Myanmar
Integrated Biological and Behavioural Surveillance Survey and Population Size Estimates among People Who Inject Drugs

Final Report

National AIDS Program
2014

TABLE OF CONTENTS

Annexes

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

This report is the result of a major collaborative effort of many institutions, organizations and individuals without whose contributions the data presented in this document could not have been collected.

We would like to express our appreciation to H.E. Dr Than Aung, Union Minister for Health and Chairperson of the Myanmar Health Sector Coordinating Committee, for his commitment and support in strengthening of HIV surveillance systems in the country.

We are also grateful for the encouragement and guidance of H.E. Dr Win Myint and H.E. Dr Thein Thein Htay, Union Deputy Ministers for Health as well as of Dr Soe Lwin Nyein, Director - General (Acting), Department of Public Health and Dr Thandar Lwin, Director (Disease Control).

The leadership and oversight of Dr Myint Shwe, Deputy Director of the National AIDS Programme (NAP) at the time of the survey, are very gratefully acknowledged. The effective collaboration of Dr Hla Htay, Programme Manager, National Drugs Abuse Prevention and Control Programme, is also thankfully recognized.

Special thanks go to UNAIDS Myanmar and its Country Director, Eamonn Murphy, and to WHO Myanmar, Center for Disease Control and FHI360 who, together with the Global Fund, supported the realization of this survey.

Sincere thanks and appreciation go to a large number of individuals for their contributions:

Dr Min Yu Aung, Medical Officer, who acted as Principal Investigator, and Dr Nang Seng Noon Kham, Assistant Director (Monitoring and Evaluation Focal Point) of the National AIDS Programme who directed the whole survey in a competent and efficient manner in close collaboration with AIDS/STD Regional Officers, Team Leaders and Medical Officers in survey sites.

Savina Ammassari, Strategic Information Adviser, and Dr Sabe Phyu, Strategic Information Officer (UNAIDS Myanmar), Phavady Bollen, HIV Technical Officer, and Dr Win Min Than, HIV National Officer (WHO Myanmar) who provided coordination support and technical assistance throughout the survey.

Virginia Lou, Lisa Johnston and Dr Phyu Mar Soe (Consultants) who assisted with the analysis of data and the writing of this comprehensive report. They also provided valuable technical support in the survey together with Joyce Neil (Center for Disease Control), Ivana Bozicevic (WHO Collaborating Centre for HIV Surveillance), Isabel Tavitian-Exley and Daw Ma Ma Aye (Consultants).

UNOPS/Principal Recipient and its staff led by Dr Faisal Mansoor for logistic and administrative support, especially Dr Yamin Shwesin, Dr Thein Zaw Lwin, Dr Eisa Hamed and Khin Malar Tun.

We also wish to gratefully acknowledge all of the government institutions and NGOs working on HIV prevention and harm reduction activities for people who inject drugs who provided data and support.

Above all we would like to thank the many persons who took part in the survey and devoted their time to providing answers to questions and testing for HIV. Without their keen interest and participation this survey would not have been possible.

ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immune deficiency syndrome
ATS	Amphetamine-type stimulants
BSS	Behavioural surveillance survey
DIC	Drop-in-center
FSW	Female sex worker
GARPR	Global AIDS response and progress report
HIV	Human immunodeficiency virus
HSS	HIV sentinel surveillance
IBBS	Integrated biological and behavioural surveillance survey
MMT	Methadone maintenance therapy
NAP	National AIDS Progrmame
NGO	Non-governmental organization
N/S	Needles/syringes
OPD	Outpatient
PWID	People who inject drugs
RDS	Respondent driven sampling
RDS-A	Respondent driven sampling Analyst
SS	Successive sampling
STD	Sexually transmitted disease
STI	Sexually transmitted infection
TB	Tuberculosis

EXECUTIVE SUMMARY

BACKGROUND

This report presents the results of the 2014 Integrated Biological and Behavioral Surveillance (IBBS) survey of people who inject drugs (PWID), and population size estimates of PWID based on the survey results. With increased number of survey sites, larger sample size and improved survey instruments, this survey provides wider scope of information compared to previous efforts.

Pre-surveillance assessment was conducted in October 2013 to identify potential sampling issues related to RDS, resolve study logistics and plan the application of PSE techniques in 12 cities and surrounding towns.

SURVEY METHODOLOGY

This survey used respondent driven sampling (RDS) most suitable to reach hidden populations, a type of chain referral sampling which yielded data representative of the network of the populations from which the samples were gathered. 10 cities/townships were selected as survey "sites" based on the following criteria: high (or increasing) HIV prevalence and risk behaviors, presence of NAP AIDS/STD team, degree of accessibility, extent of safety for participants and survey staff, communication, IT and other infrastructure. In the case of provincial towns, "sub-sites" were set up in a smaller nearby towns, amounting to 16 RDS centers in total: Yangon (Kyimyindine, Thinganyun), Mandalay (Aungmyaytharzan, Pyigyitagon), Lashio, (Nampaung, Naungmon), Muse, Kukkhai (Namphaka), Myitkyina (Aungmyinthar), Waimaw, Bamaw, Kalay and Tamu.

Eligibility criteria was males or females, 15 years or older, who injected drugs for non-medical purposes in the past one month, and having lived for at least one year in the respective township/city of survey. Sample size calculation was 392 for each township/city. 3375 respondents participated during 3 months from February to May 2014. EpiInfo 7 was used as data entry interface and RDS Analyst (RDS-A) was used for population weighted statistical analysis. As there were very few female respondents in each site (0.4% to 8%), they were omitted from final analysis.

This PWID IBBS survey had two components: a questionnaire used to collect behavioral and other data including information on socio-demographics, drug using and sexual behaviors, knowledge of HIV and need for HIV services, information needed for size estimation, and a biological component that involved testing blood specimen to determine prevalence of HIV, hepatitis B and C.

SURVEY RESULTS

As for socio-demographic characteristics, mean age ranged from 26.5 to 33.7 years old. Ethnicity varies depending on the survey city. More than 85% of respondents in all sites lived with their spouse or other family members except for Muse. Among those under age 25, nearly 60% of PWID in Muse, more than 85% in Myitkyina and Waimaw lived with a sex partner who

was not their spouse. Median income varies from 100,000 to 200,000. While more than a quarter of PWID in Yangon and Mandaly had university or graduate level education, more than a quarter in Muse, Kukkhai and Tamu did not complete primary level.

Regarding drug use practices, median age of initiating drug varied from 18 years in Yangon and Myitkyina to 25 years in Tamu. Median age of initiating injection drug use ranges from 21 years in Yangon and Myitkyina to 28 and 29 years in Muse and Tamu. For the majority of PWID in all sites, injection was not their initial form of drug use. The medium year of injection drug use was much higher in Yangon than other sites. With the exception of Yangon, one quarter to one third of the respondents had been injecting drugs for one year or less.

Overall, the survey found that heroin remained the primary drug of injection in all townships. More than half of all respondents injected 2-3 times a day or more. Injecting drugs in public places was most commonly reported in Myitkyina (47%). The proportion of respondents who reported ever having used a previously used needle/syringe varied greatly from 16% in Mandalay to 63% in Waimaw and Kalay. Use of new needles at every injection depends on the availability and accessibility of injecting equipment. Where harm reduction services have been in place for longer, the main source of needles/syringes reported by PWID is the NGO (Lashio, Muse, Myitkyina, Kukkhai). Where programs were new (Kalay, Tamu) and in large cities, the role of NGO as a source of injecting equipment was very small. In Mandalay and Tamu, drug dealers were the primary source of needles/syringe. 37% of respondents in Kalay reported drug dealer as the source of used needles/syringes.

The PWID in Yangon and Muse reported the highest levels of ever been arrested with around 30%. Among all respondents, 9% to 57% reported having sex with a paid partner in the past 12 months, and this was significantly related to higher income. More than three quarters of those respondents with paid partner reported using condom at last sex except in Kalay (17%).

There were demonstrated differences in the characteristics and risk practices of PWID living in large cities compared to smaller towns in border and hard to reach areas. In 7 out of 10 sites, HIV prevalence among new injectors (for a year or less) was around 20%. Younger PWID (<25 yrs of age) compared to older PWID were significantly less likely to have ever been tested for HIV, and more likely to have incorrect knowledge about HIV transmission. These results provide evidence that it is needed to focus more prevention programs on new and young PWIDs.

More than 40% of PWID had ever been tested for HIV in almost all sites; however levels of recent testing (in the last 12 months) were much lower, lower than 2007 survey data. This might be due in part to high prevalence of HIV, those with known HIV status would not be expected to retest. HIV testing among spouses was also fairly low. Being aware of the risk of HIV transmission through needle sharing was almost universal; however, levels of knowledge of other transmission modes were much lower. HIV prevalence among the sites ranges from 6% in Kalay, up to 43% in Muse, 45% in Bamaw and 47% in Waimaw. Kaukai and Myitkyina have 35% prevalence, while others range from 16-29%.

Compared with 2007 BSS data, significant improvement is seen in using sterile injecting equipment. Condom use with paid partners also increased, while condom use with regular partners decreased. Comprehensive knowledge of HIV prevention and transmission also decreased.

POPULATION SIZE ESTIMATE

PSE for survey sites was calculated from data triangulation of 4 methods: service multiplier method, unique object method, successive sampling size (SS-PSE) method, and best guesses of key informants and public and service providers.

Results obtained using the different PSE methods contributed to define the most realistic PSE for PWID in each of the survey townships. National PSE was defined in a large PSE workshop with all the PWID stakeholders and final consensus calculated country point estimate was 83,314.

CONCLUSION

This survey is the first successful third generation HIV surveillance exercise at a larger scale. It provides up-to-date behavioral and more representative prevalence data concerning this population whose members are at high risk of HIV infection.

The results of the IBBS/PSE, which describe the magnitude and determinants of the HIV epidemic among PWID in Myanmar, are fundamental to better understand the patterns of the HIV epidemic among PWID and the impact of the national response.

This survey indeed describes the differences in characteristics and patterns of drug use in the country, highlighting hot spots for drug use. Results allow assessing the coverage, scope and impact of targeted interventions for PWID. The HIV response for PWID can therefore now be adjusted to better meet the needs and contexts of PWID in different areas.

This survey also provides essential information for the development of HIV estimates and projections as well as for program planning and costing and resources mobilizing.

1. INTRODUCTION AND BACKGROUND

This report presents results of the 2014 Integrated Biological and Behavioural Surveillance (IBBS) survey of people who inject drugs (PWID), in selected sites in Myanmar. In addition, population size estimates of PWID based on the survey results are provided.

The information generated from the survey represents critical inputs to the National AIDS Programme (NAP) and its partners in planning and evaluating the national response to HIV, including guiding resource mobilization and allocation decisions.

As such, the objectives of the PWID IBBS are to:

- Estimate the prevalence of HIV
- Measure levels of HIV-related risk behaviours
- Determine HIV-related knowledge
- Assess uptake of HIV prevention services
- Monitor changes in HIV prevalence, HIV-related behaviours, service uptake and HIV-related knowledge over time

Two key components of the HIV/AIDS surveillance system in Myanmar have been the annual HIV sentinel surveillance system (HSS) and behavioural surveillance surveys. The HSS has been conducted since 1992 and includes seven different groups: antenatal clinic (ANC) patients, male sexually transmitted infection (STI) patients, female STI patients, TB patients, FSW, male PWID, and men who have sex with men (MSM).

In 2007-8, the NAP conducted behavioural surveillance surveys (BSS) among male PWID (in Yangon, Mandalay, Lashio, and Myitkiyna), FSW (in Yangon and Mandalay), and in female and male out of school youth (in Yangon, Mandalay, Lashio, Monywa, and Meikhtila). An IBBS was conducted among MSM in 2009, which was the first survey of this kind in Myanmar.

The 2014 IBBS among represents the second round of surveys conducted using respondent driven sampling (RDS) among PWID. RDS strives to achieve a more representative sample of hard to reach and hidden key populations through a controlled method of recruitment through peer networks. The current survey expands the number of sites included from four townships to ten and includes biological markers for HIV.[1]

2. PRE-SURVEILLANCE ASSESSMENT

A pre-surveillance assessment was conducted in October, 2013, to identify potential sampling issues related to RDS (e.g., social network sizes, network properties, acceptability of RDS, etc.), resolve study logistics (e.g., amount for incentives, preferred interview site location, hours of operation, openness to HIV testing and results, etc.) and to plan the application of population

[1] Both female and male PWID respondents were included in the sampling, however, the primary analysis of results was focused on only male respondents. See methodology section for more details on female respondents.

size estimation techniques (e.g. incorporating programme based and unique object multipliers into the survey implementation).

This formative research was conducted in a number of cities and surrounding towns. The pre-assessment concerned both PWID and MSM/TG as originally surveys were planned among both populations. Site visits, interviews and focus-group discussions were carried out in 12 cities/towns including Yangon, Mandalay, Lashio, Kukkhai, Muse, Myitkyina, Bamaw, Kalay, Tamu (for PWID) and Yangon, Mandalay, Pathein, Monywa and Pyay (for MSM/TG). The findings were analysed and presented in brief reports. Given how logistically complex the surveys were likely to be a decision was made to limit the 2014 IBBS/PSE to PWID in order to reduce the scope of the survey. The MSM/TG IBBS/PSE was rescheduled to take place along with the FSW IBBS/PSE in 2015 mainly due to feasibility and cost-effectiveness concerns because the FSW and MSM/TG surveys were going to target the same five cities (Yangon, Mandalay, Pyay, Pathein and Monywa).

The pre-surveillance assessment provided very useful information to finalize the design of the survey and of the survey instruments (questionnaire, forms etc.) and plan the implementation of the survey. The information has also been used in the preparation of the survey on the ground and proved instrumental for the selection of survey sites, identification of premises and the definition of other logistic and administrative issues.

2. METHODS

The PWID IBBS surveys had two components: (1) a questionnaire used to collect behavioural and other data to develop a PWID profile including information on socio-demographics, drug using and sexual behaviours, knowledge of HIV and need for HIV services; information needed for analysis of RDS-data (e.g., social network size; and, (2) a biological component that involved testing a blood specimen to determine prevalence of HIV, hepatitis B, and hepatitis C.[2]

Respondent Driven Sampling (RDS) to Recruit PWID

As in the previous round of BSS conducted among PWID in 2007, this survey used respondent driven sampling (RDS). Briefly, RDS is a type of chain referral sampling which, when implemented and analysed properly, yields data representative of the network of the populations from which the samples were gathered.[i,ii] Recruitment begins with a number of purposefully selected members of the study population referred to as “seeds”. After participating in the survey, each seed is asked to recruit a specific, limited number of peers (i.e. other eligible PWID) into the survey. Successfully recruited peers repeat the process of participating and then recruiting others until the sample size is reached. Recruitment is controlled through the use and management of a coupon numbering system that tracks who recruited whom within each recruitment chain starting from a seed. Statistical adjustments are made using these coupon data, along with the social network sizes (i.e., the number of people

[2] After the conclusion of the data collection blood specimens have been tested at the National Health Laboratory for hepatitis B and hepatitis C. The results are not included here, but are included in a separate report.

each respondent knows who knows them and meets the eligibility criteria) of each participant, to account for over representation of some groups and underrepresentation of other groups. A more detailed description and references to articles on the RDS methodology are included in Annex 1.

Data collection locations

Ten cities/townships were selected as survey "sites" for the PWID IBBS. These sites were chosen on the basis of the following criteria:

1. High (or increasing) HIV prevalence
2. High prevalence of risk behaviours
3. Presence of NAP AIDS/STI Team
4. Degree of accessibility (distance, transport and security)
5. Extent of safety for participants and survey staff
6. Communication, IT and other key infrastructure

Through information gathered during the pre-surveillance assessment and experience with the previous behavioural survey among PWID, that it would have been difficult to achieve the desired sample size, a decision was made to establish more than one facility to interview PWID and draw blood for HIV testing. Two of these so-called RDS centers were established in Yangon and Mandalay. The RDS centers in the same city/township were operated simultaneously by separate survey teams. In the case of provincial towns, such as Lashio and Myitkyina for example, "sub-sites" or "satellite sites" were set up in smaller nearby towns.

The original intention for operating multiple RDS centers in the same township/city and in adjacent towns was to encourage participation among PWID, by making access to the RDS centers more convenient. The team expected significant cross-over between survey sites in the same township/city and also between main sites and sub-site such that the data could be merged and analysed as a single dataset for that geographical unit.

Private houses or apartments were rented for 3.5 months to serve as RDS centers in each township. These facilities were selected in a way to ensure the RDS center was easily accessible for PWID but could also ensure adequate confidentiality in order to avoid stigma and discrimination. RDS centers were not located within the premises of NGOs or at public sector service sites in order to minimize bias in the sample toward those already familiar with these facilities and most comfortable going to such venues.

RDS centers had to have enough space so that multiple private interviews could take place at the same time. They ideally should have had five to six rooms and be organized as follows:

- One room where potential participants could be screened for eligibility, read information sheets and asked for informed consent
- Two rooms to administer the questionnaire and conduct HIV counselling
- One room to collect biological specimen(s)

- One room for the Coupon Managers, and where money for incentives could be kept and distributed
- A reception room/area where potential survey participants could wait, if needed

Such a set up could not be achieved in all of the survey sites. Especially in Yangon, the economic capital of the country, it proved difficult to secure premises with a large space and separate rooms because of the high cost of rent. In this case, the survey team had to separate rooms with curtains and be creative in furnishing the premises in a way to ensure adequate confidentiality.

Table 1. Location of RDS centers, sample recruitment, and combined sites

Site	RDS Centers	Total enrolment	Combined sample for "site" analysis	Final Sample for Analysis**
YANGON*	Kyimyindine	150	260	251
	Thingangyun	110		
MANDALAY	Aungmyaytharzan	206	422	420
	Pyigyitagon	216		
Shan State (North)	**LASHIO**	217	410	406
	Nampaung	111		
	Naungmon	106		
	MUSE	346	338	337
	KUKKHAI	250	399	397
	Namphaka	165		
Kachin State	**MYITKYINA**	302	411	409
	Aungmyinthar	113		
	WAIMAW	315	309	306
	BAMAW	343	327	327
Sagaing Division	**KALAY**	220	216	210
	TAMU	301	283	277

*** Bolded** names indicate the site name for main or combined samples.
** Final Sample is after taking out females at the end of recruitment chain.

During the survey and following the completion of recruitment, cross-over was assessed for each site. Formal cross-over, i.e. participation of recruiter and recruit at different RDS centers in the same township/city, was limited in most sites. Only in Yangon, was there some measurable evidence of network cross over given that two participants who were recruited by someone in Kyimyindyne were able to enrol in the site in Thingangyun. However, more detailed assessment of the wards where respondents resided found that there was substantial overlap of reported residential areas among respondents participating at different RDS centers. This analysis gave some indication that the sample recruited at different RDS centers in the same township/city were not geographically separate social networks. Based on this evidence, the survey team decided to combine the samples across RDS centers in Yangon and in

Mandalay. Some of the main and sub-sites have also been combined whereas others have been left separate.

Table 1 shows the list of locations of RDS centers and how the data were pooled during analysis to comprise the final sites: Yangon (two sites), Mandalay (two sites), Lashio (three sites – one main and two sub-sites), Muse (single main site), Kukkhai (one main and one sub-site), Myitkyina (one main and one sub-site) and Waimaw, Bamaw, Kalay and Tamu, (all with only one single main site). A more detailed description of each site is provided in Annex 2 and a map of survey sites in Annex 3.

Eligibility criteria

Eligible participants were males or females, 15 years or older, who injected drugs for non-medical purposes in the past one month. To ensure the sample was characteristic of the PWID community in that geographic area, the eligibility criteria also included having lived for at least one year in the respective township/city where the survey was being conducted. Participants also had to be willing to provide informed consent and willing to complete both the behavioural and biological parts (i.e. provide a venous blood sample for HIV testing) of the survey.

Sample Size Calculation

The sample sizes were calculated using the following formula:

$N=z^2 * p* (1=p) * D/d^2$

Where

N is the sample size

Z is a factor that corresponds to the desired confidence interval for a standard normal distribution (for a 95% confidence interval, z = 1.96)

p is the estimated prevalence or the proportion of the measured variable

d is the width of the interval

D is the design effect (a design effect of 2 was used)

To calculate the sample size, p was the proportion of PWID that shared needles at last injection which was 50%. The width of the confidence interval was set at + or – 7% and the design effect was 2. The final sample size for each cite was calculated to be 392 for each township/city.

Questionnaire development

Information gathered during the pre-surveillance assessment helped refine the final survey questionnaire. Findings from the formative research activities were incorporated into the design of the survey and the development of the questionnaire.

The English version of the questionnaire was developed by the study team based on the behavioural questionnaire used in Myanmar in the 2007 BSS and information gathered through the pre-surveillance assessment. The questionnaire was improved to include questions that allowed to gather more relevant information than in the past. The questionnaire was also vetted by a group of technical experts. The questionnaire was translated from English to Myanmar language and pre-tested among ten PWID to improve the question wording and to

assess the clarity, general flow, and skip patterns of the questionnaire. A copy of the questionnaire is included in Annex 5.

Selection of seeds and recruitment process

An established number of diverse seeds were selected for each PWID survey site. However, based on the recruitment progress and that some seeds did not recruit others or that recruitment chains stopped producing, more seeds were added in some locations. Seeds for PWID were identified by the AIDS/HIV Teams in collaboration with local NGOs, methadone treatment centres, and the social network of PWID. The selection of seeds was done carefully with the aim of representing the diversity of PWID in each study location. Teams were also urged to identify at least one female seed in each site.[3]

Seeds identified for the study population were each given uniquely coded coupons which were used in recruiting their peers into the survey. The coupons distributed had a validity of 14 days. Respondents who presented a valid recruitment coupon at an RDS Center were screened for eligibility and provided informed consent for a face-to-face interview, HIV pre-test counselling and a blood extraction for HIV, hepatitis B and hepatitis C testing.

Interviews were conducted in Myanmar language by trained interviewers and took approximately 45 minutes to complete. Following the interview, each respondent was provided a set of three coupons to use in recruiting eligible peers.[4]

Respondents received a primary compensation of 3000 kyats for transportation costs and a secondary compensation of 1500 kyats for each (a maximum of three) recruit who was eligible and consented to participate in and completed the survey. Survey completion consisted of completing the behavioural questionnaire and the blood testing. As explained to them during the consent process, respondents could neither receive their compensation nor recruitment coupons if they decided not to provide a biological specimen. No personal identifying information was collected. To ensure confidentiality, respondents' questionnaires and biological tests were identified using a unique survey identification (ID) number provided on the recruitment coupons.

Biological specimen collection, storage, transport and processing

Following the interview and pre-test counselling, the nurse or laboratory technician collected a venous blood sample by needle and vacutainer. Biological specimens for HIV were tested at the survey site with Determine and reactive results were confirmed with Unigold, as is consistent with national protocols for rapid testing. The blood specimens were kept in cool boxes and transferred to the AIDS/STD Team facilities every day, if possible, or at least every two days.

On a weekly basis, aliquots of all positive and indeterminate HIV test results, as well as ten percent of all negative samples were sent to the nearest AIDS/STD laboratory for quality control

[3] Examples of recruitment chains are presented in Annex 4.

[4] The number of coupons was reduced as part of tapering recruitment when the sample size was almost completed.

purposes. Survey participants were advised that they could receive their HIV test results with post-test counselling by returning to the RDS center two weeks after they provided a specimen. Test results were anonymous and returned using the unique survey ID number given to each participant.

At the end of the recruitment all specimens were sent from the AIDS/STD Teams to the National Health Laboratory (NHL) in Yangon. Participants' blood specimens were tested for the presence of antibodies against HBsAg (antiHBs) and HCsAg (antiHCs) at the NHL in Yangon. However, due to the anticipated time lag to process these tests, participants were not offered the results of hepatitis testing.

Data Entry and Management

Recruitment/coupon data were entered weekly at each RDS center by the coupon manager and stored into a Microsoft Excel spread sheets to monitor recruitment progress and track coupon numbers. Paper questionnaires and coupon management spreadsheets were transferred to UNAIDS Myanmar where a team of 14 staff entered the data in a database and cleaned them for analysis. Questionnaire data entry, cleaning and quality control were conducted in EpiInfo7. Final datasets were merged and underwent consistency checks. Unweighted frequencies and cross-tabulations were performed to check validity and logic of all variables in the datasets.

Staffing, training and quality control

Each RDS Center hosted a team of six staff including as follows: one Site Manager, one Screener, two Interviewers, one Nurse/Lab Technician and one Coupon Manager.

The staff was recruited by AIDS/STD Teams in collaboration with NAP central and included people who had experience with surveys and work on HIV with NGOs.

Training of RDS Team members was undertaken in different stages and involved:

1) A two-day training of nurses or laboratory technicians in Yangon in December 2013;
2) A Training of Trainers in Nay Pyi Taw in January 2014; and
3) A multiplier training in each of the survey sites right before the start of data collection in February 2014.

Supervision of the data collection in the different survey sites was carried out with help of a 'mobile team' including staff of NAP, partner organization and consultants. Especially at the beginning of the data collection each site was visited to provide on-site support and mentoring to members of RDS Teams. A checklist was established to identify and record issues and challenges encountered in the survey. RDS Teams also received advice and support over the phone, though telecommunications were quite poor in some of the sites made communication difficult.

Analytical approach

Composite and recoded variables were created using Microsoft Excel and EpiInfo7 before importing the datasets into RDS Analyst (RDS-A) for statistical analysis.[5]

Although the eligibility criteria for participants included females, the likelihood that female PWID had distinct patterns of injection and health seeking behaviour and the relatively small proportion of the sample they comprised in most sites, prompted the survey team to analyse the data from male and female PWID respondents separately.

Female respondents in each survey site ranged from 0.4% to nearly 8% of the sample. Female respondents at the end of recruitment chains were deleted from the male PWID dataset altogether. In order to maintain the network structure necessary for analysis, the coupon numbers and network sizes of female respondents in the middle of recruitment chains remained in the dataset; all other data from females were deleted. Table 2 shows the proportion of female respondents in the sample and the number of females at the ends of recruitment chains (i.e. did not recruit other people into the survey) for each site.

To obtain some rough insights into female PWID characteristics, the data from female respondents across all sites were pooled and analysed as a combined unweighted sample. These results are not intended to provide a representative sample of female PWID for the country. For this reason, the results for females are only included in Annex 4 where survey site profiles are presented.

Table 2. Recruitment of female respondents

Site	# Females	% Females	# Females at end of chains	% Females at the end of chains
Yangon	11	4	9	82
Mandalay	18	4	2	11
Lashio	6	2	4	67
Muse	6	2	1	17
Kukkhai	3	1	2	33
Myitkyina	2	1	2	100
Waimaw	4	1	3	75
Bamaw	1	<1	0	0
Kalay	17	8	6	35
Tamu	15	5	6	40

Population estimates and 95% confidence intervals were calculated using the Giles Successive Sampling (SS) estimator.[6] Recruitment graphics for the RDS samples were created using

[5] This open software can be found at www.hpmrg.org.

[6] Gile K, Handcock M. Respondent-Driven Sampling: An Assessment of Current Methodology (2010). arXiv:0904.1855v1. Sociological Methodology. 40: 285-327.

NETDRAW in UCINET.[7] Although results of the cross tabulations are weighted, chi-square statistics are generated based on the sample proportions and were compared to the population proportions.[8] When these proportions were found to be similar, it was assumed that the population estimates were likely to be statistically significant as well.[9] Throughout the report, levels of statistical significance are noted in tables and figures showing the cross-tabulation results using the following symbols: *=p<0.05, **=p<0.01, ***p<0.001; levels of significance notated with a '+' rather than '*' denote cross tab distributions of the sample which appear notably different than the distributions at the population level. Notably different was defined as ~>5 percentage points.

Ethical considerations

Study participation was voluntary and respondents were informed that they were free to withdraw from the survey at any time during the process. Following careful explanation of the survey, study staff gave eligible respondents the consent form to read or, if necessary, the consent form was read to the respondents by a staff member. All respondents both signed and verbally stated that they understood and agreed to all of the items contained in the consent form before being enrolled in the survey. In order to enrol in the survey, potential participants had to agree to complete the behavioural interview as well as the biological testing. To minimize any discomfort due to the sensitive nature of the questions asked, the questionnaire was administered in a private and confidential setting. Respondents could refuse to answer any specific question. All respondents were provided the name and telephone number of an external contact should they have any questions about the survey or if they believed they had been injured or mistreated as the result of their involvement in the survey.

All survey data, including biological and behavioural information, were confidential. The survey team did not record names, specific addresses or other personal identifiers on the questionnaires or on any of the laboratory specimens and results. Coupon identification numbers were assigned to each respondent and used to link questionnaire responses to

[7] The software can be found at http://www.analytictech.com/ucinet/download.htm

[8] Statistical tests for weighted cross tabulations are not a function offered in the software used for analysis, RDS-A.

[9] For example, if population cross tabulations are represented by A,B,C,D out of the total T:

	Variable 2 – True	Variable 2 - False	
Variable 1- True	A%	B%	
Variable 2- False	C%	D%	
			t=100%

And sample cross tabulations are represented by a,b,c,d out of the total t:

	Variable 2 – True	Variable 2 - False	
Variable 1- True	a%	b%	
Variable 2- False	c%	d%	
			t=100%

Chi-square statistics for sample cross tabulations are assumed to be similar for population cross tabulations when the A is approximately = to a and C is approximately = to c.

management forms and laboratory test results. After data collection, questionnaires, forms and test results were kept in a secure location in the interview offices in the survey location before being transferred to NAP in Nay Pyi Taw and subsequently to UNAIDS for data management. The data were stored at NAP.

Limitations

Compensation for respondents is a crucial element of recruitment in RDS but it can be challenging to determine the appropriate amount for each population in a given country. If the compensation offered is too high, there is a risk that recruits may fake eligibility requirements. If the amount is too low, recruitment will not be successful. For these surveys, compensation amounts were set based on meetings with key experts during the pre-survey formative research.

In order to prevent double-enrolment and ensure that all respondents met the eligibility criteria, recruits attending the survey sites were screened by a trained screener with experience of working with the population. Anyone who tried to enrol in the survey and was found to have already participated or to be ineligible, had their coupon taken away by a staff member and were asked to leave the premises.

Although the PWID estimates presented here may be considered representative of the network of the population from which respondents were recruited, the small number of values for certain variables may limit the ability to derive accurate estimates. In some cases, confidence intervals are too wide for meaningful interpretation. Further, as analysis in RDS Analyst depends on the integrity of recruitment chains to determine and adjust estimates for probability of recruitment, missing values may distort adjusted proportion estimates.

An important assumption for RDS is that the network for each sample comprises one complete network component. In principle, datasets from separate samples should not be merged unless there is evidence that the samples comprise one network. As noted in an earlier section, there was little confirmed network crossover between sites. Pooling the data across RDS centers in the same township/city as was done for this analysis may not accurately represent the structure of the PWID network in these areas.

3. SURVEY FINDINGS

A. Network Characteristics

Peer to peer recruitment in RDS relies on the population being socially networked and recognizing one another as part of that network. Extrapolation of findings to the sampled population in RDS, assumes that the target population comprises a single social network component. Characterizing these networks may also be useful in more effectively planning outreach and disseminating information to these groups.

We plotted recruitment chains by key variables of all respondents (male and female) in each survey site to characterize these networks and visually assess the potential for gross recruitment bias in the samples.[10] Specifically, we looked for indications that the network did not comprise one network component (an essential assumption of RDS) by seeing if a) almost all recruits from a single seed shared a specific characteristic; b) whether those with a particular characteristic were disproportionately found at the end of recruitment chains; and c) whether the recruitment chain of a single seed comprised a large proportion of the sample from a site. [11]

The key variables chosen included characteristics which might determine which PWID maintained strong social/injection-related ties to each other. For example, age group, duration of injection, sharing of injection equipment, HIV prevalence. Due to some concerns that respondents recruited people that were not in their social network, but whom they only met at a location where PWID received HIV-related services, recruitment chains were also examined with respect to whether the seed of the chain was recruited through an NGO, etc.

Overall, five to 13 seeds were used to recruit the full sample. In Muse, Myitkyina, and Bamaw recruitment from a single seed resulted in a half or more of the total sample. This may indicate that a sub-group of PWID is disproportionately represented in the sample. However,

[10] These network graphs depict each respondent by a symbol indicating the value of a selected variable, e.g. age <25 or age >=25, and the node for each respondent is visually linked with a uni-directional arrow to the node of the respondent(s) whom they recruited into the survey. In this way, it is possible to visualize whether individuals tended to recruit others who shared their characteristics in terms of the selected variables or not, or whether recruits originating from the same seed appear to have a profile which is distinct from the characteristics of the overall, weighted sample.

[11] The potential for recruitment bias in an RDS survey comes from multiple sources. First is the tendency for respondents to selectively recruit participants similar to themselves (i.e. recruitment homophily), which may prevent the sample from reaching equilibrium (an indication that the final sample is no longer biased by the non-randomly selected seeds). Second, is when the population is not sufficiently networked to maintain recruitment. A third form of recruitment bias can occur if respondents with specific characteristics have larger social networks and may be more efficient in recruitment. In this case, recruitment by peers from one seed may dominate not necessarily showing up in just one seed's recruitment chains, but in the overall sample. Another type of recruitment bias that is less easily detected by visual examination of recruitment chains is the extent to which the members of the target population do not comprise a single network component but form multiple separate small networks, key assumptions are not met and adjustments used to weight the sample may not be adequate. This may be more easily assessed by reviewing the characteristics of the sample (i.e. preliminary results) with the harm reduction implementers and PWID key informants in the survey area and asking whether the results are consistent with their experience and knowledge of the ground situation.

recruitment chains across all sites did not indicate clear patterns of recruitment bias by key variables (e.g., gender, age, HIV prevalence, sharing of injecting equipment, duration of injection, HIV testing, recent sex). Recruitment graphs show that new injectors in Muse and young injectors in Kalay were commonly found at the ends of recruitment chains and may indicate these groups are less effective at recruiting other members of their network.

Table 3. Recruitment pattern and number of waves

	# of seeds	# seeds recruited =<5 participants	Maximum number of waves	
Yangon	14	5	14	
Mandalay	8	0	11	
Lashio	9	1	11	
Muse	8	5	42	Recruitment from one seed comprised > 2/3 of the total sample.
Kukkhai	9	1	13	
Myitkyina	8	3	18	Recruitment from one seed comprised ~50% of the total sample.
Waimaw	6	0	12	
Bamaw	8	1	20	Recruitment from one seed comprised ~50% of the total sample
Kalay	5	1	14	
Tamu	6	0	17	

Female recruitment within PWID samples

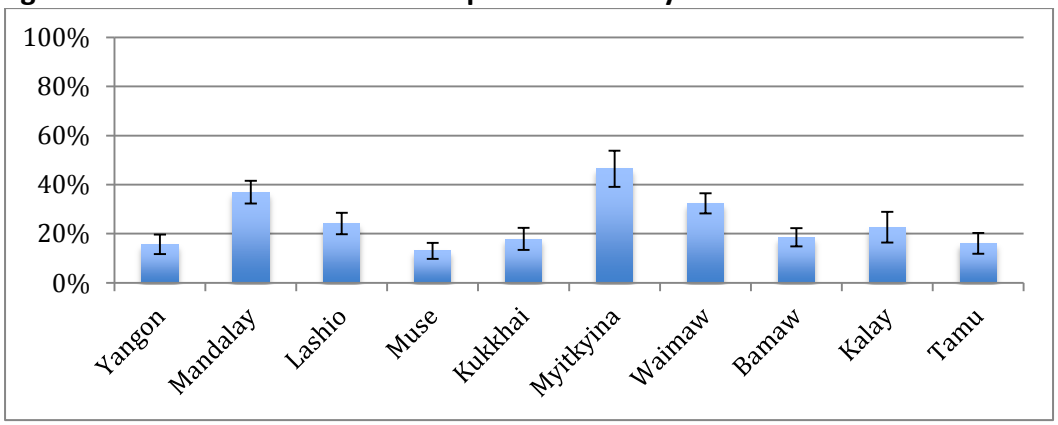
In the interest of including females in the PWID IBBS, all sites had at least one female seed. As illustrated in Table 2 the proportion of females in each site's sample ranged widely, but remained under 10% in all sites. In four sites the percentage of female respondents exceeded 4% (i.e. Yangon, Mandalay, Kalay, and Tamu). One assumption about female PWID is that their injecting networks are strongly influenced by their sexual partners, rather than being comprised of platonic friends, including those of the same gender. We found that this pattern of recruitment varied. In the Yangon sample, more than two third of females in most networks could not recruit any male or female respondents and the rest recruited only male respondents. In Mandalay, females tended to recruit each other in one network component, but not in four others, while female respondents were not recruited in two others. In Kalay, in only one component did females recruit other females into the survey. This component happened to have a female seed. In Tamu, no female respondent recruited another female respondent.

B. Socio-demographics

Age

Age distribution is an important characteristic of a PWID community because younger injectors may have different social networks, patterns of sharing, and health seeking behaviours than older injectors. The mean age of respondents ranged from 26.5 years old to 33.7 years old. The sites with a significantly higher proportion of respondents under the age of 25 were Myitkyina, Mandalay, and Waimaw.

Figure 1. Percent of male PWID respondents < 25 years old



Denominator: All respondents

Figure 2. Age distribution of male PWID respondents

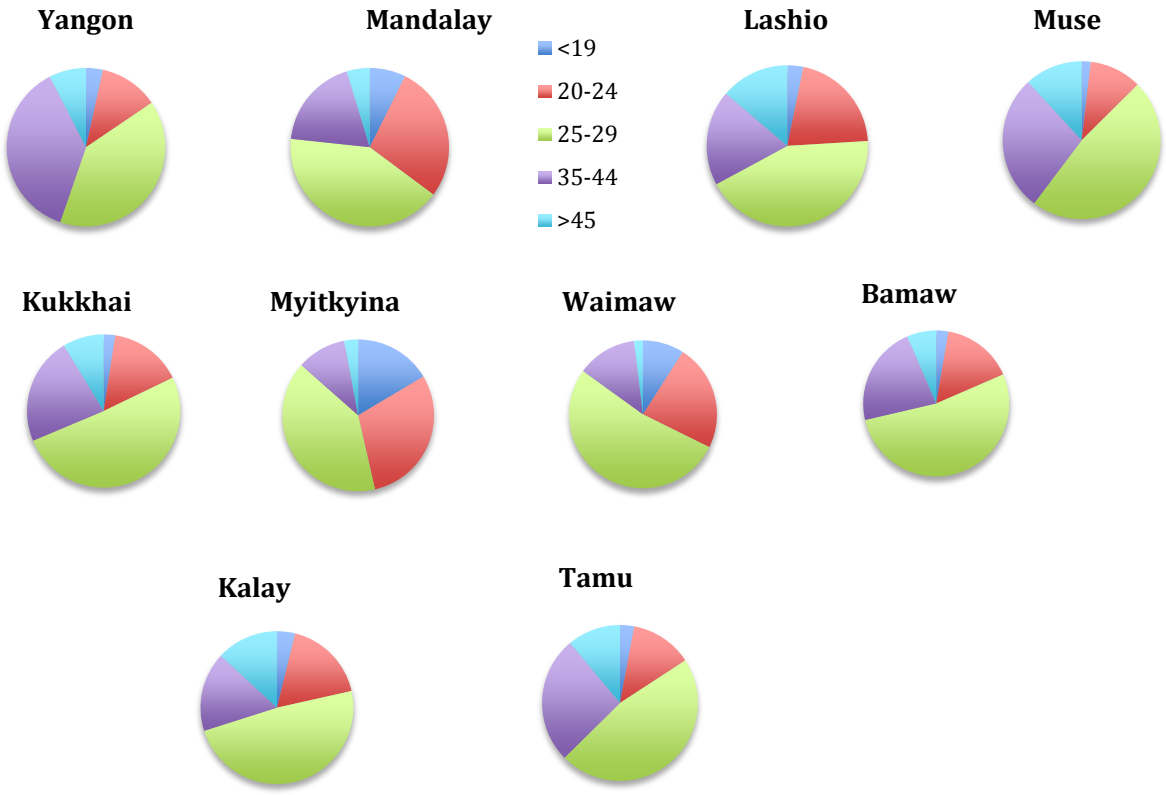


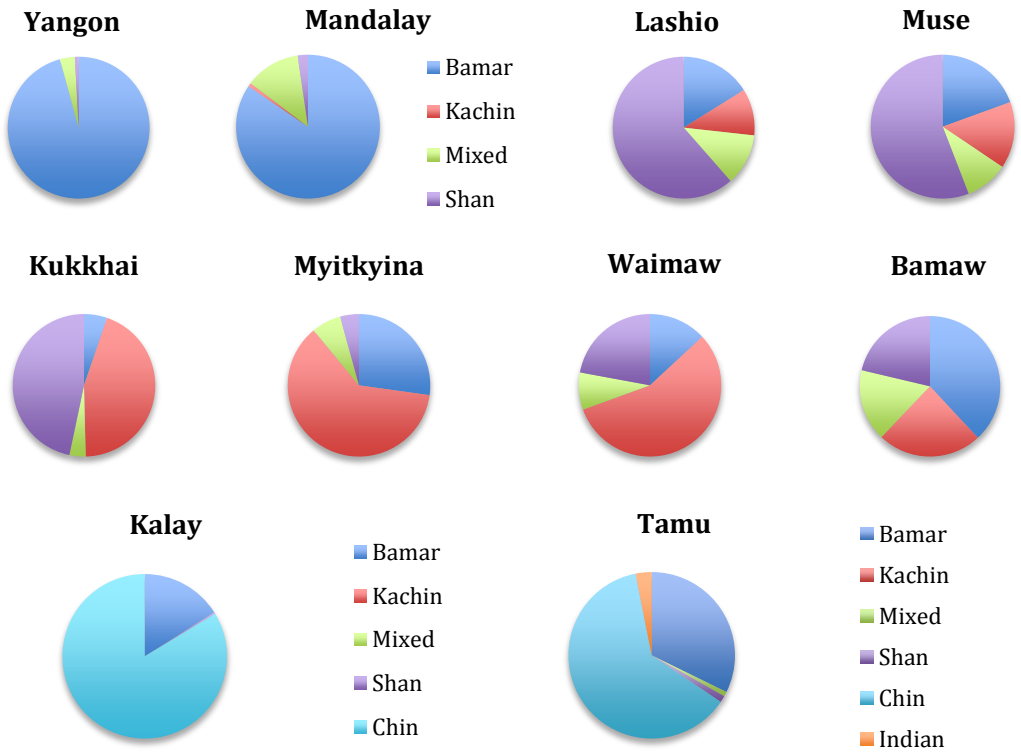
Table 4. Age distribution of male PWID respondents

	No. of male PWID respondents	Mean	Median		% < 25 years old	*95% CI*
Yangon	249	33.1	33.0		15.7	(12-20)
Mandalay	404	27.6	26.0		36.9	(32-41)
Lashio	404	32.6	30.0		24.2	(20-28)
Muse	332	33.7	31.0		13.0	(10-16)
Kukkhai	396	31.8	30.0		17.8	(13-22)
Myitkyina	409	26.5	25.0		46.4	(39-54)
Waimaw	305	27.7	27.0		32.4	(28-36)
Bamaw	326	30.9	30.0		18.5	(15-22)
Kalay	199	30.7	30.0		22.7	(16-29)
Tamu	268	32.5	31.5		16.1	(12-20)

Ethnicity

The ethnicity of PWID respondents varied significantly between sites, as corresponds to the composition of the general population in each geographic area.

Figure 3. Ethnicity of male PWID respondents



Denominator: All respondents

For example, in the metropolitan areas (Yangon and Mandalay) a majority of respondents were Bamar which is the largest ethnic group in Myanmar. While in Kukkhai, Myitkyina, and Waimaw, a large proportion of respondents were Kachin. In Kalay and Tamu a majority of respondents were Chin. Differences in ethnic group in different areas have implications for developing culturally and linguistically appropriate services for PWID.

Residency in township

In order to describe the local situation of PWID, the eligibility criteria required respondents to live in the survey area for at least one year. Despite this requirement, nearly 17% of respondents in Muse reported living in the area for only one year. In the other sites, less than 3% of respondents reported living in the area for only one year. The larger proportion of new residents in the Muse survey site likely reflects the characteristics of Muse as a border town attracting high volumes of trade and migrants.

Marital status and household composition

The marital status and household composition of PWID have implications for whether PWID are at risk for transmitting HIV to a regular sexual partner and better understanding the social context in which PWID inject, and are willing to know their status and seek treatment or harm reduction services. The proportion of PWID respondents who were currently married ranged from 24% in Muse to 47% in Kukkhai.

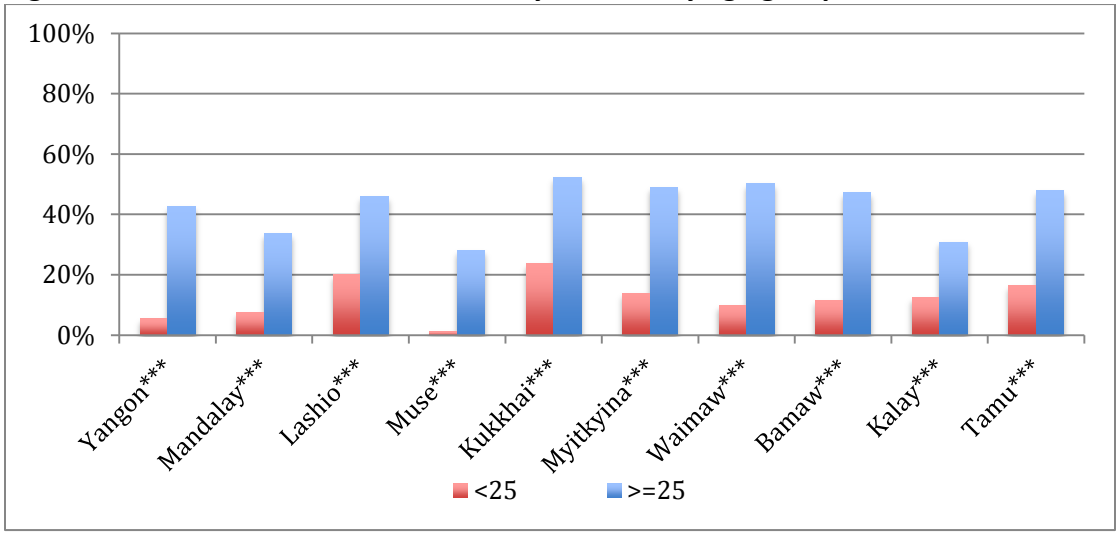
As expected, marital status is highly correlated with the age of respondents. Respondents who were older than 25 were more likely to be married.

Table 5. Marital status and household composition of male PWID respondents

	% Currently Married	*95% CI*	% Lives with spouse	*95% CI*	% Lives with Family	*95% CI*
Yangon	37	(29-44)	32	(25-38)	56	(48-62)
Mandalay	24	(19-29)	23	(18-27)	71	(65-76)
Lashio	39	(33-46)	33	(33-46)	59	(53-65)
Muse	24	(19-30)	24	(19-30)	38	(39-53)
Kukkhai	47	(41-53)	44	(41-53)	49	(35-47)
Myitkyina	33	(26-39)	20	(26-39)	77	(72-85)
Waimaw	37	(30-44)	33	(26-39)	64	(57-71)
Bamaw	41	(35-46)	38	(32-43)	56	(51-62)
Kalay	27	(21-33)	25	(19-31)	71	(64-77)
Tamu	43	(35-51)	42	(35-50)	48	(40-55)

Denominator: All respondents

Figure 4. Percent of male PWID currently married by age group



Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05
Denominator: those <25 and >=25, respectively

More than 85% of respondents in all sites lived with their spouse or other family members, with the exception of respondents in Muse which is a town on the border with China characterized by a large volume of migration. In most sites less than 10% of respondents lived with friends or by themselves. However, in Muse more than 35% of respondents lived with someone other than their spouse or family.

Table 6. Household composition among male PWID <25 years old

	% who lives with				
	Spouse/ partner	Other sex partner	Family	Friends	Alone
Yangon* **	3	0	90	7	0
Mandalay* **	7	0	88	3	3
Lashio* **	17	0	82	0	1
Muse**	1	59	13	27	0
Kukkhai* **	23	0	74	0	3
Myitkyina* **	6	90	2	1	1
Waimaw* **	9	87	3	0	0
Bamaw+++	8	0	26	43	38
Kalay	12	0	86	0	2
Tamu**	17	0	73	5	5

Statistically significance reflects Chi-square comparison of household composition of those >=25 years old to those <25 years old. ***=p<0.001, **=p<0.01, *=p<0.05. Denominator: Those <25 years old

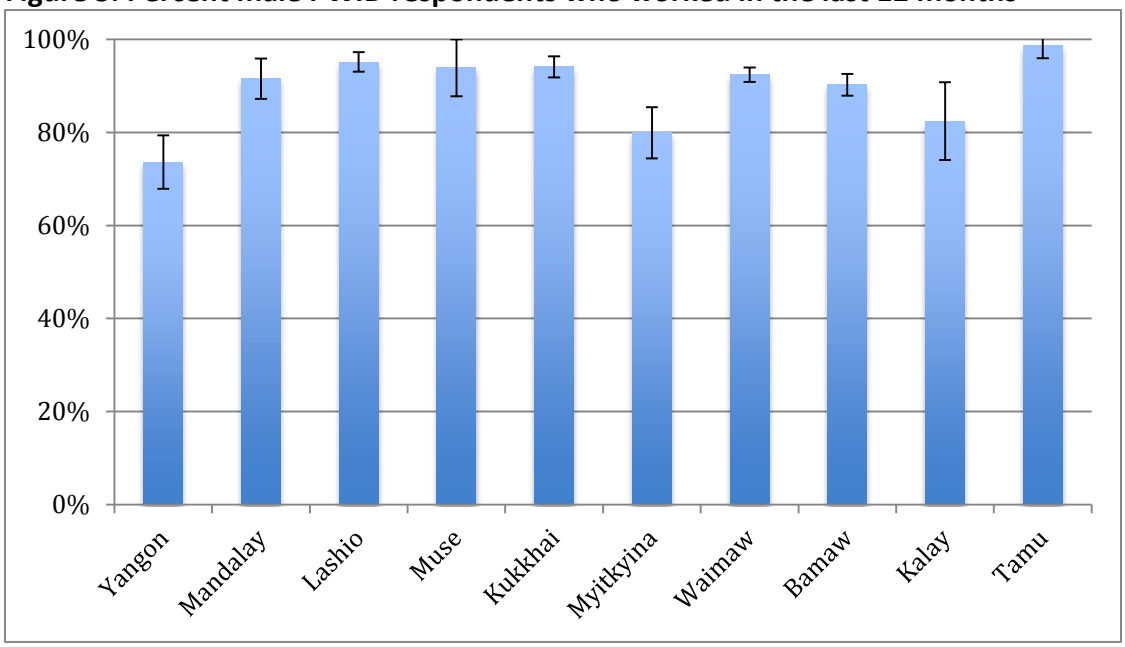
Among those under age 25, nearly 60% of PWID in Muse lived with a sex partner who was not their spouse. This pattern was also observed in Myitkyina and Waimaw, where more than 85% of PWID under 25 years old said they lived with a sex partner who was not their spouse.

Socio-economic status

In this survey socio-economic status of respondents is described in terms of employment, monthly income, level of education, and literacy. These characteristics may have implications for PWIDs' access to information and services as well as the types of places, frequency of injection, and decision to reuse needles/syringes among PWID.

Respondents were asked sources of money they used to live on. Those who reported income related to legal work (e.g. being salaried, farming, etc.) were categorized as working.[12] More than three quarters of respondents worked in the 12 months prior to the survey.

Figure 5. Percent male PWID respondents who worked in the last 12 months

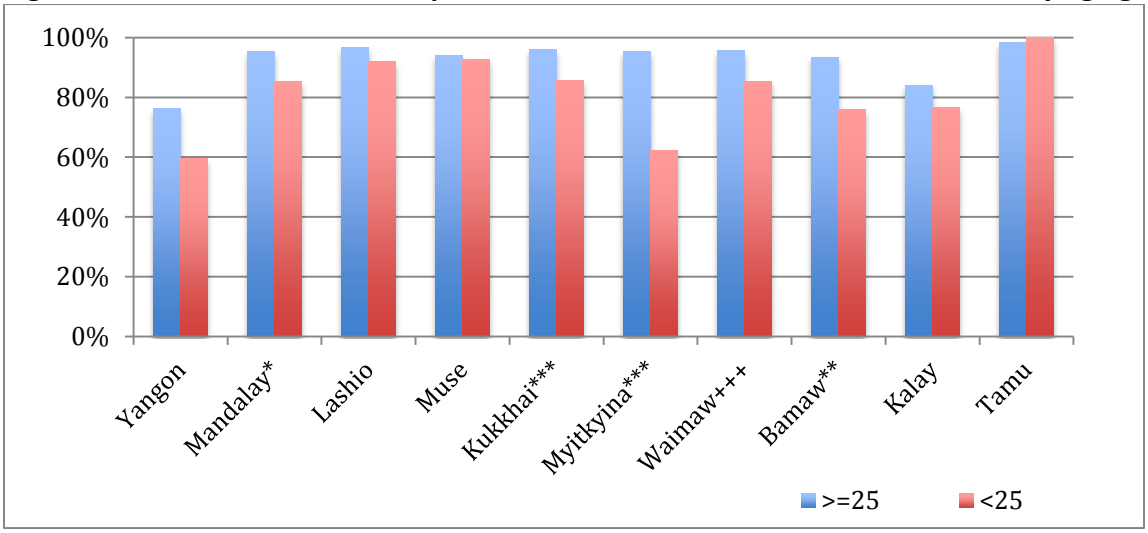


Denominator: All respondents

The proportion with recent work was slightly lower among those under age 25, but except for Yangon and Myitkyina, more than three quarters of PWID earned income in the past 12 months.

[12] Specific response categories considered as "employed" included 'salaried,' 'farming,' 'wage laborer,' 'driver/transport worker,' 'trade/business/shop.'

Figure 6. Percent male PWID respondents who worked in the last 12 months by age group



Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.
Denominator: Those <25 and >=25, respectively

Monthly income

Respondents' reported their monthly level of income in kyats.[13] Mean and median values varied significantly by site. The highest mean monthly income was reported in Myitkyina and Bamaw, however the highest median income was reported in Yangon and Mandalay. This is due to a skewed distribution of income found in Myitkyina and Bamaw. The site with the lowest income among PWID was Tamu. More than half of respondents in Kalay had missing values for monthly income, indicating that interpreting this variable and associated cross tabulations for Kalay should be done with caution.

Table 7. Monthly income (kyats) distribution of male PWID respondents

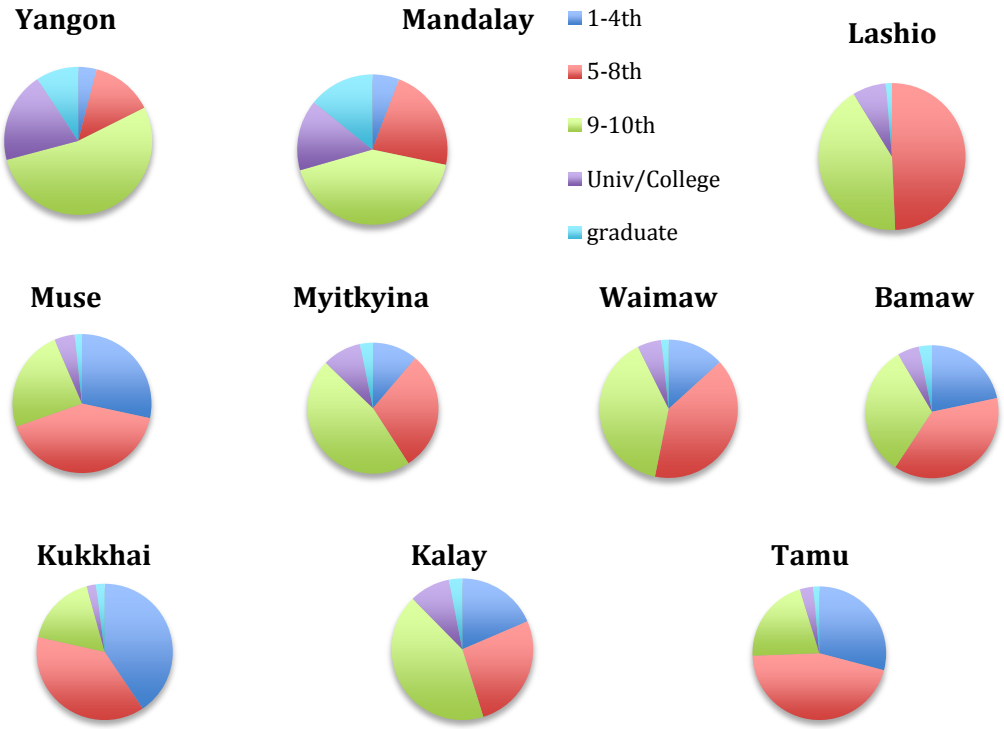
	Mean (kyats)	Median (kyats)	% < 150,000 (kyats)	*95% CI*
Yangon	218,417	200,000	30	(24-35)
Mandalay	204,229	200,000	26	(21-30)
Lashio	145,778	100,000	61	(56-66)
Muse	165,612	130,000	51	(45-57)
Kukkhai	128,019	100,000	57	(52-62)
Myitkyina	237,540	150,000	39	(32-45)
Waimaw	169,985	150,000	42	(36-47)
Bamaw	230,620	150,000	35	(29-40)
Kalay#	145,475	100,000	67	(59-76)
Tamu	110,629	100,000	69	(62-75)

[#] One half of the Kalay respondents had missing values for monthly income. Denominator: All respondents

[13] At the time of the survey 1000 kyats represented approximately 1 US$.

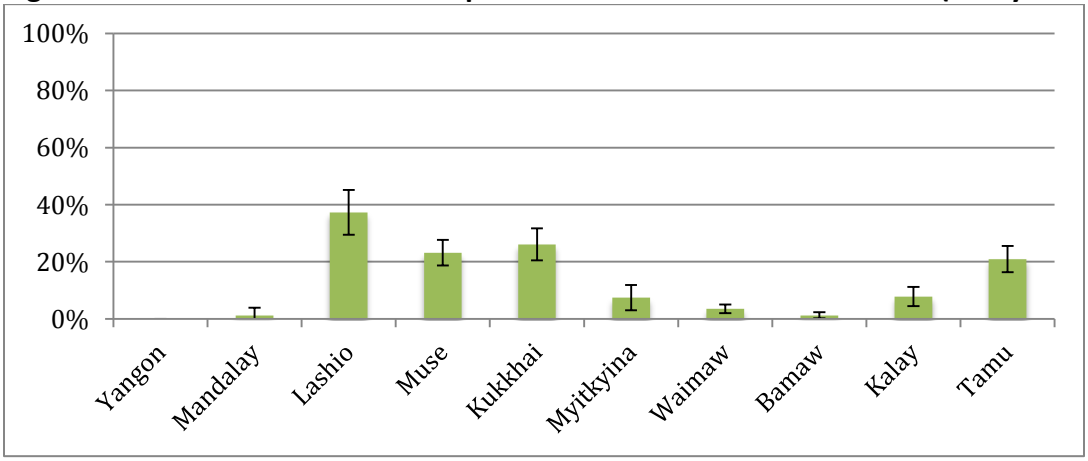
With respect to formal education, PWID varied greatly between sites. For example, more than a quarter of respondents in Muse, Kukkhai, and Tamu did not have more than four years of formal education. While in Yangon and Mandalay more than a quarter of PWID had some university or graduate level education.

Figure 7. Highest level of education completed by male PWID respondents



Denominator: All respondents

Figure 8. Percent of male PWID respondents who do not read or write (in Myanmar language)



Denominator: All respondents

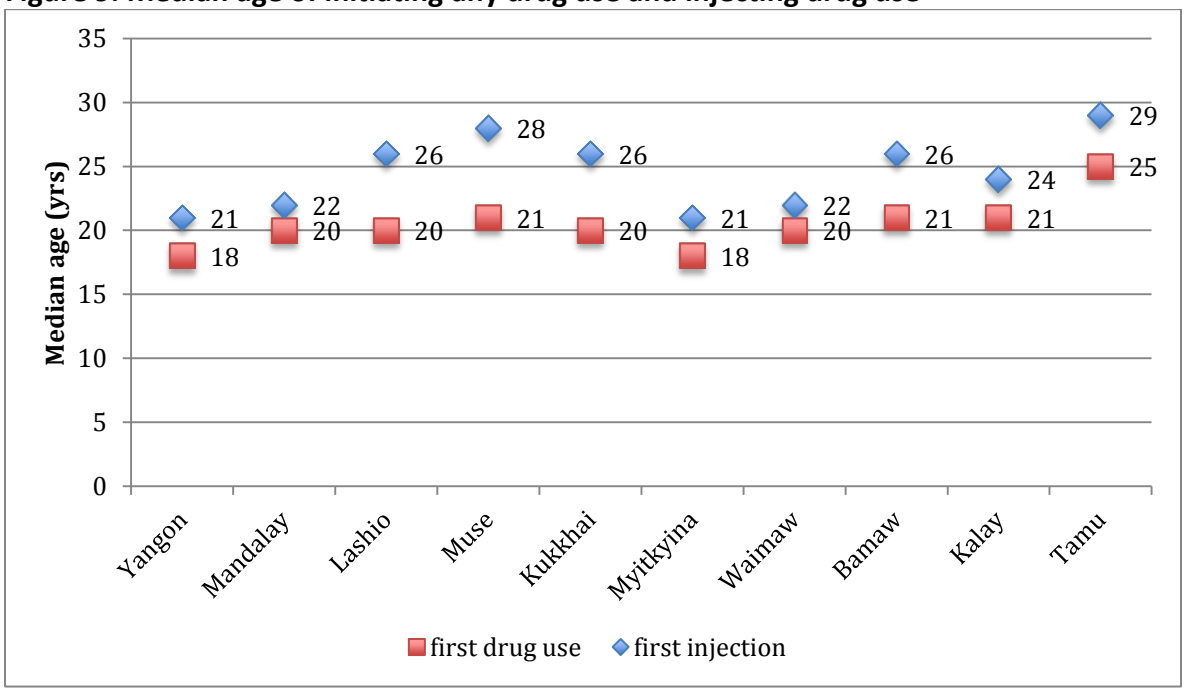
Respondents were also asked about their education in terms of literacy in Myanmar language. More than one third of respondents in Lashio and about one fourth of respondents in Muse and Kukkhai said they could not read or write. Due to the high proportion of migrants and ethnic groups in some sites, it is possible that respondents who could not read or write Myanmar language were literate in another language, however, this was not assessed in the questionnaire. The proportion of respondents without literacy in Myanmar language is consistent with the proportion that had less than a fifth grade level education.

C. Drug use practices

Initiation of drug use

The median age of initiating drug use administered by any method ranged from 18 years in Yangon and Myitkyina, to 25 years in Tamu. The median age of initiating injection drug use was several years older: from 21 years in Yangon and Myitkyina to 28 years in Muse and 29 years in Tamu. Differences in age of drug use initiation may reflect different social networks in which young people are introduced to drugs as well as the availability and access to illicit substances. It is interesting to note that in sites with younger age (i.e. ≤20 years) of initiation of non-injecting drug use, progression to injection drug use took place over a shorter period, 2-3 years. This pattern is seen in Yangon, Mandalay, Myitkyina and Waimaw. In contrast, the sites with a median age of injection >20 years, the median age of first injecting drugs is almost always more than 5 years later (e.g. Lashio, Muse, Kukkhai, Bamaw). Where drug initiation is early, there is greater urgency to intervene and prevent drug users from transitioning to injection practices. Another implication of this pattern is that the social-environmental factors that contribute to early drug initiation may also be conducive to promoting injection behaviour.

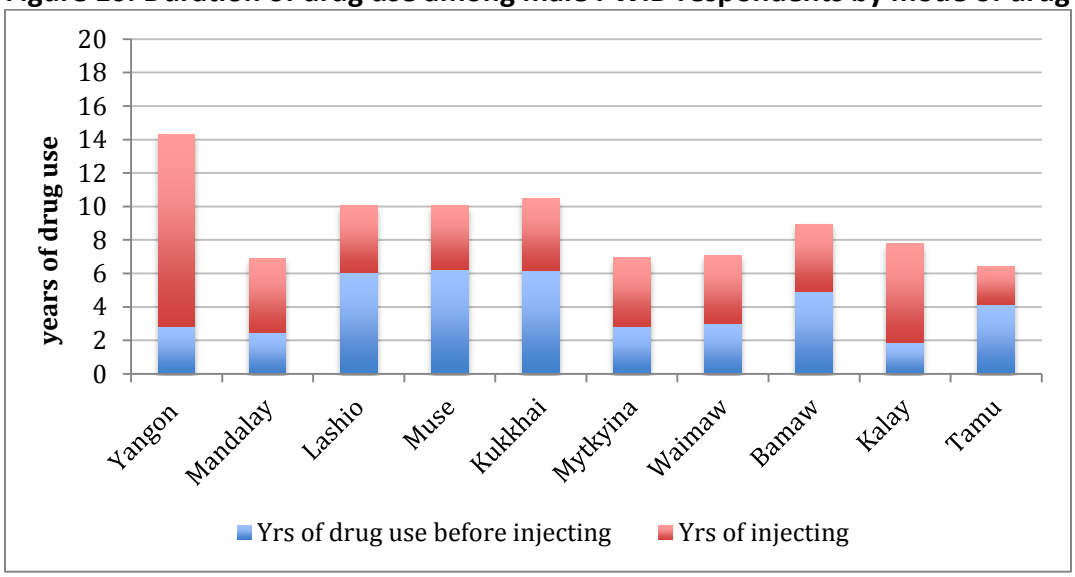
Figure 9. Median age of initiating any drug use and injecting drug use



Duration of drug use

To estimate the duration of drug use, the age of respondents when first injecting drugs or using drugs by ingestion, inhalation, or smoking was subtracted from the respondents' current age. In Yangon, Lashio, Muse, and Kukkhai respondents reported an average duration of illicit drug use of over ten years. For the majority of PWID in all survey sites, injection was not their initial form of drug use. In Lashio, Muse, Kukkhai, and Bamaw, respondents reported injecting drugs only after five years of illicit drug use by inhalation or ingestion. In Yangon, Mandalay, Kalay, Myitkyina, and Waimaw, progression to injecting drugs occurred after a shorter period of time of using illicit drugs by other methods.

Figure 10. Duration of drug use among male PWID respondents by mode of drug use



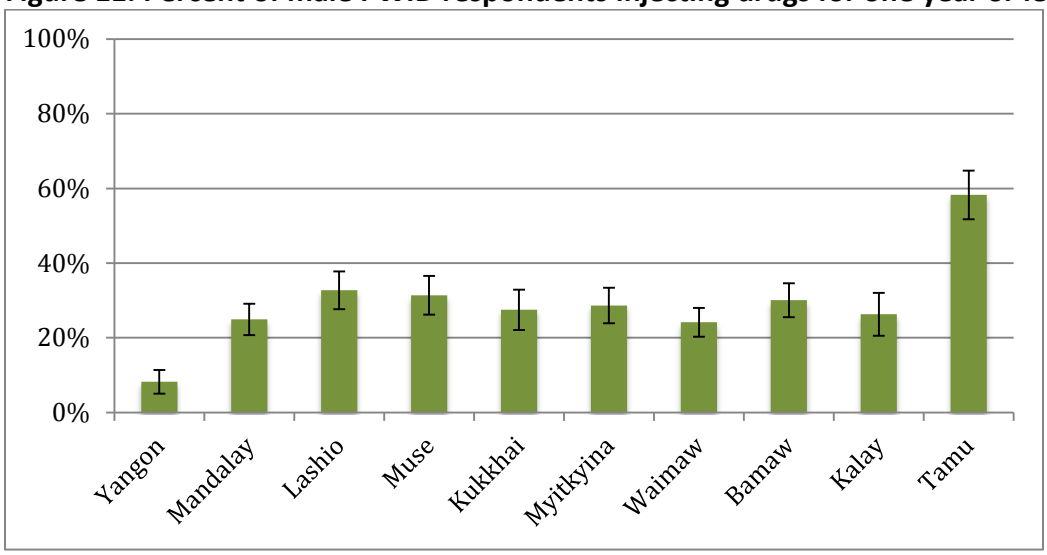
Denominator: All respondents

Table 8. Duration of injecting drugs among male PWID respondents

	Mean (yrs)	Median (yrs)		% injecting =<1 year	*95% CI*
Yangon	11.4	11.0		8	(5-11)
Mandalay	4.4	3.0		25	(21-29)
Lashio	4.0	3.0		33	(28-38)
Muse	3.8	2.0		31	(26-37)
Kukkhai	4.3	3.0		27	(22-33)
Mytkyina	4.1	3.0		29	(24-33)
Waimaw	4.1	3.0		24	(20-28)
Bamaw	4.0	3.0		30	(26-35)
Kalay	5.9	3.0		26	(21-32)
Tamu	2.3	1.0		58	(52-65)

With respect to risk of HIV, duration of injection drug use characterizes the period of exposure to the most probable mode of transmission for PWID. The mean/median years of injection drug use was much higher in Yangon than the other survey sites. With the exception of Yangon, one quarter to one third of the respondents had been injecting drugs for one year or less. More than half of PWID respondents in the Tamu survey had been injecting drugs for a year or less. New injectors represent an important sub-group to engage early in prevention services and harm reduction programmes, before HIV transmission occurs.

Figure 11. Percent of male PWID respondents injecting drugs for one year or less



Denominator: All respondents

Types of illicit drugs used

More than 95% of PWID respondents in all sites reported heroin[14] as their primary drug of injection in the last month.

When asked what drugs were used through non-injecting modes in the last 12 months, a third or more of PWID in all sites reported using amphetamines, with the exception of respondents in Kalay (7%). The highest levels of amphetamine use were reported in Muse, Kukkhai and Bamaw. In these sites, more than two thirds of respondents reported using amphetamines in the past 12 months. The use of a combination of drugs for non-injection use in the last 12 months, e.g. 'formula,' or 'swe,' was reported by 31% of respondents in Myitkyina, but in all other survey sites the proportion of respondents using this combination of drugs was less than 5%. Marijuana was used in the last 12 months by nearly two-thirds of PWID respondents in Yangon and 22% of respondents in Tamu. Marijuana use was less common in all other sites.

Frequency of use of alcohol in the last month was relatively moderate in most survey sites, with the exception of Kalay. In this site, 64% of respondents reported drinking alcohol daily,

[14] In some survey sites, e.g. Yangon, respondents mentioned injecting 'opium', which for the purposes of this question was categorized the same as heroin.

compared to less than 20% of respondents in all other sites. Daily drinking of alcohol was lowest among respondents in Tamu (6%).

Table 9. Amphetamine use and daily alcohol use among male PWID respondents by age group

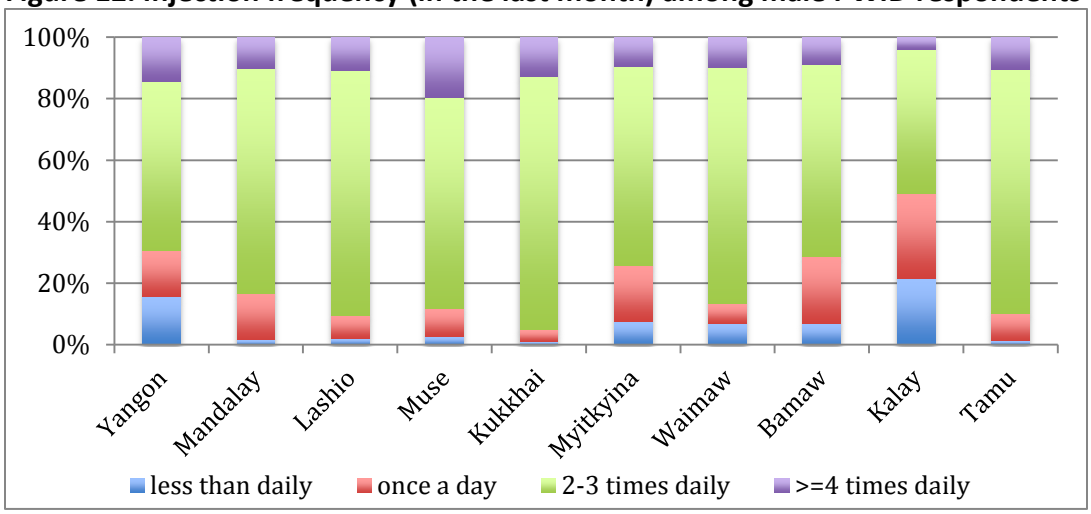
Age group	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
% Used amphetamines in the last 12 months										
>=25	35	37	44	86	74*	39	36**	69	8	46
<25	45	40	57	95	87	28	20	62	1	33
% Used alcohol daily in the last month#										
>=25	13**	16*	13	10	9	19	23***	22	65	6
<25	0	5	0	2	3	13	7	11	61	8

Statistical significance is for the distribution across all categories of alcohol use. The Current table shows only the proportion reporting daily use. Other categories include, did not drink, <1 week, once a week, >1 week). ***=p<0.001, **=p<0.01, *=p<0.05

Injection frequency

Risk of HIV infection is also strongly related to frequency of injection. In the month prior to the survey, more than three quarters of respondents across all survey sites injected at least daily. More than half of all respondents injected 2-3 times a day or more. Compared to other survey sites, respondents in Kalay reported much less frequent injecting behaviour. More than 20% of respondents in this sample reported not injecting daily.

Figure 12. Injection frequency (in the last month) among male PWID respondents



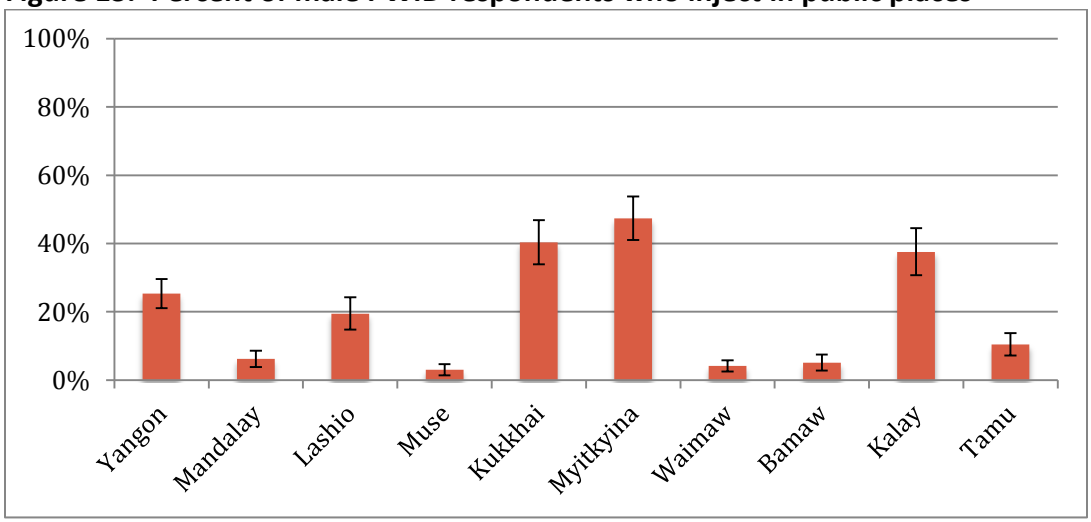
Denominator: All respondents

Injecting venues

The ability to provide harm reduction services depends on the ability for service providers to reach PWID. In the past, outreach has been provided in public spaces where injectors might be buying or using drugs. However, shooting galleries and other public places where PWID use drugs are less common making outreach and provision of services more challenging. Respondents were asked an open-ended question about where they have injected drugs in the

last month. Those who mentioned publicly accessible places such as street corners, parks, latrines, bar/club, or shooting locations were categorized as injecting in public places. Injecting drugs in public places was most commonly reported by respondents in Myitkyina (47%), Kukkhai (40%) and Kalay (38%). While in Mandalay, Muse, Waimaw, and Bamaw, injecting in public locations was reported by less than 10% of respondents.

Figure 13. Percent of male PWID respondents who inject in public places



Denominator: All respondents

Among survey sites where injecting in public venues was relatively more common, the types of public venues most frequently mentioned in Myitkyina, Kukkhai, Yangon, and Kalay were street/parks. Latrines were most frequently mentioned in Lashio and Kalay. In Kukkhai (19%) and Tamu (10%) respondents mentioned shooting galleries/locations as places of injection; while in all other sites less than 5% of respondents injected in such venues.

Due to the importance of providing prevention services to younger and new injectors, we examined whether injecting in public places was less common among these groups. No differences were found among injectors less than 25 years old compared to older injectors. And in most survey sites, no substantial differences were observed between new and older injectors, except in the two survey sites. In Yangon, a higher proportion of older injectors (27%) injected in public places compared to new injectors (9%), while the opposite was true in Myitkyina, i.e. a lower proportion of older injectors (44%) reported inject in public compared to new injectors (55%). This difference was only found to be statistically significant in Myitkyina ($p<0.05$).

Low income was not consistently associated with higher levels of injecting in public, except in Myitkyina where 60% of those respondents with monthly income <150,000 kyats injected in public places compared to 42% of those with higher income. Receiving income for work was not strongly correlated with injecting in public in most survey sites. The largest difference was observed in Lashio where 30% of respondents who had not worked in the last 12 months injected in public compared to 19% among those who had.

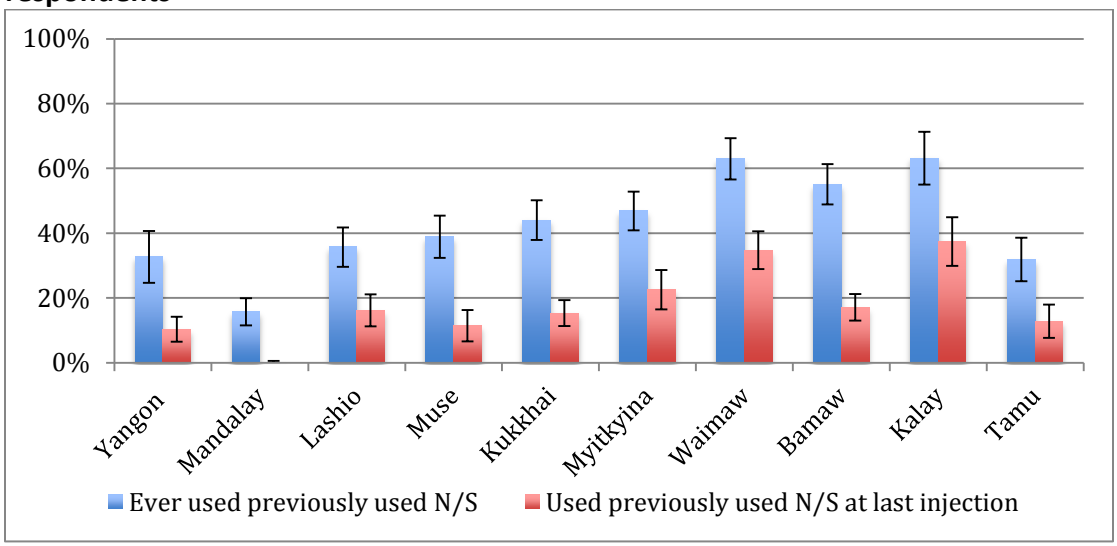
Sharing behaviours

Measuring sharing practices among PWID is challenging due to the various sharing practices that injectors may engage in. For example, using another injector's equipment, giving used injecting equipment to someone else, injecting from a common vial/container, etc[15]. Some injectors are unknowingly exposed to contaminated equipment when they use pre-filled syringes and are unsure of whether the equipment was sterilized before filling.

The proportion of respondents who reported ever having used a previously used needle/syringe varied greatly between survey sites. The percentage ranged from 16% in Mandalay to 63% in Waimaw and Kalay.

The survey questionnaire asked respondents to describe recent sharing behaviours in greater specificity. The proportion of respondents who report using a previously used needle/syringe at last injection ranged from 0.2% in Mandalay to 37.4% in Kalay. These data were consistent with ever using previously used equipment in terms of the highest levels of sharing being reported in Bamaw and Kalay and the lowest levels being reported in Mandalay. It is important to note that prevention programmes such as needle/syringe distribution is relatively new in some survey sites such as Kalay and Tamu. This may explain in part higher levels of sharing behaviour observed in Kalay. There were no significant differences among older and younger respondents in terms of those who used previously used needles/syringes at last injection.

Figure 14. History of using previously used needles/syringes (N/S) among male PWID respondents



Note: Use of previously used needles/syringes at last injection is the indicator used for GARPR.
Denominator: All respondents

Respondents were also asked to describe their injecting practices at the time of their last injection (question 419) and a list of behaviours related to being exposed to contaminated injecting equipment were read. These practices included 'using a completely fresh brand new

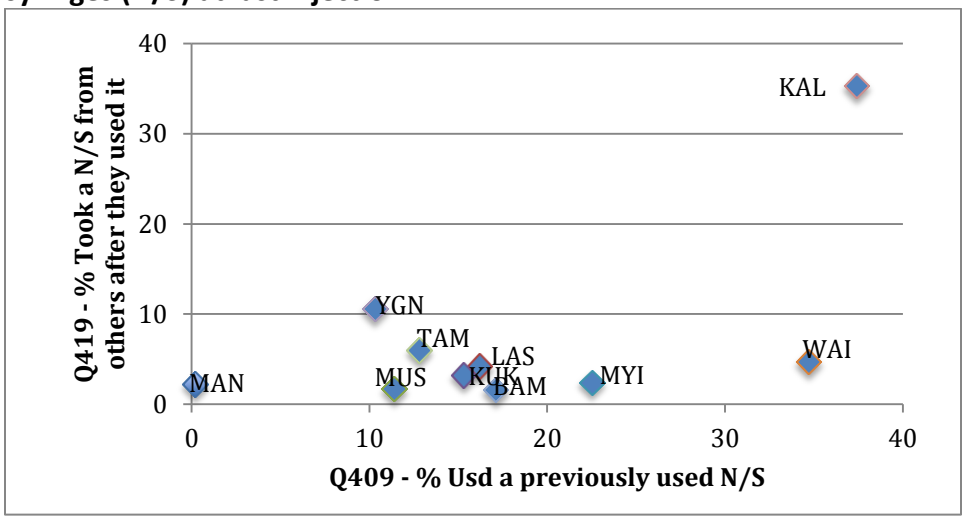
[15] Respondents were asked about use of pre-filled syringes at last injection, but the wording of this question was perceived to be confusing and may not give accurate results. For this reason these results are not presented.

needle/syringe that no one else or you used earlier,' 'injecting with a needle/syringe that was used only by you and no one else used it,' and 'taking a needle/syringe from others after they injected with it.'

In some survey sites, there were some inconsistencies in the response to the question using a previously used needle/syringe at last injection and either taking a needle/syringe from someone after they used it and using a fresh brand new needle at last injection. We would expect respondents to answer consistently to the question of using a needle/syringe previously used by someone else and taking a needle from others after they had injected with it. However, in Lashio, Muse, Kukkhai, Myitkyina, Waimaw, Bamaw, and Tamu a much smaller proportion of respondents said they had taken a needle/syringe from someone after they had used it compared to those who said they had used a needle/syringe previously used by someone else.

Similarly, we would expect that the proportion of those who used a brand new needle would be smaller than the proportion who said they had not used a previously used needle/syringe because there might have been some proportion of people who reused a needle they only used themselves. However in Lashio, Muse, Kukkhai, Myitkyina, Waimaw, and Bamaw the proportion who report using a new needle is larger than those who say they did not use a previously used needle/syringe. The difference is small enough in Yangon to have been an artefact of the statistical adjustments for analysing a respondent driven sample. These discrepancies indicate that there may be some problem in the way respondents understood and responded to these questions.

Figure 15. Comparison of responses to different question wording on sharing needles/ syringes (N/S) at last injection



Note: Unit of analysis is survey site

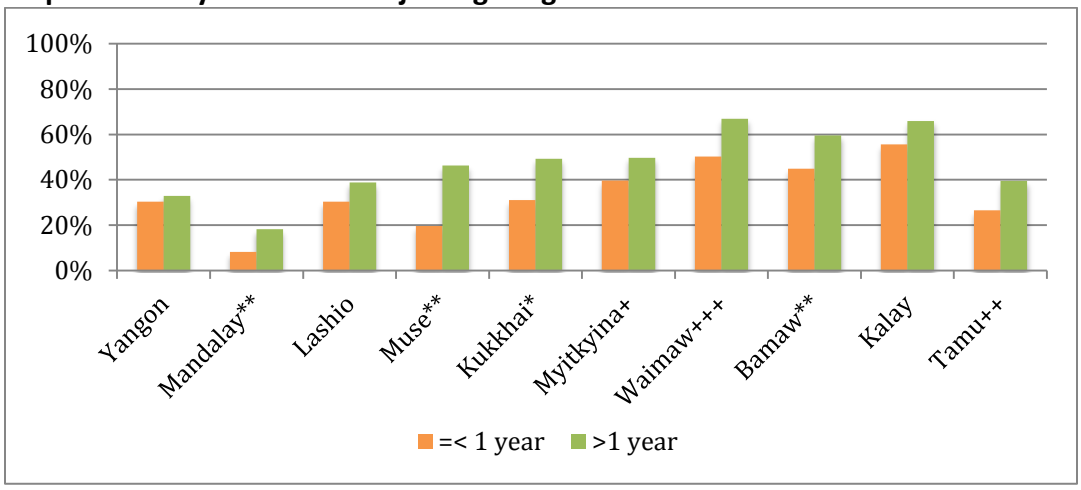
Table 10. Use of uncontaminated needles/syringes among male PWID respondents

	Did NOT use a previously used N/S at last injection (q409all)	*95% CI*	Used a fresh, new needle	*95% CI*	Used a needle used by only you and no one else	*95% CI*
Yangon	90	(86-94)	90	(85-95)	25	(18-32)
Mandalay	100		98	(97-99)	2	(0-4)
Lashio	84	(79-89)	89	(84-93)	7	(3-10)
Muse	89	(84-93)	93	(90-96)	5	(3-8)
Kukkhai	85	(81-89)	91	(88-94)	12	(8-15)
Myitkyina	77	(71-83)	94	(90-97)	6	(3-8)
Waimaw	65	(59-71)	76	(70-82)	19	(13-25)
Bamaw	83	(79-87)	96	(94-98)	3	(2-5)
Kalay	63	(55-70)	57	(48-65)	7	(4-11)
Tamu	87	(82-92)	57	(50-64)	37	(30-44)

More than a third of respondents in Tamu and a quarter of respondents in Yangon reported injecting with a needle/syringe that was only used by themselves and no one else.

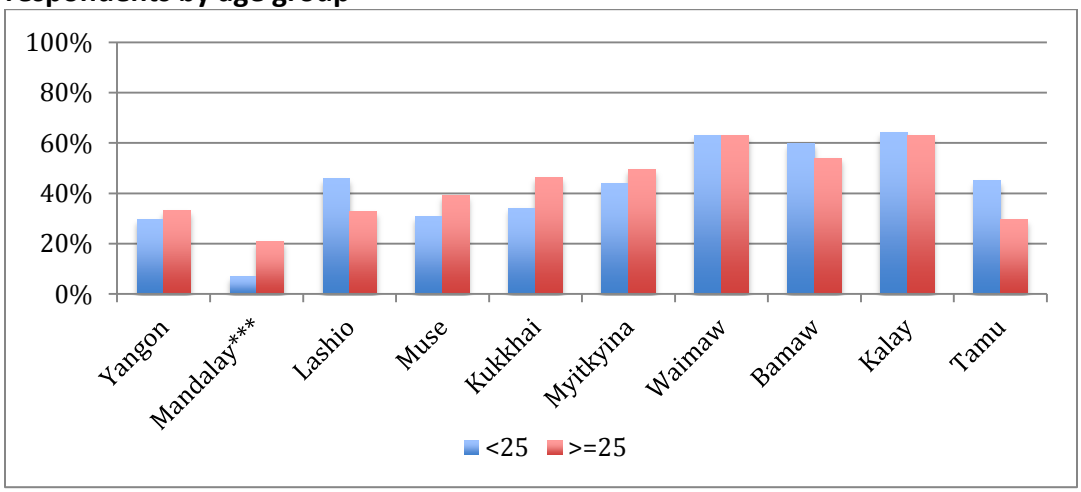
We examined whether ever using previously used needles/syringes was more common among new injectors and young injectors compared to more experienced and older injectors. As expected, because ever using previously used needles/syringes is a cumulative behaviour, those who injected less than one year were generally less likely to have reported this sharing behaviour than longer duration injectors. These differences were statistically significant in Mandalay, Muse, Kukkhai, Myitkyina, Waimaw, Bamaw, and Tamu. The difference in sharing practices among younger and older injector were less distinct. Only in Mandalay were older injectors significantly more likely to have ever used a previously used needle/syringe.

Figure 16. Percent ever used previously used needles/syringes among male PWID respondents by duration of injecting drugs



Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.
Denominator: All respondents in each duration of injection category

Figure 17. Percent ever used previously used needles/syringes among male PWID respondents by age group



Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05
Denominator: All respondents in each age group

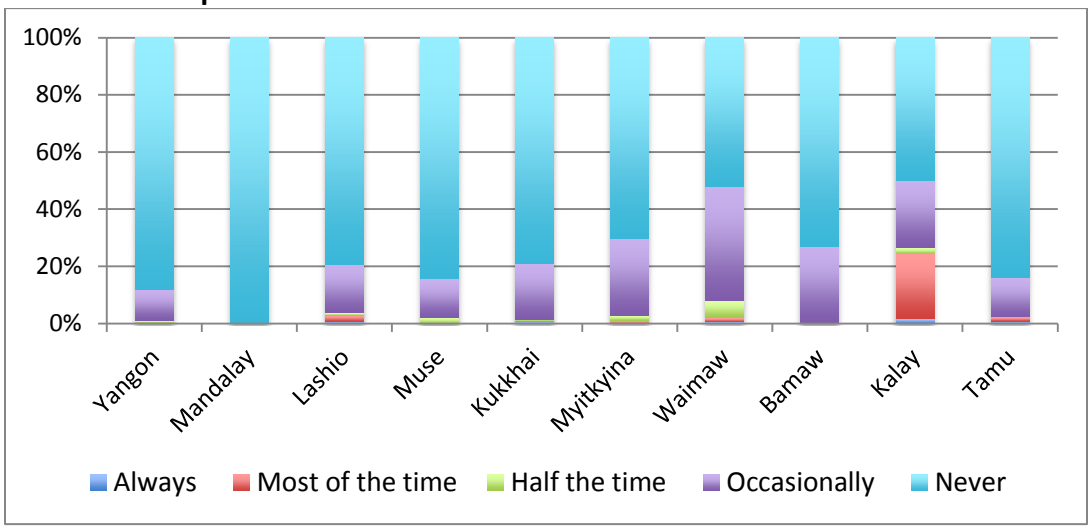
History of ever using previously used needles/syringes was not consistently associated with having lower income (i.e. <150,000 kyats per month) across survey sites. However, in Muse, 67% of respondents who had not worked in the past 12 months ever used previously used needles/syringes, compared to only 37% among those who had worked. In Waimaw and Kalay the opposite finding was observed, in which approximately 65% of recently working persons had a history of ever using previously used needles/syringes compared to only 50% of those who had not.

Assessment of other types of sharing behaviours revealed that although respondents in Mandalay reported the lowest levels of ever or recently using previously used needles/syringes, 80% of these respondents reported sharing other injecting equipment (e.g. cookers, cottons, etc.) at last injection. This percentage was 42% in Myitkyina and about one quarter of respondents in Yangon and Waimaw. In Yangon and Kalay, about 30% of respondents reported drawing up solution from a common container at last injection.

When measured at last injection, the practice of passing on needles/syringes to others was relatively uncommon in most survey sites. However, 14% of Yangon respondents and 16% of Kalay respondents said they had done so at last injection.

In addition to ever sharing and sharing at last injection, the frequency of using previously used needles/syringes over the last month was asked. And among those who had used previously used needles/syringes, this type of sharing behaviour was reported as occasional. It should be noted that due to the skip patterns, those who had not used previously used needles at last injection were not asked about the frequency of injection, so the proportion of those who shared needles/syringes more frequently is likely to be over-represented in these results.

Figure 18. Frequency of using a previously used needle/syringe in the last month* among male PWID respondents

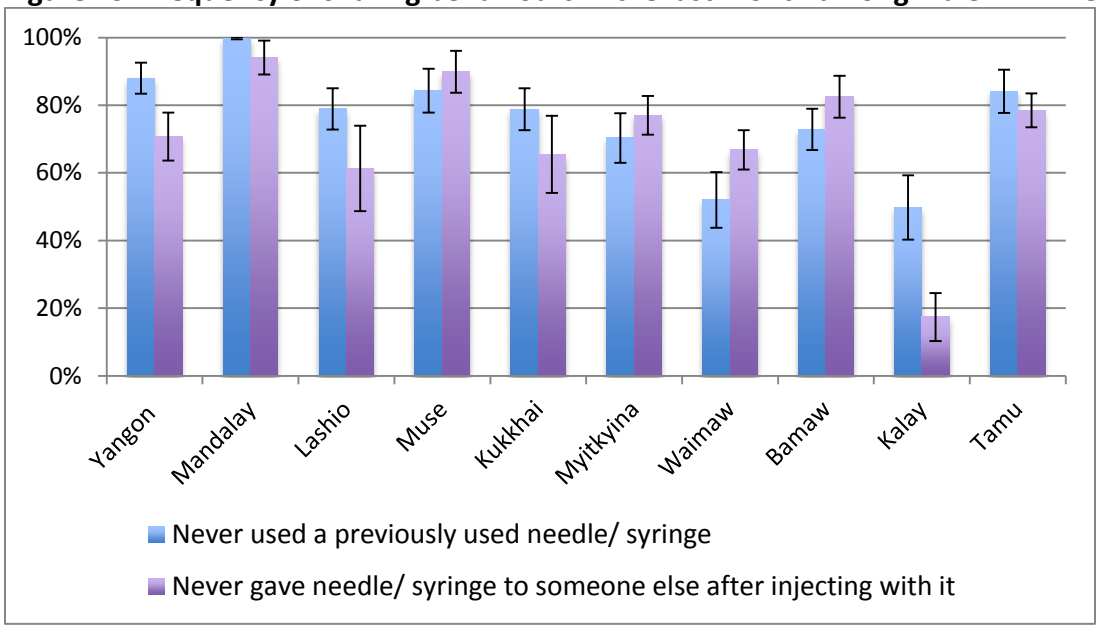


*Those who reported never ever using previously used needles/syringes were categorized as 'Never'; however, those who had previously used a needle/syringe but who had not done so at the last injection skipped this question.

Denominator: All respondents, except those who had previously shared but had not done so at last injection.

Frequency of giving needles/syringes to others after use was mapped against frequency of taking previously used needles/syringes. We found similar levels of never engaging in each type of sharing behaviour, except in Kalay where sharing practices were generally more common, and never using previously used needles/syringes was more common than never giving used needles/syringes to others.

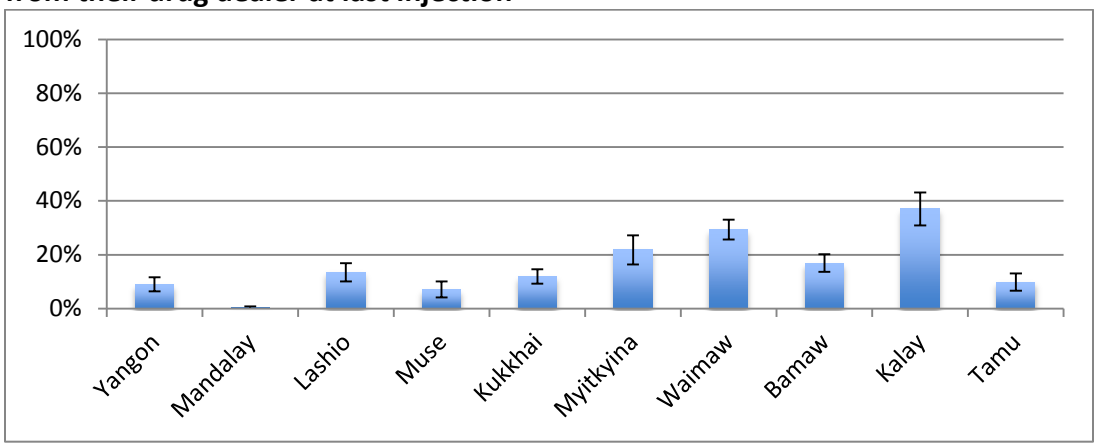
Figure 19. Frequency of sharing behaviours in the last month among male PWID respondents



Denominator: All respondents

Among those who reported using a previously used needle/syringe at last injection, the most common person from whom they received the needle/syringe was a drug dealer. Less than 10% of respondents in Yangon, Mandalay, Muse, and Tamu mentioned their dealer as the person they took their used needles/syringes from. In contrast, 37% of respondents in Kalay and 29% in Waimaw reported their dealer as the source of used needles/syringes. Respondents infrequently mentioned a sex partner, injecting friend or other people whom they met at the shooting site as a source of used needles/syringes.

Figure 20. Percent of male PWID respondents who used a previously used needle/syringe from their drug dealer at last injection



Denominator = All respondents

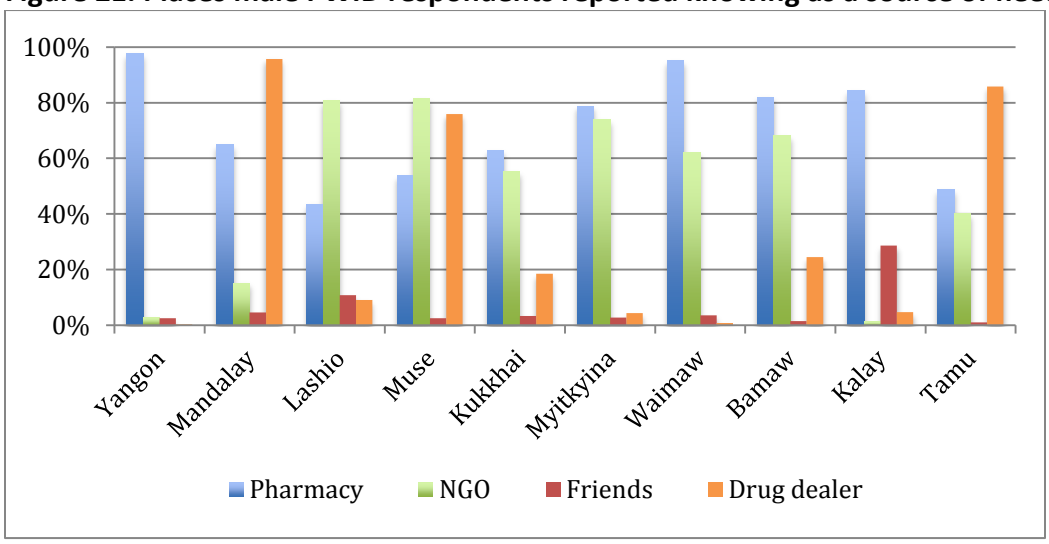
Cleaning practices

In this survey only those who reported using a previously used needle/syringe at last injection were asked about cleaning practices. Among these respondents, the percentage of respondents who always cleaned their used needles/syringes in the last month ranged from 30% in Lashio to 92% in Muse and 95% in Bamaw. However, a relatively small number of respondents were asked about cleaning behaviours and confidence intervals for these estimates were wide. The most frequently reported methods of cleaning were cold and hot water, both considered to be ineffective at sterilizing injecting equipment. Less than 5% of those who had shared at last injection reported using a more effective method of sterilizing their used needles/syringes, i.e. use of bleach to clean used needles/syringes.

Source of needles/syringes

Use of new needles/syringes at every injection depends on the availability and accessibility of injecting equipment. Respondents were asked to name places they knew where needles/syringes were available. In most survey sites a much larger proportion of respondents were aware they could get needles/syringes from pharmacies and NGOs than reported these sources as the actual main source of injecting equipment.

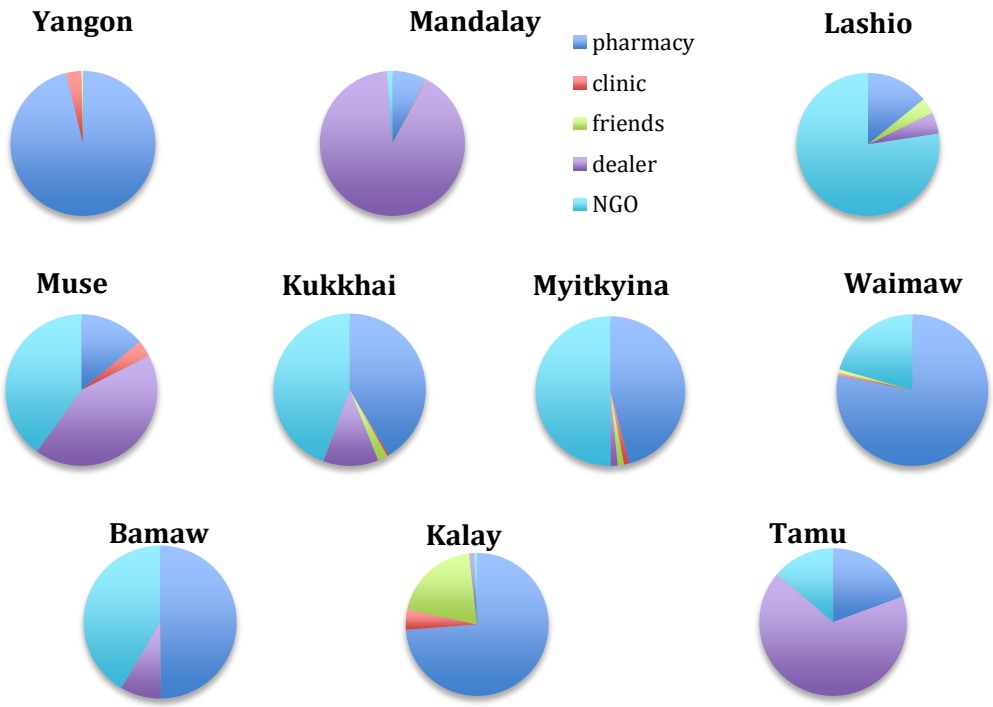
Figure 21. Places male PWID respondents reported knowing as a source of needles/syringes



Denominator: All respondents

The main source of needles/syringes actually used by respondents varied greatly across the different survey sites. For example, in Yangon and Waimaw more than three-fourths of respondents reported pharmacies as their primary source of needles/syringes. In Kukkhai, Myitkyina, and Bamaw about half of respondents reported pharmacies as their main source of injecting equipment. In contrast, in Mandalay and Tamu drug dealers were the primary source of needles/syringes. Distribution of needles/syringes by NGOs was more commonly reported by PWID in Lashio, Muse, Kukkhai, Myitkyina and Bamaw.

Figure 22. Main source of needles/syringes (in past month) among male PWID respondents



Denominator: All respondents

With respect to differences in main source of needles/syringes by age group, younger and older injectors reported the same dominant source of needles/syringes in Yangon, Mandalay, Lashio, Waimaw, Kalay, and Tamu. In Muse, Kukkhai, and Myitkyina, younger PWID were more likely to use pharmacies as their primary source of injecting equipment and less likely to use NGOs, while older injectors reported greater use of NGOs, and less use of pharmacies. The magnitude of this shift ranged from 11 to 20 percentage points.

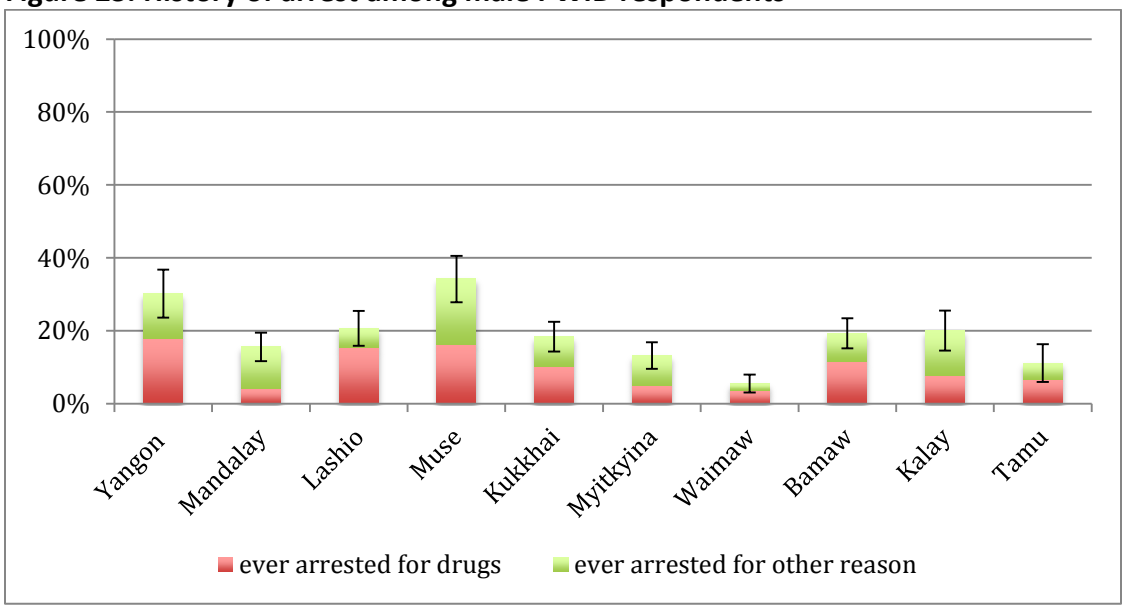
The use of NGOs as the main source of needles/syringes was lower among new injectors (injecting =< 1 year) in Muse, Kukkhai, Myitkyina, Waimaw, and Bamaw. The greatest difference was observed in Kukkhai where 48% of long-time injectors said the NGO was their main source of needles/syringes compared to only 28% of new injectors. This finding suggests that NGOs may need to conduct more outreach specifically targeting newer injectors to ensure access to sterile injecting equipment.

History of arrest/detainment

History of arrest

Respondents were asked whether they had ever been arrested or detained and if yes, whether they had ever been arrested or detained for drugs. Those PWID in Yangon and Muse reported the highest levels of history of ever being arrested. And the lowest levels of arrest history were reported in Waimaw and Tamu. Across sites, less than a half of respondents who had ever been arrested said they had been arrested for drugs.

Figure 23. History of arrest among male PWID respondents

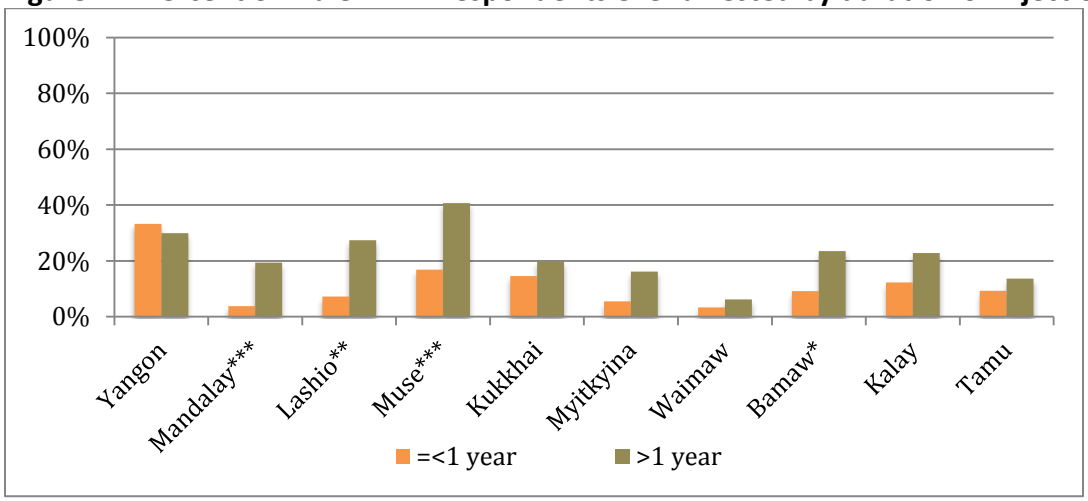


Confidence intervals reflect % ever arrested (i.e. total bar)
Denominator = All respondents

As expected, in most sites a smaller proportion of those who had been injecting for less than a year had ever been arrested compared to those who had been injecting longer. Although

sample sizes were small, those injecting for a year or less were also less likely to have been arrested for drugs.

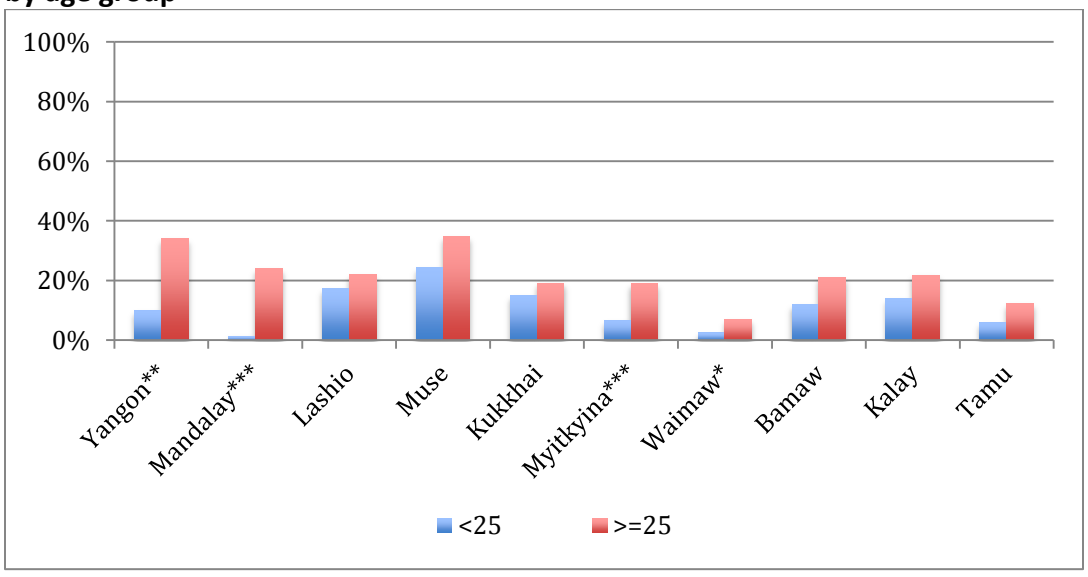
Figure 24. Percent of male PWID respondents ever arrested by duration of injection



Denominator: All respondents

This pattern was consistent with a smaller percentage of PWID younger than age 25 ever being arrested among compared to older PWID.

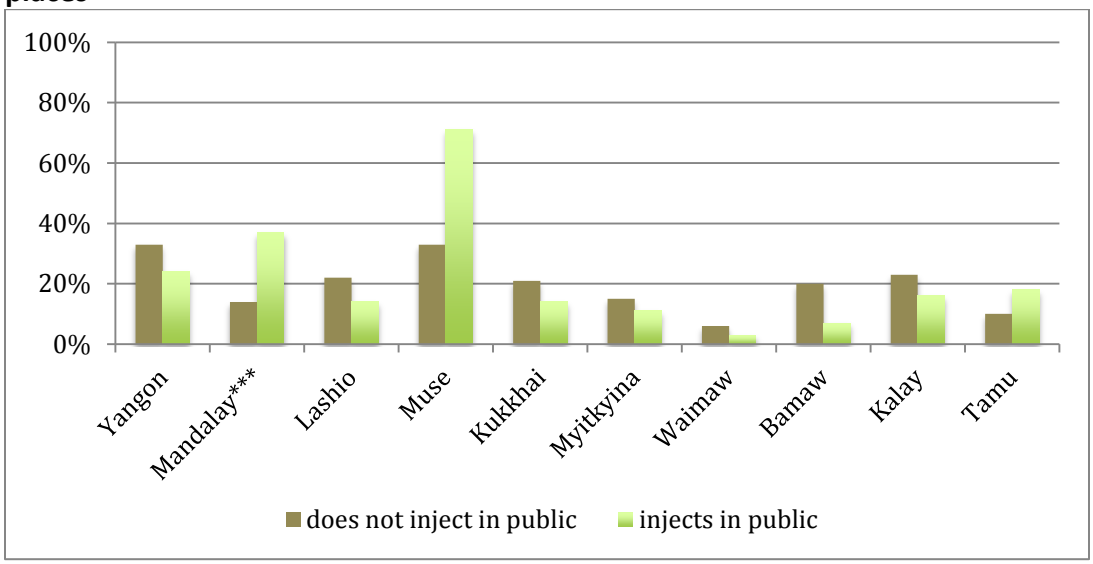
Figure 25. Percent of male PWID respondents ever arrested among male PWID respondents by age group



Denominator: All respondents

Another factor considered was whether or not PWID who injected in public places (e.g. street corners, parks, latrines, etc.) also reported a higher level of having ever been arrested. In Mandalay ($P<0.001$), Muse and Tamu a higher proportion of those who injected in public places reported having ever been arrested. However, the opposite appeared true in the remaining survey sites.

Figure 26. Percent of male PWID respondents ever arrested by whether injects in public places



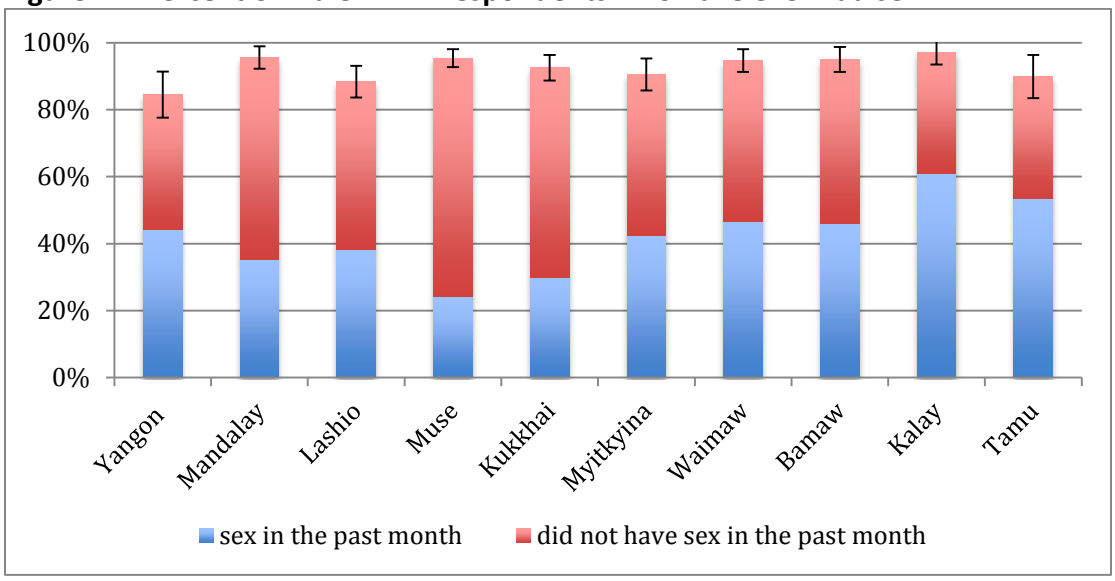
Denominator: All respondents

D. Sexual Behaviour

Frequency of sex

The vast majority of respondents had ever had sex, but in most survey sites less than half had had sex in the last month. A majority of those who had sex in the last month were those who were married or who had a regular sex partner.

Figure 27. Percent of male PWID respondents who have ever had sex



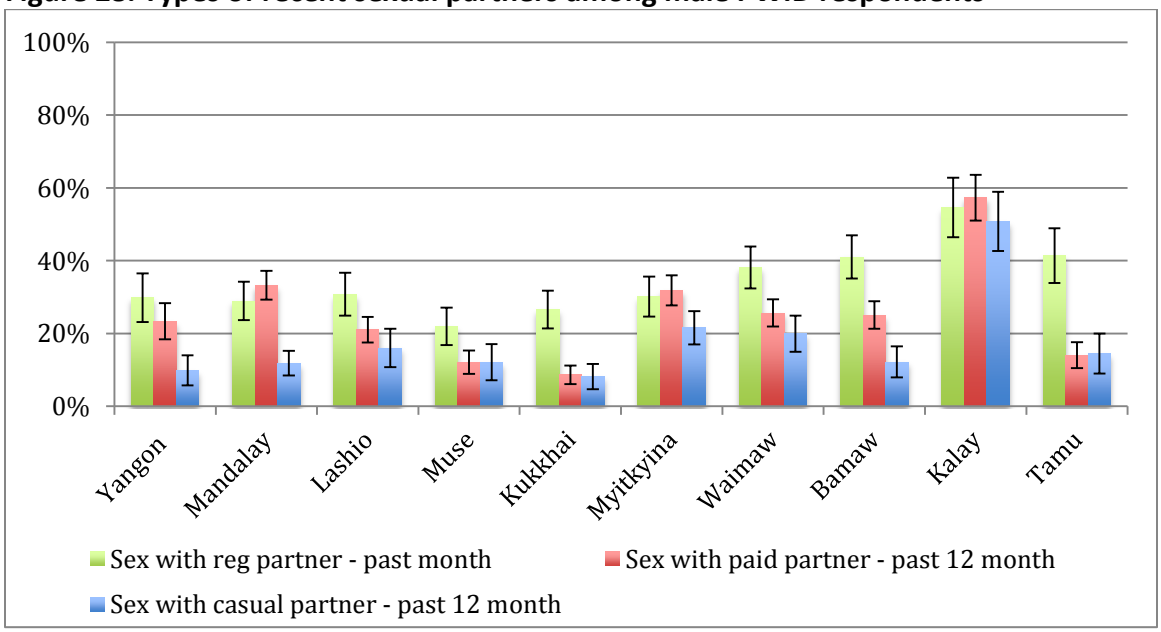
Confidence intervals reflect the % of respondents who had ever had sex.
Denominator: All respondents

Types of sexual partners

Among all respondents, having sex with a regular partner in the past month ranged from 22% to 55% across survey sites. Those having sex with a paid partner in the past 12 months ranged from 9% to 57%. And, those having sex with a casual partner in the past 12 months ranged from 8% to 51%. In Yangon, Mandalay, Myitkyina, and Kalay, the proportion of respondents who had sex with a paid partner in the last 12 months was not significantly different than the proportion that had sex with a regular partner. Having sex with a casual partner in the past 12 months was much less common than having a paid partner among respondents in Yangon, Mandalay, and Bamaw.

Sex with a paid partner was least commonly reported by PWID in Muse, Kukkhai and Tamu. More than half of respondents in Kalay reported having sex with a regular partner in the past month. Similarly more than half of respondents in Kalay had sex with a paid partner and a casual partner in the past 12 months. Having a paid partner in the last 12 months was significantly more common among those with higher income (i.e. >150,000 kyats per month) in Lashio and Muse, but not other survey sites.

Figure 28. Types of recent sexual partners among male PWID respondents



Denominator = all respondents

In most survey sites, relatively few respondents (<10%) had more than one type of sex partner in the past 12 months. Only in Kalay did 38% of respondents have both a regular and commercial sex partner, and 34% have both a regular and casual sex partner.

Table 11. Percent of male PWID respondents with multiple types of recent sexual partners

	Had regular and commercial partner*	*95% CI*	Had regular and casual partner*	*95% CI*
Yangon	6	(4-8)	4	(2-6)
Mandalay	5	(3-6)	3	(2-5)
Lashio	7	(5-9)	5	(2-8)
Muse	2	(1-3)	5	(2-8)
Kukkhai	3	(2-4)	3	(1-5)
Myitkyina	9	(7-12)	9	(6-12)
Waimaw	11	(8-13)	8	(5-11)
Bamaw	12	(8-15)	7	(4-9)
Kalay	38	(32-44)	34	(29-40)
Tamu	8	(6-11)	9	(4-13)

*Regular sexual partner is in the last month, Paid and Casual sex partners are in the last 12 months; Denominator=All respondents

Among those with a regular sex partner, the proportion of respondents under age 25 who had sex with a regular partner in the last month was not substantially different than the proportion of older respondents, except in Myitkyina. In this survey sites, 95% of those aged 25 and older had sex with a regular sex partner in the past month, compared to only 70% among those under age 25. In contrast, having a paid sex partner in the past 12 months was significantly more common among PWID who were under age 25 in Myitkyina, and Waimaw, compared to older respondents. Age related differences were not found to be significant with respect to the proportion of injectors with a casual sex partner.

Table 12. Percent of male PWID respondents having sex with different types of partners by age group

Age group	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
% who had sex with a regular partner in the past 1 month (among all respondents)										
<25	10	21**	22	25	21	22**	24***	30	37*	26*
>=25	33	34	34	22	28	37	45	44	60	44
% who had sex with a paid sex partner in the past 12 months (among all respondents)										
<25	34	37	21	20	14	41	37	21	42	13
>=25	21	31	21	9	8	24*	20*	26	62	14
% who had sex with a casual partner in the past 12 months (among all respondents)										
<25	13	12	20	32	9	20	24	13	48	24
>=25	9	11	15	9	6	23	18	12	52	13

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05

Statistically significant differences between new and long-term injectors with respect to having sex with different types of partners were few. Only a higher proportion of long-time injectors had sex with a paid partner compared to newer injectors in Lashio and Bamaw.

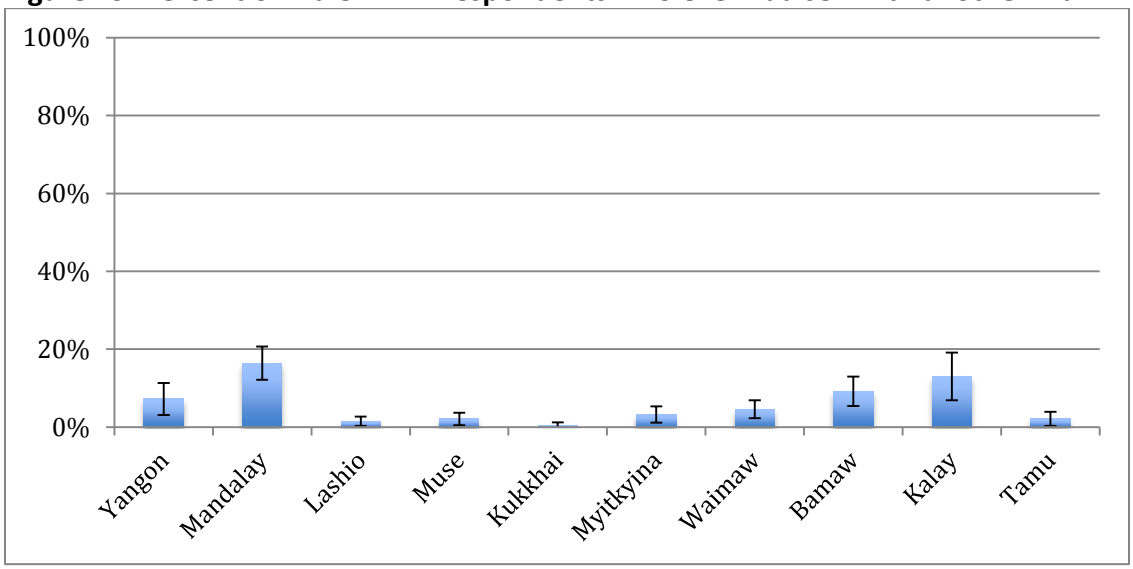
Table 13. Percent of male PWID respondents having sex with different types of partners by duration of injection

Duration of injection	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
% who had sex with a regular partner in the past 1 month										
=<1 year	21	17	38	31	26	27	41	51	57	46
>1 year	30	32	27	18	26	31	37	36	53	34
% who had sex with a paid sex partner in the past 12 months										
=<1 year	45	42	11	11	10	33	31	12	48	17
>1 year	21	30	26*	11	8	31	24	31*	60	48
% who had sex with a casual partner in the past 12 months										
=<1 year	6	9	16	11	5	12	26	6	54	13
>1 year	10	12	16	12	7	25	18	15	50	17

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents

Among those who had ever had sex, less than 5% of respondents in Lashio, Muse, Kukkhai, Myitkyina, Waimaw, and Tamu reported having ever had sex with another man. Among the other survey sites, the percentage ranged from 7.2% in Yangon to 16% in Mandalay.

Figure 29. Percent of male PWID respondents who ever had sex with another man

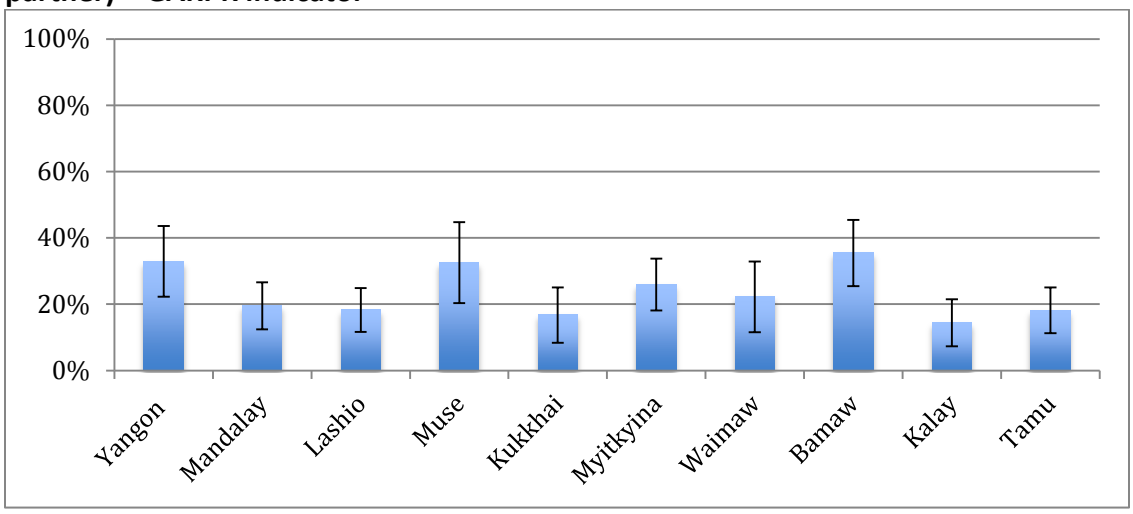


Denominator: All respondents

Condom use

To assess overall condom use, those respondents who had sex in the last month were asked whether they used condom at last sex. One third or less of respondents in all sites reported using condoms at last sex. And despite having the highest levels of reported paid or casual sex partners, respondents in Kalay reported one of the lowest levels of condom use at last sex (14%). There were no significant differences in condom use at last sex by age of respondent.

Figure 30. Percent of male PWID respondents who used condoms at last sex (with any partner) – GARPR indicator



Denominator: Those who had sex in the last month

Table 14. Percent of male PWID respondents who used condom with regular partners

	% who used condom last time with regular partner#	95% CI	% who always used condom with regular partner in the last month##	95% CI
Yangon	30	(20-41)	89	(59-119)
Mandalay	12	(6-18)	89	(65-113)
Lashio	16	(10-23)	52	(32-73)
Muse	33	(23-44)	61	(37-86)
Kukkhai	18	(9-27)	61	(45-76)
Myitkyina	14	(8-21)	37	(-14-88)
Waimaw	19	(11-27)	52	(17-88)
Bamaw	35	(25-44)	55	(39-71)
Kalay	14	(6-21)	21	(21-21)
Tamu	18	(11-25)	40	(18-61)

Denominator= # Those who had sex with a regular partner in the past month; ##Those who had sex with a regular partner in the past month and who used condoms at last sex with their regular partner.

As expected condom use with regular partner was particularly low. Among those who had sex with a regular partner in the last month, one third or less had used condoms at last sex. Only those who reported using a condom at last sex with a regular partner, were asked about the

frequency of using condoms with their regular partner. For this reason, the proportion who always used condoms with their regular partner is higher than might be expected given the overall percentage who used condoms at last sex with regular partner.

Table 15. Reasons given by male PWID respondents for not always using condoms with regular sex partner

	% Doesn't like condoms	*95% CI*	% Unnecessary	*95% CI*
Yangon	1	(0-2)	7	(5-1)
Mandalay	1	(0-2)	13	(10-15)
Lashio	10	(7-13)	14	(11-17)
Muse	2	(1-3)	7	(5-10)
Kukkhai	2	(1-3)	8	(6-10)
Myitkyina	9	(5-12)	14	(10-18)
Waimaw	6	(4-8)	23	(19-27)
Bamaw	7	(4-9)	18	(14-21)
Kalay	9	(6-13)	25	(19-30)
Tamu	5	(1-10)	25	(20-31)

Denominator: Those who had a sex with a regular partner in the last month and did not use condoms at last sex or used condoms at last sex but did not always use condoms with regular partner in the last month.

Among those having sex with their regular partner in the last month and who did not always use condoms, respondents were asked for their reasons for not using a condom. The most frequent response was that condoms were "not necessary". Some portion of respondents also said they did not like condoms. In almost all sites, few respondents responded that the lack of availability or forgetting to use condoms as a reason for not using them. However, nearly 20% of such respondents in Kalay mentioned availability as a reason for not using them and 14% of respondents in Myitkyina cited forgetting to use condoms as a reason.

Frequency of condom use with commercial partners was more common among those who had a paid partner in the past 12 months. More than three-quarters of respondents with a paid partner reported using condoms at last sex, except in Kalay. In these two survey sites only 17% of respondents with a paid sex partner used condoms at last sex.

The most common reason cited for not using condoms with paid partners in Kalay was condoms not being available (20%).

Among those with casual partners, condom use was near 50%. However, due to the small numbers of respondents with a casual sex partner in the past 12 months, most confidence intervals on these estimates are wide (e.g. more than 30 percentage points).

Table 16. Condom use at last sex with paid partner, among male PWID respondents

	% Used condom last time with paid partner	*95% CI*	N
Yangon	86	(80-91)	61
Mandalay	91	(86-97)	138
Lashio	79	(68-90)	75
Muse	-	-	-
Kukkhai	67	(52-82)	43
Myitkyina	84	(76-92)	132
Waimaw	73	(60-86)	79
Bamaw	81	(69-04)	81
Kalay	17	(10-25)	108
Tamu	78	(67-88)	47

Denominator: Those who had sex with a paid partner in the past 12 months

Sources of condoms

With the exception of Kukkhai, three-fourths or more respondents in all survey sites knew places to obtain condoms. Only 58% of respondents in Kukkhai knew a place.

The most common sources of condoms known by respondents were pharmacies and NGOs. However, few people in Lashio and Kukkhai (<15%) mentioned pharmacies. And relatively few people in Yangon and Kalay mentioned NGOs as a source of condoms (<16%).

Figure 31. Percent of male PWID respondents who know a place or person from which to obtain condoms

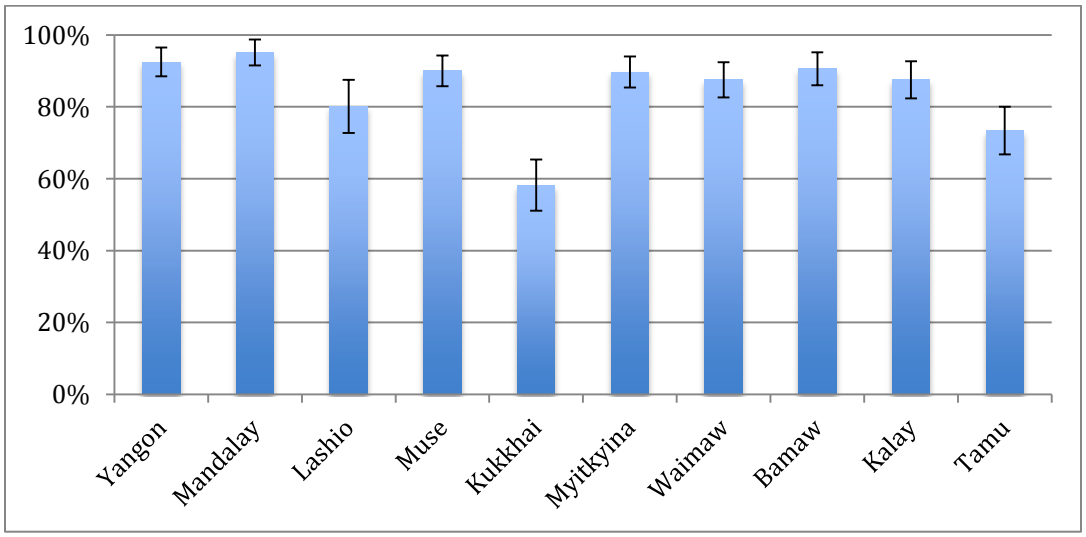


Figure 32. Sources of condoms known by male PWID respondents (in percent)

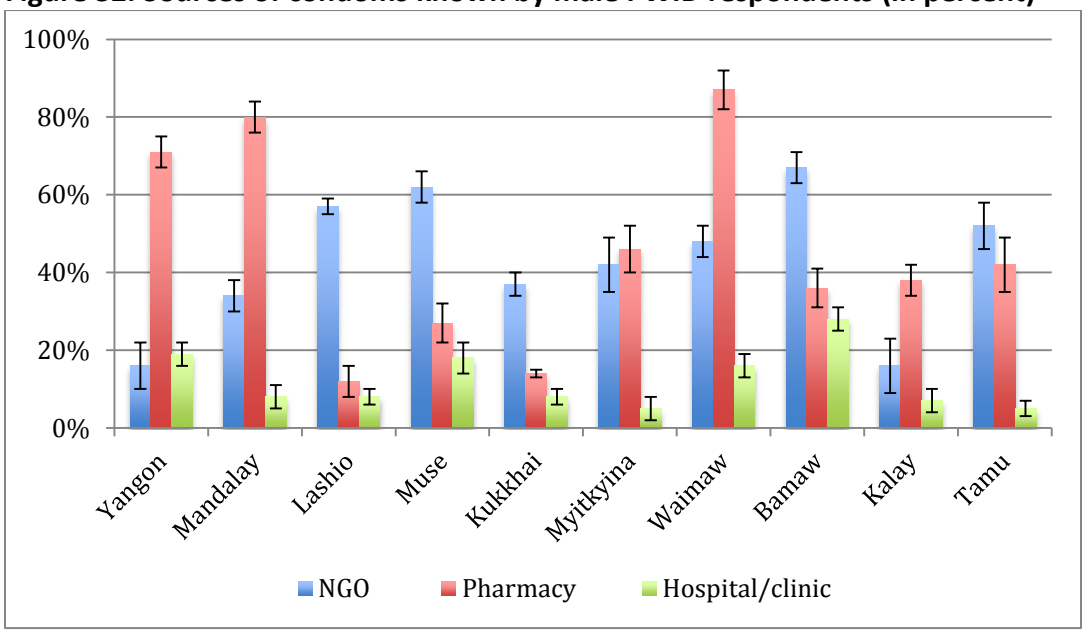


Table 17. Places known by male PWID respondents as a source of condoms (in percent)

	Pharmacy	*95% CI*	Shop	*95% CI*	Betel shop	*95% CI*	Hospital/ clinic	*95% CI*
Yangon	71	(65-77)	42	(36-47)	58	(53-63)	19	(16-23)
Mandalay	80	(76-85)	2	(1-3)	4	(2-5)	8	(5-10)
Lashio	12	(10-15)	9	(7-11)	4	(2-6)	8	(6-10)
Muse	27	(23-31)	7	(4-10)	8	(5-11)	18	(14-22)
Kukkhai	14	(11-16)	9	(6-11)	2	(1-3)	8	(6-10)
Myitkyina	46	(39-52)	27	(22-32)	7	(4-9)	5	(2-7)
Waimaw	87	(83-92)	37	(33-41)	2	(0-3)	16	(13-20)
Bamaw	36	(32-39)	12	(10-15)	11	(9-14)	28	(25-32)
Kalay	38	(31-45)	25	(19-31)	42	(36-49)	7	(4-10)
Tamu	42	(36-47)	4	(2-6)	2	(0-4)	5	(3-8)

	Guest house	*95% CI*	Health educator	*95% CI*	Friend	*95% CI*	NGO	*95% CI*
Yangon	27	(23-31)	8	(6-11)	3	(1-4)	16	(12-20)
Mandalay	18	(15-21)	20	(16-23)	3	(1-5)	34	(30-38)
Lashio	3	(1-4)	2	(1-4)	1	(1-2)	57	(53-62)
Muse	6	(3-9)	0		1	(0-2)	62	(57-67)
Kukkhai	1	(0-1)	1	(0-1)	0		37	(34-40)
Myitkyina	7	(3-11)	1	(0-3)	1	(0-3)	42	(36-48)
Waimaw	2	(1-2)	0	(0-1)	4	(2-6)	48	(43-52)
Bamaw	3	(1-5)	4	(2-5)	0	(0-1)	67	(62-73)
Kalay	0		2	(0-3)	6	(2-9)	16	(12-21)
Tamu	0		4	(2-6)	3	(1-5)	52	(45-59)

Multiple responses allowed. Denominator: All respondents

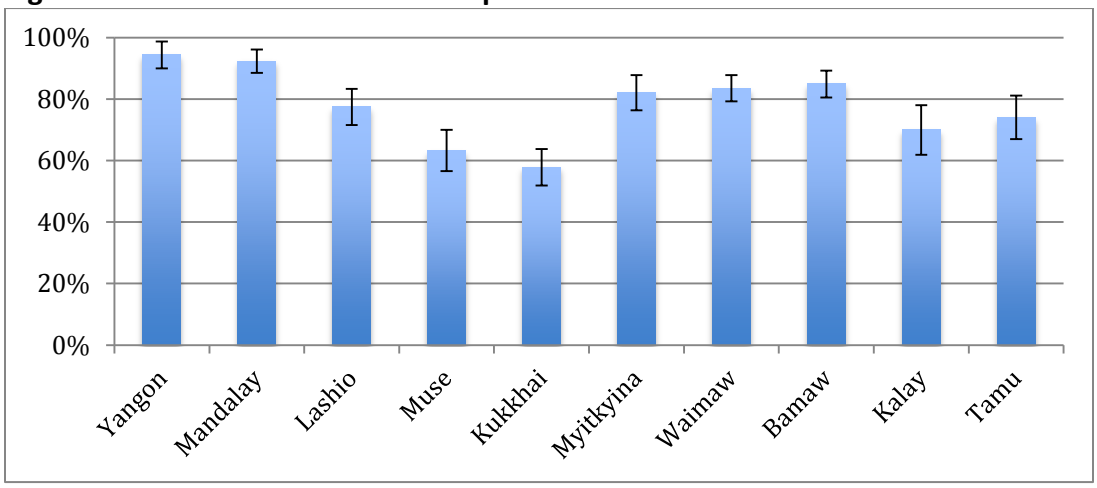
Sexually Transmitted Disease (STD) symptoms

A majority of respondents in all survey sites had heard of diseases that can be transmitted through sexual intercourse. Levels of awareness were highest among PWID in Yangon (94%) and lowest in Muse (63%) and Kukkhai (58%).

About half of male respondents in Yangon, Mandalay, Myitkyina, Waimaw, Bamaw, Kalay, and Tamu said they did not know symptoms of STDs in women. The most common symptom named was foul smelling discharge and genital ulcers.

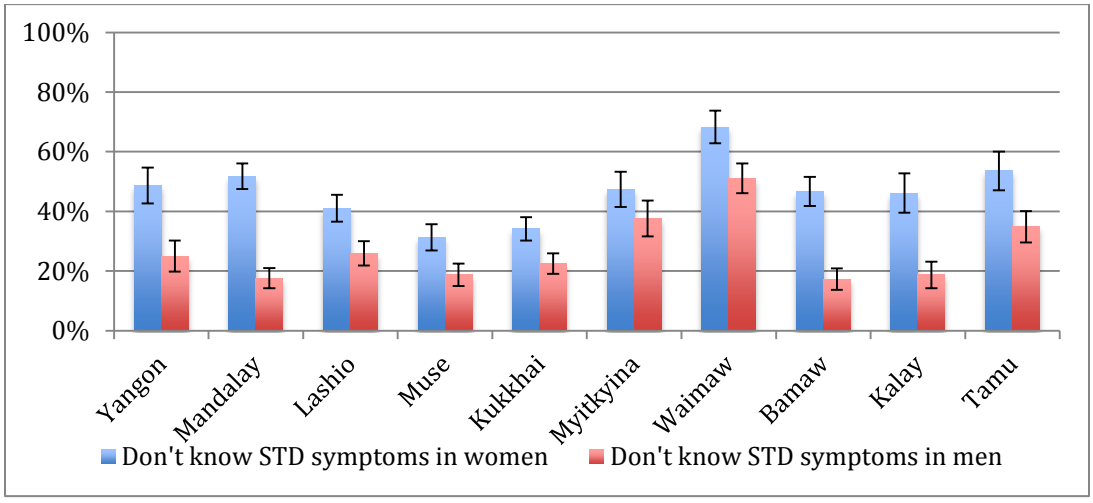
A smaller proportion of respondents could not describe symptoms of STDs in men.

Figure 33. Percent of male PWID respondents aware of STDs



Denominator: All respondents

Figure 34. Percent of male PWID respondents who could not name symptoms of STDs among women and men

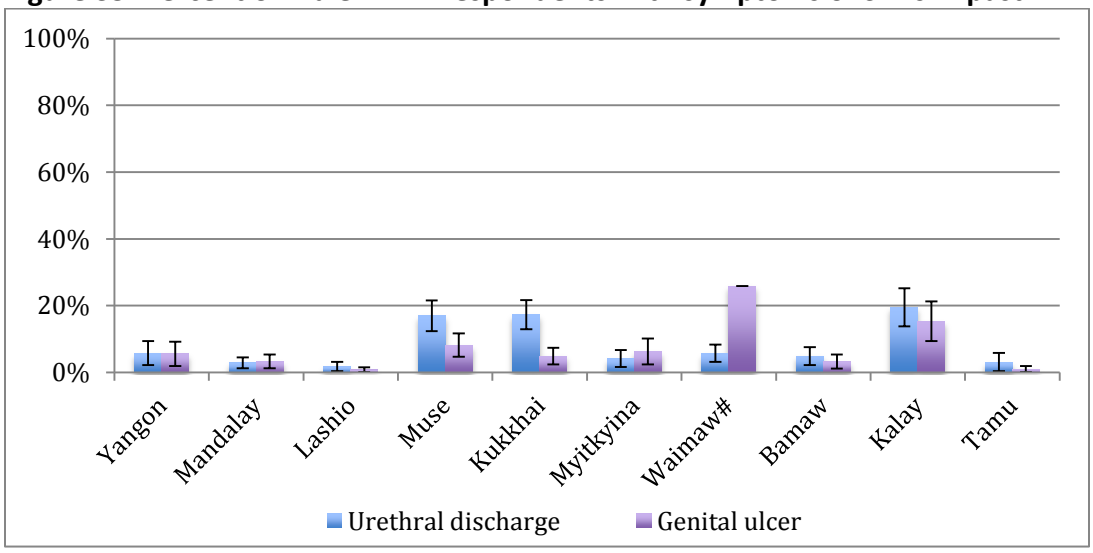


Denominator: All respondents

The most common STD symptoms among men described by respondents were discharge from penis (range across sites: 14-61%), painful urination (7-36%), genital ulcers (11-31%), and swelling in the groin (8-24%).

In addition to awareness of the symptoms of STDs respondents were asked about their own experience with two key symptoms in the past year. A small proportion of male respondents reported urethral discharge or genital ulcers in the past 12 months. However, nearly 20% of male PWID in Muse, Kukkhai and Kalay reported recent urethral discharge. The highest levels of genital ulcer were reported in Waimaw, however, this is related to problems with the skip patterns in the questionnaire in which only those who had urethral discharge were asked if they had genital ulcers.

Figure 35. Percent of male PWID respondents with symptoms of STDs in past 12 months



Denominator: All respondents, except proportion with genital ulcer in Waimaw is among those who had urethral discharge in the past 12 months.

To the extent that younger PWID may be engaged in higher risk sexual behaviour, we examined whether having STD symptoms in the past 12 months differed among those respondents under age 25 and those who were older. The results were mixed across sites and by specific type of STD symptom. With respect to urethral discharge younger PWID in Muse had lower proportions of symptomatic respondents, while younger PWID in Myitkyina had a significantly higher proportion of urethral discharge compared to older PWID. In the other survey sites, there were no statistically significant differences by age group. Although recent history of genital ulcers were only asked of those reporting urethral discharge in Waimaw, all the cases of genital ulcer occurred among those who were older than age 25.

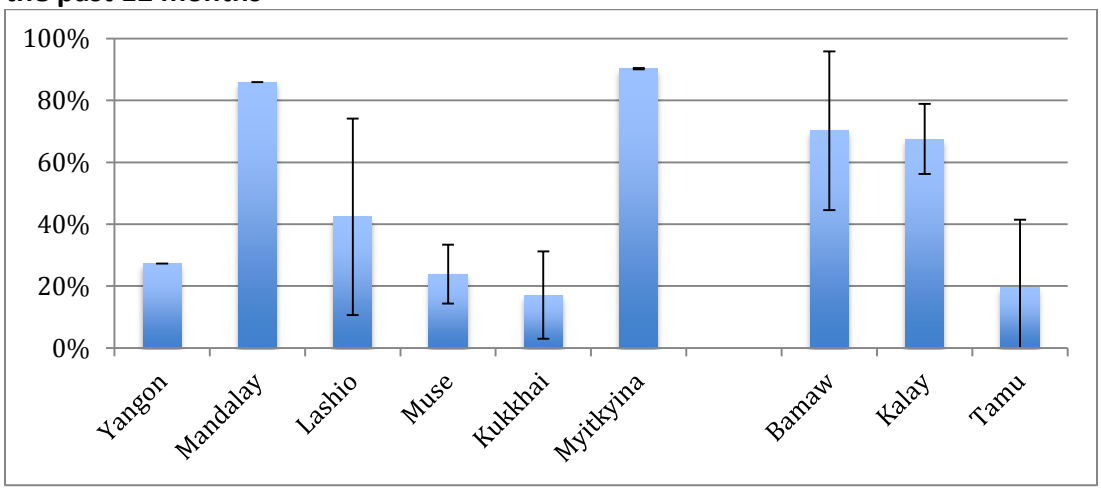
Table 18. Percent of male PWID respondents with recent STD symptoms by age group

Age group	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
% with urethral discharge in the last 12 months										
<25	5	2	0	5	18	9	7	4	11	3
>=25	6	4	2	19*	17	0**	5	5	22	3
% with genital ulcers in the last 12 months										
<25		2	0	9	6	8	0	4	11	0
>=25	5	4	1	8	5	4	38	3	17	1

[#] proportion with genital ulcer in Waimaw is among those who had urethral discharge in the past 12 months. Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05

Those with symptoms were asked if they sought treatment and more than half of such respondents in Mandalay, Myitkyina, Bamaw, and Kalay said they had. Due to the small numbers reporting symptoms in many areas the confidence intervals for these results are very wide in Lashio, Kukkhai, Bamaw, and Tamu. Due to the problems with the skip patterns noted earlier, results for Waimaw are not available.

Figure 36. Percent of male PWID respondents who sought treatment if they had symptoms in the past 12 months



Denominator: Those who had urethral discharge or genital ulcer in the past 12 months.

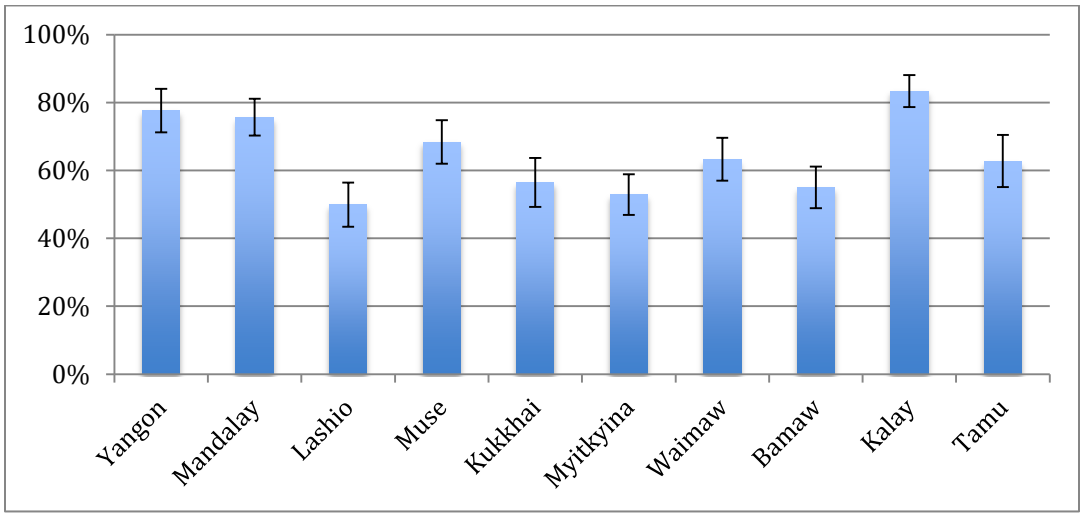
Small numbers of people who had symptoms and sought treatment which make it difficult to quantify the place of treatment. However, the most common place mentioned for treatment was outpatient clinic (OPD treatment).

E. Knowledge and Service Utilization

Awareness of HIV and AIDS

More than 90% of male PWID respondents in all survey sites had heard of HIV or AIDS. More than half the respondents in all survey sites reported knowing someone who is infected with HIV or who has died of AIDS. This percentage was highest among Kalay respondents (83%) and lowest in Lashio (50%).

Figure 37. Percent of male PWID respondents who know someone infected with HIV or has died of AIDS



Denominator: All respondents

The proportion of respondents who knew someone infected with HIV or who had died of AIDS was not correlated with HIV prevalence among PWID. Variation between sites in the proportion of respondents knowing someone with HIV/AIDS may reflect differences in how well PWID know each other and how open PWID are with each other about their HIV status.

We examined whether younger PWID were less likely to know people who were infected with HIV or died of AIDS. In a majority of survey sites (Yangon, Mandalay, Myitkyina, Bamaw, and Tamu), significantly fewer PWID under age 25 knew someone infected with HIV compared to those 25 years and older. The most striking difference was observed in Bamaw, in which those under 25 years old were half as likely to report knowing someone with HIV compared to older PWID. However, in several survey sites (Lashio, Muse, Kukkhai, Waimaw, and Kalay) there was no significant difference by age group.

Because older PWID are more likely to be HIV positive, survey sites with large the percent who know someone personally who is infected with HIV or who has died of AIDS between younger and older PWID may reflect greater social segregation by age group. Characterizing social networking mixing by age can provide important information for programmes in planning how to reach younger injectors and influence them to seek services.

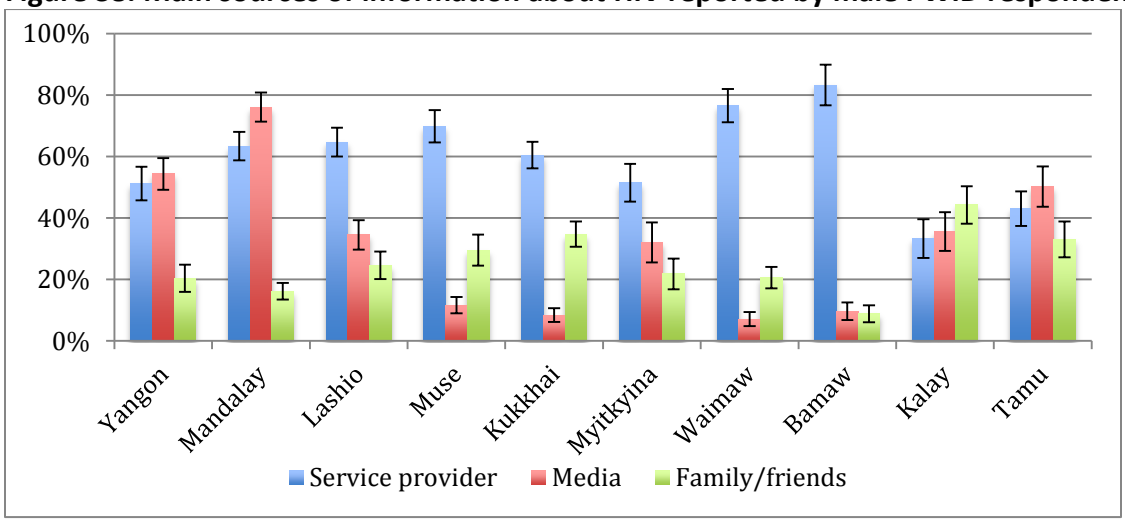
Table 19. Percent of male PWID respondents who know someone infected with HIV or who has died of AIDS by age group

Know someone who is infected with HIV or died of AIDS										
Age group	**YGN**	**MAN**	**LAS**	**MUS**	**KUK**	**MYI**	**WAI**	**BAM**	**KAL**	**TAM**
<25	57	67	42	71	48	43	63	32	82	56
>=25	81**	81**	53	67	58	62***	63	60**	84	64++

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05

Responses about the sources of HIV information differed among the survey sites. In Muse, Kukkhai, Myitkyina, Waimaw, and Bamaw some type of health service provider was the source of most information about HIV for a majority of respondents. While in large cities such as Yangon and Mandalay the media was a more common source of information about HIV.

Figure 38. Main sources of information about HIV reported by male PWID respondents

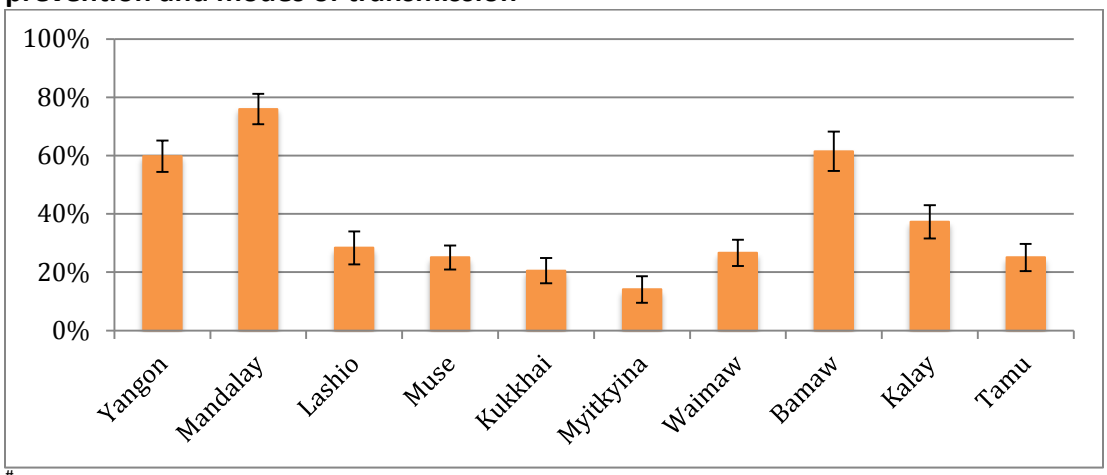


Multiple responses allowed. Denominator: All respondents

Knowledge of HIV prevention and modes of transmission

Standard questions on knowledge of HIV prevention and modes of transmission were asked of respondents. Using five of these knowledge questions we created a composite variable on comprehensive knowledge using the standard definition used for global AIDS response and progress reporting (GARPR).[16]

Figure 39. Percent of male PWID respondents with comprehensive knowledge of HIV prevention and modes of transmission[#]



[#]definition of comprehensive knowledge used is consistent with global AIDS response and progress reporting (GARPR). Denominator: All respondents.

Table 20. Percent of male PWID respondents with correct answers to individual questions on knowledge of HIV prevention and transmission

	Reducing risk by having sex with only one uninfected partner	Not getting HIV from mosquitoes	Reducing risk by using condoms every time	Not getting HIV from sharing food	A healthy-looking person can have HIV
Yangon	84	86	86	93	83
Mandalay	96	89	100	97	86
Lashio	78	64	82	75	35
Muse	79	52	88	75	56
Kukkhai	52	54	83	70	62
Myitkyina	71	56	89	82	62
Waimaw	78	61	82	76	53
Bamaw	88	79	95	89	83
Kalay	76	54	72	75	76
Tamu	66	46	84	73	75

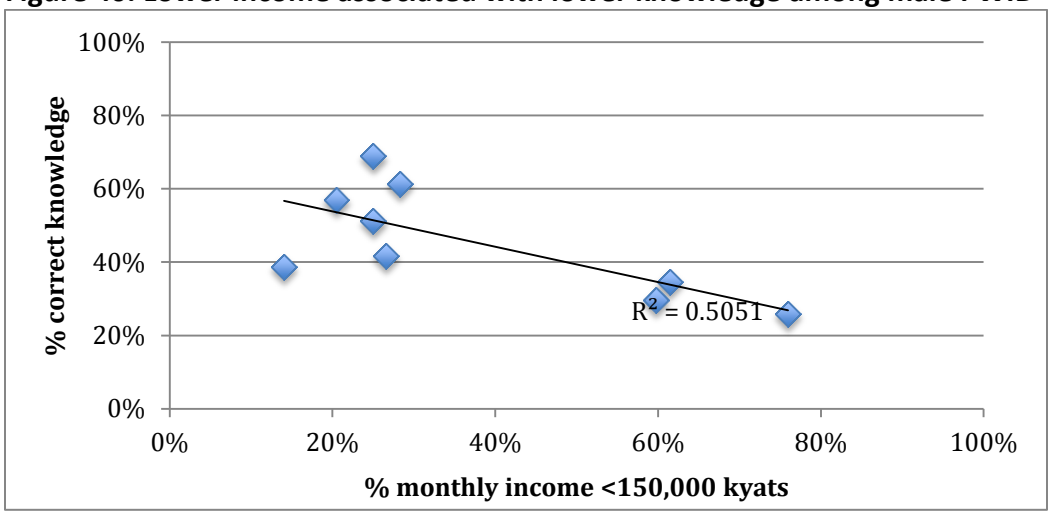
Highlighted cells indicate <80% of respondents with correct answers. Denominator: All respondents.

[16] The five knowledge questions include, knowing about the protective factors of using condoms at every sex, having a mutually monogamous partner, knowing that HIV cannot be transmitted by mosquitoes or sharing food with an infected person, and that an HIV positive person can look healthy.
See www.unaids.org/aidsreporting for GARP Reporting Guidelines

Comprehensive knowledge was highest in Yangon, Mandalay and Bamaw. The lowest levels of comprehensive knowledge were observed among PWID in Myitkyina. Table 20 contains highlights in yellow indicating survey sites where the correct response to individual knowledge questions fell below 80%. Incorrect knowledge was most common for the question about the ability for mosquitoes to transmit HIV and the lack of understanding that a healthy-looking person can have HIV.

Although knowledge alone is insufficient to affect preventive behaviours, it is an important component of behaviour change. At a population level, survey sites with a higher proportion of respondents with lower income (i.e. <150,000 kyats per month) also had lower levels of comprehensive knowledge.

Figure 40. Lower income associated with lower knowledge among male PWID



Note: Excludes Kalay because of high numbers of missing data on monthly income. Unit of analysis is site.

This relationship between low income and low knowledge also generally held at the individual level across survey sites. In particular those with less than 150,000 kyats per month had significantly ($p<0.05$) lower levels of knowledge in Mandalay and Muse.

At the individual level, being literate (in Myanmar language, i.e. can read or write) was positively correlated with having comprehensive knowledge in Lashio, Muse, Kukkhai, Myitkyina, and Bamaw. This suggests that those who are not formally educated/have Myanmar language skills are at a significant disadvantage in terms of knowing how to protect themselves and engage in safe behaviours.

In Mandalay, Myitkyina, Waimaw, and Bamaw, younger PWID had lower levels of comprehensive HIV related knowledge; however these differences were not likely to be statistically significant. There was a similar pattern with respect to newer injectors having lower levels of knowledge compared to more experienced injectors, however, these differences were only significant in Muse, Waimaw, Bamaw, and Kalay and in some cases were not different or had the opposite relationship in a few sites.

Table 21. Correlation at individual level between socio-demographic characteristics and comprehensive knowledge among male PWID respondents

% with comprehensive knowledge of HIV prevention and transmission										
	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Literacy										
Literate	60	76	30*	30**	26***	28**	28	62*	39	28
Illiterate	--	38	27	8	6	0	0	0	11	14
Age group										
<25	60	66	21	12	19	21	15	50	32	21
≥25	60	81++	31	27	21	31*	32*	64*	39	26
Duration of Injection										
≤1 year	55	69	30	12	15	29	13	47	44	25
> 1 year	60	78	28	32**	23	25	31*	68**	35*	25

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents.

We also examined whether the source of the most information about HIV was associated with comprehensive knowledge. In all survey sites, except Lashio and Myitkyina, respondents who got most of their information about HIV from a health worker or service provider had higher levels of comprehensive knowledge than those who did not. However, in Myitkyina, those who received information about HIV other than from health professionals had significantly higher levels of comprehensive knowledge. Receiving information about HIV from the media was strongly associated with comprehensive knowledge in this survey site. Getting most of their information from relatives and friends had a mixed or weak correlation with levels of knowledge. Although in most survey sites, respondents who got most of their information about HIV from sources other than friends and family had higher levels of knowledge, this relationship was only found to be significant in Muse, Kukkhai, and Tamu.

Table 22. Correlation at individual level between source of most information about HIV and comprehensive knowledge among male PWID respondents

% with comprehensive knowledge of HIV prevention and transmission										
From:	**YGN**	**MAN**	**LAS**	**MUS**	**KUK**	**MYI**	**WAI**	**BAM**	**KAL**	**TAM**
Health provider	70	82	30	31	30	21	31	67	53	30
Others	50*	65***	26	12***	6***	32**	11**	35***	30**	21+++
The media	61	75	24	34	19	50	18	79	45	31
Others	59	78	31	24	21	15***	27	60	33	19
Relatives or friends	65	89	29	14	12	24	17	56	33	12
Others	58	73	28	30**	25**	27	29	62	41	32**

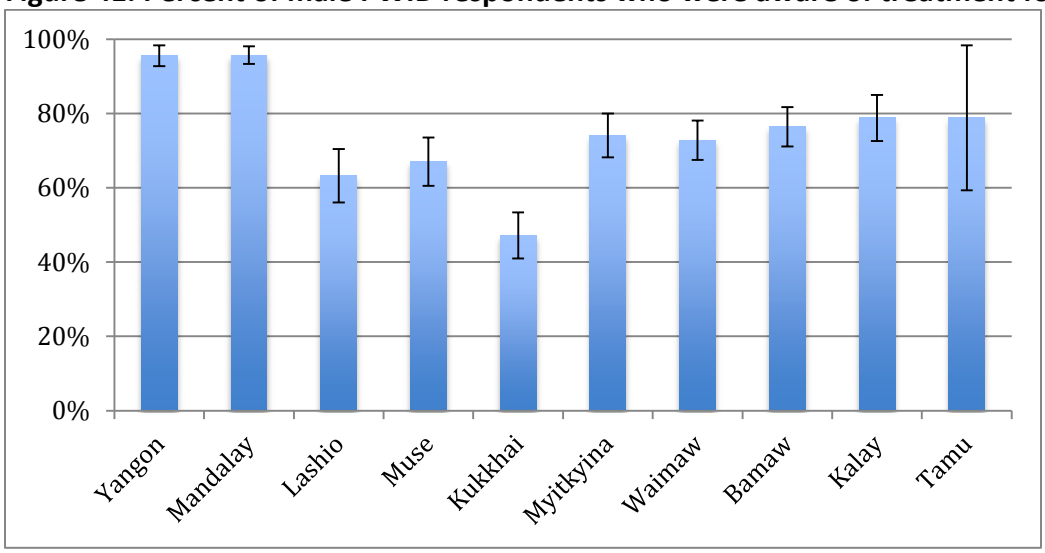
Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents.

Because these surveys were conducted among PWID, respondents were also asked a knowledge question about the risk of transmission by using contaminated injecting equipment. The percentage of respondents with correct knowledge for this question was 85% or higher in all survey sites.

Awareness of treatment for HIV

Accessing treatment requires people who are infected to be aware that treatment is available. Awareness of the availability of treatment may also encourage those who are at risk to get tested and enrolled in life-saving treatment. Levels of awareness of treatment for HIV were near 100% in Yangon and Mandalay and near 80% in Myitkyina, Waimaw, Bamaw, Kalay, and Tamu. Less than half (47%) of the respondents in Kukkhai were aware of treatment for HIV.

Figure 41. Percent of male PWID respondents who were aware of treatment for HIV



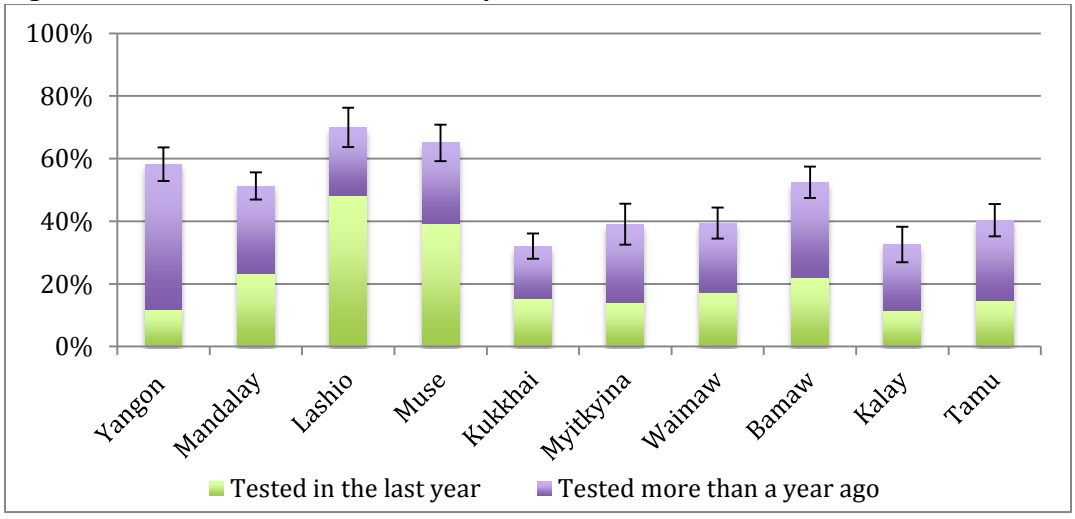
Denominator: All respondents

We looked for correlates of awareness of treatment in terms of age, duration of injection, monthly income, literacy, main source of information about HIV, and levels of comprehensive knowledge among respondents. No significant differences emerged except for being 25 years or older in Mandalay ($p<0.01$)

HIV testing behaviour

A majority of respondents in Yangon, Mandalay, Lashio, Muse, and Bamaw report ever being tested for HIV. The proportion of respondents ever tested for HIV in Kukkhai, and Kalay were lowest among all survey sites. While overall testing level was high in Yangon, a relatively small percentage of respondents had been tested in the last year. During the year of the survey, drop-in-center (DIC) services were not available in Yangon, which may account for the lower levels of testing in the last year. It may also be that older PWID who have been tested previously already know their HIV status is positive and do not need to be retested. In contrast, PWID respondents who had ever been tested in Lashio and Muse were more likely to have been tested in the last year.

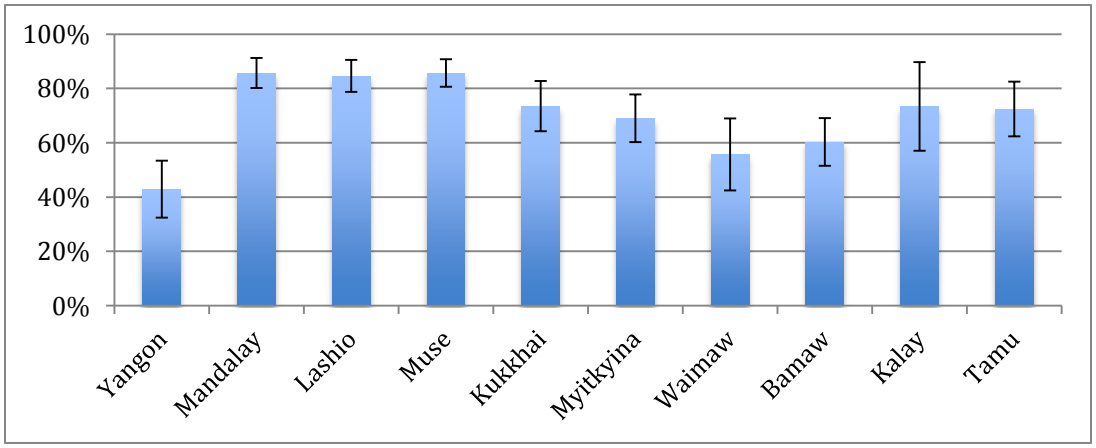
Figure 42. Percent of male PWID respondents who had ever been tested for HIV



Confidence intervals refer to the overall % of respondents who have ever been tested
Denominator: All respondents

When asked the reason for their last test, a majority of respondents said "to know their HIV status." However, in some survey sites, such as Yangon, (21%), Myitkyina (19%), Waimaw (20%), Bamaw (37%), and Tamu (14%) respondents cited a recommendation by a doctor as the reason for testing. It is also interesting that in Yangon (12%), Waimaw (17%), Kalay (13%) respondents said the last test was a 'regular' test, suggesting that testing had been promoted and taken up a regular activity among some PWID. Because Kalay respondents had lower overall rates of ever being tested for HIV, it may be particularly useful to further characterize those who said they went for 'regular' testing to design strategies for getting more PWID to adopt this practice.

Figure 43. Percent of male PWID respondents whose reason for testing was because 'I wanted to know'

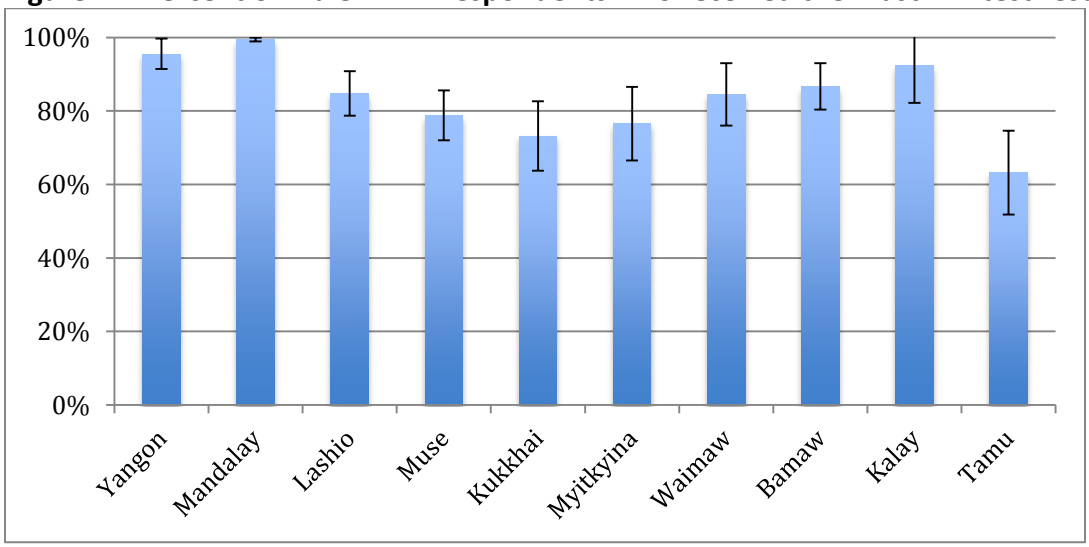


Denominator: Those who had ever been tested

An important measure of quality of testing, and awareness of its benefits for knowing ones HIV status and enrolling in treatment and practicing safe sex behaviours, is whether patients seek/receive their test results. A majority of respondents who had ever been tested for HIV

received the results of their last test. Lower rates of receiving results were observed in Tamu (63%) and Kukkhai (73%)

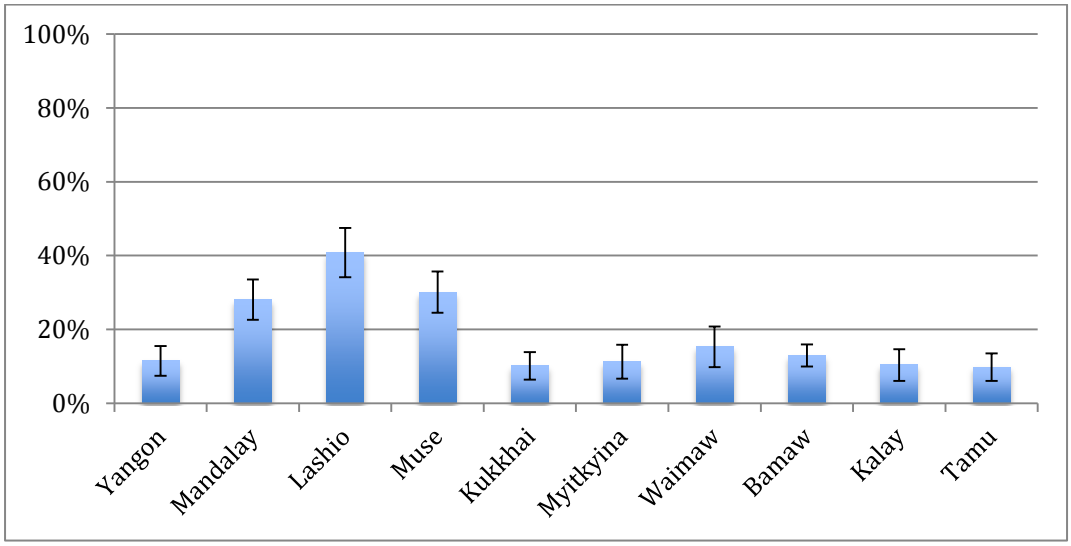
Figure 44. Percent of male PWID respondents who received their last HIV test results



Denominator: Those who had ever been tested

Knowing ones status (i.e. regular testing and receiving test results) is a critical programme indicator and the proportion of PWID who have been tested and received their result in the last year is a GARPR indicator. There were few differences in receiving test results between those tested in the last year and those tested more than a year ago. The highest levels of testing and receiving results in the last year were reported in Lashio (41%), Muse (30%), and Mandalay (28%). The low numbers overall of PWID who tested in the past one year and got test results clearly shows that much remains to be done to stimulate regular HIV testing among PWID and their early enrolment in treatment to prevent HIV transmission.

Figure 45. Percent of male PWID respondents who were tested in the last year and received their test results – GARPR indicator

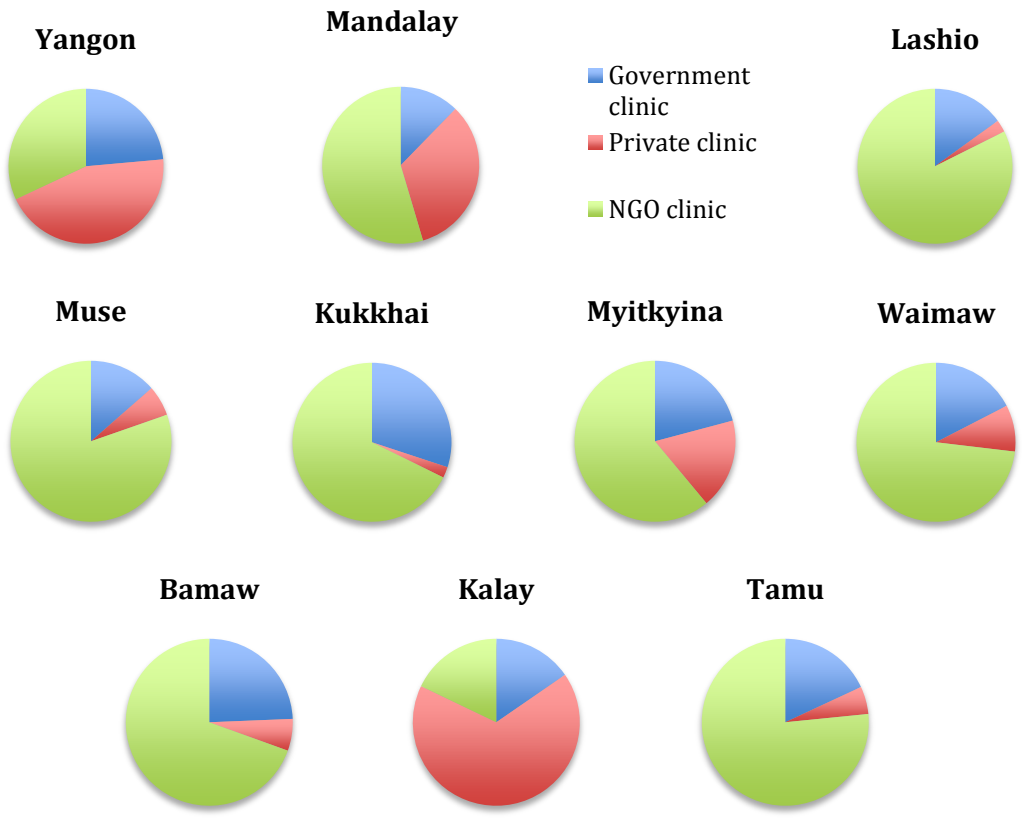


Denominator: All respondents

When asked about the place of their last HIV test, a majority of respondents mentioned an NGO clinic in many survey sites. However in Yangon, Mandalay, and Kalay, private clinics were an important place where PWID accessed HIV testing. Use of government clinics for HIV testing ranged from 12% in Mandalay to 27% in Kukkhai.

We examined whether the proportion who received their last test result was influenced by the place of testing. We found that in Muse and Kukkhai, the proportion who received their results was lower among those who had been tested in private clinics. However, the proportion of respondents who were tested in private clinics was small (6% in Muse and 2% in Kukkhai) so these differences were not statistically significant. In other survey sites there were no differences between type of testing site with respect to the proportion of respondents who received their test results.

Figure 46. Place of last test among male PWID respondents who have ever been tested for HIV

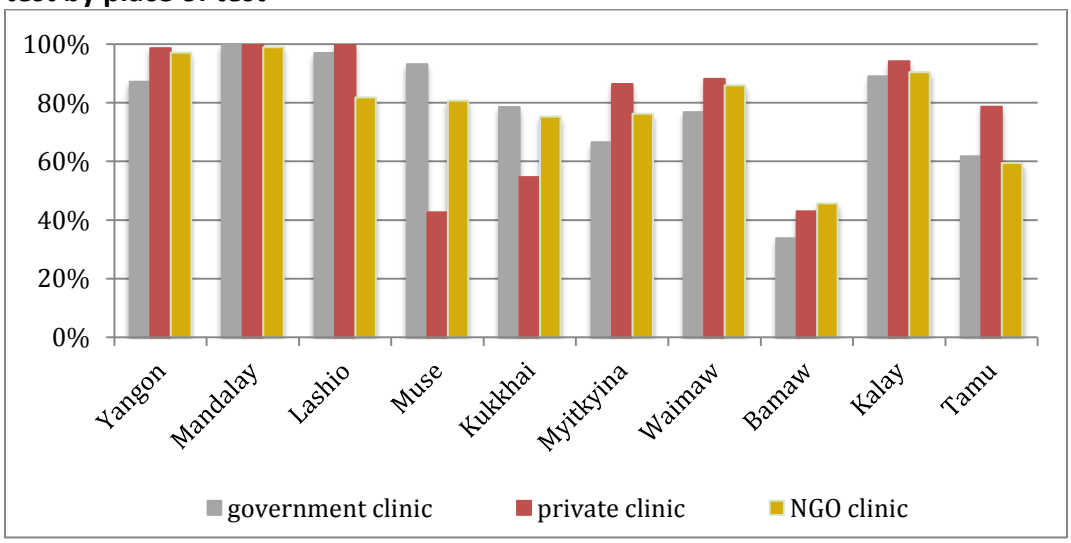


Denominator: Respondents who had ever been tested

Not knowing where to go for HIV testing may be an important barrier to PWID knowing their HIV status. Respondents were asked where they knew they could obtain an HIV test. Their responses reflect places which respondents said they had actually accessed for testing. For

example, private clinics as a place for HIV testing were mentioned by more than half of respondents in Yangon, Mandalay, and Kalay and private clinics were a dominant place of testing the last time respondents in those sites got tested.

Figure 47. Percent of male PWID respondents who received the results of their last test by place of test

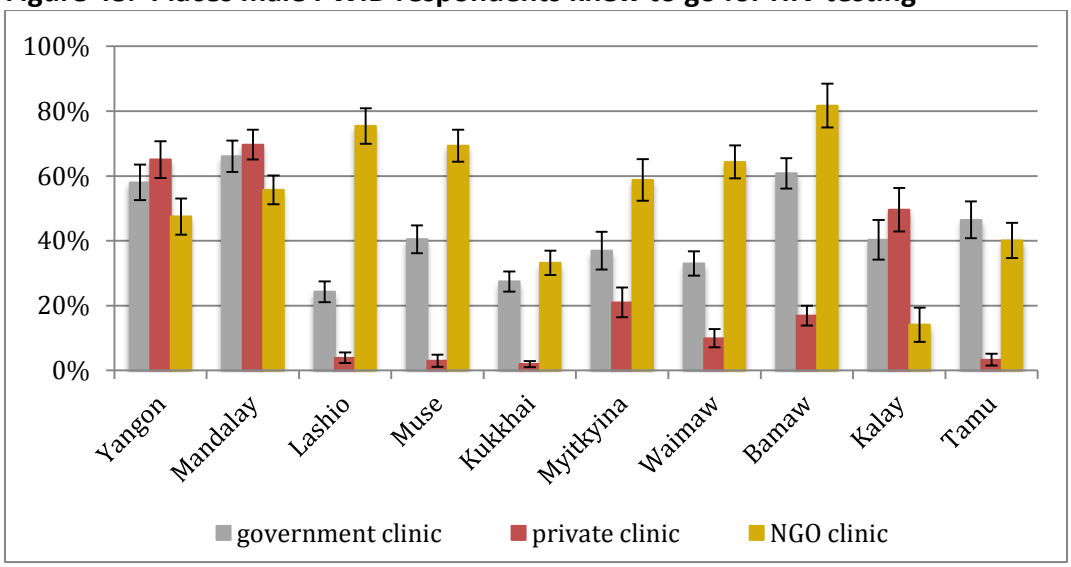


Denominator: Those who were ever tested

It is interesting to note that respondents in Kukkhai had the lowest levels of ever being tested and also had the lowest levels of knowledge regarding places to go for testing. Respondents in Kalay also had low levels of ever being tested for HIV, but appeared to have more information about where testing was available, compared to those in Kukkhai. Although less than 20% of respondents who had been tested in Kalay chose to go to a government clinic, more than 40% of respondents knew that testing was offered at these clinics. It is also notable that although there is no AIDS/STD team or programmein either Kalay or Tamu, the proportion of PWID who cite government clinics as a place for HIV testing is not significantly lower than other sites where services are more readily available.

Among those who received their last test result, more than 70% of respondents in Yangon, Mandalay, and Waimaw shared their results with someone. Less than 50% of respondents in Lashio, Muse, Kukkhai, Myitkyina, and Tamu said they shared their results. Reluctance to share test results may indicate fear of stigma and discrimination and should be explored as a potential barrier for both testing and seeking services.

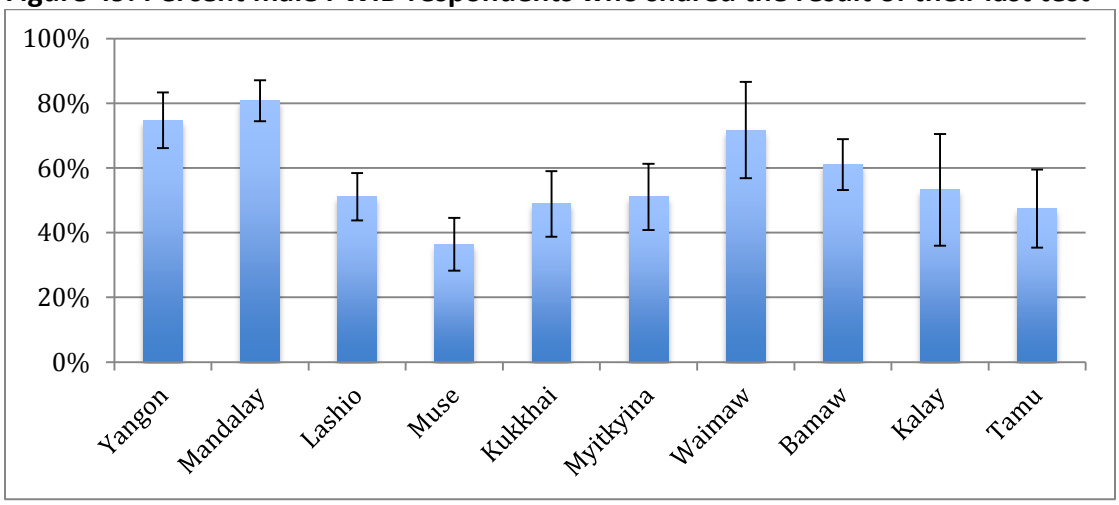
Figure 48. Places male PWID respondents knew to go for HIV testing



Denominator=all respondents

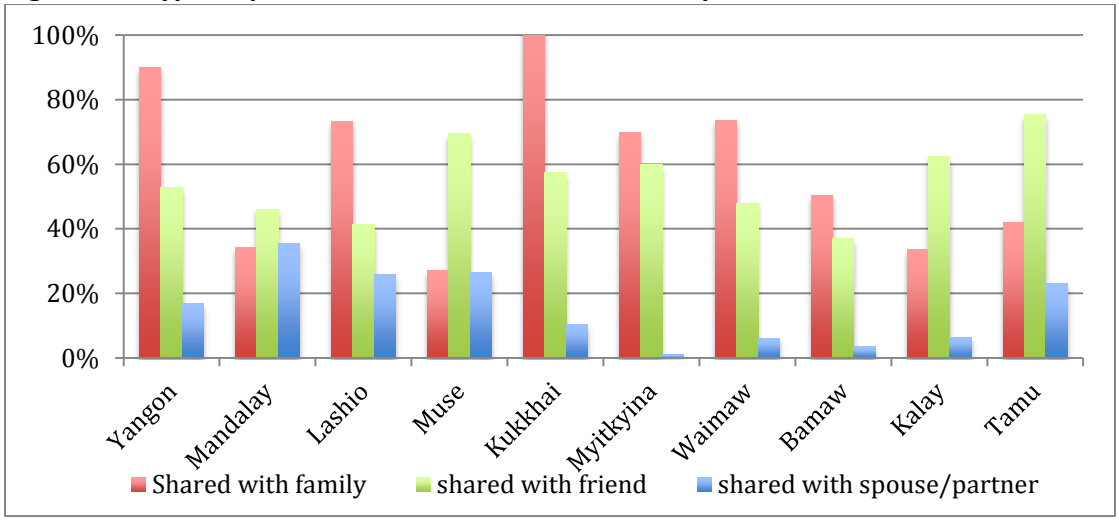
Respondents most commonly shared their results was their family, followed by friends. When looking only at respondents who had ever been tested and who had a spouse, a majority (72%) shared their results with a regular partner in the past month. The second highest percentage of disclosure of status to spouse was in Muse (45% among those tested and having a regular partner in the past month).

Figure 49. Percent male PWID respondents who shared the result of their last test



Denominator: Those who had received the results of their last test

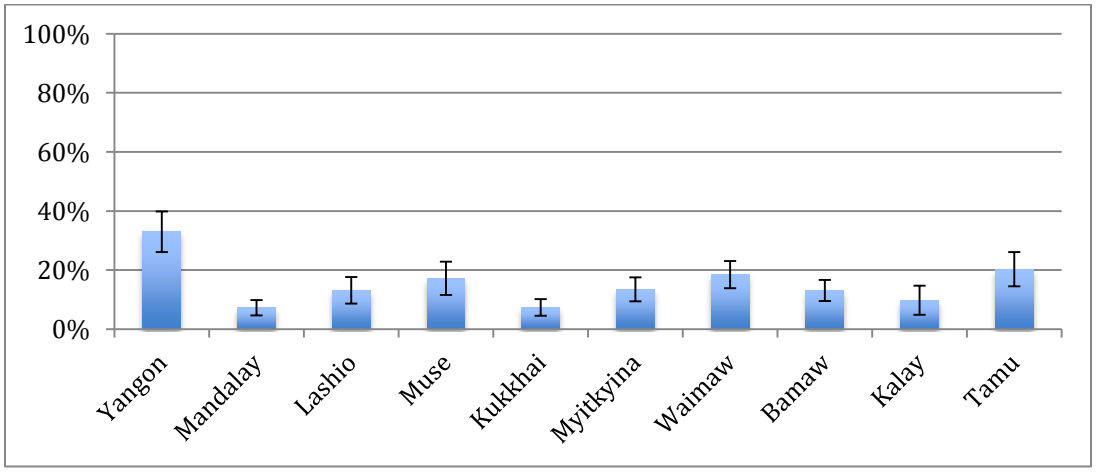
Figure 50. Type of person with whom male PWID respondents shared their last test results



Denominator: Respondents who shared the results of their last test

Reducing the potential for PWID to transmit HIV to their spouse or regular partner is an important area of prevention for PWID service providers. In addition to being tested regularly and knowing their status, PWID can encourage their spouse or regular partner to be tested as well. Among those with a spouse or regular partner, a small proportion of respondents reported that their spouse or regular partner had been tested for HIV. The highest levels were reported in Yangon where slightly more than 30% of respondents' partners had been tested. Respondents in Kukkhai and Kalay had the smallest proportion of spouses tested, which may reflect the low levels of testing among PWID themselves. Another notable finding was the low levels of spouse testing among PWID in Mandalay.

Figure 51. Percent of male PWID respondent who has a spouse/regular partner who has been tested for HIV



Denominator: All respondents, including those without spouse

Table 23. Percent of male PWID respondents who had ever been tested for HIV by whether their spouse had been tested

% ever tested for HIV										
	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Spouse tested	76	94	99	93	72	82	64	84	58	68
Spouse NOT tested	35***	49***	66***	64+++	19***	35***	38***	49	37++	38
No spouse	62	47	66	55	41	30	31	46	24	33

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05

We assessed whether the likelihood that PWID respondents had ever been tested was correlated to whether their spouse had been tested. And in all townships, the percentage of respondents who had ever been tested was highest among those who had a sponse and said their spouse had also been tested. This suggests that in these sites, couples testing or referral of regular partners for testing is occurring. It may be that levels of testing among PWID who do not have a spouse reflect the success of promoting testing among PWID overall and the additional increase in testing history among PWID with a spouse who has been tested reflects the success of partner referral among women being tested for HIV. Another interesting finding is that in Yangon and Kukkhai, PWID who do not have a spouse are also much more likely to have ever been tested compared to those who have a spouse who has never been tested. More analysis may be needed to explain why these differences were observed.

We also found there was a consistent correlation between sharing their test result with a spouse/partner and whether their spouse was tested. However, small cell sizes, reduced the ability to determine whether the results were statistically significant. We found that in all townships, except Bamaw, those who had shared their result with a regular partner were more likely to have a partner who had been tested. The potential causality for this relationship is not known. For example, respondents who shared their results might have been more likely to have a positive test result and encouraged their spouse to get tested. Or persons who were willing to share their results with their partner may have been more likely to have gotten tested with their partner and engaged in mutual disclosure of results. It is also possible that those who shared their test results may have had more explicit conversations with their spouse about HIV related risks and been more aware of whether their spouse had been tested.

Table 24. Correlation at individual level between male PWID respondents' spouse being tested and sharing their test result with their spouse

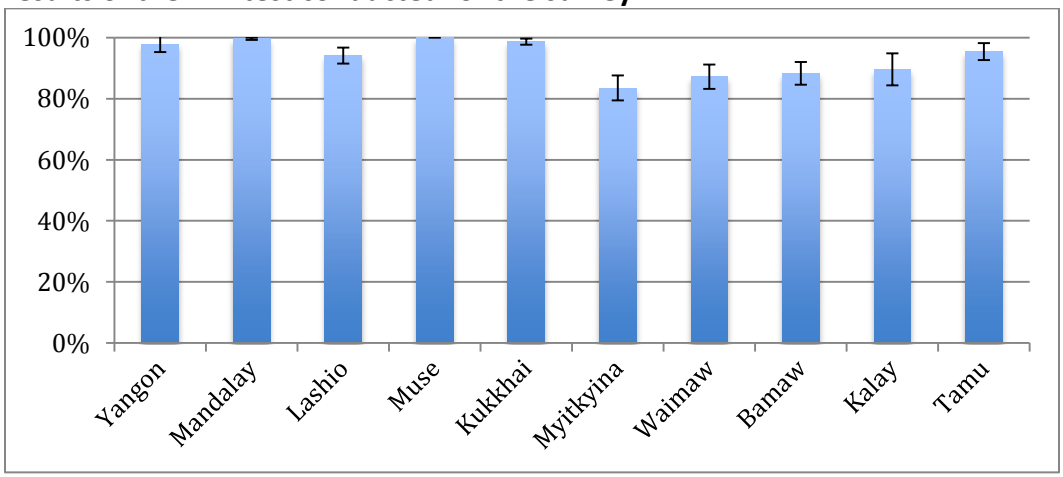
% whose spouse has been tested for HIV										
	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Did NOT share	29	4	9	14	7	13	18	13	10	19
Did share	83	28	48	62	59	100	29	13	25	54

Denominator: Respondents who have been tested, including those who do not have a spouse

When asked whether they were interested in getting the results of the HIV test being conducted as part of the survey, the vast majority of respondents said yes. Despite this declared interest, the proportion of respondents who returned for their test results was low.

For example, according to rough counts, only half of respondents in the Lashio survey site got their test results. And half of the HIV positive respondents collected their results in the Kukkhai site.

Figure 52. Percent of male PWID respondents who said they were interested in getting the results of the HIV test conducted for the survey



Denominator: All respondents

Characteristics of people getting tested

To better understand what segments of the PWID community were utilizing HIV testing services, we looked at characteristics associated with ever being tested. Across all survey sites, respondents 25 years and older were more likely to have ever been tested, although this difference was significant only in Yangon, Mandalay, Muse, Myitkyina, and Waimaw. Similarly, longer-term injectors were more likely to have been tested in Yangon, Mandalay, Kukkhai, Myitkyina, Waimaw, Bamaw, and Tamu. Being able to read and write in Myanmar language was a predictor of HIV testing in Lashio and Kukkhai; while higher monthly income was associated with higher levels of testing in Mandalay, Muse, and Waimaw.

Table 25. Percent of male PWID respondents ever tested for HIV by key characteristics

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Age group										
<25	30	38	67	38	29	30	21	38	30	27
>25	63***	59***	71	68+++	33	47***	48***	56+	33	43
Duration of injection										
=<1 year	27	37	63	56	23	30	26	38	37	31
>1 year	61**	56***	74	68	36**	43**	43*	59***	31	53***

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents

Respondents who knew someone with HIV were more likely to have ever been tested for HIV. These differences were statistically significant in Yangon, Mandalay, Myitkyina, Waimaw, and Tamu. Those respondents having comprehensive knowledge about HIV prevention and modes

of transmission were more likely to have ever been tested in Yangon, Muse, Kukkhai, Myitkyina, Waimaw, Kalay, and Tamu.

Ever using a previously used needle/syringe was correlated to ever being tested in Yangon, Mandalay, Kukkhai, and Kalay; but previously used needle/syringe at last injection was only significant in Yangon and Kalay. Having had a paid sex partner in the past 12 months was associated with higher levels of HIV testing among PWID in Kukkhai, but not in other sites.

Table 26. Percent of male PWID respondents ever tested for HIV by key characteristics

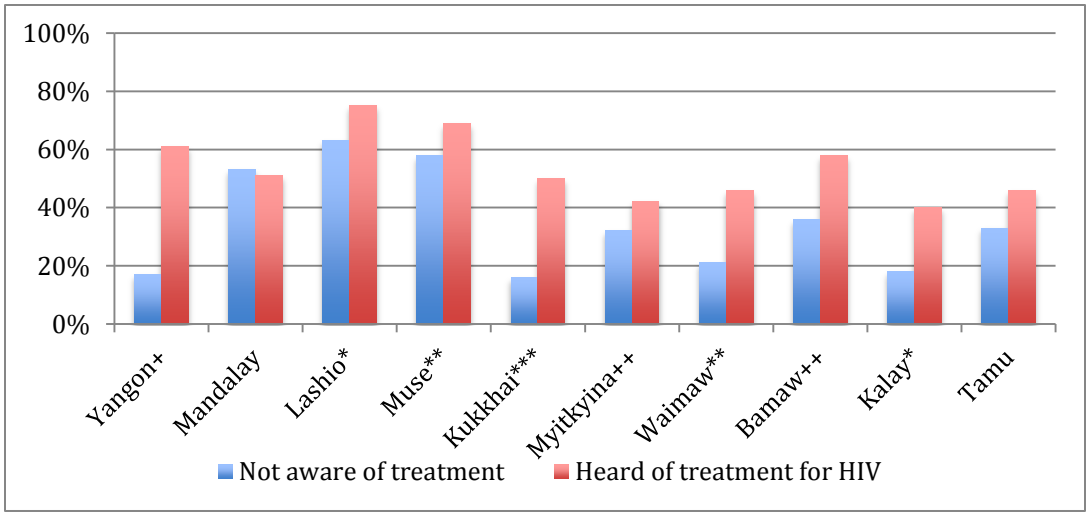
	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Knows someone with HIV										
No	33***	43**	66	57	24	29***	34**	44	30	31**
Yes	66	54	77	70	42	51	44	60	36	48
Comprehensive knowledge										
No	49*	46	69	60**	25***	37**	34***	52	24**	36***
Yes	65	53	73	80	61	46	55	53	48	53
Ever used previously used N/S										
No	51**	47***	72	60	29*	41	41	46	41*	34
Yes	74	73	68	74	36	37	39	58	28	54
Used previously used N/S last time										
No	56*	51	71	64	33	43	44+	56	35*	38++
Yes	83	0	69	73	29	27	33	37	28	55
Ever had drug treatment										
No	44***	44***	65***	59**	24***	32***	31***	28	32	30***
Yes	80	69	83	80	55	78	70	75	34	74
Ever had methadone treatment										
No	55++	50++	67*	61**	27	39	39	53	33***	38++
Yes	83	67	89	85	76	48	71	39	0	64
Used methadone in the last 3 months										
No	52**	51	69	62***	26***	36***	39*	32***	32	40
Yes	77	85	89	93	92	68	100	82	51	9
Went to a DIC in the last 3 months										
No	52***	43***	45	52***	16***	41	32*	27+++	NA	NA
Yes	98	82	81	74	59	37	43	68	NA	NA
Aware of availability of treatment for HIV										
No	17*	53	63*	58**	16***	32++	21**	36++	18*	33
Yes	61	51	75	69	50	42	46	58	40	46

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents.

Overall, accessing various types of PWID services was associated with higher levels of HIV testing in many survey sites. For example, in all sites except Bamaw and Kalay, a higher proportion of those who had accessed drug treatment reported being tested for HIV. In six survey sites, receiving methadone treatment (both ever and in the last 3 months) and visiting a DIC in the last 3 months were associated with higher proportions of respondents being tested. This suggests that HIV testing is integrated in other types of harm reduction services offered to PWID.

Finally, we explored whether awareness of treatment for HIV was consistently associated with a greater likelihood of ever being tested for HIV. While those who were aware of treatment for HIV were much more likely to have ever been tested for HIV, it is not clear whether awareness of treatment was a result of counselling associated with HIV testing, or if those who aware of treatment for HIV were motivated to get tested.

Figure 53. Percent of male PWID respondents who had ever been tested for HIV by their awareness of treatment for HIV



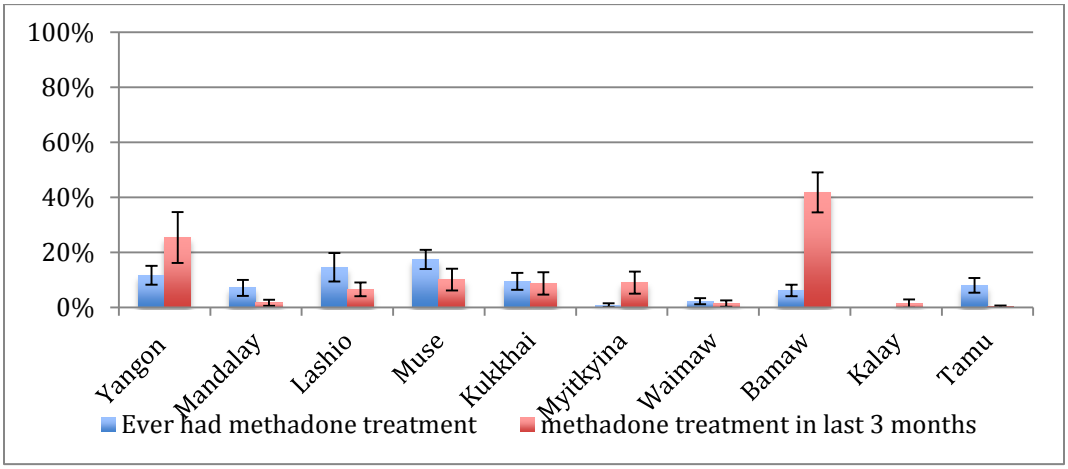
Denominator: All respondents

History of drug treatment and methadone

Less than 20% of respondents in all survey sites had ever been on methadone treatment. However, there were some discrepancies in responses given to other questions related to methadone use. History of methadone treatment was asked of respondents on two separate occasions during the questionnaire. The first time respondents were asked if they had "ever received any drug treatment intended to modify, reduce or stop your use?" (q#423) and if yes, to specify the "kind of treatment…received?"(q#424). [17] Methadone, used for either detoxification or maintenance, was a coded response. Then toward the end of the questionnaire (q#703), respondents were asked about methadone use in the past 3 months for the primary purpose of calculating a population size estimate for PWID using the multiplier method.

[17] For full question wording, see questionnaire in Annex 5.

Figure 54. Percent of male PWID respondents with lifetime and recent history of methadone treatment



Denominator: All respondents

We expected that the proportion of respondents who ever had methadone treatment (q#424) should have been larger than the proportion who had methadone in the past three months (q#703). However this was not the case in several survey sites, most notably in Yangon, Myitkyina, and Bamaw. The confidence intervals on these estimates suggest that the discrepancy is not likely to be explained by random error.

When looking at how individuals responded to both questions, in Yangon, 21% of those who did not mention ever receiving methadone treatment in q#424 said they had received treatment with methadone in the past three months. This percentage was 9% in Myitkyina and 43% in Bamaw. These discrepancies suggest that some people may not have accurately recalled their drug treatment history or misunderstood that the initial drug treatment question referred to methadone. This may have been due to the open ended nature of the question about lifetime history of drug treatment, compared to the explicit question about receiving methadone therapy in the past three months.

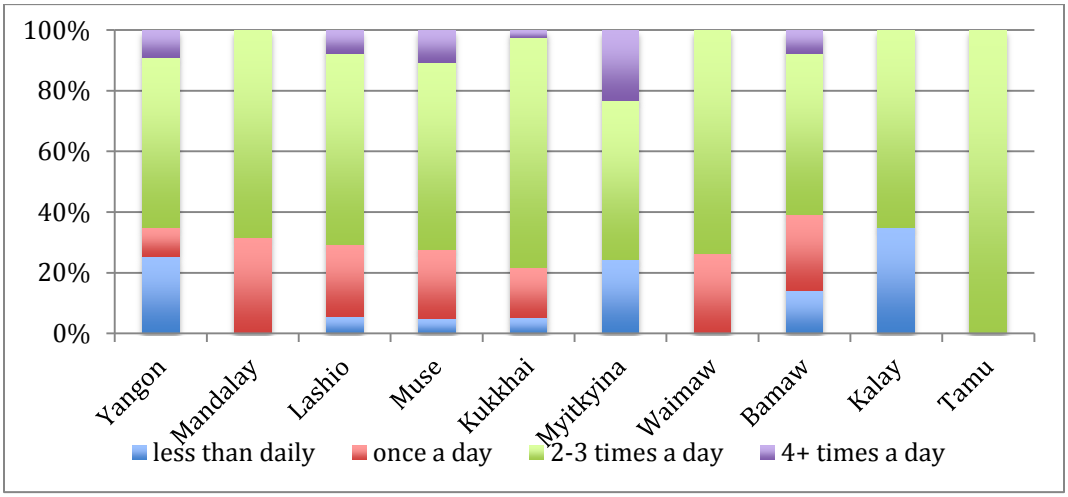
Table 27. Consistency of responses by male PWID respondents to two differently worded questions on use of methadone treatment

% who reported receiving treatment with methadone in the past 3 months (q#703)										
	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
% whether ever received methadone treatment (q#424)										
No	21	2	5	2	4	9	1	43	1	0
Yes	62	0	15	47	55	28	0	20	--	0

Highlighted cells indicates high levels of inconsistent responses

Another concern about methadone history, especially with respect to using it as a multiplier for population size estimates was that the eligibility criteria for the survey required respondents to have injected drugs in the last one month. However, a person who is successfully on methadone maintenance therapy should have abstained from injecting and would not have met the eligibility criteria.

Figure 55. Injection frequency among male PWID respondents who reported receiving methadone in the last 3 months



Denominator: Those who had received methadone in the past 3 months

We looked at frequency of injection in the last month among those who reported receiving methadone in the last three months. We found that a majority of injectors with recent methadone therapy were injecting once or more a day. These results suggest that a large number of those who have been on methadone therapy may not be excluded by the eligibility criteria, however, we cannot rule out the exclusion of some recent former injectors that would be relevant to the population size estimate, but excluded from the survey.[18]

Table 28. Correlation at individual level between characteristics of male PWID and use of methadone in past 3 months

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Comprehensive knowledge										
No	28	3	5**	7**	4***	9	1	32*	0*	0
Yes	24	1	10	18	28	7	1	48	4	0
Knows someone infected with HIV or died of AIDS										
No	33	43	66**	57*	24***	29	34	44***	30	31
Yes	66	54	77	70	42	51	44	60	36	48
Receives most information on HIV from health worker										
No	13***	1	3+++	1	4**	2***	0	22**	2	0
Yes	37	2	9	14	12	15	2	46	0	1

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents

[18] With respect to the service multiplier related to methadone use in the past 3 months, the limitations raised by issues of eligibility for the survey were examined thoroughly and taken into consideration when triangulating the PSE results.

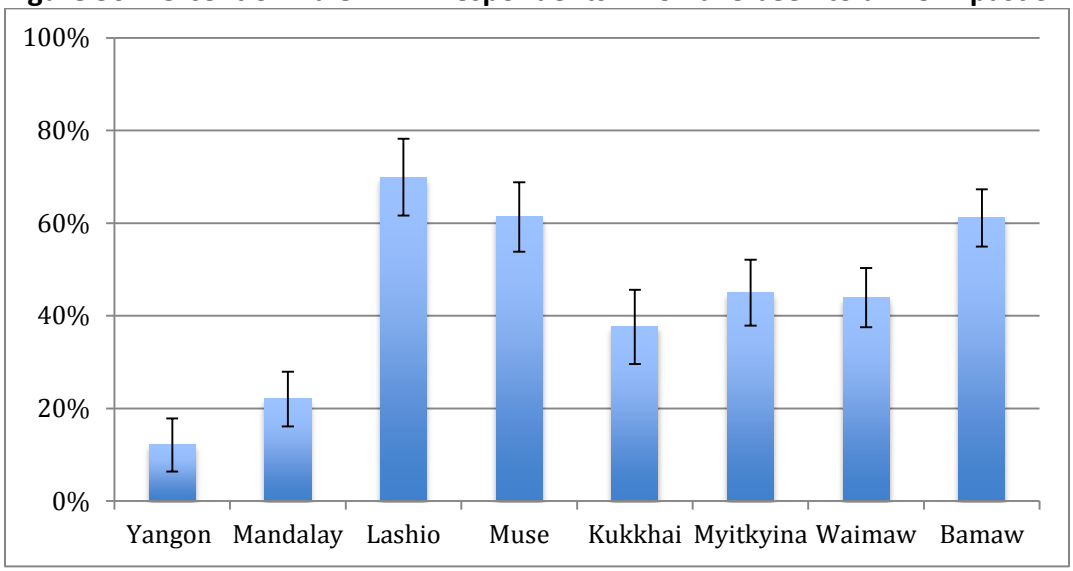
To better understand the type of PWID who utilize methadone therapy we examined characteristics that might be associated with receiving methadone in the last 3 months. Neither age, duration of injection, monthly income, marital status, nor recent use of amphetamine-type stimulants (ATS) was consistently or strongly associated with recent methadone use across survey sites.

Comprehensive knowledge was associated with a higher proportion of respondents receiving methadone in the last three months in Lashio, Muse, Kukkhai, Bamaw, and Kalay. Similarly, knowing someone infected with HIV or who had died of AIDS was associated with being on methadone therapy in Lashio, Muse, Kukkhai, and Bamaw. And as may be expected, those who received most of their information about HIV from a health professional were also more likely to have used methadone in the past three months in several sites (Yangon, Lashio, Kukkhai, Myitkhia, and Bamaw).

Drop in center use

Respondents were also asked about use of local DICs for PWID in the last three months. Utilization of DICs varied greatly across survey sites. The highest proportion of recent DIC users were found in Lashio, Muse, and Bamaw. The lowest levels of DIC use were Yangon and Mandalay.

Figure 56. Percent of male PWID respondents who have been to a DIC in past 3 months



Data from Kalay and Tamu are not available. Denominator: All respondents

Use of the DIC among younger and newer injectors was assessed. In Yangon, Lashio, Kukkhai, Waimaw, and Bamaw, younger injectors appeared less likely to have gone to the DIC in the last three months; however these differences were not statistically significant. Respondents injecting for more than one year in Muse, Kukkhai, Waimaw and Bamaw were significantly more likely to have visited a DIC compared to new injectors.

Table 29. Percent of male PWID respondents who have accessed a DIC in past 3 months by age group and duration of injection

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM
Age group								
<25	0	28	63	68	22	44	39	42
>25	15	19	72	60	41	46	46	65
Duration of injection								
=<1 year	0	23	67	53	33	41	36	51
>1 year	13	22	72	64*	40*	47	47++	65**

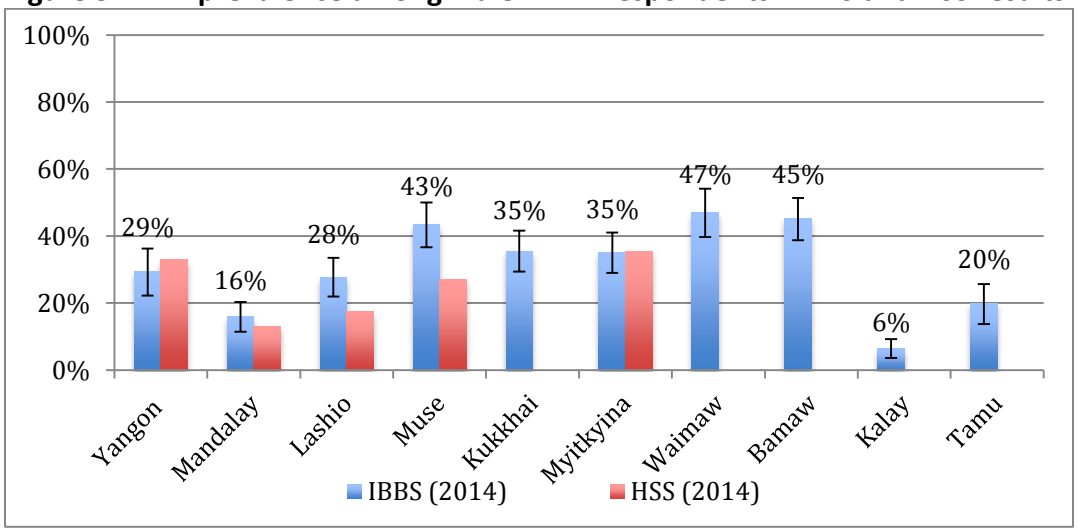
Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Data from Kalay and Tamu are not available. Included: All respondents.

F. HIV Prevalence and Correlates of Infection

Overall HIV prevalence

Across all survey sites, HIV prevalence of respondents ranged from 6% in Kalay to more than 40% in Waimaw, Bamaw, and Muse. There were five survey sites which also had data from HIV sentinel surveillance activity. The sampling methodology for HIV sentinel surveillance is very different than that used for the IBBS.[19] In all sites with both sources of HIV prevalence data, the most recent HSS results are lower than the IBBS results except in Yangon. In Myitkyina, the point estimate results from HSS and IBBS were almost the same. While the HIV prevalence in Yangon, Lashio, Mandalay and Tamu were moderately high, they do not appear as high as saturated as in Muse, Waimaw, and Bamaw. Assuming that the sample of PWID in Kalay is representative of injectors in that area, the epidemic appears to be an early emerging epidemic with important opportunities to saturate coverage with harm reduction programmes and to avert large numbers of new infections.

Figure 57. HIV prevalence among male PWID respondents - IBBS and HSS results



Denominator: All respondents

[19] HSS and IBBS differ significantly in sampling methodology, resulting in differences in the target population of PWID who are represented in each survey type.

HIV prevalence and demographic variables

We explored the characteristics of respondents who were HIV positive, including age, education, income, and marital status. As expected, younger injectors were less likely to be HIV positive compared to those 25 years and older as they have been exposed for a lesser time to risks of infection. Differences were statistically significant in Yangon, Mandalay, Lashio, Kukkhai, Myitkyina, and Waimaw. The exception to this result was observed in Tamu, where 28% of young injectors were HIV positive compared to 18% among those over age 25 (not statistically significant).

Table 30. HIV prevalence among male PWID respondents by key socio-demographic variables

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Age group										
<25	0	3	25	34	27	20	30	34	0	28
≥25	35***	24***	29+++	44	38*	48***	55***	48	8	18
Literacy in Myanmar language										
Literate	29	16	33	41	34	33**	47	45	6	15**
Illiterate	--	38	19	51	41	62	49	91	12	38
Current marital status										
Married	33	19**	19+	41	34	39	51*	43	8*	15**
Divorced, separated, widowed	21	25	38	49	46	59	70	54	13	35
Never married	28	12	32	41	34	32	41	45	2	19

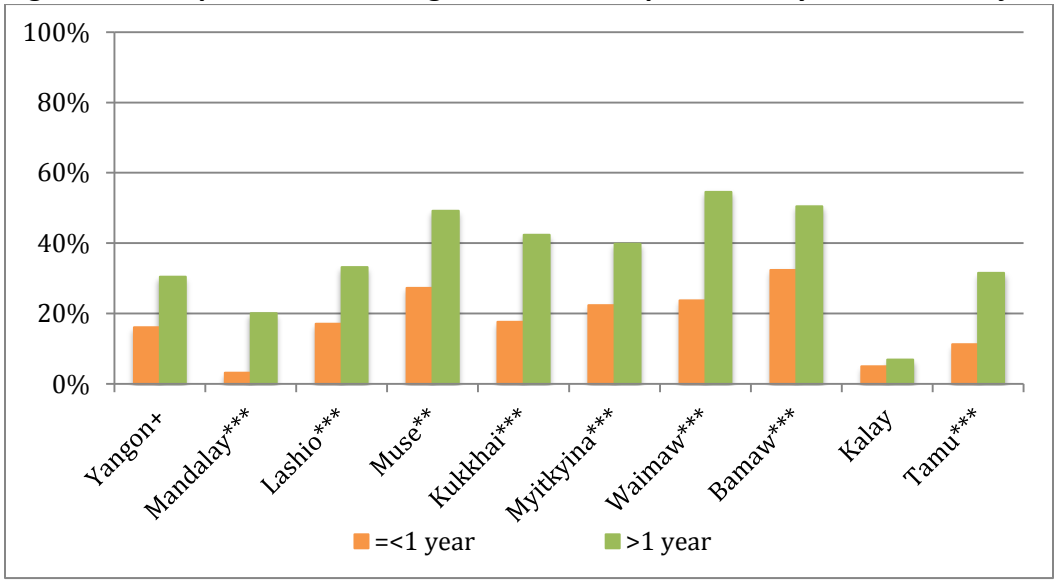
Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. All respondents.

Except in Lashio, those who were not able to read or write in Myanmar language were more likely to be HIV positive. However, differences by ability to read and write were only statistically significant in Myitkyina and Tamu. Few differences among those with high and low monthly income were observed in terms of HIV prevalence. Being divorced, separated, or widowed was associated with higher HIV prevalence compared to those who were currently married or never married in most survey sites, with the exception of Yangon. These differences were statistically significant in Mandalay, Waimaw, Kalay, and Tamu.

Correlation between HIV prevalence and injecting behaviours

We might expect that at the individual level, those who exhibit high risk injecting behaviours (e.g. sharing needles) would be more likely to be HIV positive. The challenge to establishing these correlations is matching the timeframe of engaging in risk behaviour to an unknown time of infection. As expected those who had been injecting for more than a year were much more likely to be HIV positive compared to those who had been injecting for a year or less. However, HIV prevalence was still relatively high among new injectors, except in Mandalay and Kalay, indicating missed opportunities to provide harm reduction services to these individuals in most survey areas. Rapid acceleration of service scale up is important in townships with newer PWID prevention programmes such as Kukkhai, Waimaw, and Tamu.

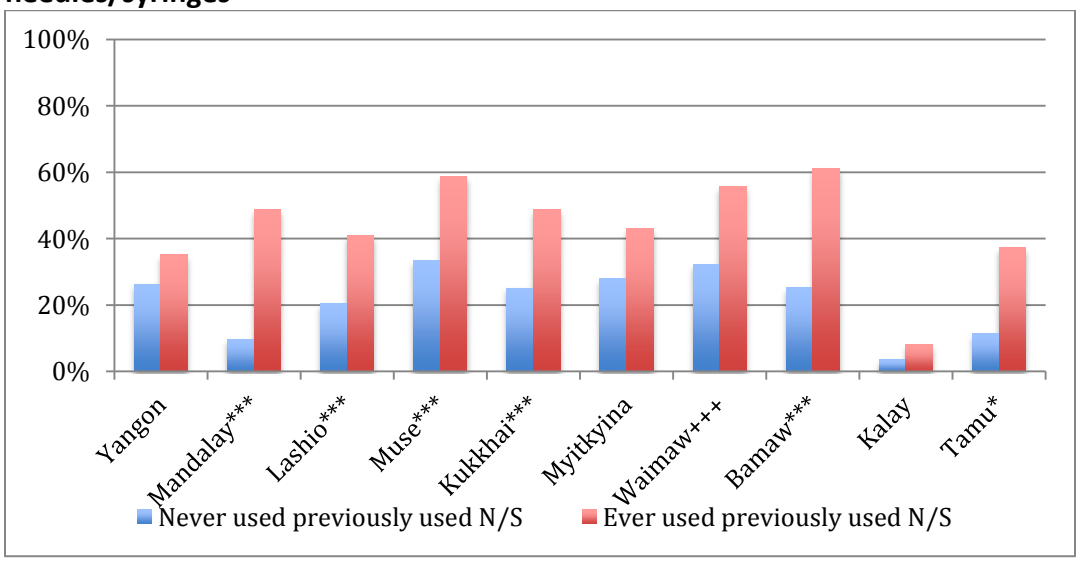
Figure 58. HIV prevalence among male PWID respondents by duration of injection



Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents.

In all survey sites, those who reported ever using a previously used needle/syringe were more likely to be HIV positive than those who had not. Using previously used needles at last injection was similarly associated with higher HIV prevalence, but was not statistically significant except in Yangon, Muse, and Myitkyina.

Figure 59. HIV prevalence among male PWID respondents by lifetime use of previously used needles/syringes



Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents.

We examined correlations between HIV prevalence, injecting with a brand new/sterile needle at last injection, the main source of needles/syringes, and whether the respondent injected in public venues and found no significant relationship.

Table 31. Correlation at individual level between injection practices and HIV prevalence among male PWID respondents

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Duration of injection										
> 1yr	30+	20***	33***	49**	42***	40***	55***	51***	7	32***
≤ 1yr	16	3	17	27	18	22	24	32	5	11
Ever used previously used needle/syringe										
No	26	10***	20***	33***	25***	28	32+++	25***	4	11*
Yes	35	49	41	59	49	43	56	61	8	37

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents.

We also looked to see if HIV positive individuals gave their used needles/syringes to others more frequently. This relationship was found to be significant in Yangon, Lashio, and Tamu. In Yangon and Lashio a significantly higher percentage of people who were HIV positive said they never gave their used needles/syringes to others, compared to those who were not infected. However, in Tamu, only 55% of those who were HIV positive reported that they never gave their used needles/syringes to others, compared to 84% of those who were HIV negative. Similarly, in Kukkhai only 64% reported to have never given needles/syringes to someone else after using them in the past one month. In contrast, in Kalay, the proportion was only 27%, which is the lowest proportion across all of the surveyed sites.

Table 32. Never giving needles/syringes to someone else after using them in the last month by HIV status

HIV status	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM
Negative	67*	96	53**	94	67	80	64	73	17	84**
Positive	82	92	80	87	64	70	70	88	27	55

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05. Included: All respondents.

Correlation between HIV prevalence and sexual behaviours

Among respondents with a regular sex partner, the HIV prevalence among those having sex with a regular partner in the last month was higher in some survey sites and lower in other survey sites, compared to those who had not had sex with their regular partner.

The HIV prevalence of those with a paid sex partner in the past 12 months was not significantly higher than those who had not, except in Mandalay (P<0.05) and Lashio (P<0.001). There was no correlation between ever having anal sex with a man and HIV prevalence.

Correlation between HIV prevalence and service utilization/knowledge

We looked for associations between comprehensive knowledge, source of information on HIV and HIV prevalence. Not receiving information on HIV from a health provider was associated with lower HIV prevalence in Yangon ($p<0.05$) and Lashio ($p<0.05$). This may reflect people who are diagnosed as HIV positive receiving more follow-up counseling and associated care and treatment from health care providers. In Yangon ($P<0.001$) and Mandalay ($p<0.05$), respondents who had been tested for HIV were more likely to be HIV positive, suggesting that people who engage in greater risk are more likely to go for testing. In Lashio and Bamaw, we also observed that respondents who were HIV positive were significantly more likely to be aware of treatment for HIV than those who were not infected with HIV. This is a positive finding because people who are infected and aware of treatment are more likely to seek services.

G. Comparing Previous Round of PWID BSS to IBBS for GARPR Indicators

In an effort to assess progress in preventing transmission and providing services to PWID, we compared the results of the 2007 BSS and 2014 IBBS for the GARPR indicators relevant to this key population. These comparisons are made with caution due to the difference in location of the RDS centers between the two survey rounds which may result in different samples. In 2014, all four overlapping sites included samples from 2 RDS centers, while in 2007 there was a single RDS center for each city/town.

The 2014 results showed a significant improvement in some indicators, especially with respect to using sterile injecting equipment (i.e., did NOT use a previously used needle/syringe at last injection) in Yangon and Lashio. This risk behaviour was low in Mandalay in both 2007 and 2014. And there was no significant difference in Myitkyina, though the 2014 point estimate was 11 percentage points higher than in 2007.

Condom use with paid sex partners saw a significant increase in 2014 for Yangon and Mandalay, and an increase in point estimate but overlapping confidence interval in Myitkyina. Condom use with paid sex partner in Lashio instead decreased.

Condom use with regular partners decreased significantly in 2014 among respondents in Mandalay and Myitkyina. Decreased levels of condom use with regular partner were also observed in Yangon and Lashio, but were not statistically significant.

Relatively poor results were observed in 2014 compared to 2007 with respect to testing in the last year (and knowing their status) in Yangon, Mandalay, and Myitkyina. Levels of testing (and knowing the results) were similar in 2007 and 2014 in Lashio.

Also, comprehensive knowledge of HIV prevention and transmission decreased in all four townships. Levels of correct knowledge decreased most sharply in Myitkyina, which went from 80% to 14%.

Table 33. Comparison of PWID GARPR indicators from 2007 and 2014

	YANGON		MANDALAY		LASHIO		MYITKYINA	
	2007 BSS	2014 IBBS	2007 BSS	2014 IBBS	2007 BSS	2014 IBBS	2007 BSS	2014 IBBS
% of PWID who have been tested in the last 12 months & know their status	39 (32-46)	11 (7-16)	33 (28-38)	28 (23-34)	48 (42-53)	41 (34-48)	45 (38-51)	11 (7-16)
% who used sterile injecting equipment at last injection	69 (59-79)	90 (86-94)	95 (92-98)	100	69 (54-79)	84 (79-89)	66 (53-75)	77 (71-83)
% of PWID who used condoms at last sex								
with regular partner	10 (5-21)	30 (20-41)	26 (16-35)	12 (6-18)	31 (21-46)	16 (10-23)	34 (25-47)	14 (8-21)
with FSW partner	61 (48-74)	86 (80-91)	46 (37-55)	91 (86-97)	87 (79-98)	79 (68-90)	73 (60-85)	84 (76-92)
with correct knowledge about prevention & HIV transmission	83 (75-88)	60 (55-65)	88 (82-93)	76 (71-81)	62 (54-72)	28 (23-33)	80 (75-86)	14 (9-19)

5. POPULATION SIZE ESTIMATES

Objectives and methods

The population sizes estimates (PSE) of PWID were estimated using four methods: 1) the service multiplier method; 2) the unique object multiplier; 3) the successive sampling size (SS-PSE) method; and 4) 'best guesses' of key informants and public and NGO service providers. Each of these methods is described below.

Service multiplier method

The service multiplier method used the unique counts of the PWID who received specific services during the 3 months prior to the start of the IBBS survey and related this number to the proportion of IBBS respondents who in the survey reported receiving the specific services. For these PSE multiple sources of service multipliers were used including unique head counts of clients from:

1. Drop-in-centres at NGO sites
2. HIV testing sites at NGOs
3. Public MMT clinics

Unique counts of clients provided by the service providers operating in the survey area were used as the numerator (M) and the proportion of survey respondents (adjusted using the successive sampling estimator for RDS) who reported receiving services from a service provider (reported by the participant during the survey) were used as the denominator (P). The mathematical formula to calculate the PSE was:

PSE=M/P

Where:
PSE=Estimated Size
P=Proportion of persons in survey who reported receiving a service
M=Number of persons who received services according to programme records

During the survey, participants will be asked this kind of questions:

- Did you receive an HIV test from [specific name/address of NGO] in the past three months (November 2013-January 2014)?[20]

- Did you visit a DIC [specific name/address of NGO] in the past three months (November 2013-January 2014)?

- Did you receive a treatment with methadone from [specific name/address of MMT site] in the past three months (November 2013-January 2014)?

The quality of data provided by the service providers was assessed in the pre-surveillance assessment to ensure it did not include double-counting or missing figures.

Unique object multiplier

The unique object multiplier method used in this survey involved distribution of a unique object to PWID in each survey city one week prior to initiating the IBBS survey. Plastic bracelets in different colors with "Getting to Zero" written on them was used because of their uniqueness and simplicity to avoid that PWID would give them away or try and sell them. The unique objects were distributed in each of the sites to the target population of the survey (same eligibility criteria) by NGO staff. The distribution was done in a way to avoid that any PWID would receive more than one object. The NGO staff was instructed to distribute the object as in ordinary service delivery activity. In sites, like Tamu and Kalay, where no NGOs are working to deliver HIV programmes for PWID, other NGOs were asked to help with the distribution of the unique objects. The NGOs recorded how many objects they distributed and how many PWID refused to take an object and for which reasons.

The number of eligible persons who received unique objects was used as the numerator (M) and the proportion (adjusted using the successive sampling estimator for RDS) who reported

[20] See questionnaire in Annex 5.

receiving a unique object (reported by survey respondents) was used as the denominator (P). The mathematical formula utilized to calculate the PSE was:

PSE=M/P

Where:
PSE=Estimated Size
P=Proportion of respondents in the survey who reported receiving an object
M=Number of eligible persons who received objects

The question asked in the questionnaire was the following:

- Did you receive a bracelet in the week of [dates of distribution of unique object] that was given to you by outreach workers of [add name of NGO]?

Multiplier assumptions

For both multiplier calculations the assumptions were as follows:

- Two overlapping data sources (specific to the group being counted)
- Population being counted must have non-zero probability of inclusion in both sources
- One data source (i.e. the survey) must be random and encompass the group in the multiplier, but can include others as well
- Second data source (multiplier) need not be random but should be specific to the group being estimated
- No individual accounted for more than once in the multiplier
- Two data sources must be independent of each other (inclusion in one not related to inclusion in the other)
- Limited in- and out-migration

Confidence intervals for the multiplier method

The following formula was used to calculate the 95% confidence bounds around the population size estimates:

$$Var(N) = \frac{Var(M)}{[E(P)]^2} + \frac{[E(M)]^2}{[E(P)]^4} Var(P)$$

Where:
N=Population size estimates
M=Number of population members who received an object/service.
E(P)=Proportion of population members in the survey who reported receiving an object/service.
E(M)=expected number of population members who could have received an object/service.
Var(M)=As M, number who received an object/service, Var(M) is equal to M.
Var(P)=The variance of the overlap of population members who received the object/service (SE^2) extracted from the RDS Analyst output.

The assumptions for calculating the confidence bounds are:

- N and P are two independent variables (Covariance = 0)
- P has an approximate a normal distribution with the Standard Error equal to SE. The RDS Analyst output for the SE for P comes from the bootstrap percentile method and it might be asymmetric.
- P has a small Coefficient of Variation.

SS PSE

The SS-PSE method used each participants' social network size data gathered during the IBBS survey to quantify population sizes by assuming that the network size distribution of successive waves reflects a depletion of the population. The estimates use a Bayesian framework (i.e., quantifies uncertainty about unknown quantities by relating them to known quantities) incorporating information about a "guess" or prior knowledge of the size of the sampled population. The Bayesian framework also allows the computation of probability intervals.

'Best guesses' of key informants and service providers

This method uses enumeration based on the estimates of key informants and public and NGO service providers working with PWID. Key informants and service providers in each survey site were asked to respond to questions about the most likely highest, lowest and accurate number of population members in each the survey city.

Township level estimates

The results obtained by using different PSE methods were presented during a workshop organized by NAP in October 2014 to present preliminary findings from the survey validate IBBS/PSE results with survey managers and implementers, representatives of NAP working at national and sub-national level and representatives of various service provider organizations as well as international IBBS and PSE experts. The PSE were presented and used for gaining consensus from all stakeholders of the most realistic PSE for PWID in each of the survey townships.

Calculated population size estimates (PSE), 95% confidence intervals and the percentage of the adult male population represented by each calculated PSE for each survey site are displayed in Table 35. These data were used in the first step of a process to gain consensus of the most realistic PSE for PWID in each of the survey sites.

Table 35. Results of population size estimates among PWID in survey townships

Survey Site (adult male population)	Method	PSE	*95% CI*	% of adult male population
Mandalay (588,169)				
	Objects	2087	1260, 3041	0.35
	Methadone	63882	19530, 108237	10.86
	HIV test	3408	2306, 4917	0.58
	DIC	2543	1691, 3396	0.43
	SS-PSE (mode)	1836	1208, 9425	0.31
	SS-PSE (median)	2726	--	0.46
	NGO Ranges	7500	6000, 10000	1.28
Bamaw (46,822)				
	Objects	737	521, 954	1.57
	Methadone	719	580, 861	1.54
	HIV test	633	340, 927	1.35
	DIC	799	693, 906	1.71
	SS-PSE (mode)	424	337, 4094	0.91
	SS-PSE (median)	424	--	0.91
	NGO Ranges	1100	900, 1400	2.35
Kukkhai (35,143)				
	Objects	1677	673, 1292	4.77
	Methadone	1747	877, 2620	4.97
	HIV test	5532	2530, 8537	15.74
	DIC	2540	1945, 3138	7.23
	SS-PSE (mode)	4030	2712, 4140	11.47
	SS-PSE (median)	3750	--	10.67
	NGO Ranges	4000	4000, 5000	11.38
Lashio (110,397)				
	Objects	1195	801, 1592	1.08
	Methadone	3985	2464, 5507	3.61
	HIV test	818	640, 997	0.74
	DIC	2221	1949, 2494	2.01
	SS-PSE (mode)	4108	2821, 5310	3.72
	SS-PSE (median)	3862	--	3.50
	NGO Ranges	4800	4800, 5400	4.35
Muse (42,530)				
	Objects	433	276, 593	1.02
	Methadone	2366	1445, 3290	5.56
	HIV test	1284	934, 1635	3.02
	DIC	449	371, 530	1.06
	SS-PSE (mode)	1180	785, 8705	2.77
	SS-PSE (median)	2013	--	4.73
	NGO Ranges	3000	3000, 4000	7.05

Myitkyina (103,265)				
	Objects	5589	2973, 8208	5.41
	Methadone	3169	1726, 4613	3.07
	HIV test	3571	786, 6359	3.46
	DIC	1716	1430, 2005	1.66
	SS-PSE (mode)	831	457, 9222	0.80
	SS-PSE (median)	1196	--	1.16
	NGO Ranges	3500	3000, 4000	3.39
Waimaw (36,485)				
	Objects	1402	868, 1939	3.84
	Methadone	12385	1020, 23751	33.95
	HIV test	286	72, 501	0.78
	DIC	785	641, 932	2.15
	SS-PSE (mode)	376	349, 457	1.03
	SS-PSE (median)	387	--	1.06
	NGO Ranges	1000	800, 1400	2.74
Yangon (1,725,886)				
	Objects	1681	766, 2597	0.10
	Methadone	858	553, 1166	0.05
	HIV test	--	--	--
	DIC	--	--	--
	SS-PSE (mode)	1556	663, 5426	0.09
	SS-PSE (median)	1850	--	0.11
	NGO Ranges	5000	4000, 6000	0.29
Kalay (116,876)				
	Objects	2941	1061, 4824	2.52
	Methadone	4533	821, 8248	3.88
	HIV test	--	--	--
	DIC	--	--	--
	SS-PSE (mode)	632	407, 3518	0.54
	SS-PSE (median)	939	--	0.80
	NGO Ranges	2000	1000, 2500	1.71
Tamu (20,412)				
	Objects	874	553, 1196	4.28
	Methadone	--	--	--
	HIV test	--	--	--
	DIC	--	--	--
	SS-PSE (mode)	2126	871, 8511	10.42
	SS-PSE (median)	3070	--	15.04
	NGO Ranges	4000	2000, 5000	19.60

These results were triangulated and vetted at the workshop by taking the strengths and weaknesses of each single approach into account. Workshop participants were asked to work in diverse groups guided by facilitators knowledgeable about PSE methods to triangulation and vet the results for each township. Each group received a list of PSE calculated by using different method. PSEs displayed as raw numbers and percentages of the adult male population based on Myanmar's new 2014 census.[21]

Table 36. Final population size estimates in survey townships based on consensus

	Consensus estimate	Ranges
Yangon	1920	1440, 2400
Mandalay	6000	4500, 7500
Lashio	4800	3800, 5400
Kukkhai	1750	880, 2620
Muse	3000	3000, 4000
Myitkyina	3570	790, 6360
Waimaw	1200	1000, 1400
Bamaw	740	520, 950
Kalay	1200	770, 1800
Tamu	1200	300, 2130

Each of four working groups was asked to focus on a selected number of sites to:

- Assess which estimates made the most sense based on knowledge of the strengths and weaknesses of each respective PSE method, possible difficulties encountered in data collection, and realities in each local context;
- Come up with a final estimate or narrow range of estimates (number PWID and their percentage of adult male population) for each city/town covered by the survey; and
- Present back to all stakeholders in a plenary session on decisions made and why the working group came up with those decisions.

Group presentations involved further consensus among all workshop participants. The final township PSEs were established based on the consensus procedure. The results are shown in Table 36.

[21] A census has been conducted in Myanmar in 2014 after thirty years during which no new census data had become available. For the current population size estimations new census data has been utilized.

National Estimates

The next exercise undertaken at the workshop was to obtain consensus of a national estimate of PWID in Myanmar. To do this, workshop participants were asked to work in diverse groups guided by facilitators knowledgeable about drug related economic, social and political factors specific geographical areas in Myanmar.

Township PSEs were used to provide benchmarks for obtaining estimates of the remaining townships in Myanmar. The townships were grouped into three categories based on the percentage PWID were estimated represent of the total adult male population - high (red), medium (blue) or low (white) prevalence of injecting drug use and concentration of PWID. Next the country was split up and different working groups were asked to categorize the remaining areas of the country into these three groups.
Each group was provided a large map and asked to fill in areas of the map to colour areas with red, blue or white. Important issues that were considered in determining how to select high, medium and low PWID concentration areas included:

- Drug production and refinement areas
- Drug trafficking routes
- Border and hard to reach areas where law enforcement is difficult
- Migration and mining areas with predominantly by male manual labour
- High transportation routes including highways and ports

Maps were coloured by the working groups based on first-hand knowledge and experience as well as information from secondary sources. Some groups extensively used internet and maps online to discuss different areas and their situation. Completed maps were presented back to all participants for final consensus.

Following the workshop, the final consensus information was combined with a secondary literature review of materials describing drug related risks in Myanmar to derive percentages to represent high, medium and low PWID prevalence. These percentages were calculated by dividing the township population, derived from Myanmar's new census, by the number of PWID estimated to be present in each township covered by the survey. Point estimates for high, medium and low PWID prevalence areas resulted at 4.12%, 1.02% and 0.11%, respectively. Corresponding lower bounds were derived using 2.60%, 0.75% and 0.08% and upper bounds were derived using 5.79%, 1.32% and 0.14%.

Proportions were multiplied by population size of males, ages 15 years and above for all 330 townships in Myanmar by using the new census data. These numbers were added up resulting in a final total national number of 83,314 PWID (Table 37).

Table 37. Estimated total number with lower bounds and upper bounds of PWID in Myanmar

Point Estimate	Lower bound	Upper bound
83,314	55,948	113,021

The township and national PSE results were further vetted after the workshop against existing data from a variety of sources. These sources included annual progress reports presenting the numbers of PWID reached each year in each of the sites, reports on drug trafficking and drug related crime, and reports from NGOs on harm reduction issues.

6. CONCLUSIONS

This 2014 IBBS Survey report provides significantly more information on PWID communities in Myanmar compared to previous efforts. The widened scope of the survey includes more than twice as many survey sites, a larger sample size per site, an improved questionnaire, and the ability to measure HIV prevalence overall as well as a correlate to specific characteristics of PWID. To ensure these findings are used to improve and refine targeted interventions for PWID, efforts have been made to present a more detailed analysis of the data than in earlier reports.

Overall, the survey found that heroin remains the primary drug of injection in all townships. And in most survey sites, PWID inject frequently (i.e. 2-3 times a day). More than occasional use of previously used needles/syringes was reported by only about 20% of PWID. Notably, this type of sharing behaviour was much more common in Waimaw and Kalay.

The findings presented demonstrate differences in the characteristics and risk practices of PWID living in large cities, such as Yangon and Mandalay; compared to smaller towns in border and hard to reach areas. Understanding these differences is critical to adjusting prevention services to better meet the needs and contexts of PWID in different areas of Myanmar.

Efforts to include female PWID in the survey met varying degrees of success in each survey site. However, given their overall small numbers compared to males, it is difficult to characterize the levels of risk and access to services of female PWID in a representative way.

New (e.g. those injecting for a year or less) and young (e.g. those <25 years of age) PWID are important populations to characterize for the purposes of preventing new infections. In many sites, the prevalence of HIV among injectors who have been injecting for a year or less is already very high. In seven out of ten sites, HIV prevalence among new injectors is near or exceeds 20%. These data indicate that prevention programmes need to reach new injectors very soon after the initiation of injecting behaviours in order to prevent transmission. Nearly 60% of PWID in Tamu were new injectors, indicating the need for services for PWID to be oriented toward new injectors and scaled up in this township.

In general, the PWID population is older: seven of the ten sites, more than two thirds of the respondents were older than age 25. The sites with the youngest PWID population were Mandalay, Myitkyina, and Waimaw. Younger age among PWID was associated with being unmarried, living with family and in some sites being less likely to earned income in the past 12 months. Though it should be noted that in some sites (i.e. Muse, Myitkyina, and Waimaw) the vast majority of younger male PWID lived with a sex partner who was not their spouse. These differences in socio-demographic characteristics are important to consider in designing prevention programmes that consider PWID social support structures and living situations.

With respect to risk practices and knowledge/perception of risk, younger PWID compared poorly to older PWID in several areas:

- Younger PWID were not more likely to use previously used needles compared to older PWID, but in some sites younger PWID exhibited higher risk sexual behaviour, i.e. had a paid sex partner in the past year.
- In more than half of sites, younger PWID were significantly less likely to have ever been tested for HIV.
- In about half of survey sites, younger PWID were also more likely to have incorrect knowledge about ways to prevent or transmit HIV.
- Younger PWID were also less likely to know someone infected with HIV or who had died of AIDS, which may influence their self-perception of risk.

These findings provide evidence of the need to focus more prevention programmes for younger PWID.

In terms of the risk of transmission to regular partners, the findings of the survey are similar to previous data showing that in almost all sites, nearly 40% of respondents have had sex in the past month; and more than a third of respondents have had sex with a regular partner in the past month. Testing among spouses is fairly low among PWID respondents in all sites, suggesting that prevention for regular sex partners of PWID remains an important area of programme focus.

The survey results also provides important information on the reach of services for PWID offered by government and NGO providers that can be triangulated with routine monitoring data reported by programmes. For example, in areas where harm reduction services have been in place for longer, the main source of needles/syringes reported by PWID is the NGO (e.g. Lashio, Muse, Myitkyina, Kukkhai), but where programmes are very new (e.g. Kalay and Tamu), less than 20% of PWID cited NGOs as their main source of needles/syringes. In the large metropolitan areas, the role of NGO as a source of injecting equipment is also very small.

In almost all sites, more than 40% of PWID had ever been tested, however, levels of recent testing were much lower. Only in Mandalay, Lashio and Muse were more than 20% of PWID tested in the last year (and received their results.) in the four townships for which there are RDS survey data from 2007, the current data show much lower levels of testing. This may be

due in part to a high prevalence of HIV in most townships and the fact that PWID who already knew they were HIV positive would not be expected to retest.

Being aware of the risk of HIV transmission through sharing injecting equipment was almost universal among PWID, however, levels of knowledge of other modes of transmission and ways to prevent transmission were much lower.

Next steps for using the information gathered through this round of IBBS include conducting more in depth analysis by site and triangulating the IBBS data with programme monitoring reports and local expertise to develop plans for strengthening services for PWID.

Annex 1. Detailed description of the respondent driven sampling method[22]

Recruitment begins with a number of purposefully selected members of the study population referred to as "seeds". After enrolling and completing the steps in the survey, each seed is given a fixed amount (usually no more than three) of uniquely numbered coupons with which to recruit peers (other eligible PWID and MSM) into the survey. These recruited peers who also enrol in and complete the survey steps are considered the first wave of respondents. Each respondent in the first wave who enrols in and completes the survey steps is then provided a fixed number of coupons with which to recruit their peers into the survey. Successive waves of recruitment, ideally resulting in long recruitment chains of respondents, continue until the sample size is reached.

Each respondent is asked his or her social network size which is directly tied to the eligibility criteria and sets up the probability of each recruit's selection into the sample. Self-reported social network sizes are considered the sampling frame which is used to produce weights for deriving estimates. Weights are applied inversely whereby those with larger social network sizes (the ability to recruit more participants and normally overrepresented in a standard snowball sampling method) are provided relatively less weight and those with smaller social network sizes are provided relatively more weight. Furthermore, data are analysed with mathematical modelling of the recruitment process (social network ties of recruits-recruiters) to generate relative inclusion probabilities and to measure the level of recruitment effort and homophily (the non-random recruitment of persons with characteristics similar to the recruit). The recruitment process of who recruited whom is monitored through the unique numbers on each participant's recruitment coupon. The unique coupon numbers also ensure respondents' anonymity by linking each respondent to their questionnaire and biological test results, thereby avoiding the need to collect names, addresses or other personal information.

When all methodological and theoretical requirements are fulfilled, RDS yields estimates of population parameters upon which inferences can be made about characteristics and behaviours of the sampled population.

[22] Heckathorn DD. (1997) Respondent-driven sampling: A new approach to the study of hidden populations. *Sociological Problems*. 44 (2), 174-199.
Heckathorn, DD. (2002). Respondent driven sampling II: deriving valid population estimates from Chain-Referral samples of hidden populations. Sociological Problems, 49(1), 11-34.

Annex 2. Description of Survey Sites[23]

Yangon (General population: 5.2 million)

Yangon is the country's largest and most commercially important city in the country. Located in lower Myanmar, Yangon city is divided into four districts Western, Eastern, Southern and Northern. The districts combined have a total of 33 townships. In Yangon, the use of drugs is believed to be significant but largely hidden because of strong law enforcement. There are a total of eight AIDS/STD Teams and several NGOs providing HIV prevention and care services. However, there are few prevention programmes targeting PWID. The Drug Dependence Treatment and Research Unit (DDTRU) is located at Ywathergyi Mental Hospital while the Drug Treatment Centre is situated at Thingangyun Hospital. In addition, the Central Committee for Drug Abuse Control (CCDAC) is running two Youth Rehabilitation Centres namely Shwe Pyi Thar and Shwe Pyi Aye. At both these sites dependency treatment and rehabilitation services for drug users are available. There were no NGOs providing harm reduction and HIV prevention services specifically targeted at PWID between 2011 and the beginning of 2014. A new Drop-In-Center (DIC) run by Burnet Institute was opened at the beginning of 2014 and started providing HIV prevention and harm reduction services for PWID in Thingangyun Township in the Eastern Yangon. This is where one of the two RDS centers was established. The other RDS center was set up in Kyimyindine Township in the Western Yangon. The RDS Centers were located in two-story shop houses.

Mandalay (General population: 1.7 million)

Mandalay is the second largest city in the country with a population of around 1.7 million. It is located in the Central Region of Myanmar. Because of its strategic location, Mandalay is a major trading and communication centre for Northern and Central Myanmar. The city is also connected to China and India by multiple modes of transportation. The city is believed to be strongly affected by drug trafficking and has a considerable number of PWID and other drug users. As regards services for PWID, there are two AIDS/STD Teams and two drug treatment centers (DTC), one at Mandalay General Hospital and a Drug Treatment Hospital. In addition, there is the Myanmar Anti-Narcotics Association (MANA) offering HIV prevention and harm reduction services targeted PWID. A DIC for PWID was established by Burnet Institute at the beginning of 2014. HIV prevention services are also offered to other key populations (female sex workers and men who have sex with men) by Population Services International (PSI), Marie

[23] Sources: Progress Report 2013, NAP
Population and Housing Census of Myanmar, 2014
Annual Report 2013 (DTC)
HSS 2012
South East Asia Opium Survey, 2013, UNODC.
Towards A Healthier Legal Environment, TNI
An Atlas of Trafficking in Southeast Asia
http://en.wikipedia.org/wiki/List_of_cities_in_Burma
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http://www.irinnews.org/report/96653/myanmar-growing-number-of-kachin-idps
http://chinlandguardian.com/index.php/chin-news/item/1962-concerns-grow-over-increase-in-chin-illegal-drug-users

Stopes International (MSI), Alliance, and Consortium. The two RDS Centers were established in Mandalay in Pyigyitagon township and in Aungmyaytharzan township.

Lashio (General population: 322,000)

Lashio is the largest towns in Northern Shan State and sits on the main road leading into or out of China. Lashio is divided in 12 wards, 70 village tracts and 538 villages. Since it is an opium growing and heroin production and trafficking area, Lashio is designated as a "hot spot" for injecting drug use in Myanmar. Opium as well as heroin is transported through Bamaw, Lashio, Mandalay to north east India. Drug consumption and in particular injecting drug use are highly prevalent in both rural and urban areas due to easy accessibility and traditional, cultural use of opium. Currently, the local AIDS/STD Team and DTC are providing HIV prevention services and MMT services. Regarding harm reduction activities and prevention services, there are four DICs from Asian Harm Reduction Network (AHRN) and MANA working together with local authorities. The two towns nearby Lashio, where two additional RDS centers were set up in addition to that in Lashio, were Nampoung (30 km away) and Naungmon (25 km).

Muse (General population: 117,000)

Muse is situated in northern Shan State and connected to Shweli twon which is located over the border in China's Yunnan province. It is one of the main border gateways between Myanmar and China. The city lies along Muse-Lashio-Mandalay road which is considered one of the main drug trafficking routes in the country. Drug addiction is a major problem in the area surrounding Muse due to poppy field cultivation, production and drug-trafficking. Injecting drug use is highly prevalent in rural and in urban areas because of easy availability of inexpensive heroin. In Muse, HIV prevention services and drug dependency treatment are being provided by the Muse AIDS/STD Team and the DTC at Mu-Se Hospital. Prevention and harm reduction services among PWID are also provided by the local NGO MANA.

Kukkhai (General population: 101,000)

Kukkhai is situated in Muse District, Northern Shan State, about 80 km North of Lashio and 105 km from Muse which is on the China border. The area around Kukkhai is also a very well-known poppy growing and heroin production zone where injecting drug use is very common in rural as well as urban areas. Since 2011, PWID have access in Kukkhai to a Drug Treatment Centre that offers Methadone Maintenance Therapy (MMT). In addition, the local NGO MANA has recently expanded its harm reduction and HIV prevention services. Namphaka is the sub-site covered by the survey 1 hour of car drive away from Kukkhai. This is a town where MANA has established a new DIC in recent times.

Myitkyina (General population: 305,000)

Myitkyina is the capital of Kachin State, Myanmar. Since ancient times, Myitkyina has been an economic hub of Northern Myanmar and acts as an important trading town between China and Myanmar. The city is very famous for best resources of jade, gold and gems in Myanmar. Kachin state is said to be major opium cultivation areas and Myitkyina is on one of the major smuggling routes between China and India. Because heroin is easily accessible and cheap, injecting drug use injecting drug use is prevalent in both rural and urban areas. Myitkyina AIDS/STID team and two NGOs - Médécins du Monde (MDM) and Substance Abuse Research Association (SARA) are providing HIV prevention and harm reduction services for PWID. Additionally, there is also a Drug Treatment Hospital in Myitkyina offering drug treatment and rehabilitation services. The town of Ay Myint Ta, which is located around 10 km from Myitkyina has been surveyed as a sub-site and a RDC Center was established here in a stand-alone 2-story house.

Waimaw (General population: 106,000)

Waimaw is located 40 km North of Myitkyina. Because of unstable relationships between government forces and the Kachin Independence Arm (KIA) in that area, Waimaw hosts a significant number of internally displaced persons (IDPs). The town is well-connected to Bamaw and Laiza which is on the border with China. Poppy cultivation and the use of opium and heroin are common problems of Waimaw. Since 2011 the Drug Treatment Center Waimaw has been providing drug treatment services for PWID and other drug users. Two local NGOs - AHRN and SARA - provide HIV and harm reduction services targeted at these two groups through outreach and DIC programmes. The RDS Center was a two-story apartment facing a main street with a restaurant and shops next door.

Bamaw (General population: 136,000)

Bamaw is situated on the bank of the Irrawaddy in Kachin State. It is an old trading port town where many ships come through when cruising from the middle and lower parts of Myanmar to Myitkyina. The town is only 65 km away from the China border and is involved in trade with China in particular of jade and rubies. Opium and heroin are also smuggled through Bamaw. There is a considerable number of PWID which is why the town is considered as a “hot spot” of injecting drug use in Myanmar. In Bamaw the AIDS/STD Team, AHRN and SARA are working on HIV prevention and harm reduction activities including DICs. There also is a DTC which provides MMT services in Bamaw.

Kalay (General population: 347,000)

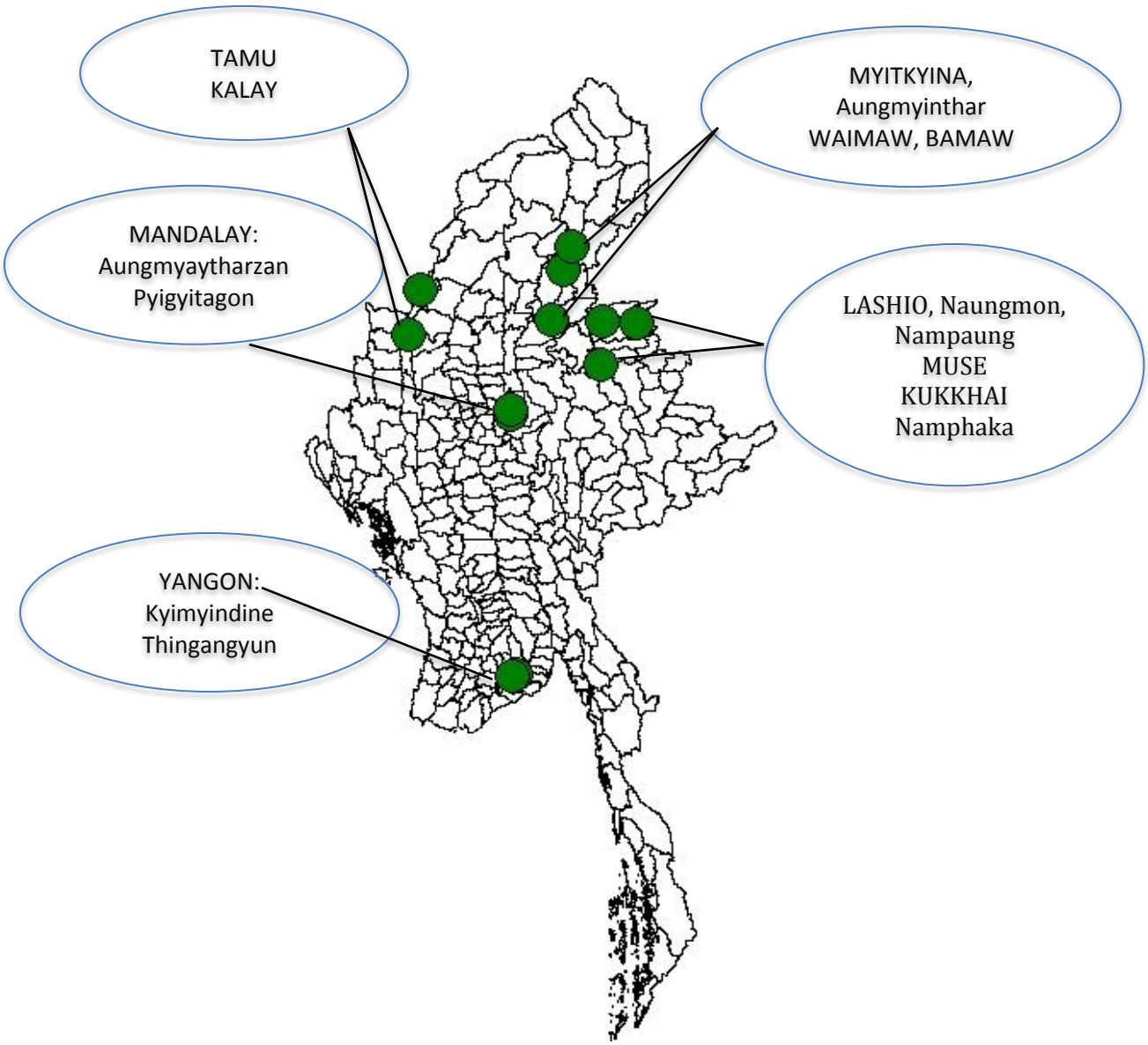
Kalay, also known as ‘Kalaymyo’, is a town located in Kalay District, Sagaing Division. It is situated near the border of Sagaing Division and Chin State around 130 km from the Myanmar-India border town of Tamu. Due to its strategic location, Kalay is at an important cross-road and represents a crucial location from where to access northern Chin State and India. The town has much developed in recent years and illegal drug use among young people is believed to be increased in recent years. The local AIDS/STD Team in Kalay is providing general HIV prevention,

care and treatment activities and there is a DTC in town. There are no NGOs working in Kalay specifically on HIV and harm reduction. The RDS Center was established in an old villa-type house in a central location off road to Tamu (Mingala U Yin ward).

Tamu (General population: 60,000)

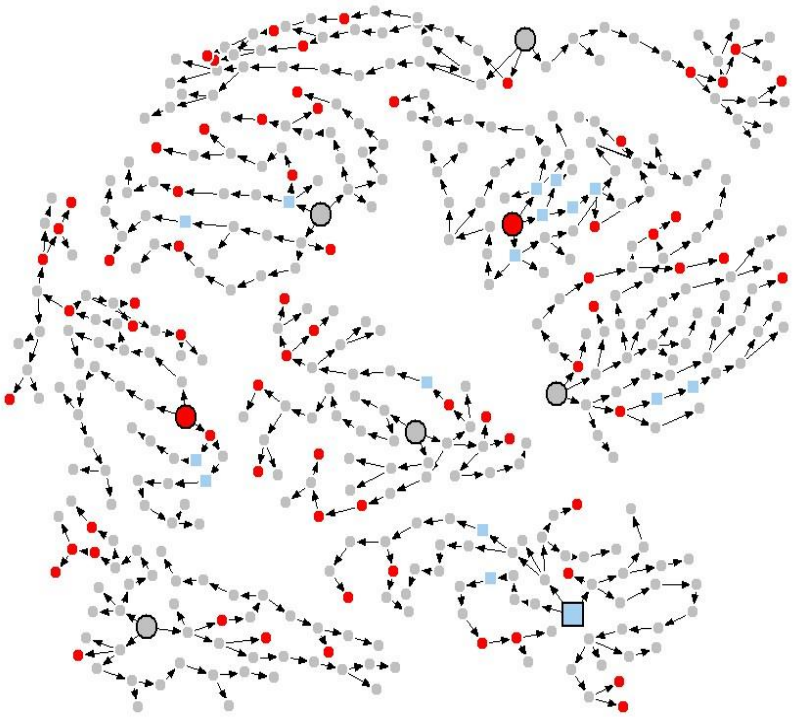
Tamu is a border town located between Sagaing Region, northwest of Myanmar and the eastern Indian state of Manipur. It is the administrative seat for Tamu Township with a population of around 60,000. The city serves as an important commercial hub and trade with India. It is also one of the noted routes for smuggled goods including drugs from Myanmar and China which are transported to India. There are few NGOs operating in Tamu – MSI, Merlin and CSF – who provide reproductive health and some HIV prevention services. However, there is no organization working principally for harm reduction services in this town.

Annex 3. Map of Survey Sites



Annex 4. Examples of Recruitment Chains

Mandalay

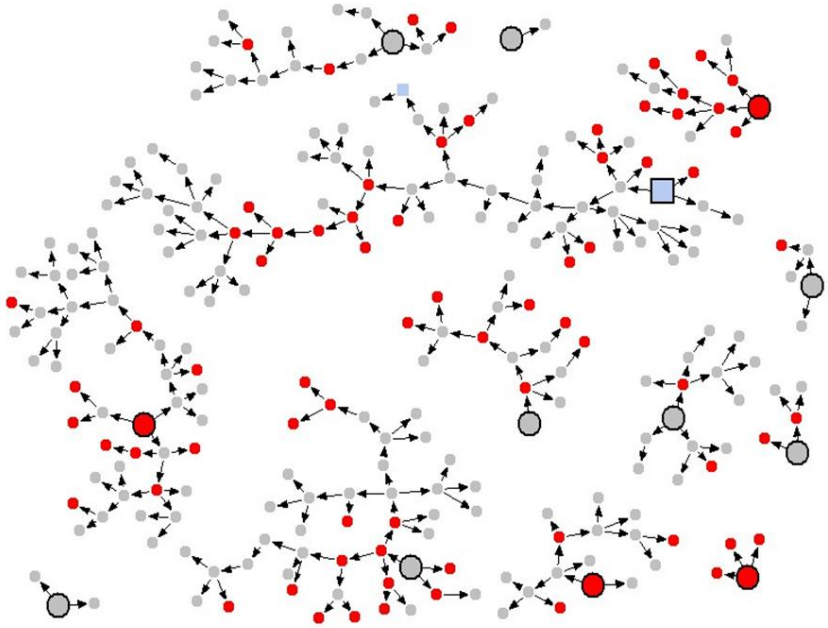


Key

Seeds: Highlighted bigger size
Color by HIV prevalence:
Red _ Reactive
Light Gray_ Non-Reactive
Black_ Indeterminate
Light Blue_Missing
Shape by Gender:

Female
Male

Yangon

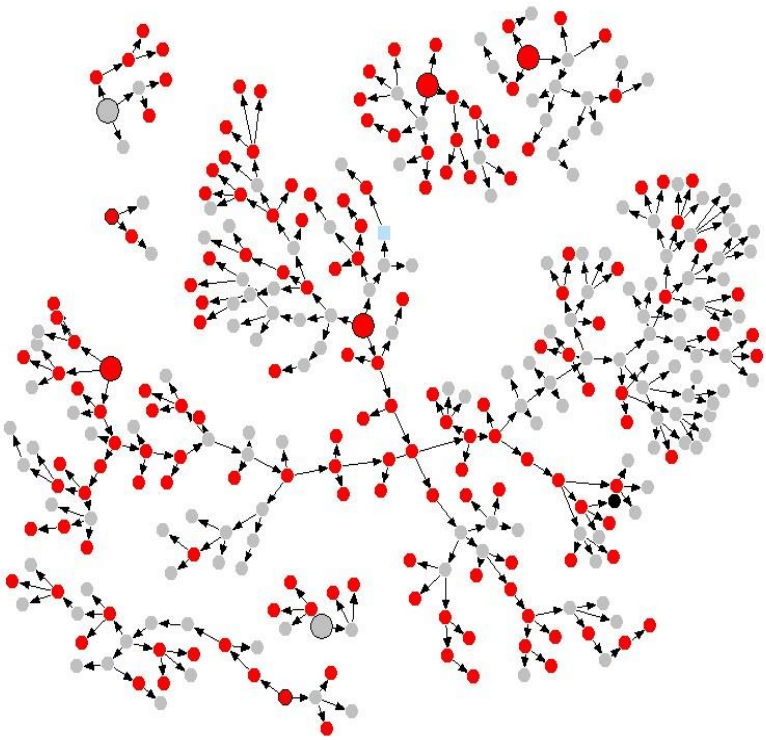


Key

Seeds: Highlighted bigger size
Color by HIV prevalence:
Red _ Reactive
Light Gray_ Non-Reactive
Black_ Indeterminate
Light Blue_MIssing
Shape by Gender:

Female
Male

Bamaw



Key

Seeds: Highlighted bigger size
Color by HIV prevalence:
Red _ Reactive
Light Gray_ Non-Reactive
Black_ Indeterminate
Light Blue_Missing
Shape by Gender:

Female

Male

Annex 5. Survey Questionnaire

Participant ID Number ☐

RDS Coupon ☐☐☐/☐☐☐-☐☐☐-☐☐☐ **Number**

Integrated Bio-behavioural Survey in People who Inject Drugs in Myanmar 2014

INTRODUCTION

1. Greet participant (for example: Mingalarbar, Good Morning/Good Afternoon/ Good Evening)
2. Introduce yourself.
3. Emphasize the confidentiality of the responses and reassure the participant that his name is not recorded in the questionnaire.
4. Thank participant for taking the time to participate in the survey.

1. **Note to interviewer: The interviewer should fill in the "Codes" column by writing in or circling the correct response code. The Supervisor will fill in the "Code Boxes" unless instructed otherwise.**

2. **Interviewers will fill in Q. 101 and Q. 102. The site supervisor will fill in Q. 103 and Q. 104 after the survey is completed.**

3. **The first three boxes on the left hand side in the "RDS Coupon Number" (on top left) are allotted for the two digit-numbers of the seeds. Always start from the first box on the left hand side. For example for seed 3, write '003' in the first three boxes. Recruitments up to 13 waves can be filled in here. These 12 boxes will have the subsequent recruitment numbers in the recruitment waves (1or 2 or 3 depending on the number of recruitment coupons are given to a recruiter in a given wave). When the coupon number is written for waves below 12, please leave the extra boxes on the right hand side blank.**

BLOCK I. INTERVIEW INFORMATION AND CONSENT STATUS				
#	Question	Answers	Codes	Skip to
101	Name of interviewer	Name_____	NA	NA
102	Date of interview	Date _____	Day	Month
103	Survey checks done by the supervisor	a. The participant ID number was checked b. The entire survey was checked for consistency and errors	No 00 00	Yes 01 01
104	These response for survey have been scrutinized for completeness and consistency by:			
	Name of supervisor _____	Date of examination b. Day c. Month d. Year ☐☐ ☐☐ ☐☐	Signature	

BLOCK II. IDENTIFICATION (To be filled by the supervisor)				
#	Question	Answers	Codes	Skip to
201	Name of township	Name_____	NA	NA
202	Name of the RDS facility (main or sub-site)	Name_____	Code of RDS Site	NA

BLOCK III. DEMOGRAPHIC/GENERAL CHARACTERISTICS				
#	Question	Answers	Codes	Skip to
301	What is your sex?	Male Female Transsexual/transgender No Answer	01 02 03 99	
302	How old are you now? (Must be older than 15 years)	Age in completed years _____ Don't know/ remember No Answer	 88 99	
303	What is your ethnicity?	Name of ethnicity: _____ Don't know/ remember No Answer	 88 99	
304	How long have you been living in this town/neighbourhood?	Number of Years: _____ Months:_____		

		No Answer	99	
305	Can you read or write?	Cannot read or write Can read only Can write only Can read and write No Answer	01 02 03 04 99	
306	What is the highest grade in school you have completed?	1st-4th standard (primary school) 5th-8th standard (secondary school) 9-10th standard (completed basic education) University/College Graduate No Answer	01 02 03 04 05 99	
307	In the last 12 months, which sources of money did you use to live on? *Do not read the options to the participant. Tick all the categories that he/she mentions. Ask, any other?*	Salaried Farming Wage laborer Driver/Transport worker Trade/business/shop Scrap/garbage collectors/rag picking/begging Selling drugs Dependent on others (family, friends etc.) Other (Specify)_____ _____ No Answer	01 02 03 04 05 06 07 08 77 99	
308	What is your average monthly income?	Kyats _____ No Answer	99	
309	What is your current marital status?	Currently married Ever married, but now divorced, separated or widowed Never married No Answer	01 02 03 99	
310	With whom do you live now?	Live with spouse/partner Live with other sex partner Live with parents/ relatives Live with friends Live alone Other	01 02 03 04 05 77	

		(Specify)_____ No Answer	 99	
311	In the last month, how often have you had drinks containing alcohol (liquor, beer, toddy, brew)?	Did not drink alcohol Less than once a week Once a week More than once per week Daily No Answer	01 02 03 04 05 99	

BLOCK IV. A-DRUG USE **Now I would like to ask you some questions regarding drug use**				
#	Question	Answers	Codes	Skip to
401	How old were you when you first used drugs by ingestion, inhalation, sniffing or smoking? (except for medical use)	Age in years _____ Don't know/remember No Answer	01 88 99	
402	How old were you when you first injected drugs for non-medical purposes?	Age in years _____ Don't know/remember No Answer	 88 99	
403	During the last 12 months what drugs did you use through non-injecting mode? READ LIST CIRCLE ALL THAT ARE MENTIONED	Opium Heroin (W4, White, white powder) Amphetamine (Yama, party drug) Cocaine Codeine, cough syrup (kyansonpyaukse, komix, komidin,cox) Pethidine Marijuana (machi, hmok, ganja) Benzodiazepines (tranquilisers eg. Diazepam, Di) Combination of drugs (e.g. "Formula" e.g. Swe) Please specify:_____ _____ _____	01 02 03 04 05 06 07 08 09	

		Other (Specify):_____ _____ _____ Don't know/ remember No Answer	77 88 99	
404	**During the last 12 months** what drugs did you use <u>through injecting</u>? READ LIST CIRCLE ALL THAT ARE MENTIONED	Opium (injected) Heroin (W4, White, white powder) Amphetamine (Yama, party drug) Cocaine Codeine, cough syrup (kyansonpyaukse, komix, komidin,cox) Pethidine Illicit Methadone (out of DTC) Benzodiazepines (tranquilisers e.g. Diazepam, Di) Combination of drugs Please specify:_____ _____ _____ Others (Specify):_____ _____ _____ Don't know/ remember No Answer	01 02 03 04 05 06 07 08 09 77 88 99	
405	**During the last month** what drug did you <u>primarily/most often</u> inject? READ LIST CIRCLE **<u>ONLY ONE</u>** THAT IS MENTIONED	Opium (injected) Heroin (W4, White, white powder) Amphetamine (Yama, party drug) Cocaine Codeine, cough syrup (kyansonpyaukse, komix, komidin,cox) Pethidine Illicit Methadone (go out of DCT) Benzodiazepines (tranquilisers e.g. Diazepam, Di) Combination of drugs Please specify:_____ Others(Specify:_____ __ _____ _____	01 02 03 04 05 06 07 08 09 77	

		Don't know/ remember No Answer	88 99	
406	When you injected in the last month, how many times did you inject on an average day?	Never Once in past month 2-3 times in past month About once a week 2-3 times in past week 4-6 times in past week About once a day 2-3 times daily 4 or more time daily Don't know/remember No Answer	01 02 03 04 05 06 07 08 09 88 99	
407	**In the last month,** where did you inject drugs? CIRCLE ALL POSSIBLE ANSWERS	At my house Someone's house Street/park Latrines/public toilets At bar/club At the drug dealer's place At the shooting location Others (Specify)_____ _____ No Answer	01 02 03 04 05 06 07 77 99	

BLOCK IV. B- INJECTING PRACTICES/ SHARING NEEDLES AND SYRINGES

Now I would like to ask you about sharing needles and syringes

#	Question	Answer	Codes	Skip to
408	Did you ever use a needle or a syringe that had previously been used by someone else?	No Yes No Answer	00 01 99	▷415
409	Think about **the last time** you injected drugs in the last one month. Did you use a needle or syringe that had previously been used by someone else?	No Yes No Answer	00 01 99	▷414
410	Think about **all the times** you injected drugs in the last month. How often did you use a needle or syringe that had previously been used by someone else?	Always/every time Most times About half of the time Occasionally Never Don't know/remember No answer	01 02 03 04 05 88 99	 ▷415

411	In the last month, did you use a used, non–sterile needle or syringe that was previous used by: READ OUT LIST CIRCLE ALL THAT ARE MENTIONED	Regular sex partner Casual sex partner or a paid sex partner Injecting friend Drug dealer Peer/experience injector People met at the shooting site Other Specify):_____ _____ No Answer	01 02 03 04 05 06 77 99	
412	From how many people in total (including your partner) did you get *used, non-sterile needles* or syringes from in the last month? (Add MMR)	Number of persons /__/__/__/ Don't know/ remember No Answer	 88 99	
413	**In the last month,** when you injected drugs with needles or syringes that had previously been used by another person, how often did you clean them? READ THE FIRST FIVE RESPONSES	Always Most times About half the time Occasionally Never Don't know/remember No Answer	01 02 03 04 05 88 99	If 05 or 88, skip to Q415
414	How did you usually clean the needles or syringes **in the last month**? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	With cold water With hot water Boiling water Distilled water Bleach Alcohol Soap or detergent Other (specify) _____ No Answer	01 02 03 04 05 06 07 77 99	
415	Think about the times you injected drugs in the last month. How often did you give the needle or syringe you used to someone else to use? READ THE FIRST FIVE RESPONSES	Always Most times About half of the times Occasionally Never No Answer	01 02 03 04 05 99	

416	Please tell me all the places you know where you can get new/unused/sterile needles and syringes CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Don't know any place Pharmacy Health worker Hospital/clinic Sex partner Drug dealer Friends or other drug users NGO, including outreach workers Other(Specify) _____ _____ No Answer			01 02 03 04 05 06 07 08 77 99	▷418
417	From all the above mentioned sources of new/unused/sterile needles and syringes, could you tell me which one was the main source in the last month?	*Register the answer number corresponding to the source mentioned in Question 416* /__/__/ No Answer			 99	
418	In the last month, how many new/unused/sterile needles and syringes did you use in total for your personal use? Please include all sources.	Number of sterile needles/syringes __/__/__/ Don't know/ remember No Answer			 88 99	
419	Think about the last injecting incident, could you tell me what did you do?		Yes	No	Don't Know	No Answer
	READ OUT RESPONSES AND CIRCLE APPROPRIATE CODE FOR EACH					
	a. Injected from a pre-filled syringe		01	02	88	99
	b. Drew up solution from a common container		01	02	88	99
	c. Passed on the needle/syringe to others after you injected with it		01	02	88	99
	d. Took needle/syringe from others after they injected with it		01	02	88	99
	e. Injected with needle/syringe that was used only by you and no one else used it		01	02	88	99
	f. Injected with a completely fresh brand new needle/syringe that no one else or you used earlier		01	02	88	99
	g. Shared any other injecting equipment (cotton, cleaning agent, dropper, cooker/vial)		01	02	88	99

420	Have you ever been arrested or detained?	No Yes No Answer	00 01 99	▷423
421	Have you ever been arrested or detained for using drugs?	No Yes No Answer	00 01 99	▷423
422	Have you ever injected drugs while you were in detention (prison or jail)?	No Yes No Answer	00 01 99	

BLOCK IV. C- DRUG TREATMENT

I would like to continue asking about drug treatment

#	Question	Answer	Codes	Skip to
423	Have you ever received any drug treatment intended to modify, reduce or stop your use? Please include if you are in drug treatment now but do not include attempts on your own without professional help.	No Yes No Answer	00 01 99	▷501
424	What kind of treatment have you received? Do not include attempts on your own without professional help CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST PROBE BY ASKING "Are there any other kinds of treatment that you've received?"	Inpatient counselling Outpatient counselling Peer/community counselling Detoxification with methadone Maintenance with methadone Detoxification with other drugs Other (Specify) _____ _____ No Answer	01 02 03 04 05 06 77 99	
425	Are you currently receiving any treatment intended to modify, reduce or stop your drug use?	No Yes No Answer	00 01 99	

BLOCK V. SEXUAL RELATIONSHIPS

Now I would like to ask you some questions about your sexual relationships

#	Question	Answers	Codes	Skip to
501	Have you ever had sexual intercourse (vaginal or anal)?	No Yes No Answer	00 01 99	▷522
502	At what age did you first have vaginal or anal sexual intercourse?	Age in completed years _____ Don't know/ remember No Answer	 88 99	
503	Have you had sexual intercourse in the last month?	No Yes No Answer	00 01 99	▷509
504	Did you use a condom when you last had sexual intercourse in the last month?	No Yes No Answer	00 01 99	

BLOCK V. SEXUAL RELATIONSHIPS

A-REGULAR PARTNER

Now I would like to ask you about your regular partner, this person could be your spouse or a partner you have had a long-term, ongoing relationship with. *It should be explained that this relates to male-female sexual relationships.*

#	Question	Answers	Codes	Skip to
505	In the last month, have you had sex with your spouse or regular partner?	No Yes No Answer	00 01 99	▷509
506	The last time you had sex with your spouse/regular partner in the past month, did you use a condom?	No Yes No Answer	00 01 99	▷508
507	In the last month, with what frequency did you and your spouse/regular partner use a condom? READ THE FIRST FIVE RESPONSES	Always Most times About half the time Occasionally Never No Answer	01 02 03 04 05 99	▷509
508	During the last month, when you did not use a condom during sex with your spouse/regular partner, what was the reason for not using a condom?	Not easily available Expensive Partner doesn't like to use it I don't like to use it Use of other contraceptive Don't think it is necessary	01 02 03 04 05 06	

	CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Don't think of it/Forget Other(Specify)_____ No Answer	07 77 99	

BLOCK V. SEXUAL RELATIONSHIPS

B-PAID, COMMERCIAL SEXUAL PARTNER

For men: Now, let's talk about paid, commercial sexual partners in case you had ones. They are persons who you paid or gave gifts to in exchange for sex. It should be explained that this relates to male-female sexual relationships.
For women: Now, let's talk about paid, commercial sexual partners, if you had ones. They are persons who paid you or gave you gifts in exchange for sex.

#	Question	Answers	Codes	Skip to
509	**For men:** During the last 12 months, how many partners whom you paid with money or gifts did you have vaginal or anal intercourse with? **For women:** During the last 12 months, how many partners who paid you with money or gifts did you have vaginal or anal intercourse with?	0 Number _____ No Answer	00 99	▷513
510	The last time you had sexual intercourse with a commercial sexual partner **in the last 12 months**, did you and your partner use a condom?	No Yes No Answer	00 01 99	▷512
511	In the last 12 months, with what frequency did you use condoms in sexual intercourses with commercial partners? READ THE FIRST FIVE RESPONSES	Always Most times About half the times Occasionally Never No Answer	01 02 03 04 05 99	▷513
512	During the last month, when you did not use a condom during sex with commercial partners, what was the reason for not using a condom? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Not easily available Expensive Partner doesn't like to use it I don't like it Use other contraceptive Don't think it is necessary Don't think of it/Forget Others (Specify) _____ No Answer	01 02 03 04 05 06 07 77 99	

BLOCK V. SEXUAL RELATIONSHIPS

C-NON-REGULAR, NON- COMMERCIAL SEXUAL PARTNER

Now I would like to ask you some question about your non-regular, non-commercial sex partner, this may be someone you had sex with only once or a few times. *It should be explained that this relates to female-male sexual relationships partners*

#	Question	Answers	Codes	Skip to
513	**In the last 12 months**, did you have sex with a non-regular, non-commercial partner?	No Yes No Answer	00 01 99	▷518
514	In the last 12 months, how many non-regular, non-commercial sex partners did you have?	Number_____ No Answer	 99	
515	The last time you had sex with a non-paid, non-regular partner **in the last month**, did you and your partner use a condom?	No Yes No Answer	00 01 99	▷517
516	In the last month, with what frequency did you and your non-paid, non-regular partner(s) use a condom? READ THE FIRST FIVE RESPONSES.	Always Most times About half the times Occasionally Never No Answer	01 02 03 04 05 99	▷518
517	Why didn't you use a condom with your non-paid, non-regular partner? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Not easily available Expensive Partner doesn't like to use it I don't like it Use other contraceptive Don't think it is necessary Don't think of it/Forget Others No Answer	01 02 03 04 05 06 07 77 99	

BLOCK V. SEXUAL RELATIONSHIPS

D-MEN TO MEN SEXUAL RELATIONSHIP.

This is for males only. If a respondent is a female, please skip to Q 522. Now I want to know about men to men sexual relationship

#	Question	Answers	Codes	Skip to
518	We have just talked about your female partners. Have you ever had anal sex with another man?	No Yes No Answer	00 01 99	▷522
519	Have you had anal sex with another man in the past 6	No Yes	00 01	▷522

	months?	No Answer	99	
520	In the past 6 months, with how many men did you have anal intercourse?	Number of male partners _____ No Answer	 99	
521	Did you use condoms at last anal intercourse in the past 6 months with another man?	Every time Almost every time Sometimes Never No Answer	01 02 03 04 99	

BLOCK V. SEXUAL RELATIONSHIPS

E-CONDOMS

Now I would like to ask you about condoms

#	Question	Answers	Codes	Skip to
522	Do you know of any place or person from which you can obtain condoms?	No Yes No Answer	00 01 99	▷601
523	Please tell me all the places you know where you can get condoms? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Pharmacy Store/ Shop Betel shop Hospital/ clinic Karaoke/ Restaurant Inn/ Hotel/ Motel Guesthouse Health educator Friend NGO worker Others (Specify) _____ _____ No Answer	01 02 03 04 05 06 07 08 09 10 77 99	

BLOCK VI. KNOWLEDGE ON STI & HIV/AIDS

Now I would like to ask your knowledge on sexually transmitted diseases

#	Question	Answers	Codes	Skip to
601	Have you heard of diseases that can be transmitted through sexual intercourse?	No Yes No Answer	00 01 99	▷604

602	Can you describe any symptoms of STDs in women? …….. any other? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Abdominal pain White or foul smelling discharge Itchiness around genitalia Burning/ painful urination Pain during sex Genital ulcer Swelling in groin No symptoms Other (Specify) _____ _____ Don't know/remember No Answer	01 02 03 04 05 06 07 08 77 88 99	
603	Can you describe any symptoms of STDs in men? …… any other? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Discharge from penis Burning/ painful urination Pain during sex Genital ulcer Swelling in groin No symptoms Other (Specify)_____ _____ Don't know/remember No Answer	01 02 03 04 05 06 77 88 99	
604	Did you have discharge from your genitalia in the last 12 months?	No Yes No Answer	00 01 99	
605	Did you have ulcer on your genitalia in the last 12 months?	No Yes No Answer	00 01 99	
606	If you had discharge or ulcer in the past 12 months, did you seek treatment?	No Yes Did not have discharge or ulcer No answer	00 01 88 99	▷608
607	If medical treatment has been taken, where did you go for treatment? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Self-medication OPD treatment Traditional medicine Treatment at HIV/AIDS clinic Govt hospital/clinic Clinics at NGOs Other _____ No Answer	01 02 03 04 05 06 77 99	

BLOCK VI. KNOWLEDGE ON STI & HIV/AIDS

I will ask you about HIV and AIDS in terms of knowledge and attitudes

#	Question	Answers	Codes	Skip to
608	Have you ever heard of HIV or AIDS?	No 0 Yes 1 No Answer	00 01 99	▷702
609	From where/whom do you receive most information about HIV? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Health Staff/ NGO staff/Teacher Radio/ TV/ Magazine Relatives/Friends Others (Specify):_____ _____ No Answer	01 02 03 77 99	
610	Do you know someone who is infected with HIV or who has died of AIDS?	No Yes No answer	00 01 99	
611	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	No Yes Don't know/remember	00 01 88	
612	Can a person get HIV from mosquito bites?	No Yes Don't know/remember	00 01 88	
613	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	No Yes Don't know/remember	00 01 88	
614	Can a person get HIV by sharing food with someone who is infected?	No Yes Don't know/remember	00 01 88	
615	Can a person get HIV by injecting with a needle that was already used by someone else?	No Yes Don't know/remember	00 01 88	
616	Can a healthy-looking person have HIV?	No Yes Don't know/remember	00 01 88	
617	When was the last time you were tested for HIV?	Within the last 6 months 6-12 months ago Over one year ago Never tested No Answer	00 01 02 03 99	 ▷623

618	I don't want to know the results for the last time you were tested, but did you get the results of that test?	No Yes No Answer	00 01 99	
619	The last time you went for an HIV test, why did you get the test done?	I wanted to know my HIV status Urged by spouse/ partner Urged by friend Recommended by doctor For regular blood testing Other Specify) _____ _____ No Answer	01 02 03 04 05 77 99	
620	Where did you go for HIV testing last time when you had an HIV test?	Govt. Hospital/ clinic Private hospital/clinic Clinic at NGO Other(specify)_____ _____ No Answer	01 02 03 77 99	
621	Last time when you had an HIV test, did you share your test result with others?	No Yes No Answer	00 01 99	▷623
622	If so, to whom did you share your test result? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	Spouse/ partner Friend Family member Health staff Colleague Other (Specify)_____ _____ No Answer	01 02 03 04 05 77 99	
623	Where can you have an HIV test? CIRCLE ALL THAT ARE MENTIONED DO NOT READ LIST	AIDS/STD Team Public hospital GP/private clinic/hospital Clinics at NGOs Don't know any place Other (Specify) _____ _____ No Answer	01 02 03 04 05 77 99	
624	Has your spouse/regular partner ever tested for HIV?	No Yes Has no regular partner/spouse Don't know No Answer	00 01 02 88 99	

625	Have you heard that there is a treatment for HIV/AIDS?	No Yes No Answer	00 01 99	
626	Are you interested in receiving your HIV test results in this study?	No Yes No Answer	00 01 99	

BLOCK VII. EXPOSURE TO INTERVENTION

Now I would like to ask you questions about HIV and prevention services that you might have used in the past few months

#	Question	Answers	Codes	Skip to
701	Did you receive an HIV test from the NGO [***add the name***] in the past three months (November 2013-January 2014).	No Yes No Answer	00 01 99	
702	Did you visit a DIC of the NGO [***add the name***] in the past three months (November 2013-January 2014).	No Yes No Answer	00 01 99	
703	Did you receive a treatment with methadone at [***add the name***] in the past three months (November 2013-January 2014).	No Yes No Answer	00 01 99	
704	Did you receive a [bracelet] in the week of [**dates of distribution of unique object**] that was given to you by outreach workers of the NGO add here?	No Yes No Answer	00 01 99	

Our HIV/AIDS program thanks you very much for your time and attentive responses.

Annex 6. Site Profiles

Yangon Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
YANGON	Kyimyindine	150	0	260	11	4.23	9
	Thingangyun	110	0				

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		33.1	33.0		<25 years old		16	(12-20)
Monthly income (kyats)		218,417	200,000		Injected < 1 year		8	(5-11)
		%	95% CI		Worked in the last 12 months		74	(68-79)
Highest Education Level	1-4th	4	(1-7)		Marital status	Currently married	37	(30-44)
	5-8th	14	(7-20)			Divorced, separated, widowed	8	(3-12)
	9-10th	53	(46-61)					
	University / College	20	(14-25)			Never married	55	(48-62)
	Graduate	9	(5-14)		Ever been arrested		30	(24-37)
Cannot read or write (Myanmar language)		0						

HIV Prevalence

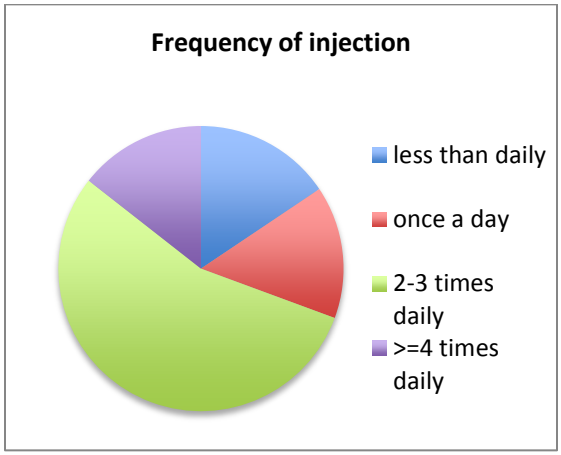
	%	95% CI			%
Overall Prevalence	29	(22-36)		Prevalence among those <25	0
HSS (2013)	16			Prevalence among those injecting 1 year or less	16

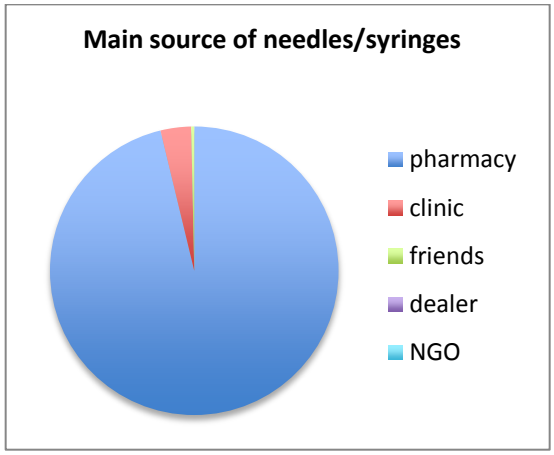
Population Size Estimate

Consensus point estimate	1920		Estimated Adult Male Population	1,725,886
Range	1440-2400		Size as a % of adult male population	0.1 (0.08-0.14)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	37	(31-42)		**injected in public places**	25	(21-30)
Ever used previously used needles/syringes	33	(25-41)		**Used previously used needle/syringe at last injection**	10	(6-14)
Never gave needle/syringe to someone else after injecting with it	71	(64-78)		**Always cleaned their used needles/syringes in the last month**	51	(0-100)





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	44	(36-53)		**Had sex with a regular partner in the last month#**	30	(23-37)
Had sex with a paid partner in the last 12 months#	23	(18-28)		**Had sex with a casual partner in the past 12 months#**	10	(6-14)
Used condom at last sex (any partner)	33	(22-44)		**Condom use at last sex with regular partner**	30	(20-41)
Had urethral discharge in the last 12 months	6	(2-9)		**Had genital ulcers in the last 12 months**	6	(2-9)

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	78	(71-84)		**Gets most HIV information from health providers**	51	(46-57)
Aware of HIV treatment	96	(93-98)		**Gets most HIV information from media**	54	(49-60)
Comprehensive knowledge about HIV prevention	60	(54-65)		**Ever received methadone as drug treatment**	12	(8-15)
Ever tested for HIV	58	(53-64)		**Methadone in the past 3 months**	25	(16-35)
Tested in the last year & received result	12			**Visited a DIC in the past 3 months**	12	(6-18)

Mandalay Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
MANDALAY	Aungmyaytharzan	206	0	422	18	4.3	2
	Pyigyitagon	216	0				

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		27.6	26.0		**<25 years old**		37	(32-41)
Monthly income (kyats)		204,229	200,000		**Injected =< 1 year**		25	(21-29)
		%	**95% CI**		**Worked in the last 12 months**		91	(87-96)
Highest Education Level	1-4th	6	(3-8)		**Marital status**	**Currently married**	24	(19-29)
	5-8th	22	(18-27			**Divorced, separated, widowed**	16	(11-21)
	9-10th	42	(27-48)					
	University / College	15	(11-20)			**Never married**	60	(54-66)
	Graduate	14	(10-18)		**Ever been arrested**		16	(12-19)
Cannot read or write (Myanmar language)		1	(0-4)					

HIV Prevalence

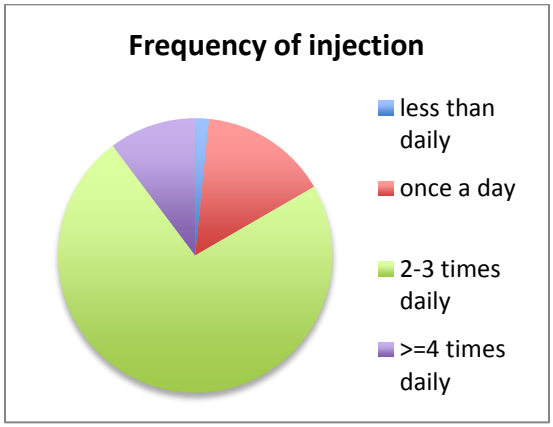
	%	95% CI			%
Overall Prevalence	16	(11-20)		**Prevalence among those <25**	3
HSS (2013)	13			**Prevalence among those injecting 1 year or less**	3

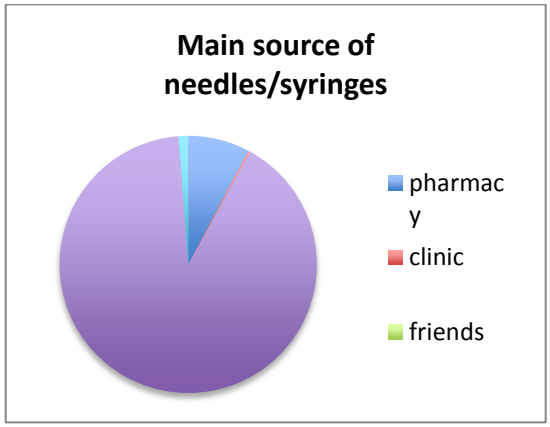
Population Size Estimate

Consensus point estimate	6000		**Estimated Adult Male Population**	588,169
Range	4500, 7500		**Size as a % of adult male population**	1.02 (0.76 – 1.28)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	38	(34-42)		**Injected in public places**	6	(4-9)
Ever used previously used needles/syringes	16	(12-20)		**Used previously used needle/syringe at last injection**	0	
Never gave needle/syringe to someone else after injecting with it	94	(89-99)		**Always cleaned their used needles/syringes in the last month**	30	(5-55)





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	44	(36-53)		**Had sex with a regular partner in the last month#**	29	(24-34)
Had sex with a paid partner in the last 12 months#	33	(29-37)		**Had sex with a casual partner in the past 12 months#**	12	(8-15)
Used condom at last sex (any partner)	20	(12-27)		**Condom use at last sex with regular partner**	12	(6-18)
Had urethral discharge in the last 12 months	3	(1-4)		**Had genital ulcers in the last 12 months**	3	(1-5)

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	76	(70-81)		**Gets most HIV information from health providers**	63	(59-68)
Aware of HIV treatment	96	(93-98)		**Gets most HIV information from media**	76	(71-81)
Comprehensive knowledge about HIV prevention	76	(71-81)		**Ever received methadone as drug treatment**	7	(4-10)
Ever tested for HIV	51	(47-56)		**Methadone in the past 3 months**	2	(1-3)
Tested in the last year & received result	23			**Visited a DIC in the past 3 months**	22	(16-28)

Lashio Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
LASHIO	Lashio	217	14	410	6	1.5	4
	Nampaung	111	8				
	Naungmoon	106	2				

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		32.6	30		<25 years old		24	(20-28)
Monthly income (kyats)		145,778	100,000		Injected =< 1 year		33	(28-38)
		%	95% CI		Worked in the last 12 months		95	(93-97)
Highest Education Level	1-4th	42	(34-50)		Marital status	Currently married	39	(33-46)
	5-8th	29	(22-36)			Divorced, separated, widowed	12	(8-16)
	9-10th	24	(18-31)					
	University / College	4	(4-8)			Never married	48	(42-55)
	Graduate	1	(0-1)		Ever been arrested		21	(16-25)
Cannot read or write (Myanmar language)		37	(29-45)					

HIV Prevalence

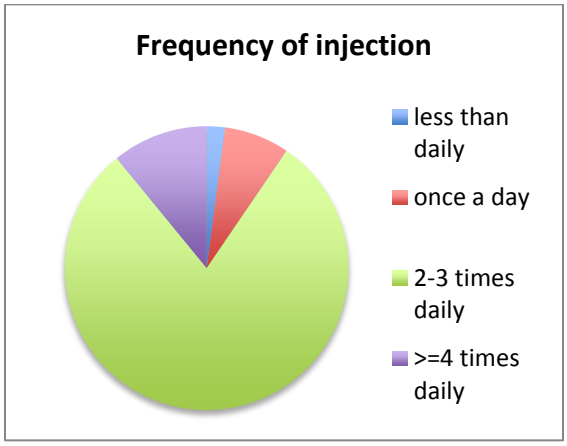
	%	95% CI			%
Overall Prevalence	28	(22-33)		Prevalence among those <25	25
HSS (2013)	20			Prevalence among those injecting 1 year or less	17

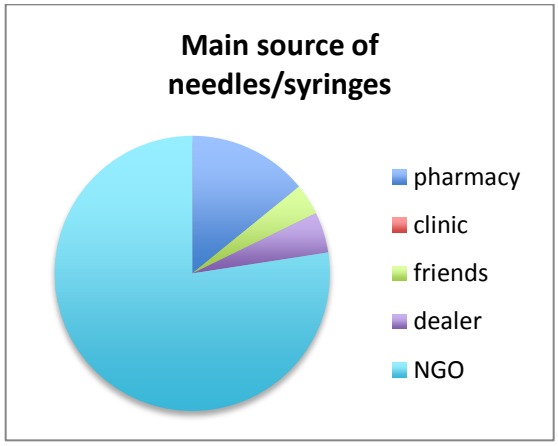
Population Size Estimate

Consensus point estimate	4800		Estimated Adult Male Population	110,397
Range	3800-5400		Size as a % of adult male population	4.3 (3.44 – 4.89)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	47	(41-52)		**Injected in public places**	20	(15-24)
Ever used previously used needles/syringes	36	(30-42)		**Used previously used needle/syringe at last injection**	16	(11-21)
Never gave needle/syringe to someone else after injecting with it	61	(49-74)		**Always cleaned their used needles/syringes in the last month**	NA	





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	38	(31-46)		**Had sex with a regular partner in the last month#**	31	(25-37)
Had sex with a paid partner in the last 12 months#	21	(18-25)		**Had sex with a casual partner in the past 12 months#**	16	(11-21)
Used condom at last sex (any partner)	18	(12-25)		**Condom use at last sex with regular partner**	16	(10-23)
Had urethral discharge in the last 12 months	2	(0-3)		**Had genital ulcers in the last 12 months**	1	(0-2)

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	50	(43-56)		**Gets most HIV information from health providers**	65	(60-70)
Aware of HIV treatment	63	(56-70)		**Gets most HIV information from media**	35	(30-39)
Comprehensive knowledge about HIV prevention	28	(23-34)		**Ever received methadone as drug treatment**	15	(9-20)
Ever tested for HIV	70	(64-76)		**Methadone in the past 3 months**	7	(4-9)
Tested in the last year & received result	41			**Visited a DIC in the past 3 months**	70	(62-78)

Muse Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
MUSE	Muse	346	8	338	6	1.8	1

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		33.7	31		**<25 years old**		13	(10-16)
Monthly income (kyats)		165,612	130,000		**Injected < 1 year**		31	(26-37)
		%	**95% CI**		**Worked in the last 12 months**		94	(98-100)
Highest Education Level	1-4th	28	(22-35)		**Marital status**	**Currently married**	24	(19-30)
	5-8th	41	(34-49)			**Divorced, separated, widowed**	30	(24-35)
	9-10th	24	(17-31)					
	University / College	5	(2-7)			**Never married**	46	(39-53)
	Graduate	2	(1-3)		**Ever been arrested**		34	(28-40)
Cannot read or write (Myanmar language)		23	(19-28)					

HIV Prevalence

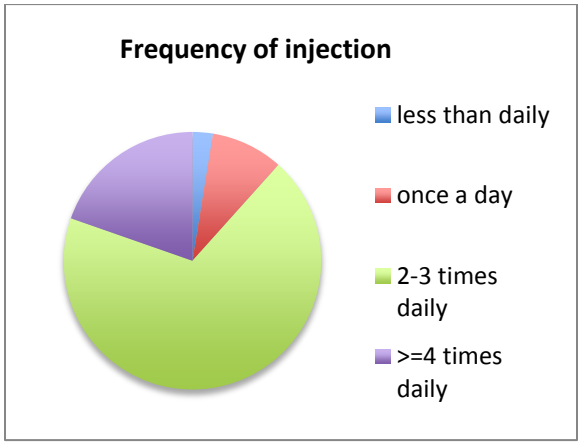
	%	95% CI			%
Overall Prevalence	43	(37-50)		**Prevalence among those <25**	34
HSS (2013)	17			**Prevalence among those injecting 1 year or less**	27

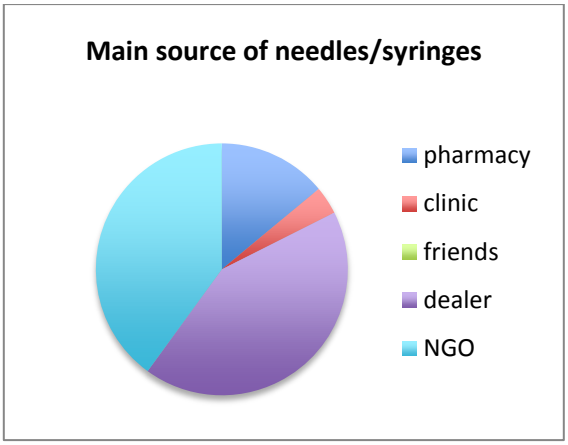
Population Size Estimate

Consensus point estimate	3000		**Estimated Adult Male Population**	42,530
Range	3000-4000		**Size as a % of adult male population**	7.05 (7.05 – 9.41)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	8	(82-94)		**Injected in public places**	3	(1-5)
Ever used previously used needles/syringes	39	(32-45)		**Used previously used needle/syringe at last injection**	11	(7-16)
Never gave needle/syringe to someone else after injecting with it	90	(84-96)		**Always cleaned their used needles/syringes in the last month**	92	(82-102)





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	72	(65-79)		**Had sex with a regular partner in the last month#**	22	(17-27)
Had sex with a paid partner in the last 12 months#	12	(9-15)		**Had sex with a casual partner in the past 12 months#**	12	(7-17)
Used condom at last sex (any partner)	33	(22-45)		**Condom use at last sex with regular partner**	61	(37-85)
Had urethral discharge in the last 12 months	17	(12-22)		**Had genital ulcers in the last 12 months**	8	(5-12)

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	68	(62-75)		**Gets most HIV information from health providers**	70	(65-75)
Aware of HIV treatment	67	(61-73)		**Gets most HIV information from media**	12	(9-14)
Comprehensive knowledge about HIV prevention	25	(21-29)		**Ever received methadone as drug treatment**	17	(14-21)
Ever tested for HIV	65	(59-71)		**Methadone in the past 3 months**	10	(6-14)
Tested in the last year & received result	31			**Visited a DIC in the past 3 months**	61	(54-69)

Kukkhai Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
KUKKHAI	Kukkhai	250	11	399	3	0.8	2
	Namphaka	165	5				

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		31.8	30		**<25 years old**		18	(13-22)
Monthly income (kyats)		128,019	100,000		**Injected < 1 year**		27	(22-33)
		%	**95% CI**		**Worked in the last 12 months**		94	(92-96)
Highest Education Level	1-4th	41	(34-47)		**Marital status**	**Currently married**	47	(41-53)
	5-8th	38	(31-44)			**Divorced, separated, widowed**	11	(8-15)
	9-10th	17	(12-22)					
	University / College	2	(0-4)			**Never married**	41	(35-47)
	Graduate	2	(0-4)		**Ever been arrested**		18	(14-22)
Cannot read or write (Myanmar language)		26	(20-32)					

HIV Prevalence

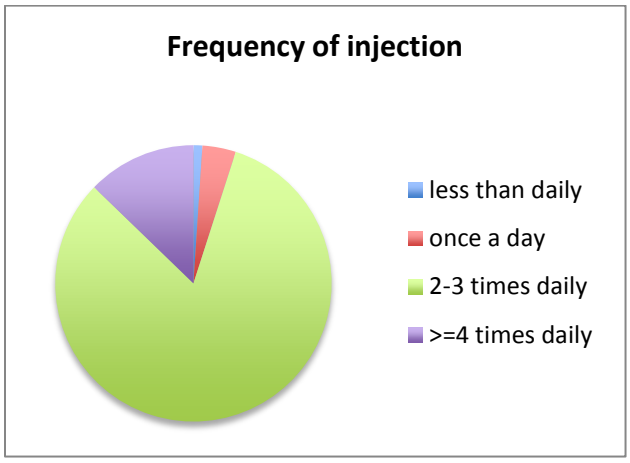
	%	95% CI			%
Overall Prevalence	35	(29-42)		**Prevalence among those <25**	27
HSS (2013)	NA			**Prevalence among those injecting 1 year or less**	18

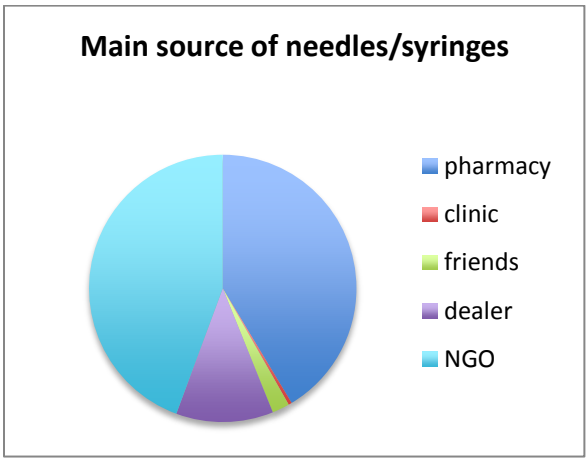
Population Size Estimate

Consensus point estimate	1750		**Estimated Adult Male Population**	35,143
Range	880-2620		**Size as a % of adult male population**	4.98 (2.5 – 7.46)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	76	(71-81)		**Injected in public places**	40	(34-47)
Ever used previously used needles/syringes	44	(38-50)		**Used previously used needle/syringe at last injection**	15	(11-19)
Never gave needle/syringe to someone else after injecting with it	65	(54-77)		**Always cleaned their used needles/syringes in the last month**	57	(34-81)





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	30	(24-35)		**Had sex with a regular partner in the last month#**	27	(21-32)
Had sex with a paid partner in the last 12 months#	9	(6-11)		**Had sex with a casual partner in the past 12 months#**	8	(5-12)
Used condom at last sex (any partner)	17	(8-25)		**Condom use at last sex with regular partner**	18	(9-27)
Had urethral discharge in the last 12 months	17	(13-22)		**Had genital ulcers in the last 12 months**	5	(2-7)

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	56	(49-64)		**Gets most HIV information from health providers**	60	(56-69)
Aware of HIV treatment	47	(41-53)		**Gets most HIV information from media**	8	(6-11)
Comprehensive knowledge about HIV prevention	21	(16-25)		**Ever received methadone as drug treatment**	10	(6-13)
Ever tested for HIV	32	(28-36)		**Methadone in the past 3 months**	9	(5-13)
Tested in the last year &				**Visited a DIC in the past 3**		(30-46)

received result	11			**months**	38	

Myitkyina Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
Kachin	MYITKYINA	302	3	411	2	0.5	2
	Aungmyinthar	113	1				

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		26.5	25		**<25 years old**		32	(28-36)
Monthly income (kyats)		237,540	150,000		**Injected < 1 year**		29	(24-33)
		%	**95% CI**		**Worked in the last 12 months**		80	(74-85)
Highest Education Level	1-4th	11	(7-15)		**Marital status**	**Currently married**	33	(26-39)
	5-8th	30	(24-35)			**Divorced, separated, widowed**	4	(2-7)
	9-10th	46	(40-52)					
	University / College	10	(6-13)			**Never married**	63	(56-70)
	Graduate	3	(1-5)		**Ever been arrested**		13	(9-17)
Cannot read or write (Myanmar language)		7	(3-11)					

HIV Prevalence

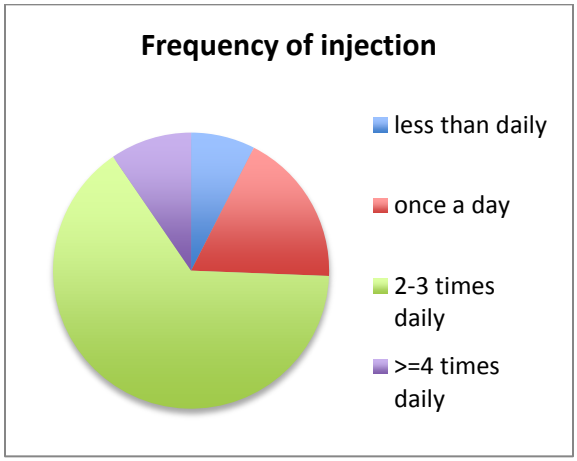
	%	95% CI			%
Overall Prevalence	35	(29-41)		**Prevalence among those <25**	20
HSS (2013)	36			**Prevalence among those injecting 1 year or less**	22

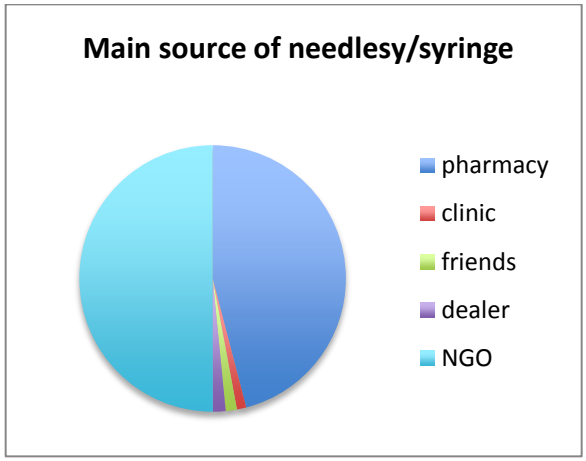
Population Size Estimate

Consensus point estimate	3570		**Estimated Adult Male Population**	103,265
Range	790-6360		**Size as a % of adult male population**	3.46(0.77 – 6.16)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	34	(28-40)		**Injected in public places**	47	(41-54)
Ever used previously used needles/syringes	47	(41-53)		**Used previously used needle/syringe at last injection**	23	(17-29)
Never gave needle/syringe to someone else after injecting with it	77	(71-83)		**Always cleaned their used needles/syringes in the last month**	52	(19-85)





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	42	(36-49)		**Had sex with a regular partner in the last month#**	30	(25-36)
Had sex with a paid partner in the last 12 months#	32	(28-36)		**Had sex with a casual partner in the past 12 months#**	22	(17-26)
Used condom at last sex (any partner)	26	(18-34)		**Condom use at last sex with regular partner**	14	(8-21)
Had urethral discharge in the last 12 months	4	(2-7)		**Had genital ulcers in the last 12 months**	6	(2-10)

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	53	(47-59)		**Gets most HIV information from health providers**	51	(45-58)
Aware of HIV treatment	74	(68-80)		**Gets most HIV information from media**	32	(26-39)
Comprehensive knowledge about HIV prevention	14	(10-19)		**Ever received methadone as drug treatment**	10	(6-13)
Ever tested for HIV	39	(33-46)		**Methadone in the past 3 months**	9	(5-13)
Tested in the last year & received result	11			**Visited a DIC in the past 3 months**	38	(30-46)

Waimaw Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
Kachin	Waimaw	315	6	309	4	1.3	3

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		27.7	27		**<25 years old**		32	(28-36)
Monthly income (kyats)		169,985	150,000		**Injected < 1 year**		24	(20-28)
		%	**95% CI**		**Worked in the last 12 months**		92	(91-94)
Highest Education Level	1-4th	13	(9-17)		**Marital status**	**Currently married**	37	(30-44)
	5-8th	40	(33-46)			**Divorced, separated, widowed**	7	(4-10)
	9-10th	39	(33-46)					
	University / College	6	(3-8)			**Never married**	56	(49-62)
	Graduate	2	(1-3)		**Ever been arrested**		5	(3-8)
Cannot read or write (Myanmar language)		3	(2-5)					

HIV Prevalence

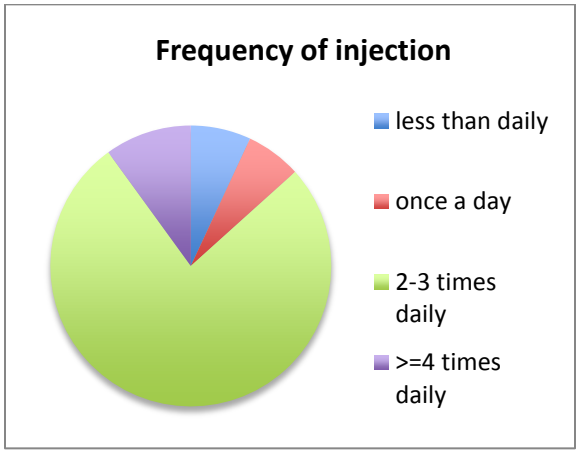
	%	95% CI			%
Overall Prevalence	47	(40-54)		**Prevalence among those <25**	30
HSS (2013)	NA			**Prevalence among those injecting 1 year or less**	24

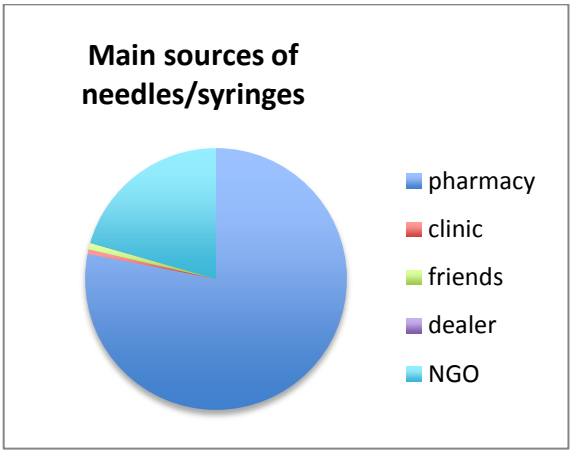
Population Size Estimate

Consensus point estimate	1200		**Estimated Adult Male Population**	36,485
Range	1000-1400		**Size as a % of adult male population**	3.29(2.74 – 3.84)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	31	(27-35)		**Injected in public places**	4	(3-6)
Ever used previously used needles/syringes	63	(57-69)		**Used previously used needle/syringe at last injection**	35	(29-41)
Never gave needle/syringe to someone else after injecting with it	67	(61-73)		**Always cleaned their used needles/syringes in the last month**	78	(68-88)





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	47	(40-54)		**Had sex with a regular partner in the last month#**	38	(32-44)
Had sex with a paid partner in the last 12 months#	26	(22-29)		**Had sex with a casual partner in the past 12 months#**	20	(15-25)
Used condom at last sex (any partner)	22	(12-33)		**Condom use at last sex with regular partner**	19	(11-27)
Had urethral discharge in the last 12 months	6	(3-8)		**Had genital ulcers in the last 12 months**	##	

among all respondents; ## Question was only asked to those who had urethral discharge

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	63	(57-69)		**Gets most HIV information from health providers**	77	(71-82)
Aware of HIV treatment	73	(67-78)		**Gets most HIV information from media**	7	(5-9)
Comprehensive knowledge about HIV prevention	27	(22-31)		**Ever received methadone as drug treatment**	2	(1-3)
Ever tested for HIV	39	(34-44)		**Methadone in the past 3 months**	1	(0-3)
Tested in the last year & received result	15			**Visited a DIC in the past 3 months**	44	(37-50)

Bamaw Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
Kachin	Bamaw	343	16	327	1	0.3	0

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		30.9	30		**<25 years old**		19	(15-22)
Monthly income (kyats)		230,620	150,000		**Injected < 1 year**		30	(26-35)
		%	**95% CI**		**Worked in the last 12 months**		90	(88-92)
Highest Education Level	1-4th	22	(15-28)		**Marital status**	**Currently married**	40	(35-46)
	5-8th	37	(33-44)			**Divorced, separated, widowed**	9	(6-12)
	9-10th	32	(27-37)					
	University / College	5	(2-7)			**Never married**	51	(45-56)
	Graduate	3	(1-5)		**Ever been arrested**		19	(15-23)
Cannot read or write (Myanmar language)		1	(0-2)					

HIV Prevalence

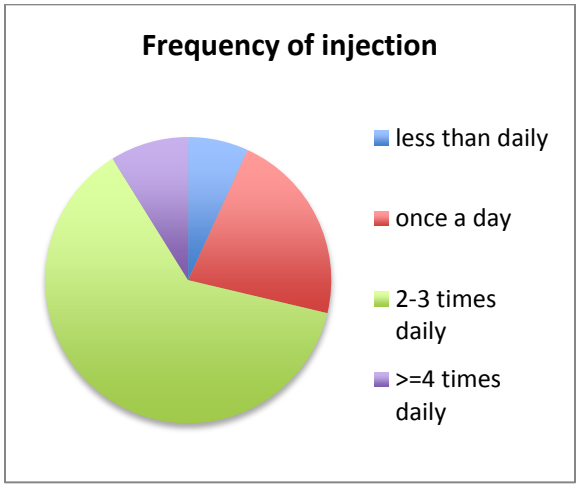
	%	95% CI			%
Overall Prevalence	45	(39-51)		**Prevalence among those <25**	34
HSS (2013)	NA			**Prevalence among those injecting 1 year or less**	32

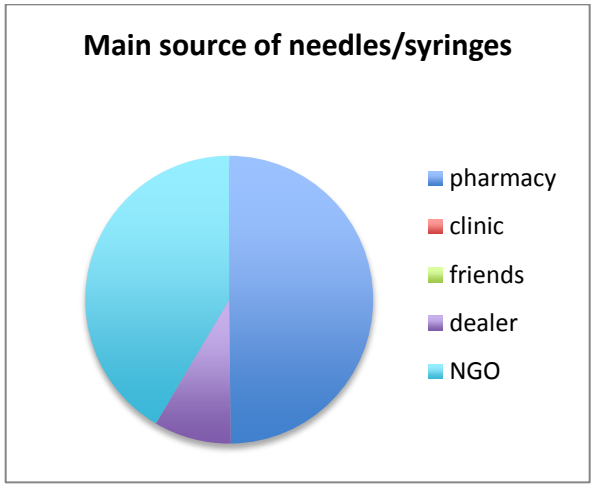
Population Size Estimate

Consensus point estimate	740		**Estimated Adult Male Population**	46,822
Range	520-950		**Size as a % of adult male population**	1.58 (1.11 – 2.03)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	67	(67-73)		**Injected in public places**	4	(3-6)
Ever used previously used needles/syringes	63	(57-69)		**Used previously used needle/syringe at last injection**	35	(29-41)
Never gave needle/syringe to someone else after injecting with it	82	(76-89)		**Always cleaned their used needles/syringes in the last month**	95	





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	46	(40-52)		**Had sex with a regular partner in the last month#**	41	(35-47)
Had sex with a paid partner in the last 12 months#	25	(21-29)		**Had sex with a casual partner in the past 12 months#**	12	(8-16)
Used condom at last sex (any partner)	35	(25-45)		**Condom use at last sex with regular partner**	35	(25-44)
Had urethral discharge in the last 12 months	5	(2-8)		**Had genital ulcers in the last 12 months**	3	(1-5)

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	55	(49-61)		**Gets most HIV information from health providers**	83	(77-90)
Aware of HIV treatment	76	(71-82)		**Gets most HIV information from media**	10	(7-13)
Comprehensive knowledge about HIV prevention	61	(55-68)		**Ever received methadone as drug treatment**	6	(4-8)
Ever tested for HIV	52	(47-57)		**Methadone in the past 3 months**	42	(35-49)
Tested in the last year & received result	18			**Visited a DIC in the past 3 months**	61	(55-67)

Kalay Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
Sagaing	Kalay	220	4	216	17	7.9	6

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		30.7	30		**<25 years old**		23	(16-29)
Monthly income (kyats)		145,475	100,000		**Injected < 1 year**		26	(21-32)
		%	**95% CI**		**Worked in the last 12 months**		82	(74-91)
Highest Education Level	1-4th	19	(12-25)		**Marital status**	**Currently married**	27	(21-33)
	5-8th	27	(20-33)			**Divorced, separated, widowed**	27	(20-33)
	9-10th	42	(35-50)			**Never married**	47	(39-54)
	University / College	9	(5-13)					
	Graduate	3	(0-5)		**Ever been arrested**		20	(14-25)
Cannot read or write (Myanmar language)		8	(4-11)					

HIV Prevalence

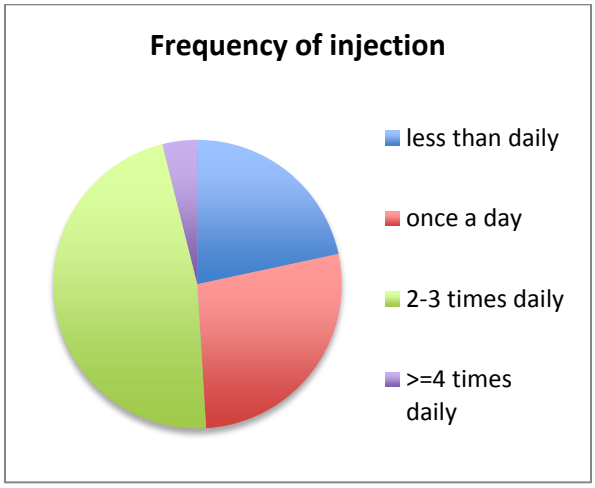
	%	95% CI			%
Overall Prevalence	6	(4-9)		**Prevalence among those <25**	0
HSS (2013)	NA			**Prevalence among those injecting 1 year or less**	5

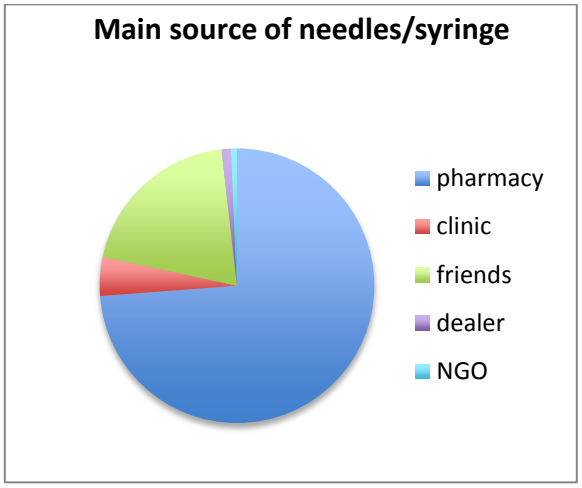
Population Size Estimate

Consensus point estimate	1200		**Estimated Adult Male Population**	116,876
Range	770-1800		**Size as a % of adult male population**	1.03 (0.66 – 1.54)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	7	(3-10)		**Injected in public places**	38	(31-45)
Ever used previously used needles/syringes	63	(55-71)		**Used previously used needle/syringe at last injection**	37	(30-45)
Never gave needle/syringe to someone else after injecting with it	17	(10-25)		**Always cleaned their used needles/syringes in the last month**	NA	





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	61	(52-69)		**Had sex with a regular partner in the last month#**	55	(46-63)
Had sex with a paid partner in the last 12 months#	57	(51-64)		**Had sex with a casual partner in the past 12 months#**	51	(43-59)
Used condom at last sex (any partner)	14	(7-21)		**Condom use at last sex with regular partner**	14	(6-21)
Had urethral discharge in the last 12 months	20	(14-25)		**Had genital ulcers in the last 12 months**	15	NA

among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	83	(79-88)		**Gets most HIV information from health providers**	33	(27-40)
Aware of HIV treatment	79	(73-85)		**Gets most HIV information from media**	36	(29-42)
Comprehensive knowledge about HIV prevention	37	(32-43)		**Ever received methadone as drug treatment**	0	
Ever tested for HIV	33	(27-38)		**Methadone in the past 3 months**	1	(0-3)
Tested in the last year & received result	10			**Visited a DIC in the past 3 months**	NA	

Tamu Site Profile

Sample Recruitment

State/ Division	RDS Centers	Total Enrollment	Non-Eligible and Refused	Combined sample for "site"	# Female	% Female	# females at end of chains
Sagaing	Tamu	301	18	283	15	5.3	6

Socio-demographics

		Mean	Median		Cutoffs		%	95% CI
Age in Years		32.5	31.5		**<25 years old**		16	(12-20)
Monthly income (kyats)		110,629	100,000		**Injected < 1 year**		58	(52-65)
		%	**95% CI**		**Worked in the last 12 months**		99	(96-100)
Highest Education Level	1-4th	29	(22-36)		**Marital status**	**Currently married**	43	(35-51)
	5-8th	45	(37-54)			**Divorced, separated, widowed**	16	(11-22)
	9-10th	21	(15-27)					
	University / College	3	(1-5)			**Never married**	41	(34-48)
	Graduate	1	(1-3)		**Ever been arrested**		11	(6-16)
Cannot read or write (Myanmar language)		21	(16-26)					

HIV Prevalence

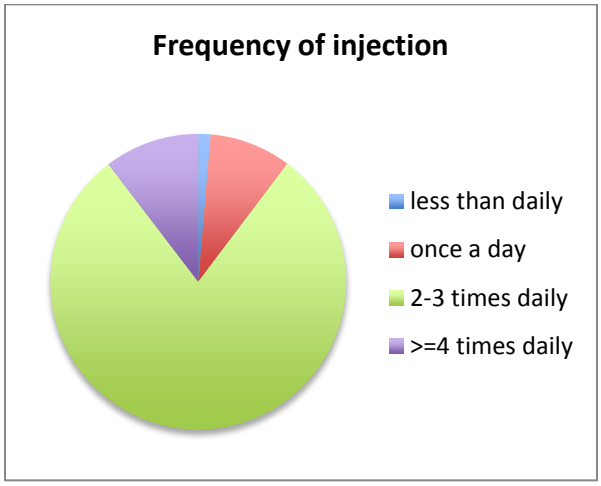
	%	95% CI			%
Overall Prevalence	20	(14-26)		**Prevalence among those <25**	28
HSS (2013)	NA			**Prevalence among those injecting 1 year or less**	11

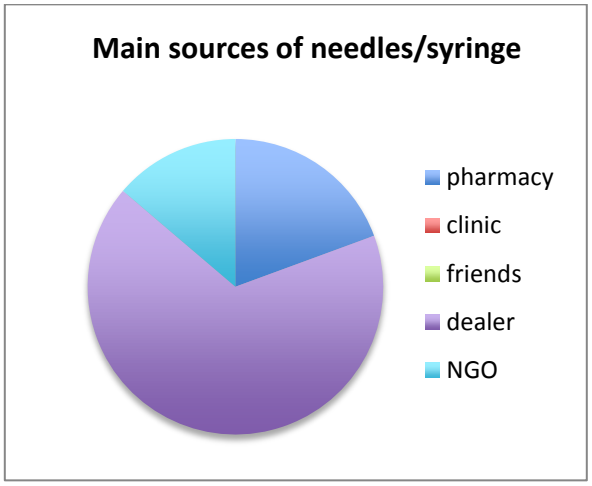
Population Size Estimate

Consensus point estimate	1200		**Estimated Adult Male Population**	20,412
Range	300-2130		**Size as a % of adult male population**	5.88 (1.47 – 10.43)

Drug Use Practices

	%	95% CI			%	95% CI
Used amphetamines in the past 12 months	44	(39-49)		**Injected in public places**	10	(7-14)
Ever used previously used needles/syringes	32	(25-39)		**Used previously used needle/syringe at last injection**	13	(8-18)
Never gave needle/syringe to someone else after injecting with it	79	(74-83)		**Always cleaned their used needles/syringes in the last month**	NA	





Sexual Risk Behavior

	%	95% CI			%	95% CI
Had sex in the last month	53	(45-62)		**Had sex with a regular partner in the last month#**	41	(34-49)
Had sex with a paid partner in the last 12 months#	14	(11-18)		**Had sex with a casual partner in the past 12 months#**	14	(9-20)
Used condom at last sex (any partner)	18	(11-25)		**Condom use at last sex with regular partner**	18	(11-25)
Had urethral discharge in the last 12 months	3	(0-6)		**Had genital ulcers in the last 12 months**	1	

Among all respondents

Knowledge and Service Utilization

	%	95% CI			%	95% CI
Know someone infected with HIV or died of AIDS	63	(55-71)		**Gets most HIV information from health providers**	43	(37-49)
Aware of HIV treatment	79	(59-75)		**Gets most HIV information from media**	50	(44-57)
Comprehensive knowledge about HIV prevention	25	(20-30)		**Ever received methadone as drug treatment**	8	(5-11)
Ever tested for HIV	40	(36-45)		**Methadone in the past 3 months**	0	
Tested in the last year & received result	10			**Visited a DIC in the past 3 months**	NA	

Female PWID Profile

Sample Recruitment Total N=83

Yangon	11	Myitkyina	2
Mandalay	18	Waimaw	4
Lashio	6	Bamaw	1
Muse	6	Kalay	17
Kukkhai	3	Tamu	15

Socio-demographics

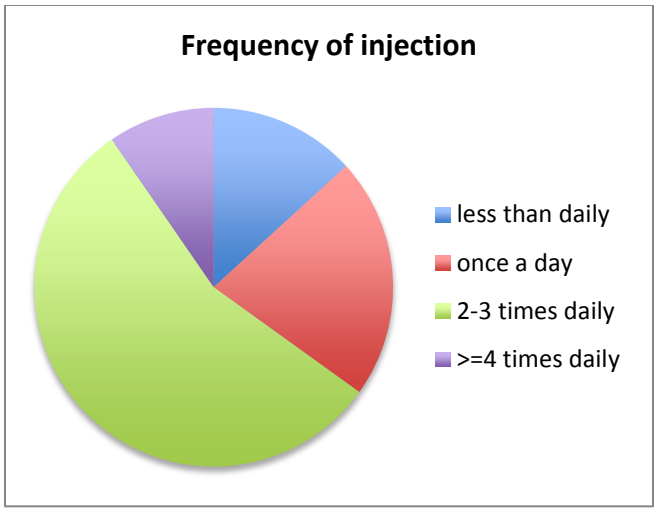
		Mean	Median		Cutoffs		%	N
Age in Years		30.0	30		**<25 years old**		24	83
Monthly income (kyats)		169,641	90,000		**Injected < 1 year**		36	83
		%	**N**		**Worked in the last 12 months**		66	83
Highest Education Level	1-4th	25	83		**Marital status**	**Currently married**	48	83
	5-8th	22				**Divorced, separated, widowed**	26	
	9-10th	30				**Never married**	25	
	University / College	11			**Ever been arrested**		17	
	Graduate	12						
Cannot read or write (Myanmar language)		16	83					

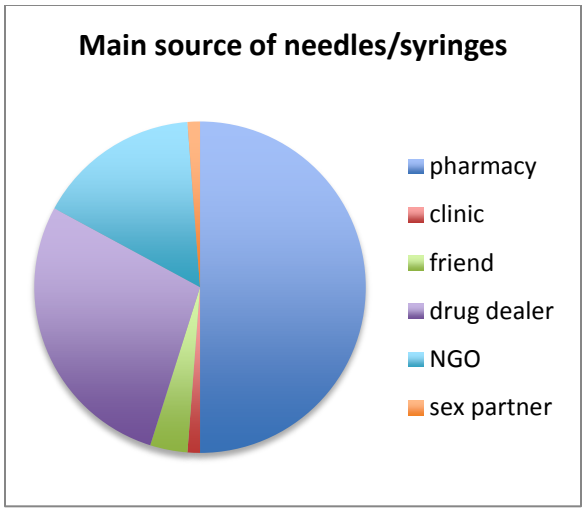
HIV Prevalence

	%	N			%
Overall Prevalence	40	83		**Prevalence among those <25**	15
				Prevalence among those injecting 1 year or less	20

Drug Use Practices

	%	N			%	N
Used amphetamines in the past 12 months	39	83		**injected in public places**	19	83
Ever used previously used needles/syringes	41	83		**Used previously used needle/syringe at last injection**	17	83
Never gave needle/syringe to someone else after injecting with it	41	49		**Always cleaned their used needles/syringes in the last month**	36	14





Sexual Risk Behavior

	%	N			%	N
Had sex in the last month	63	68		**Had sex with a regular partner in the last month#**	52	83
Sold sex in the last 12 months#	19	83		**Had sex with a casual partner in the past 12 months#**	19	80
Used condom at last sex (any partner)	28	43		**Condom use at last sex with regular partner**	28	43
Had genital discharge in the last 12 months	18	65		**Had genital ulcers in the last 12 months**	2	79

among all respondents

Knowledge and Service Utilization

	%	N			%	N
Know someone infected with HIV or died of AIDS	82	79		**Gets most HIV information from health providers**	70	83
Aware of HIV treatment	83	81		**Gets most HIV information from media**	41	83
Comprehensive knowledge about HIV prevention	48	83		**Ever received methadone as drug treatment**	12	83
Ever tested for HIV	65	72		**Methadone in the past 3 months**	4	81
Tested in the last year & received result	32	83		**Visited a DIC in the past 3 months**	45	49

Annex 7. Detailed Tables

A. SOCIAL DEMOGRAPHICS

Table 1. Age	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Age <20 years old	3	8	3	2	2	16	9	3	4	3	agelt20
95% CI	(2-5)	(5-10)	(1-5)	(0-4)	(1-4)	(11-21)	(7-21)	(1-4)	(0-8)	(0-6)	
Age <25 years old	16	37	24	13	18	46	32	19	23	16	agelt25
95% CI	(12-20)	(32-41)	(20-28)	(10-16)	(13-22)	(39-54)	(28-36)	(15-22)	(16-29)	(12-20)	
Age - Mean	33.1	27.6	32.6	33.7	31.8	26.5	27.7	30.9	30.7	32.5	q302age
Age - Median	33.0	26.0	30.0	31.0	30.0	25.0	27.0	30.0	30.0	31.5	
<19	3	7	3	2	2	16	9	3	4	3	q302age
20-24	12	28	21	11	15	30	23	16	18	13	
25-29	40	41	43	48	51	40	53	53	49	47	
35-44	37	19	19	28	23	11	13	22	17	26	
≥45	8	5	14	12	9	3	2	6	13	11	
Denominator	249	404	405	331	397	409	305	326	199	268	

Table 2. Ethnicity	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Bamar	96	85	16	19	5	27	13	38	16	32	q307ethn
95% CI	(92-100)	(80-89)	(11-21)	(12-27)	(3-8)	(19-35)	(8-18)	(32-45)	(4-29)	(24-41)	
Kachin	0	0	10	14	44	61	56	24	0	0	
95% CI			(5-16)	(9-21)	(36-52)	(52-70)	(49-63)	(17-31)			
Mixed	3	12	12	10	4	7	8	16	0	1	
95% CI	(1-6)	(9-16)	(7-17)	(5-15)	(1-6)	(4-9)	(4-13)	(12-21)		(0-2)	
Shan	1	2	61	56	47	4	22	21	0	0	
95% CI	(0-3)	(0-5)	(56-68)	(49-63)	(40-54)	(2-7)	(18-25)	(16-27)			
Chin	0	0	0	0	0	0	0	0	84	62	
95% CI									(71-96)	(53-71)	
Indian	0	0	0	0	0	0	0	0	0	3	
95% CI										(0-6)	
Denominator	249	404	405	332	397	409	305	326	199	268	

Table 3. Current marital status

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Currently married	37	24	39	24	47	33	37	40	27	43	q309marr
95% CI	(29-44)	(19-29)	(33-46)	(19-30)	(41-53)	(26-39)	(30-44)	(35-46)	(21-33)	(35-51)	
Ever married	8	16	12	30	11	4	7	9	27	16	
95% CI	(3-12)	(11-21)	(8-16)	(24-35)	(8-15)	(2-7)	(4-10)	(6-12)	(20-33)	(11-22)	
Never married	55	60	48	46	41	63	56	51	47	41	
95% CI	(48-62)	(54-66)	(42-55)	(39-53)	(35-47)	(56-70)	(49-62)	(45-56)	(39-54)	(34-48)	
Denominator	249	404	405	332	397	409	305	326	199	268	

Table 4. With whom respondent lives with now

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Spouse	32	23	33	24	44	20	33	38	25	42	q310live
95% CI	(25-38)	(18-27)	(33-46)	(19-30)	(41-53)	(26-39)	(26-39)	(32-43)	(19-31)	(35-50)	
Other sex partner	0	0	0	0	0	0	0	0	0	0	
95% CI											
Parents/relatives	56	71	59	38	49	77	64	56	71	48	
95% CI	(48-62)	(65-76)	(53-65)	(39-53)	(35-47)	(72-85)	(57-71)	(51-62)	(64-77)	(40-55)	
Friends	3	4	1	15	2	2	2	2	1	3	
95% CI	(1-5)	(2-6)	(0-2)	(9-21)	(0-3)	(0-3)	(1-4)	(1-4)	(0-2)	(0-5)	
Alone	9	3	7	21	5	1	1	3	3	7	
95% CI	(4-14)	(1-5)	(3-10)	(15-27)	(3-7)	(0-1)	(0-1)	(1-5)	(0-5)	(3-11)	
Denominator	249	404	406	332	397	409	305	326	199	268	

Table 5. Highest education level completed

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
1-4th	4	6	42	28	41	11	13	22	19	29	q306grde
95% CI	(1-7)	(3-8)	(34-50)	(22-35)	(34-47)	(7-15)	(9-17)	(15-28)	(12-25)	(22-36)	
5-8th	14	22	29	41	38	30	40	37	27	45	
95% CI	(7-20)	(18-27)	(22-36)	(34-49)	(31-44)	(24-35)	(33-46)	(33-44)	(20-33)	(37-54)	
9-10th	53	42	24	24	17	46	39	32	42	21	
95% CI	(46-61)	(27-48)	(18-31)	(17-31)	(12-22)	(40-52)	(33-46)	(27-37)	(35-50)	(15-27)	
University/College	20	15	4	5	2	10	6	5	9	3	
95% CI	(14-25)	(11-20)	(4-8)	(2-7)	(0-4)	(6-13)	(3-8)	(2-7)	(5-13)	(1-5)	
Graduate	9	14	1	2	2	3	2	3	3	1	
95% CI	(5-14)	(10-18)	(0-1)	(1-3)	(0-4)	(1-5)	(1-3)	(1-5)	(0-5)	(1-3)	
Denominator	249	404	405	332	397	409	305	326	199	268	

Table 6. Monthly income (kyats)

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
<150,000 kyats	30	26	61	51	57	39	42	35	67	69	incomlt150
95% CI	(24-35)	(21-30)	(56-66)	(45-57)	(52-62)	(32-45)	(36-47)	(29-40)	(59-76)	(62-75)	
Denominator	243	404	403	332	396	351	273	320	106	268	
Monthly income - Mean	218417	204229	145778	165612	128019	237540	169985	230620	145475	110629	q308incm
Monthly income - Median	200000	200000	100000	130000	100000	150000	150000	150000	100000	100000	
Denominator	249	404	403	332	396	351	273	320	106	268	

Table 7. Work history in the past 12 months

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Worked	74	91	95	94	94	80	92	90	82	99	employed
95% CI	(68-79)	(87-96)	(93-97)	(88-100)	(92-96)	(74-85)	(91-94)	(88-92)	(74-91)	(96-100)	
Denominator	249	404	406	332	397	409	305	326	199	268	

Table 8. Literacy in Myanmar language

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Does not know how to read or write	0	1	37	23	26	7	3	1	8	21	noreadwri
95% CI	0	(0-4)	(29-45)	(19-28)	(20-32)	(3-11)	(2-5)	(0-2)	(4-11)	(16-26)	
Denominator	249	404	406	332	397	409	304	326	198	268	

Table 9. History of arrest

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Ever been arrested	30	16	21	34	18	13	5	19	20	11	q420arr
95% CI	(24-37)	(12-19)	(16-25)	(28-40)	(14-22)	(9-17)	(3-8)	(15-23)	(14-25)	(6-16)	
Denominator	249	404	405	332	397	409	305	326	199	268	
Ever been arrested for drugs	18	4	15	16	10	5	4	12	8	7	q421all
95% CI	(11-28)	(2-6)	(11-19)	(11-21)	(7-13)	(2-7)	(2-6)	(8-15)	(4-12)	(3-11)	
Denominator	249	403	403	332	397	409	304	325	195	266	
Injected drugs in prison if arrested for drugs	40	3	4	1	10	25	3	16	25	0	q422injp
95% CI	(26-54)	(1-4)	(0-9)	(0-4)	(1-18)	(10-41)	(2-4)	(8-24)	(NR)	0	
Denominator	44	14	72	57	47	21	11	34	18	0	

History of arrest by injection venue

Does not inject in public	33	14	22	33	21	15	6	20	23	10	q407pub,
Injects in public venues	24	37	14	71	14	11	3	7	16	18	q420arr

DRUG USE BEHAVIORS

Table 1. Duration of injection

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Years of drug use before injecting - Mean	2.8	2.5	6.1	6.2	6.2	2.8	3.0	4.9	1.9	4.1	yrsbinj
Years of drug use before injecting - Median	2.0	2.0		5.0		1.0	2.0	3.0	0.0	2.0	yrsbinj
Denominator	249	395		327		386	213	326	197	263	
Years of injecting drugs - Mean	11.4	4.4	4.0	3.8	4.3	4.1	4.1	4.0	5.9	2.3	yrsinj
Years of injecting drugs - Median	11	3	3.0	2	3	3	3	3	3	1	yrsinj
Denominator	249	404		330		409	304	326	199	268	
Injecting drugs =<1 year	8	25	33	31	27	29	24	30	26	58	injlt1yr
95% CI	(5-11)	(21-29)	(28-38)	(26-37)	(22-33)	(24-33)	(20-28)	(26-35)	(21-32)	(52-65)	
Denominator	249	404	403	330	397	408	304	326	199	268	

Table 2. Primary drug injected in the past month

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Opium	26	0	0	0	0	1	0	0	5.6	0	q405prdr
95% CI	(17-35)					(0-2)			(1-10)		
Heroin	74	100	97.8	97.8	100	98.8	100	0	93.7	100	
95% CI	(65-83)		(97-99)	(96-100)		(98-100)	(99-100)		(89-98)	(99-100)	
Combination of drugs	0	0	1.8	2.2	0	0	0	0	0	0	
95% CI			(1-3)	(1-4)							
Denominator	249	404	406	332	395	409	304		199	268	

Table 3. Drugs used in the past 12 months

Non-injected	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	
Heroin	8	56	69	53	75	34	43	29	52	86	q403hern
95% CI	(5-10)	(51-60)	(63-74)	(47-59)	(69-80)	(27-40)	(37-48)	(24-33)	(47-58)	(79-92)	
Denominator	249	404	404	332	396	409	305	326	199	268	
Amphetamines	37	38	47	88	76	34	31	67	7	44	q403amph
95% CI	(31-42)	(34-42)	(41-52)	(82-94)	(71-81)	(28-40)	(27-35)	(62-73)	(3-10)	(39-49)	
Denominator	249	404	404	332	396	409	305	326	199	268	
Marijuana	63	9	1	4	2	4	0	11	15	22	q403marj
95% CI	(57-69)	(6-12)	(0-1)	(1-7)	(1-3)	(2-6)		(8-13)	(10-19)	(17-27)	
Denominator	249	404	404	332	396	409		326	199	268	
Opium	2	3	13	28	31	51	40	34	28	59	q403opum
95% CI	(1-4)	(0-5)	(9-18)	(24-33)	(27-34)	(45-57)	(36-45)	(30-39)	(22-34)	(53-65)	
Denominator	249	404	404	332	396	409	305	326	199	268	
Combination of drugs	5	2	1	5	0	31	4	0	2	0	q403comb
95% CI	(3-8)	(0-4)	(0-1)	(3-7)		(25-36)	(3-6)		(-1-5)		
Denominator	249	404	404	332	396	409	305	326	199	268	
Benzodiazepines	14	14	0	1	0	9	1	0	7	7	q403benz
95% CI	(!0-18)	(11-17)		(0-2)		(5-13)	(0-1)		(4-11)	(4-10)	
Denominator	249	404	404	332	396	409	305	326	199	268	
Amphetamine use by age group											ageIt25,
Age <25	35	37	44	86	74	39	36	69	8	46	q403amph
Age >=25	45	40	57	95	87	28	20	62	1	33	
Injected											
Combination of drugs	0	0	7	14	0	20	7	1	1	0	q404comb
95% CI			(5-9)	(11-17)		(15-25)	(5-9)	(0-1)	(0-1)	(0-1)	
Denominator	249		404	332		409	305	326	199	268	

Table 4. Frequency of alcohol use in the past month

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Did not drink	49	40	0	49	47	26	19	35	2	48	q3011alco
95% CI	(41-57)	(34-45)		(42-55)	(42-53)	(21-32)	(15-23)	(29-40)	(0-4)	(40-56)	
<1 week	11	13	0	12	15	9	27	23	2	6	
95% CI	(6-16)	(7-18)		(8-16)	(11-20)	(6-12)	(22-33)	(18-28)	(0-4)	(3-9)	
Once a week	0.123	0.2362		0.13498	0.18113	0.13672	0.1114	0.13938	0.01895	0.26053	
95% CI	(8-17)	(18-29)		(9-18)	(13-23)	(10-18)	(7-16)	(9-18)	(0-4)	(19-33)	
>1 week	16	12	0	17	11	35	25	8	30	14	
95% CI	(11-22)	(9-16)		(12-22)	(7-15)	(29-40)	(20-30)	(5-11)	(23-38)	(9-19)	
Daily	11	12	0	9	8	16	18	20	64	6	
95% CI	(6-15)	(8-16)		(5-13)	(5-11)	(12-21)	(13-23)	(16-25)	57-72)	(3-10)	
Denominator	249	403		332	396	407	305	325	199	268	
Frequency of alcohol use by age group											agelt25,
Age <25	13	16	13	10	9	19	23	22	65	6	q311alco
Age >=25	0	5	0	2	3	13	7	11	61	8	

Table 5. Frequency of injection in the past month

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Less than daily	16	2	2	3	1	8	7	7	22	1	q406recat
95% CI	(9-22)	(0-3)	(!-3)	(0-5)	(0-2)	(4-11)	(4-10)	(3-11)	(15-28)	(1-2)	
Once a day	15	15	7	9	4	18	6	22	27	9	
95% CI	(9-21)	(10-20)	(5-10)	(4-14)	(2-6)	(13-23)	(3-10)	(16-27)	(21-34)	(3-15)	
2-3 times daily	55	73	79	69	82	65	77	62	47	79	
95% CI	(47-63)	(68-78)	(75-84)	(62-75)	(77-87)	(59-70)	(72-82)	(55-70)	(40-54)	(73-86)	
>=4 times daily	14	10	11	20	13	10	10	9	4	10	
95% CI	(10-19)	(7-13)	(7-14)	(!5-25)	(8-17)	(6-13)	(7-13)	(6-12)	(1-6)	(6-15)	
Denominator	248	404	405	332	397	409	305	322	199	254	
Injects at least daily	84	98	97	97	99	92	93	93	78	94	injdaily
95% CI	(78-91)	(94-102)	(96-99)	(94-100)	(98-100)	(89-96)	(92-95)	(90-97)	(72-85)	(88-99)	
Denominator	249	404	403	332	397	409	305	322	199	268	

Table 6. Types of injection venues

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Public places	25	6	20	3	40	47	4	5	38	10	q407pub
95% CI	(21-30)	(4-9)	(15-24)	(1-5)	(34-47)	(41-54)	(3-6)	(3-7)	(31-45)	(7-14)	
Private places	82	98	83	100	74	58	74	98	33	100	q407pri
95% CI	(75-89)	(94-100)	(78-88)		(67-81)	(51-64)	(68-79)	(97-98)	(28-38)		
Streets/parks	18	2	9	1	20	44	4	1	19	1	q407stpk
95% CI	(5-22)	(0-3)	(7-11)	(0-3)	(17-23)	(38-50)	(2-6)	(0-2)	(13-24)	(0-2)	
Latrines	9	1	15	2	3	5	0	3	23	0	q407latr
95% CI	(6-12)	(0-3)	(12-18)	(1-3)	(2-5)	(2-7)	(0-1)	(2-5)	(16-31)	(0-1)	
Shooting locations	1	3	1	0	20	0	0	1	0	10	q407shlc
95% CI	(0-1)	(1-4)	(1-2)	(0-1)	(16-24)		(0-1)	(0-2)		(7-13)	
Denominator	249	404	404	332	396	409	305	326	199	268	
Injects in public venues by duration of injection											q407pub
injected =<1 year	27	6	19	3	39	44	6	5	35	13	injlt1yr
injected>1 year	9	6	21	4	45	55	0	5	44	8	
Injects in public venues by age group											
age >=25	25	7	20	3	38	44	4	6	35	11	agelt25
age <25	27	4	18	5	50	51	4	3	47	7	
Injects in public venues by monthly income category											
>150,000 kyats	27	8	17	4	39	42	4	4	40	9	incmlt150
=<150,000 kyats	23	2	22	3	42	60	6	7	53	11	
Injects in public venues by recent work history											
Did not work	21	12	31	0	32	51	1	0	36	0	employed
Worked	27	6	19	3	41	47	4	6	38	11	

Table 7. Use of previously used needles/syringes

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Ever used	33	16	36	39	44	47	63	55	63	32	q408usev
95% CI	(25-41)	(12-20)	(30-42)	(32-45)	(38-50)	(41-53)	(57-69)	(49-61)	(55-71)	(25-39)	
Denominator	249	404	406	332	397	409	305	326	199	268	
Used Last time	10	0	16	11	15	23	35	17	37	13	q409all
95% CI	(6-14)		(11-21)	(7-16)	(11-19)	(17-29)	(29-41)	(13-21)	(30-45)	(8-18)	
Denominator	249	404	406	332	397	407	302	326	199	268	
Frequency of using used N/S											q410all
Always	0	0	1	0	1	0	1	0	2	1	
95% CI			(0-2)		(0-1)		(0-2)		(0-4)	(1-1)	
Most of the time	0	0	2	0	0	1	1	0	23	1	
95% CI			(-1-6)		(0-1)	(-1-3)	(0-3)		(14-32)	(1-2)	
Half the time	1	0	1	2	1	2	6	0	2	0	
95% CI	(-1-2)		(-1-2)	(-1-5)	(-1-2)	(0-3)	(2-10)		(-1-5)		
Occasionally	11	0	17	14	19	27	40	27	24	14	
95% CI	(7-15)		(11-22)	(8-19)	(13-26)	(20-34)	(32-48)	(21-33)	(15-32)	(7-20)	
Never	88	100	79	84	79	70	52	73	50	84	
95% CI	(83-92)		(73-85)	(78-91)	(73-85)	(63-78)	(44-60)	(67-79)	(40-59)	(78-90)	
Denominator	192		311	238	279	306	217	189	147	199	
Ever used previously used N/S by age group											
Age <25	30	7	46	31	34	44	63	60	64	45	agelt25
Age >=25	33	21	33	39	46	49	63	54	63	30	
Ever used previously used N/S by duration of injection											
Injected =<1 year	30	8	30	20	31	40	50	45	56	27	injlt1yr
Injected >1 year	33	18	39	46	49	50	67	60	66	39	

Ever used previously used N/S by recent work history

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	
Did not work	40	17	28	67	38	45	49	56	51	41	employed
Worked	30	11	36	37	45	47	64	55	66	32	

Ever used previously used N/S by monthly income category

>150,000 kyats	32	17	39	42	40	51	63	53	69	25	incomlt150
=<150,000 kyats	36	11	32	36	47	40	67	59	70	35	

Last time, used previously used N/S by age group

Age <25	11	0	17	11	14	25	34		13	12	q409all, agelt25
Age >=25	9	0	14	2	20	20	37		16	19	

Table 8. Frequency of giving used N/S to someone else in the last month

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Always	2	0	2	0	4	0	0	0	1	1	q415gvfr
95% CI	(0-3)		(1-2)		(0-8)				(0-2)	(0-1)	
Most times	0	0	5	0	1	0	0	0	23	0	
95% CI	(0-1)		(1-9)		(0-1)				(14-33)		
Half the time	0	0	0	0	0	0	2	0	2	0	
95% CI							(0-4)		(0-5)		
Occasionally	26	6	30	10	29	23	30	17	55	21	
95% CI	(19-34)	(!-11)	(17-43)	(4-16)	(18-40)	(17-29)	(25-36)	(11-24)	(45-65)	(16-26)	
Never	71	94	61	90	65	77	67	82	17	79	
95% CI	(64-78)	(89-99)	(49-74)	(84-96)	(54-77)	(71-83)	(61-73)	(76-89)	(10-25)	(74-83)	
Denominator	224	60	155	126	173	407	305	190	129	262	

Table 9. Injection practices at last injection

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
needle used by only you	25	2	7	5	12	6	19	3	7	37	q419slus
95% CI	(18-32)	(0-4)	(3-10)	(3-8)	(8-15)	(3-8)	(13-25)	(2-5)	(4-11)	(30-44)	
Used a new needle	90	98	89	93	91	94	76	96	57	57	q419nwnd
95% CI	(85-95)	(97-99)	(84-93)	(90-96)	(88-94)	(90-97)	(70-82)	(94-98)	(48-65)	(50-64)	
Solution from a common container	32	6	4	0	4	7	2	2	28	0	q419slcm
95% CI	(24-39)	(2-11)	(2-6)	(0-1)	(2-5)	(4-11)	(0-4)	(0-3)	(20-35)		
Passed used needle to someone	14	1	3	0	3	3	1	1	16	3	q419psnd
95% CI	(7-20)	(0-2)	(0-6)		(1-6)	(1-5)	(0-2)	(0-2)	(10-21)	(0-5)	
Took a needle from someone	11	2	4	2	3	2	5	2	35	6	q419tknd
95% CI	(6-15)	(0-4)	(0-8)	(0-4)	(1-5)	(1-4)	(2-7)	(0-3)	(28-43)	(2-10)	
Denominator	249	404	406	332	397	407	302	326	199	268	

Table 10. Person from whom respondent received used needles/syringes

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Dealer	9	0	14	7	12	22	29	17	37	10	q411drdl
95% CI	(6-12)	(0-1)	(10-17)	(4-10)	(9-14)	(16-27)	(26-33)	(!4-20)	(31-43)	(7-13)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Table 11. Cleaning practices

Cleaning frequency last month

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Always	51	30	30	92	57	52	78	95			q413clfr
95% CI	(-14-115)	(5-55)	(5-54)	(82-102)	(34-81)	(19-85)	(68-88)	(95-95)			
Most times	24	39	38	3	15	7	7	0			
95% CI	(-41-88)	(13-64)	(14-63)	(3-3)	(-21-51)	(-1-14)	(1-13)				
Half the time	4	0	0	0	0	2	1	0			
95% CI	(0-8)					(-3-8)	(-1-3)				
Occasionally	10	30	30	5	23	33	14	5			
95% CI	(3-17)	(10-50)	(11-49)	(-5-15)	(5-41)	(3-63)	(4-23)	(5-5)			
Never	11	2	2	0	5	6	0	0			
95% CI	(4-19)	(1-2)	(1-2)		(4-6)	(-1-13)					
Denominator	28	55	55	31	59	101	106	53			

Substances cleaned with

Cold water	25	9	22	28	17	30	61	48	5	29	q414clcw
95% CI	(21-29)	(7-12)	(19-26)	(23-32)	(14-20)	(24-35)	(57-66)	(43-52)	(2-7)	(24-34)	
Hot water	4	1	8	6	7	23	30	0	1	1	q414clhw
95% CI	(2-7)	(-1-4)	(6-11)	(3-9)	(4-9)	(17-28)	(26-35)	(0-1)	(-1-2)	(0-3)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Table 12. Sources of needles/syringes

Places known	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Pharmacy	98	65	44	54	63	79	95	82	84	49	q416phrm
95% CI	(92-103)	(60-70)	(39-48)	(49-58)	(58-67)	(73-85)	(94-96)	(73-91)	(78-91)	(43-54)	
Hospital	24	5	1	10	2	7	2	15	9	0	q416hosp
95% CI	(20-28)	(1-8)	(0-2)	(7-13)	(1-4)	(4-9)	(1-3)	(12-17)	(4-13)		
Drug dealer	27	9572	905	7596	1849	436	73	2446	466	8584	q416drdl
95% CI	(0-1)	(91-100)	(7-11)	(70-81)	(15-22)	(1-7)	(0-1)	(21-28)	(2-7)	(80-92)	
Injecting friend	2	5	11	3	3	3	3	1	29	1	q416frdl
95% CI	(1-4)	(3-7)	(7-14)	(1-4)	(2-5)	(1-5)	(2-5)	(0-3)	(23-34)	(0-2)	
NGO	3	15	81	81	55	74	62	68	1	40	q416ngo
95% CI	(1-5)	(12-18)	(75-86)	(76-87)	(51-60)	(68-80)	(57-67)	(63-74)	(-2-4)	(35-45)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Main source in past month

Pharmacy	96	8	14	14	40	45	78	50	73	19	q417mso
95% CI	(93-99)	(5-11)	(9-19)	(9-19)	(32-47)	(38-52)	(73-83)	(43-57)	(66-80)	(14-24)	
Health worker	0	0	0	0	0	0	0	0	1	1	
95% CI				(0-1)		(0-1)	(0-1)	(0-1)	(0-2)	(0-2)	
Hospital/clinic	3	0	0	4	0	1	1	0	4	0	
95% CI	(1-6)	(0-1)		(1-6)	(0-1)	(0-2)	(0-1)		(1-8)		
Dealer	0	91	4	42	11	2	0	9	1	66	
95% CI		(87-94)	(2-6)	(36-49)	(6-16)	(0-3)		(5-12)	(0-2)	(59-72)	
Friends	0	0	5	2	2	1	1	0	20	0	
95% CI	(0-1)	(0-1)	(2-8)		(0-4)	(0-3)	(0-1)		(13-27)		
NGO	0	0	77	40	43	49	20	41	1	14	
95% CI			(71-83)	(33-46)	(36-49)	(42-56)	(16-25)	(34-48)	(0-2)	(9-18)	
Denominator	248	404	339	332	396	405	303	326	197	267	

Main source of needles/syringes among those <25

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Pharmacy	97	4	9	23	53	56	73	53	77	28	q417mso
Health worker	0	0	0	0	0	0	0	0	0	4	agelt25
Hospital/clinic	1	93	0	0	2	2	0	0	12	0	
Dealer	0	3	6	51	4	2	0	15	0	63	
Friends	2	0	7	0	3	2	1	0	11	0	
NGO	0	37	78	26	34	37	26	32	0	5	

Main source of needles/syringes among those >=25

Pharmacy	96	10	16	13	37	36	80	49	71	17
Health worker	0	0	0	0	0	1	1	1	2	0
Hospital/ clinic	4	89	0	4	0	0	1	0	2	0
Dealer	0	0	3	42	13	1	0	7	1	66
Friends	0	0	4	0	2	0	1	0	22	0
NGO	0	63	77	41	44	60	18	43	1	15

Main source of needles/syringes among those injecting =< 1 year

q417mso

injlt1yr

Pharmacy	94	10	9	20	44	49	84	55	77	20
Health worker	0	0	0	1	0	0	0	0	2	1
Hospital/clinic	2	0	0	2	0	2	0	0	4	0
Dealer	0	89	6	42	17	0	0	17	2	67
Friends	4	0	7	0	2	3	1	0	13	0
NGO	0	1	78	35	28	44	15	28	3	11

Main source of needles/syringes among those >1 year

Pharmacy	96	7	16	12	38	44	76	47	71	18
Health worker	0	0	0	0	0	0	1	1	1	0
Clinic	4	0	0	4	1	1	1	0	5	0
Dealer	0	91	3	44	9	2	0	5	1	64
Friends	0	0	4	0	2	1	1	0	22	0
NGO	0	1	77	41	48	51	22	47	0	18

SEXUAL BEHAVIORS and STDs

Table 1. Sexual Activity

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Ever had sex	72	93	81	94	89	84	90	91	93	78	q501evsx
95% CI	(65-79)	(90-97)	(77-86)	(91-97)	(86-93)	(79-83)	(87-93)	(87-95)	(89-97)	(72-85)	
Denominator	249	404	406	332	397	409	305	326	199	268	
Had sex in past month	44	35	38	24	30	42	47	46	61	53	
95% CI	(36-53)	(29-41)	(31-46)	(19-30)	(24-35)	(36-49)	(40-54)	(40-52)	(52-69)	(45-62)	
Denominator	181	377	339	310	361	347	276	303	184	208	

Table 2. Types of recent sex partners

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Sex with regular partner in last month (those having sex in the last month)											
	93	88	95	97	99	85	91	98	97	99	q505sxrg
95% CI	(85-102)	(81-95)	(92-98)	(94-99)	(98-100)	(77-93)	(85-97)	(7-100)	(93-100)	(97-101)	
Denominator	87	133	131	71	115	156	123	134	119	112	
Sex with regular partners in last month (all respondents)											
	30	29	31	22	27	30	38	41	55	41	q505all
95% CI	(23-37)	(24-34)	(25-37)	(17-27)	(21-32)	(25-36)	(32-44)	(35-47)	(46-63)	(34-49)	
Denominator	492	403	405	332	397	409	305	326	199	268	
Sex with paid partner in the last 12 months											
	23	33	21	12	9	32	26	25	57	14	q509any
95% CI	(18-28)	(29-37)	(18-25)	(9-15)	(6-11)	(28-36)	(22-29)	(21-29)	(51-64)	(11-18)	
Denominator	244	404	404	332	394	408	303	326	195	268	
Sex with casual partner in the last 12 months											
	10	12	16	12	8	22	20	12	51	14	q513all
95% CI	(6-14)	(8-15)	(11-21)	(7-17)	(5-12)	(17-26)	(15-25)	(8-16)	(43-59)	(9-20)	
Denominator	248	403	403	332	395	409	305	326	199	261	
Only regular partner in last 12 months											
	26	26	32	24	43	24	28	34	7	33	onlyregprt
95% CI	(21-32)	(22-30)	(27-37)	(20-28)	(38-47)	(20-27)	(24-32)	(30-38)	(3-12)	(28-39)	
Denominator	244	404	404	332	394	408	303	326	195	268	
Only paid partner in last 12 months											
	0	2	0	0	0	3	2	0	1	0	onlypaidprt
95% CI		(1-4)				(2-5)	(-1-5)	(0-1)	(-1-3)		
Denominator	244	404	404	332	394	408	403	326	195	268	
Regular and casual partner in the last 12 months											
	4	3	5	5	3	9	8	7	34	9	regcasprt
95% CI	(2-6)	(2-5)	(2-8)	(2-8)	(1-5)	(6-12)	(5-11)	(4-9)	(29-40)	(4-13)	
Denominator	249	404	406	332	397	409	305	326	199	268	

Regular and paid partner in the last 12 months

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
	6	5	7	2	3	9	11	12	38	8	regpaidprt
95% CI	(4-8)	(3-6)	(5-9)	(1-3)	(2-4)	(7-12)	(8-13)	(8-15)	(32-44)	(6-11)	
Denominator	244	404	404	332	394	408	303	326	195	268	

Ever had sex man

	7	16	2	2	0	3	5	9	13	2	q518mtm
95% CI	(3-11)	(12-21)	(0-3)	(1-4)	(0-1)	(1-5)	(2-7)	(5-13)	(7-19)	(0-4)	
Denominator	178	378	339	310	356	347	276	303	184	203	

Sex with a regular partner in the past 1 month by age group (among those having sex in the past month) — q505sxrg

Age <25	10	21**	22	25	21	22**	24***	30	37*	26*	agelt25
Age >=25	33	34	34	22	28	37	45	44	60	44	

Sex with a paid sex partner in the past 12 months by age group — q509any

Age <25	34	37	21	20	14	41	37	21	42	13	agelt25
Age >=25	21	31	21	9	8	24*	20*	26	62	14	

Sex with a casual sex partner in the past 12 months by age group — q513all

Age <25	13	12	20	32	9	20	24	13	48	24	agelt25
Age >=25	9	11	15	9	6	23	18	12	52	13	

Sex with a regular partner in the past 1 month by duration of injection (among all respondents) — q505all

=<1 year	21	17	38	31	26	27	41	51	57	46	injlt1yr
>1 year	30	32	27	18	26	31	37	36	53	34	

Sex with a paid sex partner in the past 12 months by duration of injection (among all respondents) — q509any

=<1 year	45	42	11	11	10	33	31	12	48	17	injlt1yr
>1 year	21	30	26*	11	8	31	24	31*	60	48	

Sex with a casual sex partner in the past 12 months by duration of injection (among all respondents) — q513all

=<1 year	6	9	16	11	5	12	26	6	54	13	injlt1yr
>1 year	10	12	16	12	7	25	18	15	50	17	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 3. Condom use with recent sex partners

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Used condom at last sex	33	20	18	33	17	26	22	35	14	18	q504mcdm
95% CI	(22-44)	(12-27)	(12-25)	(20-45)	(8-25)	(18-34)	(12-33)	(25-45)	(7-21)	(11-25)	
Denominator	87	132	126	71	115	154	123	133	119	110	
Condom use at last sex by age group											q504mcdm,
Age <25	27	30	13	15	14	36	21	53	10	2	agelt25
Age >=25	33	16	20	36	17	19	23	33	15	20	
Used condom last time with regular partner	30	12	16	33	18	14	19	35	14	18	q506lcdm
95% CI	(20-41)	(6-18)	(10-23)	(23-44)	(9-27)	(8-21)	(11-27)	(25-44)	(6-21)	(11-25)	
Denominator	80	117	119	67	113	133	115	131	115		
Always used condom with regular partner	89	89	52	61	61	37	52	55	21	40	q507rfrq
95% CI	(59-119)	(65-113)	(32-73)	(37-86)	(45-76)	(-14-88)	(17-88)	(39-71)	(21-21)	(18-61)	
Denominator	30	16	27	24	23	20	23	46	14		
Used condom with last paid partner	86	91	79	can't run	67	84	73	81	17	78	q510cdm
95% CI	(80-91)	(86-97)	(68-90)		(52-82)	(76-92)	(60-86)	(69-04)	(10-25)	(67-88)	
Denominator	61	138	75		43	132	79	81	108	47	
Always used condom with paid partner	88	97	85	91	79	86	can't run	91	43	52	q511cfrq
95% CI	(82-93)	(96-97)	(76-94)	(88-94)	(68-90)	(78-94)		(85-97)	(28-57)	(14-90)	
Denominator	51	127	65	38	30	110		64	43	37	
Used condom at last sex with casual partner	54	45	49	41	33	37	8	18	17	38	q515cdm
95% CI	(33-74)	(31-60)	(35-63)	(28-55)	(16-51)	(23-50)	(1-16)	(5-31)	(9-25)	(15-60)	
Denominator	29	56	62	33	31	99	61	36	108	41	
Always used condom with casual partner	85	87	64	80	86	can't run	can't run	89	20	33	q516cfrq
95% CI	(76-94)	(70-105)	(20-108)	(57-102)	(77-95)			(67-112)	(20-20)	(11-55)	
Denominator	16	25	32	15	12			8	21	20	

Table 4. Reasons condoms were not always used

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
With regular partner											
Doesn't like condoms	1	1	10	2	2	9	6	7	9	5	q508rsnl
95% CI	(0-2)	(0-2)	(7-13)	(1-3)	(1-3)	(5-12)	(4-8)	(4-9)	(6-13)	(1-10)	
Not necessary	7	13	14	7	8	14	23	18	25	25	q508unnc
95% CI	(5-1)	(10-15)	(11-17)	(5-10)	(6-10)	(10-18)	(19-27)	(14-21)	(19-30)	(20-31)	
Forgot	0	0	2	1	0	14	0	0	6	2	q508frgt
95% CI			(1-4)	(0-2)		(10-18)			(2-9)	(-1-4)	
Denominator	249	404	404	332	396	409	305	326	199	268	
With paid partner											
Not available	2	1	2	1	2	4	6	1	20	3	q512ntav
95% CI	(0-3)	(0-2)	(1-3)	(0-2)	(1-3)	(1-6)	(4-9)	(0-2)	(15-25)	(1-4)	
Forgot	4	1	1	0	1	0	1	0	8	1	q512frgt
95% CI	(0-2)	(-2-4)	(0-2)		(0-1)		(0-2)	(0-1)	(4-12)	(-1-3)	
Denominator	249	404	404	332	396	409	305	326	199	268	
With casual partner											
Not available	1	3	5	5	4	9	12	5	18	4	q517ntav
95% CI	(0-2)	(2-5)	(3-6)	(2-8)	(3-6)	(6-12)	(8-15)	(3-7)	(13-22)	(2-6)	
Don't like condoms	1	1	1	1	0	4	1	3	12	5	q517rsnl
95% CI	(0-2)	(0-3)	(1-2)	(0-2)	(0-1)	(2-6)	(0-2)	(1-5)	(8-15)	(1-10)	
Not necessary	2	2	4	2	0	4	4	2	14	1	q517unnc
95% CI	(1-4)	(1-4)	(2-6)	(0-3)		(2-6)	(2-6)	(0-3)	(10-18)	(0-2)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Table 5. Sources of condoms

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Knows a place for condoms	92	95	80	90	58	90	87	91	88	73	q522obtc
95% CI	(88-97)	(92--99)	(73-88)	(86-94)	(51-65)	(85-94)	(83-92)	(86-95)	(82-93)	(67-80)	
Denominator	249	377	339	311	360	347	276	303	198	267	
Places known as a source of condoms											
Pharmacy	71	80	12	27	14	46	87	36	38	42	q523phrm
95% CI	(65-77)	(76-85)	(10-15)	(23-31)	(11-16)	(39-52)	(83-92)	(32-39)	(31-45)	(36-47)	
Shop	42	2	9	7	9	27	37	12	25	4	q523shop
95% CI	(36-47)	(1-3)	(7-11)	(4-10)	(6-11)	(22-32)	(33-41)	(10-15)	(19-31)	(2-6)	
Betel shop	58	4	4	8	2	7	2	11	42	2	q523bshp
95% CI	(53-63)	(2-5)	(2-6)	(5-11)	(1-3)	(4-9)	(0-3)	(9-14)	(36-49)	(0-4)	
Hospital/ clinic	19	8	8	18	8	5	16	28	7	5	q523hosp
95% CI	(16-23)	(5-10)	(6-10)	(14-22)	(6-10)	(2-7)	(13-20)	(25-32)	(4-10)	(3-8)	
Guest house	27	18	3	6	1	7	2	3	0	0	q523gsth
95% CI	(23-31)	(15-21)	(1-4)	(3-9)	(0-1)	(3-11)	(1-2)	(1-5)			
Health educator	8	20	2	0	1	1	0	4	2	4	q523hled
95% CI	(6-11)	(16-23)	(1-4)		(0-1)	(0-3)	(0-1)	(2-5)	(0-3)	(2-6)	
Friend	3	3	1	1	0	1	4	0	6	3	q523frnd
95% CI	(1-4)	(1-5)	(1-2)%	(0-2)		(0-3)	(2-6)	(0-1)	(2-9)	(1-5)	
NGO	16	34	57	62	37	42	48	67	16	52	q523ngow
95% CI	(12-20)	(30-38)	(53-62)	(57-67)	(34-40)	(36-48)	(43-52)	(62-73)	(12-21)	(45-59)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Table 6. Knowledge about STDs

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Aware of STDs	94	92	77	63	58	82	84	85	70	74	q601sxdz
95% CI	(90-99)	(89-96)	(72-83)	(57-70)	(52-64)	(76-88)	(79-88)	(80-89)	(62-78)	(67-81)	
Denominator	248	404	404	332	396	409	305	326	198	268	
Symptoms among women respondents are aware of											
Don't know	55	56	46	36	38	53	74	52	53	60	q602dnkn
95% CI	(49-61)	(52-60)	(41-50)	(31-40)	(34-42)	(47-59)	(68-79)	(47-56)	(46-59)	(54-67)	
Foul smelling discharge	36	23	13	13	8	10	5	22	7	7	q602smds
95% CI	(30-41)	(19-26)	(11-16)	(10-16)	(6-10)	(7-13)	(2-7)	(19-26)	(4-10)	(5-10)	
Genital itching	9	7	8	2	4	4	4	7	5	5	q602itch
95% CI	(6-13)	(4-11)	(6-9)	(0-3)	(3-6)	(2-6)	(3-5)	(5-9)	(2-7)	(3-8)	
Pain with urination	11	4	4	3	4	3	4	1	5	2	q502pnur
95% CI	(8-14)	(2-5)	(3-6)	(1-4)	(3-6)	(2-5)	(2-7)	(0-1)	(2-8)	(1-3)	
Pain during sex	6	1	3	0	1	2	0	1	1	1	q602pnsx
95% CI	(3-8)	(0-2)	(2-5)		(0-2)	(0-3)	(0-1)	(0-1)	(-1-3)	(0-2)	
Genital ulcer	10	14	13	6	5	15	5	15	5	6	q602gnul
95% CI	(7-13)	(10-17)	(10-15)	(4-8)	(3-6)	(11-19)	(3-6)	(12-19)	(2-7)	(3-8)	
Swelling groin	4	0	3	5	3	8	2	6	1	2	q602swgr
95% CI	(2-5)	(0-1)	(2-4)	(2-7)	(1-4)	(5-11)	(1-3)	(4-8)	(-1-3)	(0-4)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Symptoms among men respondents are aware of

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	
Don't know	25	18	26	19	22	38	51	17	19	35	q603dnkn
95% CI	(20-30)	(14-21)	(22-30)	(15-22)	(19-26)	(32-44)	(46-56)	(14-21)	(14-23)	(30-40)	
Discharge	61	54	24	20	19	17	14	41	38	30	q603dsps
95% CI	(56-66)	(49-59)	(21-27)	(16-23)	(16-22)	(13-21)	(10-17)	(36-45)	(31-44)	(24-36)	
Painful urination	36	31	18	20	10	10	8	32	16	11	q603pnur
95% CI	(31-41)	(27-35)	(15-21)	(16-23)	(7-12)	(6-13)	(4-11)	(28-36)	(11-21)	(8-15)	
Pain during sex	12	2	4	1	1	0	2	2	4	5	q603pnsx
95% CI	(9-15)	(1-2)	(2-6)	(0-2)	(0-2)	0	(1-3)	(1-3)	(1-8)	(3-7)	
Genital ulcers	32	46	30	13	11	26	19	25	22	25	q603gnul
95% CI	(27-36)	(42-50)	(27-34)	(10-16)	(9-14)	(21-31)	(16-23)	(22-29)	(17-28)	(19-30)	
Swelling in groin	12	12	17	13	7	19	21	24	8	8	q603swgr
95% CI	(9-15)	(8-16)	(14-20)	(9-17)	(5-8)	(14-24)	(17-25)	(20-27)	(4-12)	(3-12)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Table 7. History of STD symptoms in the past 12 months

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Urethral discharge	6	3	2	17	17	4	6	5	20	3	q604dis
95% CI	(2-9)	(1-4)	(0-3)	(12-22)	(13-22)	(2-7)	(3-8)	(2-8)	(14-25)	(0-6)	
Denominator	249	404	399	332	395	409	305	326	199	268	
Genital ulcer	6	3	1	8	5	6	26	3	15	1	q605ulcr
95% CI	(2-9)	(1-5)	(0-2)	(5-12)	(2-7)	(2-10)	(26-26)	(1-5)	0	0	
Denominator	248	404	385	331	393	409	18	326	197	267	
Urethral discharge by age group											
Age <25	5	2	0	5	18	9	7	4	11	3	
Age >=25	6	4	2	19*	17	0**	5	5	22	3	
Genital ulcers by age group											
Age <25		2	0	9	6	8	0	4	11	0	
Age >=25	5	4	1	8	5	4	38	3	17	1	

#skip pattern for Waimaw genital ulcer is a problem. Question was only asked of people who had urethral discharge

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 8. Treatment seeking behavior

	YGN	MAN	LAS	MUS	KUK	MYI	WAI#	BAM	KAL	TAM	Variable name
Sought treatment	27	86	42	24	17	90		70	68	20	q606sktx
95% CI	(27-27)	(86-86)	(11-74)	(14-33)	(3-31)	(90-90)		(44-96)	(56-79)	(-2-41)	
Denominator	15	15		75	59	24		20	49	9	

#skip pattern for Waimaw genital ulcer is a problem. Question was only asked of people who had urethral discharge

KNOWLEDGE & SERVICE UTILIZATION

Table 1. Awareness of HIV and AIDS

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Ever heard of HIV or AIDS	99	100	91	98	93	97	97	98	93	96	q608hiv
95% CI	(96-100)		(86-96)	(96-99)	(90-96)	(95-99)	(95-98)	(97-100)	(89-93)	(94-99)	
Denominator	249	404	404	332	394	409	305	326	199	268	
Know someone who is infected	78	76	50	68	56	53	63	55	83	63	q610know
95% CI	(71-84)	(70-81)	(43-56)	(62-75)	(49-64)	(47-59)	(57-69)	(49-61)	(79-88)	(55-71)	
Denominator	247	404	381	332	375	395	294	320	185		
Knows someone who is infected by age group											q610know
Age <25	57	67	42	71	48	43	63	32	82	56	agelt25
Age >=25	81**	81**	53	67	58	62***	63	60**	84	64++	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 2. Sources of most information about HIV

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Health staff/NGO staff/teacher	51	63	65	70	60	51	77	83	33	43	q609hlst
95% CI	(46-57)	(59-68)	(60-70)	(65-75)	(56-69)	(45-58)	(71-82)	(77-90)	(27-40)	(37-49)	
Radio/TV/ Media	54	76	35	12	8	32	7	10	36	50	
95% CI	(49-60)	(71-81)	(30-39)	(9-14)	(6-11)	(26-39)	(5-9)	(7-13)	(29-42)	(44-57)	
Friends/Relatives	20	16	25	30	35	22	21	9	44	33	
95% CI	(!6-25)	(13-19)	(20-29)	(25-35)	(31-39)	(17-27)	(17-24)	(6-12)	(38-50)	(27-39)	
Denominator	249	404	404	332	396	409	305	326	199	268	

Table 3. Comprehensive knowledge of HIV prevention and transmission#

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Has comprehensive Knowledge	60	76	28	25	21	14	27	61	37	25	compknow
95% CI	(54-65)	(71-81)	(23-34)	(21-29)	(16-25)	(10-19)	(22-31)	(55-68)	(32-43)	(20-30)	
Denominator	249	404	406	332	397	409	305	326	199	268	
Comprehensive knowledge by age group											
Age <25	60	66	21	12	19	21	15	50	32	21	agelt25
Age >=25	60	81++	31	27	21	31*	32*	64*	39	26	
Comprehensive knowledge by duration of injection											
injected =<1 year	55	69	30	12	15	29	13	47	44	25	injlt1yr
injected > 1 year	60	78	28	32**	23	25	31*	68**	35*	25	
Comprehensive knowledge by literacy in Myanmar language											
Literate	60	76	30*	30**	26***	28**	28	62*	39	28	noreadwri
Illiterate	--	38	27	8	6	0	0	0	11	14	
Comprehensive knowledge by monthly income											
>150,000 kyats	58	79	29	32	29	32	30	68	35	29	incmlt150
<150,000 kyats	62	67	29	19	14	15	19	50	41	23	
Comprehensive knowledge by sources of most information about HIV											
Not from health professional	50*	65***	26	12***	6***	32**	11**	35***	30**	21+++	q609hlst
From health professional	70	82	30	31	30	21	31	67	53	30	
Not from the media	59	78	31	24	21	15***	27	60	33	19	q609mdia
From the media	61	75	24	34	19	50	18	79	45	31	
Not from relatives friends	58	73	28	30**	25**	27	29	62	41	32**	q609rlfr
From relatives or friends	65	89	29	14	12	24	17	56	33	12	

as defined by Global AIDS progress and response reporting guidelines, Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 4. Correct responses to specific knowledge questions

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Can get HIV by injecting with others' needles	93	98	86	94	91	92	92	96	84	93	q615usnd
95% CI	(89-97)	(96-99)	(81-91)	(90-97)	(87-95)	(89-96)	(89-95)	(93-98)	(78-90)	(89-97)	

Included in GARPR definition of comprehensive knowledge

Can reduce risk with one uninfected sex partner	84	96	78	79	52	71	78	88	76	66	q611rskp
95% CI	(79-90)	(92-99)	(71-84)	(73-85)	(46-58)	(64-77)	(73-83)	(85-92)	(70-83)	(59-73)	
Mosquitoes can't transmit HIV	86	89	64	52	54	56	61	79	54	46	q612mosq
95% CI	(80-92)	(84-93)	(57-71)	(46-59)	(46-61)	(50-63)	(55-66)	(74-84)	(46-62)	(39-53)	
Can reduce risk by using condoms every time	86	100	82	88	83	89	82	95	72	84	q613rskc
95% CI	(81-92)	(99-100)	(76-89)	(83-93)	(78-87)	(86-93)	(78-87)	(92-97)	(65-79)	(78-89)	
Sharing food can't transmit HIV	93	97	75	75	70	82	76	89	75	73	q614shfd
95% CI	*(88-97)*	*(95-99)*	*(69-82)*	*(68-81)*	*(64-75)*	*(77-88)*	*(72-81)*	*(85-93)*	*(68-82)*	*(66-80)*	
A healthy looking person can have HIV	83	86	35	56	62	62	53	83	76	75	q616look
95% CI	(76-89)	(82-91)	(28-42)	(50-63)	(55-68)	(56-68)	(46-59)	(79-87)	(70-83)	(68-82)	

Table 5. Awareness of treatment for HIV

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Aware	96	96	63	67	47	74	73	76	79	79	q625htx
95% CI	(93-98)	(93-98)	(56-70)	(61-73)	(41-53)	(68-80)	(67-78)	(71-82)	(73-85)	(59-75)	
Denominator	247	404	401	332	396	409	305	325	183	261	
Awareness of treatment by age group											q625htx &
Age <25	96	98**	63	67	49	71	77	79	79	67	agelt25
Age >=25	92	65	66	64	40	78	65	64	79	64	
Aware of treatment by duration of injection											injlt1yr
>1 year	0	97	67	67	49	76	75	81	78	80	
=<1 year	0	92	57	65	42	70	68	65	81	58	
Aware of treatment by monthly income											incmlt150
>150,000	97	95	76	73	57	79	74	79	84	67	
<150,000	91	97	57	61	40	63	35	70	80	67	
Aware of treatment by literacy in Myanmar language											noreadwri
Literate	96	96	77	70	52	76	74	77	80	67	
Illiterate	--	100	40	57	34	49	35	19	65	68	
Awareness of treatment by main source of information on HIV											q609hlst
Not from health care provider	95	93	44	58	34	67	63	56	76	59	
From health care provider	96	97	73	71	56	81	76	80	84	77	
Not from media	96	93	61	64	48	69	73	76	77	61	q609mdia
From media	95	97	68	89	45	84	71	84	81	72	
Not from relatives/ friends	95	95	65	71	49	76	72	77	80	72	q609rlfr
From relatives/ friends	99	98	57	57	45	67	75	72	78	57	
Awareness of treatment by comprehensive knowledge											compknow
No	93	91	59	62	43	69	72	67	75	65	
Yes	97	97	74	81	64	89	76	82	85	74	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 6. HIV testing experience

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Ever tested for HIV	58	51	70	65	32	39	39	52	33	40	q617evtst
95% CI	(53-64)	(47-56)	(64-76)	(59-71)	(28-36)	(33-46)	(34-44)	(47-57)	(27-38)	(35-45)	
Denominator	248	404	406	332	394	409	304	326	199	268	
Tested in the last year	12	23	48	39	15	14	17	22	12	15	q617lstyr
95% CI	(9-15)	(19-28)	(41-55)	(35-44)	(12-18)	(10-19)	(13-22)	(19-25)	(8-15)	(12-18)	
Denominator	248	404	406	332	394	409	304	326	199	268	
Tested for HIV & got results in the last year	11	28	41	30	10	11	15	13	10	10	q617lstyr &
95% CI	(7-16)	(23-34)	(34-48)	(25-36)	(6-14)	(7-16)	(10-21)	(10-16)	(6-15)	(6-14)	q618rcrs

Table 7. Correlates of ever being tested for HIV

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Age group											agelt25
>25	63***	59***	71	68+++	33	47***	48***	56+	33	43	
<25	30	38	67	38	29	30	21	38	30	27	
Literacy											noreadwri
Literate	58	51	80***	66	36***	39	40	53	32	37	
Illiterate	--	87	54	61	20	40	26	10	31	53	
Monthly income											incomlt150
>150,000 kyats	55	58**	76	69**	35	41	47***	53	23	38	
<150,000 kyats	63	31	67	62	30	42	29	52	32	42	
Comprehensive knowledge											compknow
No	49*	46	69	60**	25***	37**	34***	52	24**	36***	
Yes	65	53	73	80	61	46	55	53	48	53	
Ever used previously used N/S											q408usev
No	51**	47***	72	60	29*	41	41	46	41*	34	
Yes	74	73	68	74	36	37	39	58	28	54	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 7 (cont.) Correlates of ever being tested for HIV

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	
Used previously used N/S last time											
No	56*	51	71	64	33	43	44+	56	35*	38++	
Yes	83	0	69	73	29	27	33	37	28	55	
Had a paid sex partner in the past 12 months											q509any
No	59	50	68	64	30%**	42	42	53	36	38	
Yes	56	53	80	74	51	34	34	51	29	56	
Ever had drug treatment				-	-	-	-	-	-	-	q423evtx
No	44***	44***	65***	59**	24***	32***	31***	28	32	30***	
Yes	80	69	83	80	55	78	70	75	34	74	
Ever had methadone treatment											q424meth
No	55++	50++	67*	61**	27	39	39	53	33***	38++	
Yes	83	67	89	85	76	48	71	39	0	64	
Heard of treatment for HIV											q625htx
No	17+	53	63*	58**	16***	32++	21**	36++	18*	33	
Yes	61	51	75	69	50	42	46	58	40	46	
Wants results of survey HIV test											q626gtrs
No	22	61	69	--	--	38	46	66	31	63	
Yes	60	51	70	65	32	39	39	51	33	39	
Used methadone in the last 3 months											q703mthd
No	52**	51	69	62***	26***	36***	39*	32***	32	40	
Yes	77	85	89	93	92	68	100	82	51	9	
Went to a DIC in the last 3 months											q702dic
No	52***	43***	45	52***	16***	41	32*	27+++	can't run	Can't run	
Yes	98	82	81	74	59	37	43	68			
Has spouse been tested					-	-	-	-	-	-	q624tstp
No	35	48,9%	66	64%	19	35	38	49	37	38	
Yes	76	94	99	93	72	82	64	84	58	68	
No spouse	62	48	66	55	41	30	31	46	24	33	

Table 7 (cont.) Correlates of ever being tested for HIV

Knows someone infected with HIV

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
No	33	43	66	57	24	29	34	44	30	31	q610know
Yes	66	54	77	70	42	51	44	60	36	48	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 8. Place of last HIV test

Among ever tested

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Government clinic	23	12	15	13	28	21	17	24	15	14	
95% CI	(!4-31)	(6-18)	(9-20)	(8-18)	(18-37)	(13-28)	(7-28)	(17-31)	(2-27)	(8-20)	
Private clinic	44	33	3	6	2	18	9	6	64	4	
95% CI	(34-54)	(23-40)	(0-5)	(1-10)	(0-4)	(9-27)	(2-17)	(1-10)	(44-84)	(2-8)	
NGO clinic	32	54	81	76	62	60	73	69	17	59	
95% CI	(22-41)	(47-61)	(75-87)	(70-83)	(51-73)	(50-71)	(63-83)	(62-77)	(7-26)	(48-70)	
Denominator	156	221	290	233	144	154	118	197	66	132	

Among those tested in the last year

Government clinic	9	12	14	7	4	25	21	19	25	8	
Private clinic	50	22	1	0	0	12	7	6	41	5	
NGO clinic	41	31	85	87	86	63	72	74	33	75	
Tested at an NGO in the past 3 months	7	9	32	22	12	2	6	8	can't run	Can't run	q701ngon
95% CI	(4-19)	(6-12)	(26-38)	(16-27)	(8-16)	(1-4)	(3-10)	(5-11)			
Denominator	243	404	405	332	397	407	303	326			

Table 9. Reason for last HIV test

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
I wanted to know	43	86	85	86	74	69	56	60	73	72	q619tstr
95% CI	(32-54)	(80-91)	(79-91)	(81-91)	(64-83)	(60-78)	(42-69)	(52-69)	(58-89)	(63-82)	
Spouse/ partner	0	3	1	0	2	1	0	2	0	2	
95% CI	0	(1-5)	(0-3)	(0-1)	(0-5)	(-1-3)	0	(1-3)	0	(-2-6)	
Friend	0	2	2	1	8	1	2	0	7	9	
95% CI	(0-1)	(1-4)	(0-4)	(0-2)	(0-17)	(0-3)	(-1-5)		(1-12)	(3-15)	
Doctor	21	3	8	10	5	19	20	37	13	14	
95% CI	(11-30)	(1-5)	(4-11)	(6-14)	(2-9)	(11-26)	(8-32)	(29-46)	(-2-28)	(7-21)	
Regular test	12	2	0	1	3	1	17	0	0	0	
95% CI	(6-17)	(0-4)	(0-1)	(0-2)	(0-6)	(0-3)	(6-28)				
Other	24	4	4	2	8	8	5	0	7	3	
95% CI	(16-32)	(0-8)	(0-8)	(0-4)	(3-13)	(3-14)	(2-8)		(2-11)	(1-4)	
Denominator	156	221	289	231	142	156	117	192	66	131	

Table 10. Received the result of last test

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Received result	96	99	85	79	73	77	85	87	92	63	q618rcrs
95% Lower Bound	(1-100)	(99-100)	(79-91)	(72-86)	(64-83)	(67-87)	(76-93)	(80-93)	(82-100)	(52-75)	
Denominator	155	220	287	233	141	156	120	200	66	131	
Received result by timing of last test											
Not tested - last year	97	100	86	79	75	74	81	90	94	62	
Tested in the last year	97	99	84	79	71	81	89	82	89	66	
Received result by place of last test											
Government clinic	87	100	97	93	79	67	77	34	89	62	
Private clinic	99	100	100	43	55	86	88	43	94	79	
NGO clinic	97	99	82	81	75	76	86	46	90	60	
Other	100	100	100	52	41	100	0	0	82	71	

Table 10. (cont.) Received the result of last test

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	
Wants IBBS test result	98	100	94	100	99	84	87	88	90	95	q626gtrs
95% CI	(95-100)	(99-100)	(91-97)		(98-100)	(79-88)	(83-91)	(85-92)	(84-95)	(93-98)	
Denominator	246	404	404		392	408	303	327	199	268	

Table 11. Places known where an HIV test can be done

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Public hospital	58	66	24	40	27	37	33	61	40	46	q623pubh
95% CI	(53-63)	(61-71)	(21-28)	(36-45)	(24-30)	(31-43)	(29-37)	(56-66)	(34-46)	(41-52)	
Private clinic	65	70	4	3	2	21	10	17	50	3	q623priv
95% CI	(59-71)	(65-74)	(2-6)	(1-5)	(1-3)	(16-26)	(7-13)	(14-20)	(43-56)	(1-5)	
NGO	47	56	75	69	33	59	64	82	14	40	q623ngoc
95% CI	(42-53)	(51-60)	(70-81)	(64-74)	(29-37)	(52-65)	(59-69)	(75-88)	(9-19)	(35-46)	
Denominator	249	404	404	332	396	409	305	326	198	268	

Table 12. Shared results of last HIV test (among those ever tested)

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Shared result	75	81	51	36	49	51	72	61	53	47	q621shrs
95% CI	(66-83)	(74-87)	(44-58)	(28-45)	(39-59)	(41-61)	(57-87)	(53-69)	(36-71)	(35-60)	
Denominator	156	221	286	233	141	156	109	191	66	132	
Person with whom result was shared (among those who shared)											
Spouse	17	35	26	26	10	1	6	4	6	23	q622sppt
Friend	53	46	41	70	58	60	48	37	62	75	q622frnd
Family	90	34	73	27	122	70	74	50	34	42	q622fmly
Among those who were ever tested and had a regular partner/spouse*											
Shared last result with spouse/partner	24	72	25	45	17	0	7	4	6	17	q622sppt

*Defined by having sex with a spouse or regular partner in the past 1 month

Table 13. Spouse has been tested

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Spouse has been tested	33	7	13	17	7	14	19	13	10	20	q624tstp
95% CI	(26-40)	(5-10)	(9-18)	(12-23)	(5-10)	(9-18)	(14-23)	(9-17)	(5-15)	(14-26)	
Denominator	239	396	361	318	385	363	263	325	159	251	
Spouse has been tested by whether respondent shared result of last test with spouse											q624tstp
Did not share	29	4	9	14	7	13	18	13	10	19	q622sppt
Shared result	83	28	48	62	59	100	29	13	25	54	

*percentage includes those without a spouse

Table 14. History of drug treatment with methadone

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Ever had methadone	12	7	15	17	10	1	2	6	0	8	q424meth
95% CI	(8-15)	(4-10)	(9-20)	(14-21)	(6-13)	(0-2)	(1-3)	(4-8)		(5-11)	
Denominator	249	404	406	332	397	409	305	326		268	
Methadone past 3 mth	25	2	7	10	9	9	1	42	1	0	q703mthd
95% CI	(16-35)	(1-3)	(4-9)	(6-14)	(5-13)	(5-13)	(0-3)	(35-49)	(0-3)		
Denominator	248	404	405	332	396	408	305	326	199	268	
Frequency of injection among those ever receiving methadone treatment											
less than daily	9	0	2	5	8	0	0	2	--	0	q424meth,
once a day	10	32	3	24	2	8	0	13	--	6	q406recat
2-3 times a day	62	47	82	59	84	60	73	85	--	78	
4+ times a day	19	21	14	12	6	32	27	0	--	15	
Frequency of injection among those who received methadone in the past 3 months											q703mthd
less than daily	26	0	6	5	5	24	0	14	35	0	q406recat,
once a day	10	32	24	23	17	0	26	25	0	0	
2-3 times a day	56	68	63	62	76	52	74	53	65	100	
4+ times a day	9	0	8	11	3	23	0	8	0	0	

Table 15. Correlates with receiving methadone in the past 3 months

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Age group											q703mthd
Age >25	25	3	7	10	9	14***	1	45*	1	0	agelt25
Age <25	30	0	6	11	8	3	2	27	2	0	
Duration of injection											injlt1yr
Injected >1 year	27	2	8+	12*	11**	12**	2	46+	0	0	
Injected =<1 year	11	0	3	5	3	1	0	32	5	1	
Monthly income											incmlt150
>150,000 kyats	25	2	11**	15*	12*	8+	0	46	7	0	
<150,000 kyats	28	1	4	5	6	14	2	35	0	0	
Marital status											q309marr
Currently married	19	1	4	14	10	19+++	0	44	1	0	
Divorced, separated, widowed	24	4	10	10	5	13	3	39	3	2	
Never married	30	1	8	8	9	4	2	41	1	0	
Recent use of amphetamines											q403amph
No	31	2	10	6	9	7+	1	34	1	1	
Yes	15	2	3	11	9	13	1	45	11	0	
Comprehensive knowledge											compknow
No	28	3	5**	7**	4***	9	1	32*	0*	0	
Yes	24	1	10	18	28	7	1	48	4	0	
Knows someone infected with HIV or died of AIDS											q610know
No	33	43	66**	57*	24***	29	34	44***	30	31	
Yes	66	54	77	70	42	51	44	60	36	48	
Receives most information on HIV from relatives/friends											q619rlfr
No	27	2	9**	13	11*	11*	2	43	1	0	
Yes	19	0	0	4	5	2	0	30	2	0	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 15. (cont.) Correlates with receiving methadone in the past 3 months

Receives most information on HIV from health worker	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
No	13***	1	3*++	1	4**	2***	0	22**	2	0	q619hlst
Yes	37	2	9	14	12	15	2	46	0	1	
Receives most information on HIV from media											q619mdia
No	26	3	5	10	8	10	1	41	1	1	
Yes	25	1	9	12	14	6	6	51	2	0	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 16. Recent exposure to drop-in-centers (DIC)

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Visited a DIC in the last 3 months	12	22	70	61	38	45	44	61	can't run	can't run	q702dic
95% CI	(6-18)	(16-28)	(62-78)	(54-69)	(30-46)	(38-52)	(37-50)	(55-67)			
Denominator	248	404	406	332	395	409	305	326	199	267	
Visited a DIC in the last 3 months by age group											agelt25
Age >= 25	15	19	72	60	41	46	46	65	can't run	can't run	
Age <25	0	28	63	68	22	44	39	42			
Visited a DIC in the last 3 months by duration of injection											injlt1yr
Injected > 1 year	13	22	72	64*	40*	47+	47++	65**			
Injected =< 1 year	0	23	67	53	33	41	36	51			

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05.

Table 17. Received a unique object

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Received a unique object	12	10	13	20	0	6	9	19	1	9	q704brct
95% CI	(5-18)	(6-14)	(9-17)	(14-27)		(3-8)	(6-12)	(14-23)	(0-3)	(4-14)	
Denominator	248	404	406	332		409	305	326	199	267	

HIV PREVALENCE

Table 1. Overall Prevalence

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
HIV prevalence#	29	16	28	43	35	35	47	45	6	20	q903fnl
95% CI	(22-36)	(11-20)	(22-33)	(37-50)	(29-42)	(29-41)	(40-54)	(39-51)	(4-9)	(14-26)	
Total	249	404	406	329	397	409	305	326	199	268	

#high number of indeterminate in Kukkhai

Table 2. HIV prevalence by socio-demographic characteristics

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Age group				-	-	-	-	-	-	-	q903fnl&
>25	35***	24***	29+++	0.44	38*	48***	55***	48	8	18	agelt25
<25	0	3	25	34	27	20	30	34	0	28	
Literacy in Myanmar language											
Literate	29	16	33	41	34	33**	47	45	6	15**	noreadwri
Illiterate	--	38	19	51	41	62	49	91	12	38	
Monthly income											
>150,000 kyats	29	15	31	49	31	38	48	43	7	19	incmlt150
<150,000 kyats	30	18	24	38	39	32	44	49	6	20	
Current marital status											
Married	33	19**	19+	41	34	39	51*	43	8*	15**	q309marr
Divorced, separated, widowed	21	25	38	49	46	59	70	54	13	35	
Never married	28	12	32	41	34	32	41	45	2	19	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05

Table 3. Drug-related risk behavior correlates of HIV prevalence

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Duration of injection											q903fnl
> 1yr	30+	20	33***	49**	42***	40***	55***	51***	7	32***	injlt1yr
=< 1yr	16	3	17	27	18	22	24	32	5	11	
Ever used previously used needle/syringe											q408usev
No	26	10***	20***	33***	25***	28	32+++	25***	4	11*	
Yes	35	49	41	59	49	43	56	61	8	37	
Used previously used needle/syringe at last injection											q409all
No	27*	16	26	41**	35	32+++	43+	43	4	18	
Yes	46	100	40	63	39	44	54	55	11	34	
Injected with a new needle at last injection											q419nwnd
Yes	28	16	27	44	35	34+	45	46	5	18	
No	40	24	33	27	40	46	54	28	8	22	
Main source of needle/syringes#											q417mso
Don't know					1						
Pharmacy	0.28	0.09	0.17	0.38	0.32	38%*	0.46	0.36	0.07	19%**	
Health worker				0		0	1	0	0.31	1	
Hospital/clinic	0.57	0.34		0.51	0	0	0		0.05		
Sex partner											
Drug dealer		0.17	0.2	0.44	0.25	0.86		0.35	0	0.15	
Friend	0		0.03		0.15	0	0.56		0.04		
NGO		0.05	0.33	0.44	0.42	0.33	0.5	0.59	0	0.4	
Other		0			0.35	0.26				0	
Types of injecting venues											
Does not inject in public	31	15	27	44	35	37%+	46	47	8	19	q407pub
Injects in public places	24	32	31	32	36	33	67	14	4	25	

#Shading of cells indicates less than 15% of the sample was in this row category, i.e. cell sizes were small.

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05

Table 4. Sex-related risk behavior correlates of HIV prevalence

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
Had sex with a regular partner in the last month					-	-	-	-	-	-	q505sxrg
No	5	48	56	100	1	41	35	87	0	17	
Yes	30	16	23	26	33	40	43	37	7	18	
Had a paid sex partner in the past 12 months					0	0	0	0	0	0	q509any
No	30	13%*	23%***	44	35	35	49	45	11	20	
Yes	27	22	47	41	38	35	38	45	3	19	
Ever had anal sex with another man					0	0	0	0	0	0	q518mtm
No	29	15	27	44	35	35	47	46	7	19	
Yes	24	22	51	9	100	51	40	35	2	17	

Table 5. Knowledge and service utilization correlates of HIV prevalence

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable
Comprehensive knowledge				-	-	-	-	-	-	-	
No	28	14	28	40	36	35	47	46	6	20	q903fnl
Yes	30	16	27	52	33	35	47	44	8	17	compknow
Receives most information about HIV from health providers											
No	21*	17	22*	43	29	31	49	50	7	19	q609hlst
Yes	37	15	31	43	40	39	46	44	6	21	
Receives most information about HIV from media											
No	31	14	25	44	36	38	47	44	7	21	q609mdia
Yes	28	16	34	40	26	29	45	52	5	18	
Receives most information about HIV from relatives/ friends											
No	31	16	29	45	39	35	45	45	4	20	q609rlfr
Yes	23	16	26	40	30	34	54	50	10	19	
Ever been tested for HIV											
No	19***	13*	32	32	35	32	49	40	6	13	q617evtst
Yes	37	19	26	49	36	40	43	50	8	29	

Table 5. (cont.) Knowledge and service utilization correlates of HIV prevalence

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	
Tested for HIV in the last year											q617tstlyr
No	31	17	34+++	41	37	39*	48	44	6	19	
Yes	21	13	21	46	27	13	42	48	8	25	
Wants result from survey HIV test											q626gtrs
No	9	39	67	43	38	34	55	58	4	21	
Yes	30	16	25	100	36	36	46	43	7	20	
Is aware of treatment for HIV											q625htx
No	10	7	15.9++	40	33	30	41	32+	6	22	
Yes	31	16	33.9	45	39	37	49	49	7	19	
Spouse has been tested											q624tstp
No	76	87	78	62	55	58	44	56	95	89	
Yes	61	64	65	14	47	53	54	53	76	66	
Does not have spouse	74	85	70	57	55	74	62	54	96	67	
Shared their last HIV test result with spouse/partner											q622sppt
No	58	69	70	48	51	53	54	45	87	63	
Yes	66	84	77	54	66	60	60	53	96	80	

Significance of chi-square statistic: ***=p<0.001, **=p<0.01, *=p<0.05

Table 6. Awareness of treatment by HIV status

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
HIV negative	94	95	57**	65	47	72	70	71*	79	68	q903fnl,
HIV positive	98	98	79	70	51	78	76	83	83	64	q625htx

Table 7. Never giving needles to someone else after using them in the last month by HIV status

	YGN	MAN	LAS	MUS	KUK	MYI	WAI	BAM	KAL	TAM	Variable name
HIV negative	67*	96	53**	94	67	80	64	73	17	84**	q903fnl,
HIV positive	82	92	80	87	64	70	70	88	27	55	q415gvfr

HEPATITIS B AND HEPATITIS C PREVALENCE

Table 1. Overall HBV Prevalence

	YGN	MAN	LAS	MUS	KUK#	MYI	WAI	BAM	KAL#	TAM
HBV prevalence	5.9	6.5	10.9	11.3		6.4	9.1	8		11.2
95% CI	(2.4-9.5)	(3.9-9.2)	(7.1-14.7)	(7.7-14.8)		(3.6-9.2)	(5.1-13.1)	(5-11)		(5.2-17.2)
Denominator	249	404	402	332		407	295	321		268
Missing	0	0	2	0		2	10	5		0

#Kukkai and Kalay data are not described because of more than 10% missing data.

Table 2. Overall HCV Prevalence

	YGN	MAN	LAS	MUS	KUK#	MYI	WAI	BAM	KAL#	TAM
HCV prevalence	61.3	21.8	60.6	69.2		73.1	80.9	71.3		41.5
95% CI	(51.2-71.4)	(16.3-27.1)	(53.4-67.9)	(63-75.3)		(67.2-78.9)	(75.5-86.2)	(65.4-77.1)		(34.3-48.6)
Denominator	249	404	402	331		405	295	302		268
Missing	0	0	2	1		4	10	24		0

#Kukkai and Kalay data are not described because of more than 10% missing data.

HIV AND HEPATITIS B, HEPATITIS C COINFECTION

Table 1. HIV and HBV co-infection Prevalence

	YGN	MAN	LAS	MUS	KUK#	MYI	WAI	BAM	KAL#	TAM
Prevalence of HIV and HBV co-infection	1.3	0.9	2.3	4.5		2.8	3.4	4.1		0.8
95% CI	*(0-2.6)*	*(0.1-1.8)*	*(0.8-3.9)*	*(2.2-6.8)*		*(0.9-4.8)*	*(1.8-5)*	*(2.3-6)*		*(0.1-1.6)*
Denominator	248	404	398	328		400	294	320		268
Missing	1	0	6	4		9	11	6		0

#Kukkai and Kalay data are not described because of more than 10% missing data.

Table 2. HIV and HCV co-infection Prevalence

	YGN	MAN	LAS	MUS	KUK#	MYI	WAI	BAM	KAL#	TAM
Prevalence of HIV and HCV co-infection	20.8	6.2	23.6	38.5		33.9	40	39.8		15.3
95% CI	*(14.7-26.9)*	*(3.4-9)*	*(18.4-28.7)*	*(32.3-44.9)*		*(28-39.7)*	*(34.3-45.8)*	*(33.8-45.5)*		*(10.3-20.6)*
Denominator	247	402	393	324		399	294	297		268
Missing	2	2	11	8		10	11	29		0

#Kukkai and Kalay data are not described because of more than 10% missing data.