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Ministry of Health
Department of Health
National AIDS Programme

Behavioral Surveillance Survey 2008

Injecting Drug Users and Female Sex Workers



**National Behavioural Surveillance Survey
2007-08 Report**

Myanmar

On

Injecting Drug Users and Female Sex Workers

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Abbreviations

AIDS	–	Acquired Immunodeficiency syndrome
ART	–	Antiretroviral therapy
ATS	–	Amphetamines
DIC	–	Drop in center
FSW	–	Female sex worker
HIV/AIDS	–	Human immunodeficiency virus
IDU	–	Injection drug user
INGO	–	International non-governmental organization
PMCT	–	Prevention of mother to child transmission
NAP	–	National AIDS Programme
NGO	–	Non-governmental organization
NSP	–	Needle and syringe exchange programme
RDS	–	Respondent driven sampling
STD/STI	–	Sexually transmitted disease/sexually transmitted infection
UNAIDS	–	Joint United Nations Programme on HIV/AIDS
VCCT	–	Voluntary confidential counselling and testing
WHO	–	World Health Organization

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Executive Summary

Background: To monitor the trajectory of the HIV epidemic among higher risk groups the National AIDS Programme (NAP) has a two prong surveillance system which consists of HIV sentinel sero-surveillance and behavioural surveillance surveys (BSS). Both are critical components for assessing and evaluating the overall impact of the national response to HIV and AIDS. The previous round of BSS, in 2003, were conducted among the general population. Between late 2007 and the first quarter 2008, BSS was conducted in female sex workers (FSW) and injection drug users (IDU), for first time by the NAP.

Method: The NAP employed respondent driven sampling (RDS), as a new method appropriate for the recruitment of hidden populations such FSW and IDU. This method relies on participants who meet the eligibility criteria to recruit their friends for the survey, and uses special statistical methods for the analysis of this type of chain-referral samples. Survey sites included Yangon, Mandalay, Lashio and Myitkyina for IDU; and Yangon and Mandalay for FSW.. Each FSW site had 275 respondents, while 225 IDU participated in each IDU survey site. Data collection for each site took approximately 2 months.

Results: For IDU - The age of IDU participating in the survey varied across sites. Participants were younger in Mandalay and Myitkyina, e.g. 37% were under 20 years of age in Myitkyina. While in Yangon and Lashio, the participants were much older e.g. almost 30% were over age 35. New injectors were more prominent in Myitkyina (58% of the sample having injected for less than 1 year). The majority of IDU in all sites were employed. Injection more than once a day over the last six months was quite common in Myitkyina (65%) and Lashio (77%); compared to only 22% in Mandalay and 1% in Yangon. The respondents included in the Yangon sample, had particularly low injection frequency. Half of the sample reported injecting only 2-3 times in the 6 months. Heroin was the most commonly used drug in all survey sites. However, the use of amphetamines was also relatively high across all townships. In Yangon, a large percentage of IDU also used tranquilizers by injection. In Myitkyina, 59% reported used codeine or cough syrup. The survey also found that IDUs primarily injected in their home or at friend's home, but one fifth (23%) injected in public areas such as street sites, parks or public latrines. Mandalay was unusual in that 87% reported injecting at the dealer's site. The pattern of sharing needles and syringes varied. In Yangon, 31% of IDU shared at last injection compared to 22% in Myitkyina, 19% in Lashio and only 5% in Mandalay. The percentages of always or almost always used injection equipment from others or handing off their used needles to someone else in the past 6 months were low in other areas except in Yangon (12% and 11% respectively). There was evidence that the use of pre filled syringe was still practiced in all areas but in Myitkyina it was about 15%. The most common person to share injecting equipment with was a friend. The most common material used for cleaning for injection equipment was plain water. Knowing where to obtain clean/new needles was common. Most of the IDUs mentioned the place of getting sterile needles and syringes were pharmacies, the second most common place were NGO and then from health workers and drug dealer's places. Knowledge of where to get condoms was also high and places they mentioned were similar places of needle exchange. Concerning service utilization of IDU targeted interventions, drop in centers (DICs) were visited most often by IDU in Lashio (70%) compared to IDU in other sites. Almost 30% of IDU in Yangon and Myitkyina mentioned having gone to an NGO clinic for service in the last month. Outreach coverage was highest in the Lashio sample (73%), compared to 43% in Mandalay, 28% in

Myitkyina and 21% in Yangon. The experience with detoxification or maintenance therapy with methadone was very low (only 4-7%) among the respondents. However, across all types of treatment, detoxification with a non-methadone drug was the most common form of treatment. The use of HIV counseling and testing services were reported by only half of the respondents in Yangon, Mandalay and Myitkyina whereas in Lashio 70% took that service. Approximately, two thirds reported to have gone for testing more than once. The majority went to an NGO center for their last test. And 89%-97% of them received the result while 61%-88% shared their results with family and friends. With respect to sexual risk behaviour, more than 90% of IDUs ever had sex in the past six months. Buying sex was reported by 48% of respondents in Mandalay, 41% in Yangon, 31% in Myitkyina and 9% in Lashio. Of those who bought sex recently, condom use at last sex with a paid partner was 61% in Yangon, 46% in Mandalay, 73% in Myitkyina and 87% in Lashio. The proportion of IDUs had sex with casual partners in the past six months was 26% in Myitkyina, 21% in Yangon, 17% in Mandalay and 11% in Lashio.

For FSW – Both sites attempted to sample FSW across different typologies. Assessment of network recruitment patterns suggested that in Mandalay, FSW recruited primarily from their own type, resulting in separate chains of recruitment. The distribution of types of FSW in the Mandalay sample is influenced by patterns of recruitment, and may not represent the actual proportion of different typology of FSW in the population. In Yangon, FSW participating in the survey recruited was not as strongly associated with typology. In part this reflects that a large percentage of FSW in Yangon solicited from multiple types of venues. In the Mandalay survey, FSW were slightly younger (median age of 25) than in the Yangon sample (median age >30); and were equally distributed across brothel, street, and entertainment based sex work. In Yangon, more than half of the FSW in the sample solicited at street based venues. The median age of starting sex work was 23 years in Mandalay and 24 in Yangon. Higher risk intensity was found among Mandalay sex workers, more than one third of respondents had more than 10 clients in the last week, compared to less than 10% in Yangon. Condom use was reported as very high among FSW in Mandalay (97% always or almost always used condoms) and moderately high in Yangon (83%). Despite high reported condom use levels, more than half of FSW in Mandalay and Yangon reported either a genital ulcer or discharge in the last year. Treatment seeking among those with a genital ulcer or discharge was moderately high (>70% in Yangon, and >60% in Mandalay). The vast majority sought treatment at a clinic, rather than self medicating or using other types of medical care. Patterns of intervention coverage varied between FSW in the Mandalay and Yangon surveys. In Mandalay, 48% of respondents had gone to an NGO clinic, 20% had been to another type of private clinic, and 68% had been contacted through outreach. In Yangon, a much higher proportion (72%) visited an NGO clinic and only 44% had been contacted through outreach. Private clinics were not commonly visited by respondents in Yangon. A majority of FSW respondents reported having an HIV test in the past 6 months (Yangon 74%, Mandalay 62%). The most common place for testing was an NGO clinic.

I. Background

A. The HIV epidemic in Myanmar and the importance of HIV surveillance

The HIV epidemic in Myanmar is one of the most serious faced in Asia. An exercise conducted in 2006 with international advisors and national stakeholders to estimate the total number of people living with HIV/AIDS in Myanmar, projected a figure of 242,000 adults and children living with HIV in Myanmar in 2007. This represents a prevalence of 0.67% of the adult population. The epidemic is driven by a combination of injection drug use and sex work and is believed to be concentrated in large cities and the north and eastern states, where large scale production and movement of illicit drugs occurs. Approximately, 40,000 female sex workers (FSW) and 60,000 IDU are estimated in Myanmar. (see *Technical report of estimation and projection of HIV and AIDS, Myanmar, 2007*). However, these numbers are fluid given the hidden and highly mobile natures of the population.

Given the concentrated nature of the epidemic, the National AIDS Programme has developed a strategy that puts focus on targeted interventions for high risk groups in townships where the magnitude and trajectory of the epidemic has the greatest potential for spread. Evidence from other countries in the region, with similar types of epidemics suggests the need to track the situation to ensure that the programmatic responses for both prevention, care and treatment match local needs. (*Redefining the Epidemic in Asia: Crafting an Effective Response, Commission on AIDS in Asia, 2008*) To do this, a robust system of both disease and behavioural surveillance is required.

B. Second generation surveillance in Myanmar

HIV surveillance activities have been conducted in Myanmar since 1992, primarily in the form of disease prevalence estimates among selected groups. However, more recently, the surveillance system has been strengthened by increasing the number of townships participating; collecting data consistently in the same sites to enhance the ability to look at trends; and updating protocols followed by increasing training and supervision to improve the technical rigor and quality of the data collected.

There are two main components for HIV surveillance in Myanmar, the HIV sentinel surveillance system (HSS) and the behavioural surveillance surveys (BSS). Through HSS, HIV prevalence is measured in more than 32 priority townships among antenatal clinic (ANC) attendees and male STD patients (34 sites). There are also sites in six townships where prevalence have been measured among injection drug users (IDU), and six townships for female sex workers (FSW).

C. History of BSS in Myanmar

The primary aim of BSS is to monitor levels of HIV-related risk in selected population groups and, over time, to assess and evaluate the overall impact of the National AIDS Programme and partners' efforts. In conjunction with data from the HSS, these behavioural data provide an evidence base from which to inform ongoing policy development, programme initiatives and advocacy.

In 2003, the National AIDS Programme (NAP) carried out BSS in seven key sites in Myanmar; Yangon, Mandalay, Dawei, Lashio, Meiktila, Taunggyi and Monywa. In 2007, the NAP conducted again BSS

in Shwebo, Hpa-an and Kawthoung. At each survey, a probability sample of the general population was obtained through stratified, multi-stage cluster sampling of households, to enable separate estimates for urban and rural males and females aged between 15 and 49 years. The survey instrument assessed respondents' levels of risk and knowledge about HIV-related information.

In 2007-2008, BSS was conducted among four groups of IDU (in Yangon, Mandalay, Lashio, and Myitkeeya), two groups of FSW (in Yangon and Mandalay), and five sites of both female and male out of school youth (in Yangon, Mandalay, Lashio, Monywa, and Meikhtila.). These surveys took place between December 2007 and March 2008. The inclusion of FSW and IDU represents the first time probability-based samples of high risk groups have been included in the Myanmar HIV surveillance system.

D. Objectives of the IDU and FSW surveys

Given the importance of IDU and FSW populations to understanding the underlying dynamics of the HIV epidemic in Myanmar, the BSS had three key objectives:

- To provide a more detailed profile of the key populations and the context of risk behaviour
- To quantify the level of risk behaviour among groups in each township and potential for transmission among and between groups.
- To assess the level of access and use of prevention and testing services available to high risk groups in each area.

The first and second objectives are consistent with the concept that to “Know Your Epidemic,” is a critical step in planning an appropriate and effective response.

E. Partnership and Collaboration

The BSS, including development of protocols, training, field support, and analysis, was conducted as a partnership between the National AIDS Programme (NAP) and WHO with financial support from the Three Diseases Fund and WHO. The survey field work was conducted by independent field teams, under the supervision and guidance of the AIDS/STD Team leaders with cooperation from local authorities and NGO partners. The success of the survey is due to the spirit of collaboration and the shared interest in collecting high quality, relevant information that will ultimately benefit the participants and their communities.

II. Methodology

A. Sampling methodology

Due to marginalized status of IDU and FSW populations, members of these communities are largely hidden and highly mobile, making conventional methods of sampling infeasible. Respondent driven sampling (RDS) was selected for the BSS of IDU and FSW as a probability based method that addresses the challenges of sampling these unconventional populations.

Through a highly controlled method of chain recruitment, RDS allows respondents to recruit their peers for the survey, and gives flexibility to potential respondents to participate in the survey at a time convenient and comfortable to them. This sampling method relieves the burden of field teams to identify members of the target population from public venues, construct a sampling frame, develop rapid rapport and trust among potential respondents, or conduct interviews in public locations at times that may be inconvenient for respondents.

Despite these clear advantages, survey teams face a number of theoretical and operational challenges for ensuring that RDS provides a representative sample of the population of interest. The theoretical challenges for a successful RDS survey are to confirm that the target population is connected to each other (i.e. well networked) and that respondents choose randomly from their eligible friends. The key operational challenge of an RDS survey lies in establishing a single survey site (i.e. an RDS center) in an area easily accessible and non-threatening to most members of the survey population. Special effort is also required in managing the system of recruitment to track linkages between respondents; avoid duplicative or ineligible respondents from participating; and maintaining a steady flow of respondents coming to the RDS center for interviews.

B. Site selection and sample size

For IDU populations, four sites were selected, Yangon, Mandalay, Lashio, and Myitkyina. Yangon and Mandalay are the two largest cities in the country and have consistently shown HIV prevalence of or above 25% in the HSS data for IDU sites.

Lashio and Myitkyina are capitals of Kachin, and Shan states, respectively. Large concentrations of drug users, and injection drug users have been identified in these areas. Both townships have seen HIV prevalence among IDU of over 30% percent, consistently since 2000.

The sample size chosen for IDU represented a balance between field feasibility to recruit the required numbers in a limited time period and the ability to measure key behavioural and service utilization statistics with meaningful levels of precision. For IDU populations, a sample size in each site was 225 respondents.

For FSW populations, two sites were selected: Yangon and Mandalay. These sites are consistent with the longest standing FSW sites included in HSS. These two cities also represent the largest concentration of sex work populations in the country.

The sample size for FSW similarly balanced survey resources against the precision of statistical inference. A sample size of 275 respondents was targeted for each FSW survey site.

C. Eligibility criteria and Operational definitions

The following eligibility criteria were used for the survey:

- IDU: Males, aged fifteen years or older, who have injected drugs in the last six months for non medical purposes.
- FSW: Women, aged fifteen years or older, who have sold sex for money in the last month.

In addition to the explicit eligibility criteria, the scope of the sample may have been affected by two key operational conditions: 1) the location and accessibility of the RDS center and 2) the selection of seeds in terms of the completeness of the network components to which they were connected. These operational issues vary across townships due to the differences in structure and composition of IDU and FSW in each geographic area. An assessment of the success of the sampling (i.e. the ability to generalize results to the larger population of IDU and FSW) is provided in the first section of results for each survey group.

D. Questionnaire development

Questionnaires were developed based on standardized English-language survey instruments designed for behavioural surveillance (*Behavioral Surveillance Surveys: Guidelines for Repeated Behavioral Surveys in Populations of Risk of HIV*. FHI, 2000) but it was modified to reflect issues pertinent to the current understanding of the Myanmar HIV epidemic and programmatic response. Questionnaires were translated into Myanmar language and pre-tested among focus groups of IDU and FSW contacted through NGO partners. Further modifications and corrections, including the introduction of local terminology were made and then the questionnaire was back-translated into English. Some small modifications to skip patterns and question wording were made based on field experience in Myitkyina which served as the pilot site for the RDS methodology. Thus, there are some minor deviations between the questionnaires from Myitkyina and the other three IDU survey sites. Where relevant, these are noted in the presentation of results.

E. Recruitment protocols

Both IDU and FSW surveys started with similar recruitment protocols. Each respondent was allowed to invite up to 3 people to participate in the survey (i.e given 3 recruitment coupons). Coupons were given a 7 day expiry period. Due to low flow of participants, the Lashio IDU survey extended their expiry period to 9 days and for the Yangon IDU survey to 10 days. In contrast, high recruitment volume for the Yangon FSW survey caused them to shorten the expiry period to 5 days, halfway through the survey.

The process for recruitment was explained to each respondent by the coupon manager of the RDS center. Respondents were told to recruit people:

- Whom they knew met the eligibility criteria (age, gender, and injection in the last six months or selling sex within the last month)

- People whom they had a social relationship with, i.e. whom they knew by name and who knew their name.
- And to select from among the people they knew, without preference (i.e. not to select people they necessarily had a stronger relationship to, not to select people who needed the incentive more than others, etc.)

Respondents were told the amount of the secondary incentive they would receive for each person they recruited who was eligible and participated in the survey.

The amounts of primary and secondary incentives were determined through consultation with community members, NGOs, and local authorities. The following incentives were given for each survey site:

Survey Group	Township	Primary Incentive	Secondary Incentive (per recruit)
IDU	Yangon	Kyats 1000 + T-shirt	Kyats 1000
	Mandalay	Kyats 1000 + T-shirt	Kyats 1000
	Lashio	Kyats 1500	Kyats 500
	Myitkyina	Kyats 1500	Kyats 500
FSW	Yangon	Kyats 1000 + Cream puff+ refreshments	Kyats 1000
	Mandalay	Kyats 1000 + Cream puff refreshments	Kyats 1000

Respondents were eligible to receive their secondary incentives after the expiry period of their recruitment coupons, or if all three recruits had already come to participate. In Myitkyina, it was common for respondents to accompany their recruits to the RDS center on the same day or the next day of the survey.

In anticipation of reaching the desired sample size, team supervisors consulted with the AIDS/STD team leaders to reduce the number of coupons given to each person in order to taper off recruitment.

F. Seed Selection

The main criterion for selecting seeds was to introduce diversity of participants from the beginning of sampling to reach different parts of the social network. Consideration to diversity was given in terms of age, marital status, exposure to NGO services, area of residence within the township, and place of solicitation (for FSW populations). Potential seeds were identified through the assistance of NGO partners and those individuals AIDS/STD team leaders had contact with through government treatment, clinic or outreach services. All potential seeds were interviewed to gather their demographic profile and to gauge their interest in participating in the survey as well as the size of their social networks. The characteristics of the seeds for each survey are summarized in Annex 4.

G. Implementation Arrangements

Each survey site (survey group-township) had a single RDS center and field team. FSW and IDU surveys in the same township (e.g. Yangon and Mandalay) were run independently of each other, including different color-coded coupons to avoid possible confusion during recruitment.

A supervisor, screener, coupon manager and three interviewers comprised each team. Most screeners were current or former members of the group being surveyed. Where possible, interviewers who met the position qualifications were recruited from the communities (i.e. FSW or IDU) being surveyed.

The location of the RDS center for each site was decided by the AIDS/STD team leader upon consultation with central NAP staff, WHO technical consultants, local NGOs and potential respondents (i.e. FSW and IDU representatives). The main criteria for RDS center location were

- an area that was central and accessible by local transport,
- a building that could be easily found but could be entered discretely by potential respondents,
- a house with sufficient space for three simultaneous private interviews as well as a central reception area that could be used for waiting respondents and coupon management

RDS centers were open six days a week during fixed hours. Specific hours and days of the week were discussed with NGOs and community members to ensure they would be convenient for participants. The operational times of the RDS center were printed on the recruitment coupons to avoid participants coming during non-working hours.

Because the sampling methodology was new to the surveillance system, the Myitkyina IDU site began several weeks before the other sites to enable managers to learn from the experience and adjust the methodology as needed. Thereafter, study sites began in a staggered fashion to enable central training/supervision teams to cover each site. Each site took between ~60 – 75 calendar days to achieve their respective sample size.

The following table summarizes the operational hours of the RDS center and the start and end dates of recruitment for each survey:

		Yangon	Mandalay	Lashio	Myitkyina
IDU	Start Date	15 Jan 2008	7 Jan 2008	29 Dec 2007	11 Dec 2007
	End Date	30 Mar 2008	16 Mar 2008	6 Mar 2008	21 Feb 2008
	# of days	74	58	68	61
	Final N	225	230	225	228
	Centre Hours	Tu-Su 9am-4pm	Tu-Su 9am-4pm	Mo-Sa 9am-2pm	Mo-Sa 9am-4pm
FSW	Start Date	15 Jan 2008	7 Jan 2008		
	End Date	15 Mar 2008	16 Mar 2008		
	# of days	59	65		
	Final N	275	279		
	Centre Hours	Tu-Su 9am-4pm	Tu-Su 9am-4pm		

H. Training and Supervision

Monitoring and evaluators of NAP involved with supervising and implementing the BSS underwent a five day BSS technical training of trainers. Each survey field team underwent an intensive three-day training on the protocol for recruitment, coupon management, research ethics, handling adverse events, and detailed review of the survey instrument. Trainings were conducted in each survey

site jointly by NAP central staff, the local AIDS/STD team leaders, and WHO consultants. Trainers stayed on site for the first one to three days of the survey to provide additional support to the field teams. All field trainings, manuals, and questionnaires were given in Myanmar language.

In addition to daily communication between AIDS/STD team leaders and team supervisors, NAP staff and WHO staff and consultants conducted supervision visits to all survey sites to review adherence to the protocol and assess progress.

I. Data management and Analysis

Study forms were transferred to NAP for central data entry, management and analysis. Double data entry was done for all study forms using an Epi Info database. Inconsistencies were resolved and further data cleaning, recoding, and other data management activities were conducted in SPSS. Datafiles ready for analysis were exported to Microsoft Excel to create RDSAT readable files. Recruitment network graphs used to assess the success of the sampling were graphed using UCINET v6.0.

RDSAT v. 5.6 was used for all analyses, with the exception of crude mean and median values for continuous variables estimated through SPSS. Because RDSAT does not readily calculate mean and median values for continuous variables.

III. Results - Injection Drug Users

A. *Assessment of the recruitment and characteristics of IDU networks*

To assess whether the sampling was successful, or to determine the limitations of the RDS method as applied in these surveys, we considered several issues about the characteristics of the respondents.

- 1) Are the socio-demographics of the respondents similar to what would be expected based on programmatic field experience?
- 2) Did the location of the RDS center limit the geographic scope of where the respondents came from?
- 3) Was the sample likely to include a higher proportion of respondents who were connected to the interventions in the area than are in the population?

Given the differences in local populations, survey teams, and township, these issues were assessed separately for each survey site. Overall, many of the concerns regarding oversampling an intervened population did not appear to be warranted.

Yangon:

The IDU population in Yangon has been described by program managers as mostly underground, i.e. are not highly visible in street injection places or easily reached by interventions. Access to heroin is also more limited and it is considered expensive to maintain a regular habit. This description is consistent with the survey findings that a majority of Yangon respondents injected in private homes, and that a very small number injected more than once per day.

Closer examination of the frequency of injection shows that half the survey respondents injected only 2-3 times in the past 6 months, suggesting the sample did not capture a high percentage of regular users. Looking at recruitment networks by frequency of injection shows that less frequent injectors have some ties to more frequent users and are not isolated or only found at the terminus of a recruitment chain. A subset analysis was conducted on key variables (age <30, home as the usual place of injection, use of sterile equipment at last injection, and had a FSW sex partner in the past 6 months). There were not large differences between groups injecting more frequently (i.e. at least once a week) compared to those less frequent injectors.¹ Given the constraints of the statistical analysis of chain recruitment data, including extensive sub-group analysis, the main results are discussed treating the group as a whole.

The location of RDS center sites in large cities are often problematic due to the challenge of finding a place both convenient to a wide geographic area and feasible to rent for a short period of time. Yangon is a large metropolitan area that spans seven townships. The RDS center was located in one of the two adjacent townships where, from program experience, large numbers of IDU are known to spend time. The survey site was located close to a railway station and a 5 minute walk

¹Due to the limitations of small sample sizes and the constraints of analysis with RDSAT, only a limited sub-group analysis was possible comparing respondents who injected 2-3 times in the last 6 months and those who injected at least once a week. These results are presented in the detailed tables.

from a bus stand. The location was a little off the main road, making it accessible but providing some privacy for respondents. The RDS center was located two bus stops from one of the two DICs offering services for IDU in the city. It is believed that respondents from these two townships were likely to have convenient access to the site. The other DIC is located in Yankin township which was managed by the NGO, MANA.

Harm reduction services for IDU are not as extensive in Yangon as in some other urban areas. In 2007, both NGO DICs in the city, reported less than a hundred IDU came to either to their facility. The survey team also made conscious efforts to avoid biasing the sample toward the more intervened group by selecting the first seeds from among those who did not have ties to NGOs. While a higher than expected proportion of IDUs in Yangon reported having been contacted by an outreach worker or visited a service site in the last month, a large portion of those seeking services utilized private clinics rather than those at NGOs. Overall, it is likely that the Yangon sample included respondents who were more receptive to NGO services than the broader population of IDU in the city.

Mandalay:

Mandalay is the second largest city in Myanmar, spanning seven townships. It is also one of the country's economic hubs. The IDU population is believed to be large, young adult group, which is increasingly reached by intervention programs. The use of DICs has increased five fold among IDU since 2005 (N=880) to over 10,813 individuals in 2007, as reported through routine program monitoring data. (see *Progress report 2007*). The cost of drug habits is similar to in Yangon where heroin is expensive and less readily available. The general age profile and low injection frequency of the survey respondents seemed consistent with program experience. However, a large majority of those included in the survey claimed not to have visited services, including not going to NGO DICs in the last month (86%), which suggests either the size of the IDU population is quite large or people with exposure to interventions may have been less likely to be included in the sample.

The RDS center was located close to the government AIDS/STD clinic and a large NGO site providing IDU with care and support services. The site itself was in the urban area, but not in the middle of downtown. It was considered easy to access by different modes of transport frequented by respondents.

Lashio:

As is commonly understood about the drug use situation in Lashio, injection drug users have easy access to inexpensive heroin allowing more frequent injection and longer periods of addiction. Services have also been well established for IDU in Lashio. It was not surprising that the relative proportion of respondents who reported injected more than once a day and had accessed services or been contacted by outreach was high and the highest of all four survey groups.

The RDS center for this site was located in an urban area, close to the downtown and also near to a DIC of one of the largest intervention programs in the township. Special effort was taken to select seeds from different blocks (the primary geographic division for the township) and review of the distribution of respondents by block of residence shows good diversity. Similarly, respondents appeared to be linked to a range of NGO partners, not only the one of closest proximity to the RDS center. The local AIDS/STD team leader also noted that many IDU access services from multiple intervention sites suggesting that there may not be strong recruitment bias of people by their links to NGOs.

Although the Lashio survey respondents are a heavily intervened population, it is not clear that this is out of proportion to the actual coverage of IDU in the township. Assessments of recruitment chains do not suggest tendencies for people with NGO service exposure to only recruit others with similar service utilization patterns.

Myitkyina:

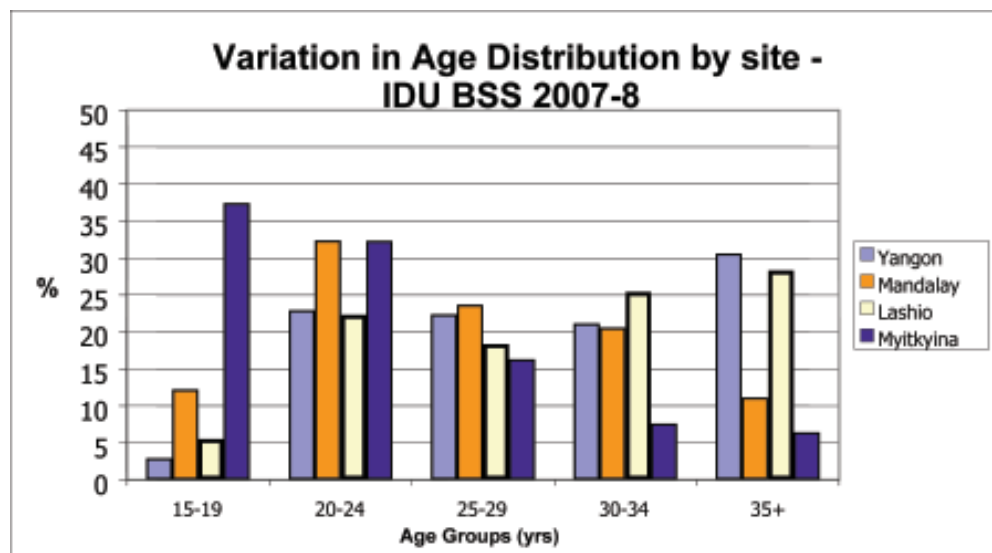
Based on program experience, access to heroin is relatively plentiful and inexpensive in Myitkyina. This was consistent with the high proportion of respondents injecting more than once per day. The younger age of respondents also fit with local key informants descriptions of the population. Two key areas in the township were known as areas where IDU were from: Moekaung and Oo Pyit. Review of the sample characteristics from the geographic area showed good diversity of recruitment from these areas, as well as penetration to other parts of the township.

The RDS center was well situated, convenient to a busy shopping area, but off the main road. However, its location was also very close to a DIC run by a large NGO providing services to IDU in the township. There was some concern that respondents may be going to the DIC to recruit people who they may not have had a strong social relationship with. However, with more intensive questioning during screening and instructions from the coupon manager, this problem may have been reduced. It is also encouraging that while a substantial proportion of the respondents had some exposure to services, a majority had not had been to a fixed site for service or been contacted by an outreach worker in the last month.

A. Basic socio-demographics

The social profile of IDU included in each survey varied by site, most markedly by age. Participants in Yangon and Lashio were older, almost 30% were over age 35, compared to only 11% in Mandalay and 6% in Myitkyina. The IDU in Myitkyina were particularly young: 37% were under the age of 20 years.

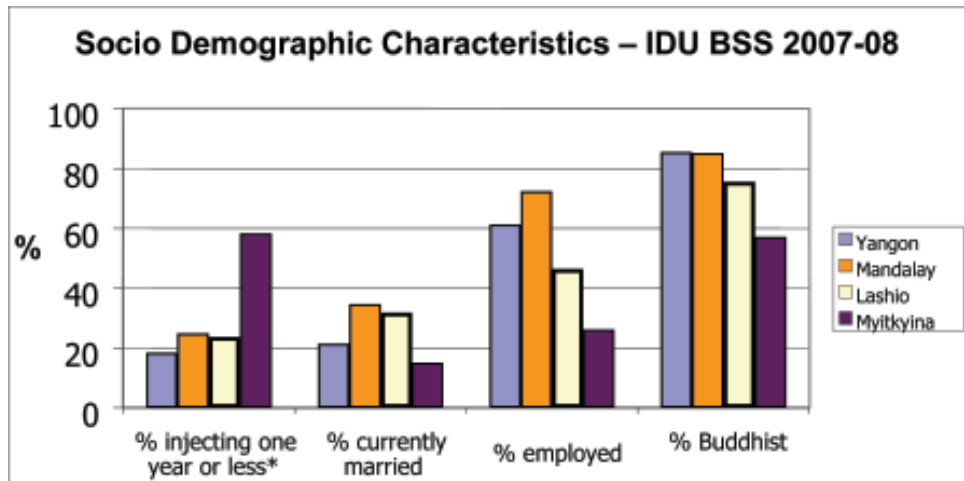
Fig 1. The age distribution by site



As may reflect their age profile, more than half (58%) of IDU in the Myitkyina survey had been injecting less than one year. This figure is more than double the new injectors in Lashio (24%) and Mandalay (25%). Even fewer IDU in the Yangon survey (18%) had been injecting for a year or less.

A majority of IDU in Yangon (61%) and Mandalay (72%) were employed. In contrast, 46% of IDU in Lashio and 26% of IDU in Myitkyina were employed. Almost all respondents were long term residents of the township of the survey they participated in, less than 2% had been living in the township for less than a year. This was true even in Myitkyina which is relative close to the border with China and mobility was expected to be high.

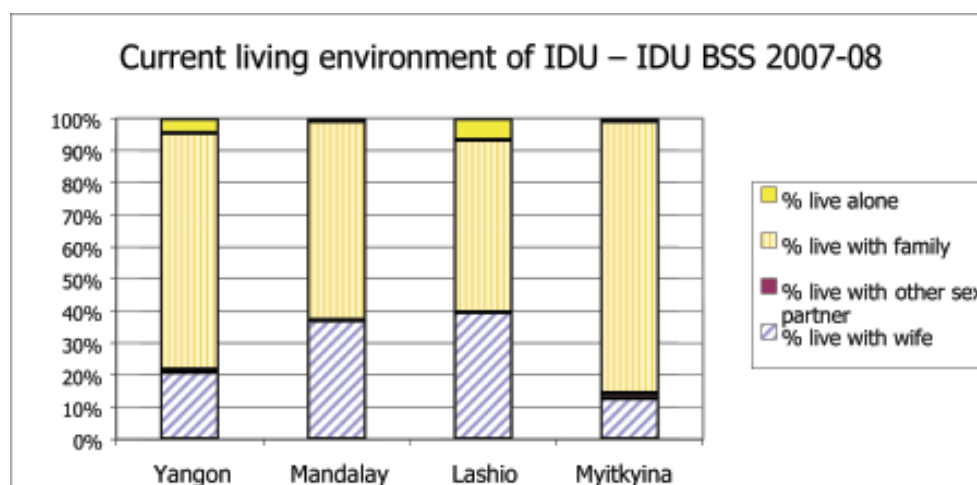
Fig 2. Socio-demographic characteristics of respondents



A majority of respondents were Buddhist, but a sizeable minority (43%) of IDU in Myitkyina were another religion, most of whom were Christian.

The proportion of IDU who were currently married ranged from 15% in Myitkyina to 35% in Mandalay. A majority of those who were still married currently lived with their wives. Very few IDU lived alone (range: 1-7%), and a majority said they lived with family (range 53-80%).

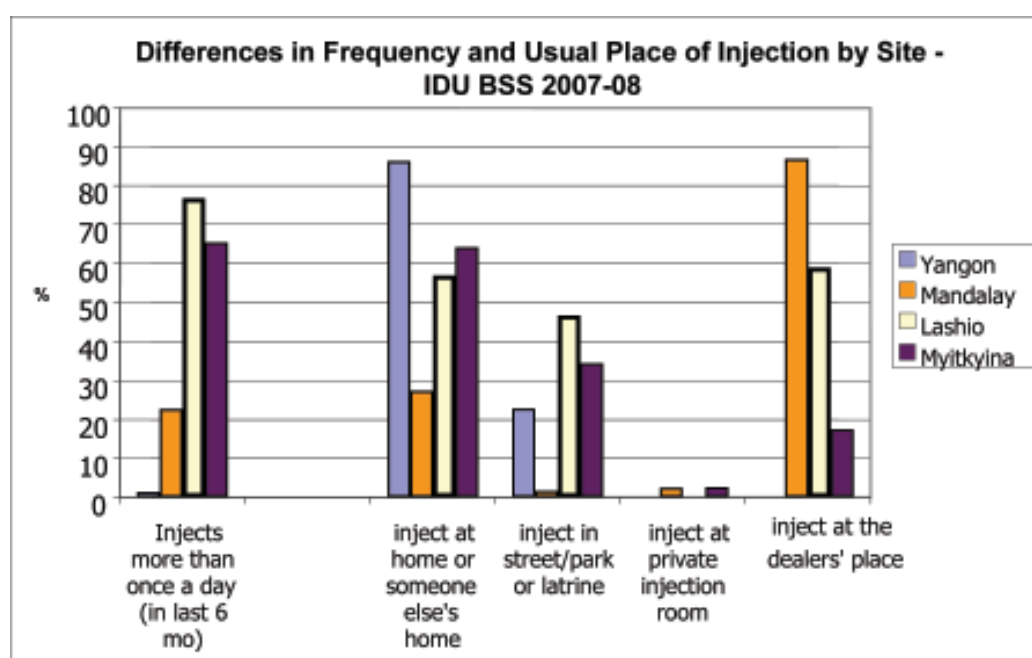
Fig 3. Living environment of IDU



C. *Patterns of injection and sharing*

Drug use patterns varied widely by township. While a majority of IDU in Myitkyina (65%) and Lashio (77%) injected more than once a day, over the last six months, only 22% of IDU in Mandalay, and 1% in Yangon reported injecting at that frequency. As described earlier, half the respondents in Yangon injected only 2-3 times in the 6 months preceding the survey. This pattern of injection frequency is generally consistent with the reported greater access to heroin in Shan and Kachin states. However, there is some concern about the representativeness of the sample of IDU in Yangon and the injection practices of this group must be interpreted with caution.

Fig 4. Frequency and place of injection

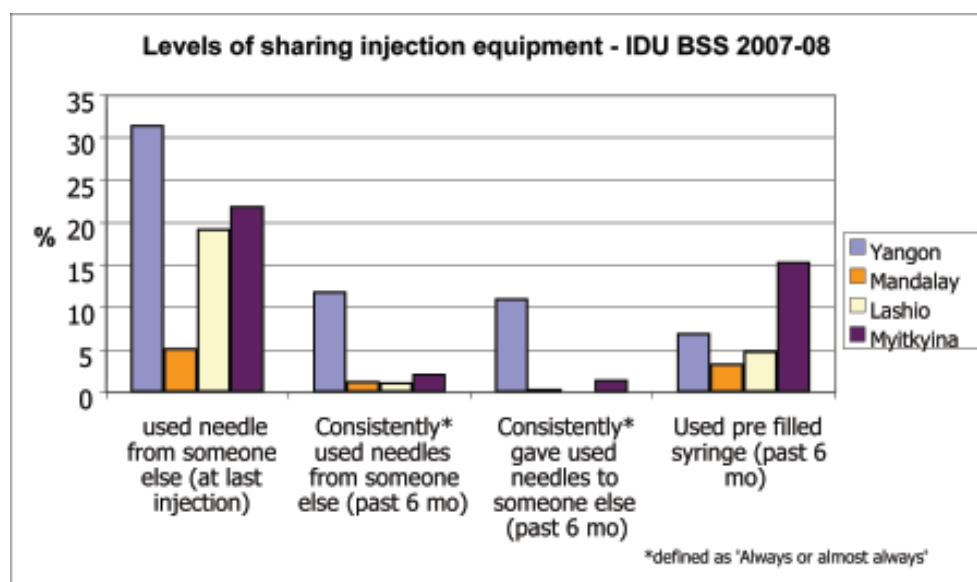


Across all townships, the drug most commonly used and injected was heroin. More than 95% of IDU in Myitkyina, Lashio, and Mandalay used heroin in the last six months, compared to a lower 78% in Yangon. A larger proportion of IDU in Yangon used tranquilizers (89%), and 69% of all Yangon IDU using tranquilizers by injection. Tranquilizer use was also common in Lashio (56%) and to some extent in Mandalay (18%), but very few IDU in Myitkyina reported the use of tranquilizers. The second most common drug used by IDU in Myitkyina (59%) was codeine or cough syrup, which is not a substance commonly injected. The use of amphetamines (i.e. ATS, yama, etc.) was relatively high across all townships: range 20-42%.

The locations IDU commonly used for injection was quite different. In Yangon, IDU in the survey almost always injected in their home or at friend's home (86%). Although one fifth (23%) did inject in public areas such as street sites, parks, or public latrines, in Mandalay, the most common site for injection was at the dealer's site (87%) with about one quarter (27%) who reported they injected at their home or someone else's home. Injectors in the Lashio survey described more variation in where they injected: 57% injected in private homes, 47% injected in public places, and 59% injected at their dealer's place. A similar pattern was noted in Myitkyina, with 64% injecting in homes, 34% injecting in public places and 17% who injected at their dealer's.

When asked about the frequency of sharing needles and syringes, only 5% of IDU in Mandalay reported having used a needle or syringe from someone else at last injection . Sharing at last injection was moderately high in Yangon (31%), Myitkyina (22%), and Lashio (19%). Always or almost always using injection equipment that had been previously used was uncommon in Mandalay (1.3%), Lashio (1.2%) and Myitkyina (2.2%), compared to Yangon (12%). The practice of handing off their used injection equipment to others was reported at similarly low levels in each township. In Yangon, 11% of IDU always or almost always gave their equipment to someone else, compared to less than 2% of IDU in the other townships. To assess the intensity of risk behaviour, the levels of sharing must be considered with frequency of injection. Although sharing behaviour was more common in Yangon, these IDU also reported the lowest frequency of injection. Thus moderately high sharing among those in Myitkyina and Lashio are multiplied by the frequency of injection and may suggest overall a higher potential for transmission among IDU networks.

Fig 5. Levels of sharing injection equipment



Most often IDU respondents described an injecting friend as the person with whom they most commonly shared equipment: 38% in Yangon, 33% in Myitkyina, and 17% in Lashio. The number of people who reported sharing was too small in Mandalay to analyze in detail about sharing or cleaning practices. A small proportion of IDU ($\leq 5\%$ in each township) shared with strangers met at shooting galleries.

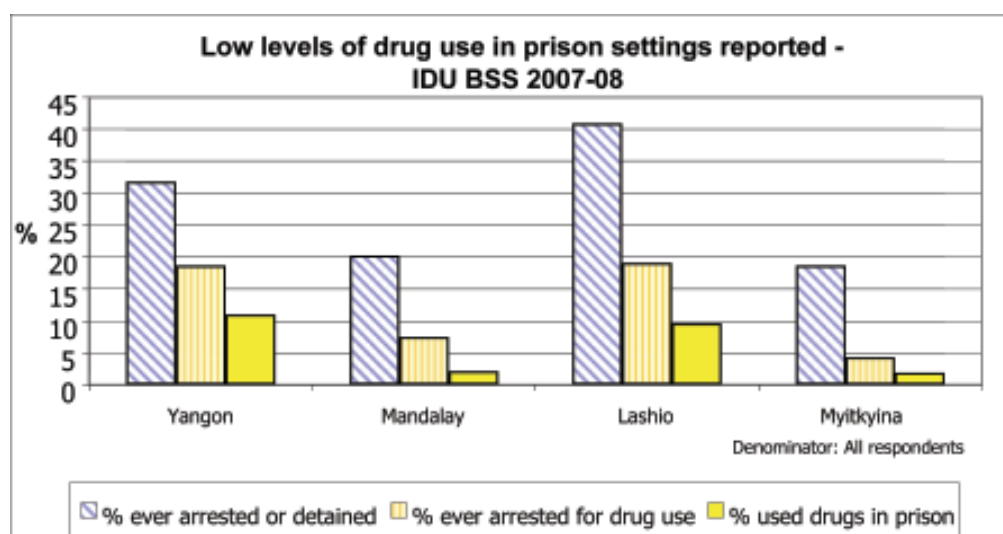
The most common substance used to clean used injection equipment was water. In Lashio, 40% of IDU reported using cold water, and 26% used hot water for cleaning their equipment. The proportions were 30% using cold water and 17% using hot water in Myitkyina. Lower levels of cleaning were reported among those in Yangon, with 17% of IDU using cold water and 3% using hot water. Less than 5% of IDU in all four townships reported using bleach or alcohol to sterilize their used needles and syringes.

Drug use in prison and jail settings is important to assess for a fuller understanding of the potential for HIV transmission in an area. Reported history of arrest or detainment was relatively high among IDU in most survey sites. The IDU respondents in Lashio reported the highest levels of prison history, with 41% having ever been arrested and 20% who had been arrested specifically for drug

use. Of those IDU in Yangon, 32% had been arrested and 19% had been arrested for reasons related to drug use. Slightly lower levels of arrest history were reported in Mandalay (20%) and Myitkyina (19%). The level of drug use in prison reported by respondents was relatively low for an IDU population.

As consistent with the proportion with history of arrest, IDU in Lashio (10%) and Yangon (11%) reported higher levels of drug use in prison, compared to in Mandalay (2%) and Myitkyina (2%). If these data are representative of IDUs' experience, it does not appear that prison settings were a particularly high risk setting for either introducing individuals to drug use or for contributing to high levels of spread.

Fig 6. Drug use in prison settings

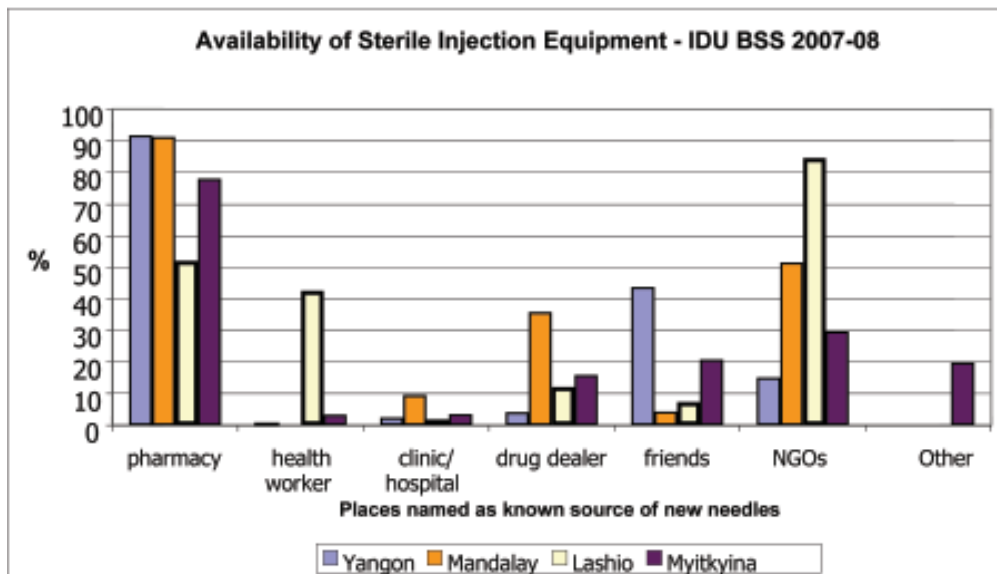


D. Access to commodities and services

Four areas of service access and utilization were assessed during the IDU surveys: 1) accessibility of prevention commodities (e.g. sterile needles/syringes and condoms); 2) utilization of targeted interventions; 3) experience with drug treatment or substitution therapy; and 4) use of HIV counselling and testing services.

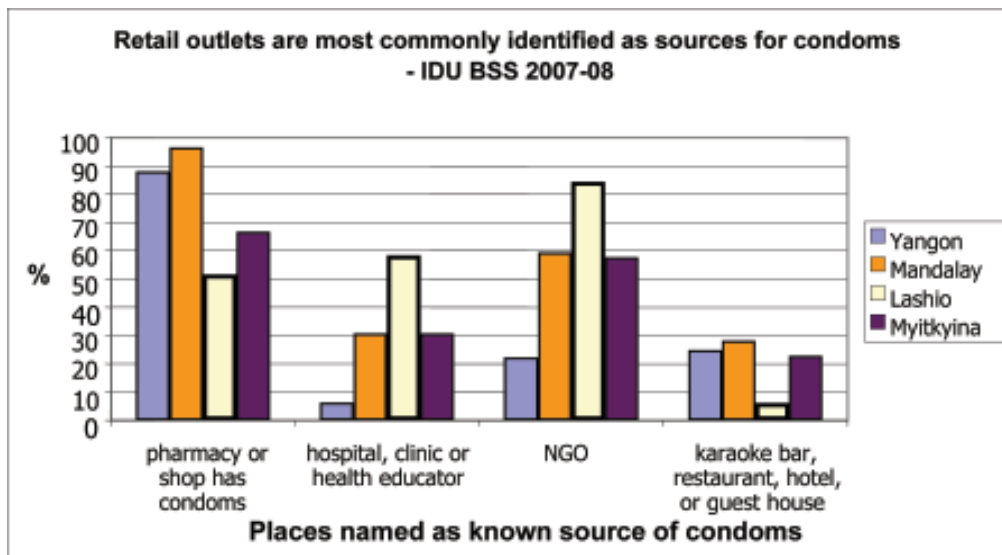
Almost all IDU interviewed in Yangon, Mandalay, and Lashio (range: 98-100%) reported knowing a place to get new or unused needles and syringes. This contrasts with only 78% of IDU in Myitkyina who knew of a source of sterile injection equipment. When asked to describe the places where they knew new needles were available, more than 90% of IDU in Yangon and Mandalay mentioned pharmacies. Fewer IDU in Myitkyina (78%) mentioned pharmacies; as did only half (52%) of IDU in Lashio. The next most commonly named place to obtain clean injection equipment was from an NGO source: more than 84% in Lashio, 52% in Mandalay, and 30% in Myitkyina. Those IDU in Yangon mentioned NGOs as a source of needles much less frequently (15%). Other common sources for new needles and syringes were health workers (42% in Lashio) and friends (36% in Mandalay and 20% in Myitkyina). Considering that a large proportion of IDU in Mandalay report injecting at their dealer, it is interesting to note that more than one third (36%) mentioned their dealer as a source of clean needles and syringes when asked where they could obtain sterile equipment.

Fig 7. Availability of sterile injection equipment



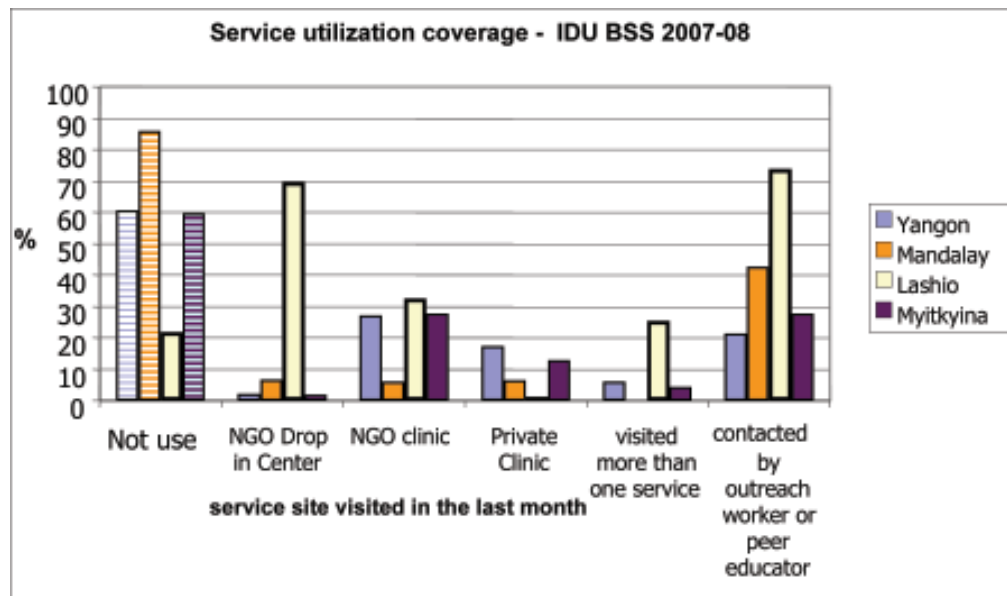
Knowledge of where to get condoms was uniformly high among IDU in all four sites (>90%). Patterns of where IDU could obtain condoms in each township were similar to places IDU knew they could get sterile injection equipment. Both pharmacies (range: 51-97%) and NGOs (22-84%) were commonly reported. Health workers and hospitals or clinics were frequently mentioned by IDU in Lashio (58%) as well as Mandalay and Myitkyina (both 31%). About one quarter of respondents in Yangon and Mandalay mentioned being able to access condoms at sex work venues (e.g. hotels, guest houses, etc.).

Fig 8. Known sources of condoms



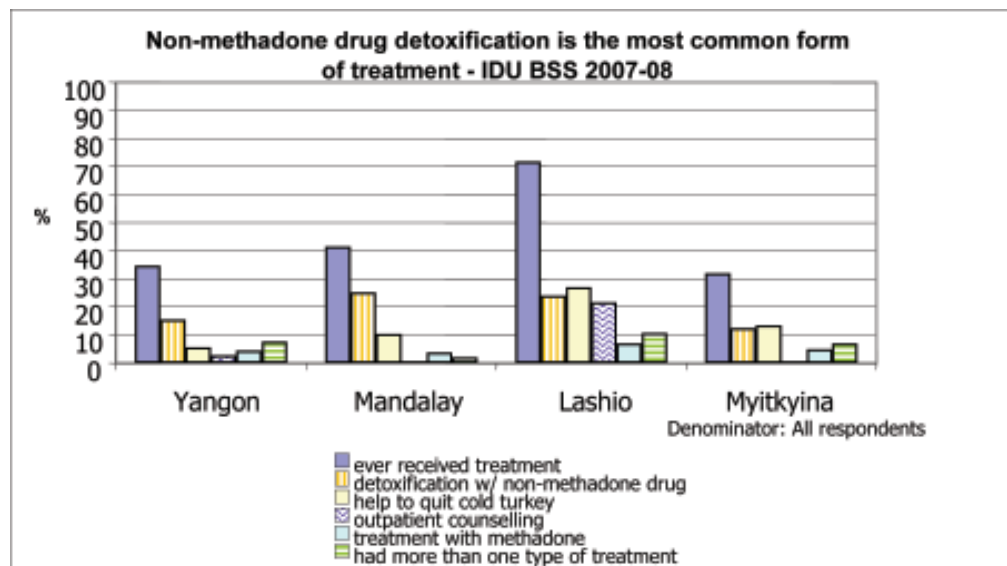
Service utilization of IDU targeted interventions was very high in Lashio: 70% reported having gone to a drop in center (DIC) in the last month and 33% had gone for clinical services. This is consistent with the pattern of mentioning NGOs as a source for clean injection equipment and condoms. In Yangon and Myitkyina service use was similar, roughly 30% had been to an NGO clinic, but only 2% had visited the DIC. Use of private clinics was also more common among IDU in Yangon (17%) and Myitkyina (13%) than Lashio (6%). In Mandalay, few IDU sought out targeted intervention services (~6%) or private clinics (6%). In addition to fixed targeted intervention sites, prevention services are also available for IDU through outreach workers, including peer educators. Nearly three quarters of the IDU (73%) in Lashio report being contacted through outreach in the last month. And although IDU in Mandalay did not seek out fixed site services, nearly 43% report having contact with an outreach worker or peer. Outreach coverage was lower in Yangon (21%) and Myitkyina (28%).

Fig 9. Service utilization



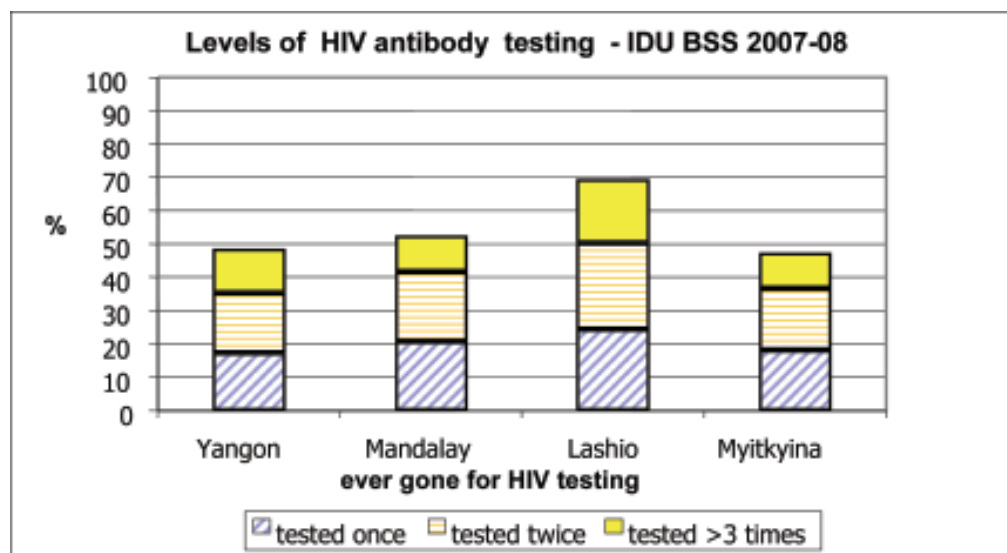
In addition to prevention services, drug treatment centers (DTC) have been providing services in these four townships for several years. The introduction of methadone maintenance therapy has recently been added to the array of treatment options available at the DTC. History of treatment was very high among Lashio respondents (72%) compared to Mandalay (41%), Yangon (35%) and Myitkyina (32%). Given that methadone treatment services have started relatively recently, it is not surprising that a small percentage of respondents reported experience with detoxification or maintenance therapy with methadone (range:4-7%). Detoxification treatment with a non-methadone drug was the most common form of treatment (range 12-25%). And a substantial minority of respondents had also received help to quit without the use of other therapeutic substances (i.e. “cold turkey”): 27% in Lashio, 13% in Myitkyina, 10% in Mandalay, and 6% in Yangon. A small proportion of the survey respondents were in treatment (range: 7-14%) at the time of the survey.

Fig 10. Drug Treatment History



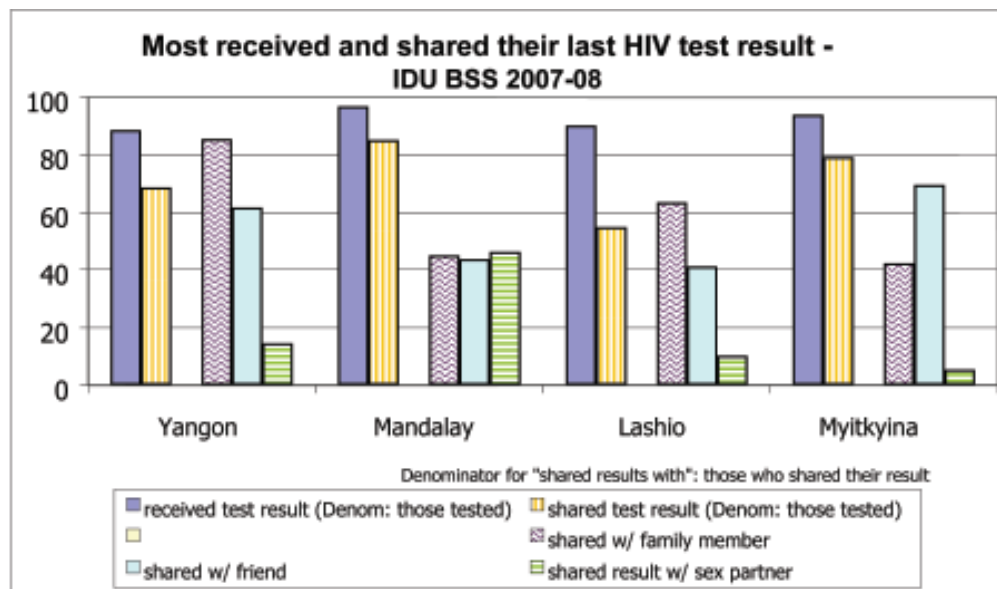
The final area of service utilization explored was HIV counseling and testing. Roughly half of the respondents in Yangon, Mandalay, and Myitkyina reported ever having taken an HIV test, with the exception of Lashio, in which 70% of IDU said they had been tested. Across all survey sites, among those people tested, approximately two thirds reported to have gone for testing more than once. Among those tested in Myitkyina, 85% of respondents had gotten tested in the last 6 months. This was much higher than the level of recent testers in Lashio (57%), Yangon (50%), and Mandalay (32%). In Lashio and Myitkyina, a majority of people tested went to an NGO center for their last test. This contrasts with a higher proportion 43%.

Fig 11. Experience with HIV testing



A high proportion of IDU who were tested received the result of their last test (range 89%-97%), and among those, a majority shared their test results with someone (range 61%-88%). It was most common for respondents to have shared their test results with family and friends. On the high end of the spectrum, more than 85% of IDU in Yangon told a family member and 62% told a friend. Sharing test results with a sexual partner (e.g. a wife) was not very common, except in Mandalay (46% of those who shared their test result).

Fig 12. Receipt and sharing of HIV test results



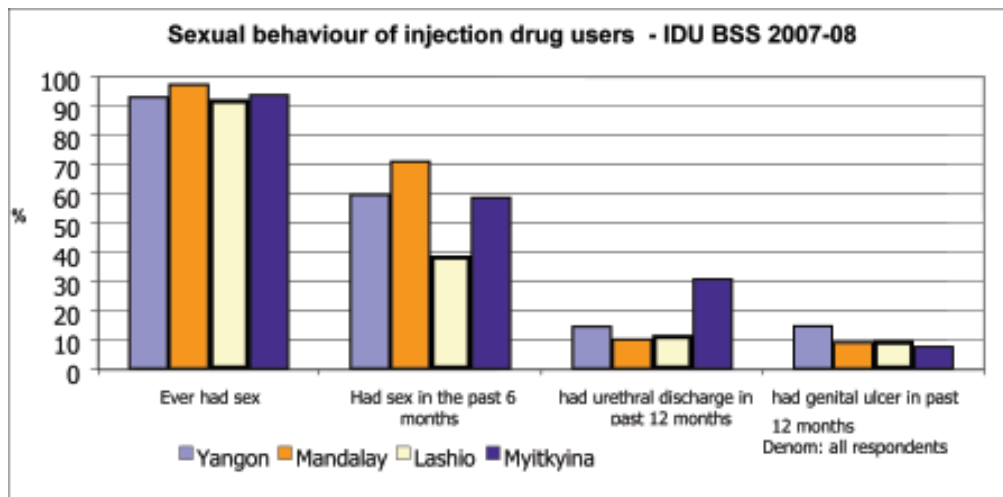
E. *Patterns of sexual behaviour*

Beyond risk of transmission through needle sharing, it is important to assess the overlap between IDU, FSW, and MSM networks to understand the force of an epidemic in a given geographic area. The potential for IDU to transmit infection to their wives or girlfriends is another important issue to investigate as part of planning appropriate interventions. For this reason, an extensive section on sexual risk behaviours was included in the IDU survey instrument.

While more than 90% of respondents in all sites had ever had sex, sexual activity in the past 6 months varied from 39% in Lashio to 71% in Mandalay. In Yangon and Myitkyina 60% of respondents had sex in the past 6 months.

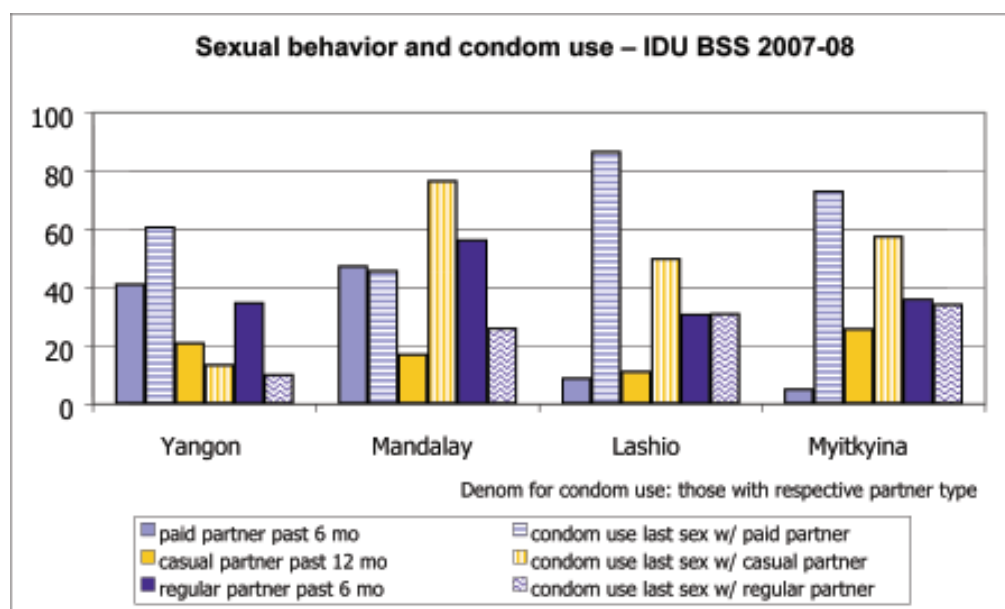
Most IDU were well aware of diseases that can be transmitted through sexual contact (range: 89-100). A similarly high proportion in Yangon and Mandalay could describe STD symptoms among men, but this level was much lower in Lashio (61%) and Myitkyina (76%). Awareness of the symptoms of STD which women experience was much lower among respondents at all survey sites (range: 26.5%-47%). A substantial proportion of respondents reported having had a urethral discharge or genital ulcer in the last 12 months (range 9-13% had discharge; 8-15% had an ulcer). This was true even among IDU in Lashio (10% with a discharge; 12% with an ulcer) who reported much lower levels of sexual activity, including with FSW and casual partners.

Fig 13. Sexual activity and history of STI symptoms



Among all respondents, a high proportion of IDU reported having commercial sex partners in Mandalay (48%), Yangon (41%) and Myitkyina (31%). This proportion was much smaller in Lashio, at only 9% reporting having paid for sex in the last 6 months, which probably reflects the smaller fraction of recently sexually active respondents. High levels of interaction between IDU and FSW networks is worrisome as rapid transmission among IDU networks can fuel and reignite sex work driven epidemics that can have much wider impact on communities, due to the potentially large volume of clients of FSW. Reported condom use with FSW partners was moderate in the two sites where paying for sex was most common. In Yangon, 61% of those who paid for sex said that a condom was used the last time. In Mandalay, only 46% of respondents used condoms with their last FSW partner. Last time condom use was higher in Myitkyina (73%) and Lashio (87%).

Fig 14. Types of sexual partners and condom use at last sex

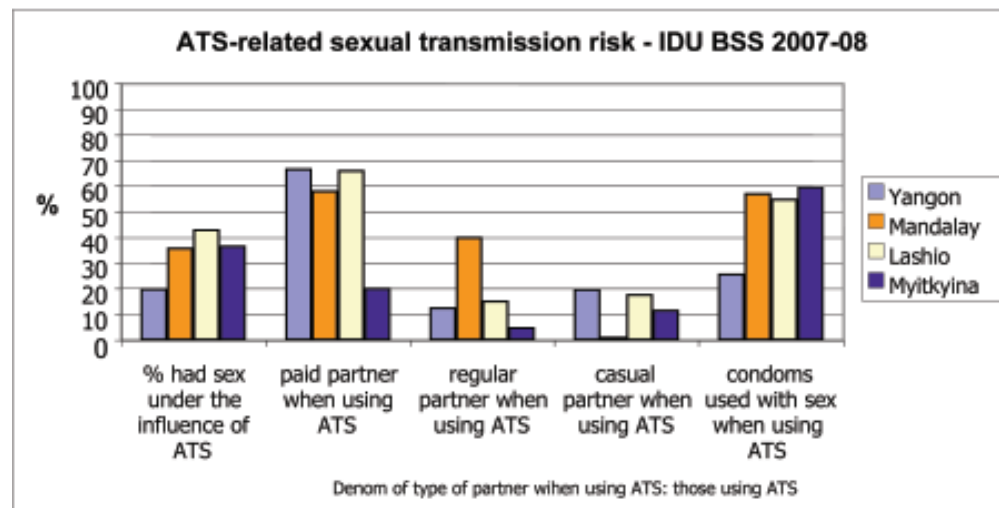


Another form of high risk sexual behaviour is having sex with casual partners, women whom the IDU respondents had occasional or one time sexual encounters, but whom they did not pay to have sex. The proportion of all IDU who had sex with a casual partner in the past 6 months was 26% in Myitkyina, 21% in Yangon, 17% in Mandalay, and 11% in Lashio. In general, condom use at last sex with casual partners was much lower than condom use reported with paid partners. This was particularly true in Yangon, where 14% of IDU who had sex with casual partners used a condom the last time, compared to 60% who used condoms with their last paid partner.

In Yangon, Mandalay and Myitkyina, the proportion of IDU who had sex with someone they considered to be a regular partner (range: 31-57%) was substantially higher than the proportion who reported being currently married (range: 15-35%), suggesting that many IDU have a steady girlfriend. As is common in many countries in the region, condom use with regular partners is substantially lower than with other types of partners. Only 10% of IDU with a regular partner used condoms at last sex. The fraction of respondents reporting condom use at last sex with regular partner was similar in Mandalay (26%), Lashio (31%) and Myitkyina (34%). When asked for the main reason condoms weren't used with their regular partners, one of the most commonly given reason was that the respondent felt "it was not necessary:" (range: 47-63%).

These patterns of condom use with different types of sexual partners suggest that respondents may assess their level of risk of acquiring HIV from paid partners to be higher than from casual partners. However, they may not be fully considering the importance of using condoms to prevent the risk of transmitting disease to their sexual partners if they are already infected.

Fig 15. Levels of ATS-related sexual transmission among IDU



The use of amphetamines has been associated with high risk sexual behaviour in other countries. In Mandalay (36%), Lashio (43%), and Myitkyina (37%), more than a third of respondents reported having sex while under the influence of amphetamines in the last six months. In Yangon this proportion was only 20%. In all sites, having sex under the influence of amphetamines was most commonly during sex with commercial partners. However, in Mandalay, there was also a high proportion of respondents (40%) who said they had used amphetamines during sex with regular partners. Patterns of condom use during last sex while using amphetamines ranged from 26-60%,

which were similar to condom use patterns, taking into account condom use reported with various types of partners.

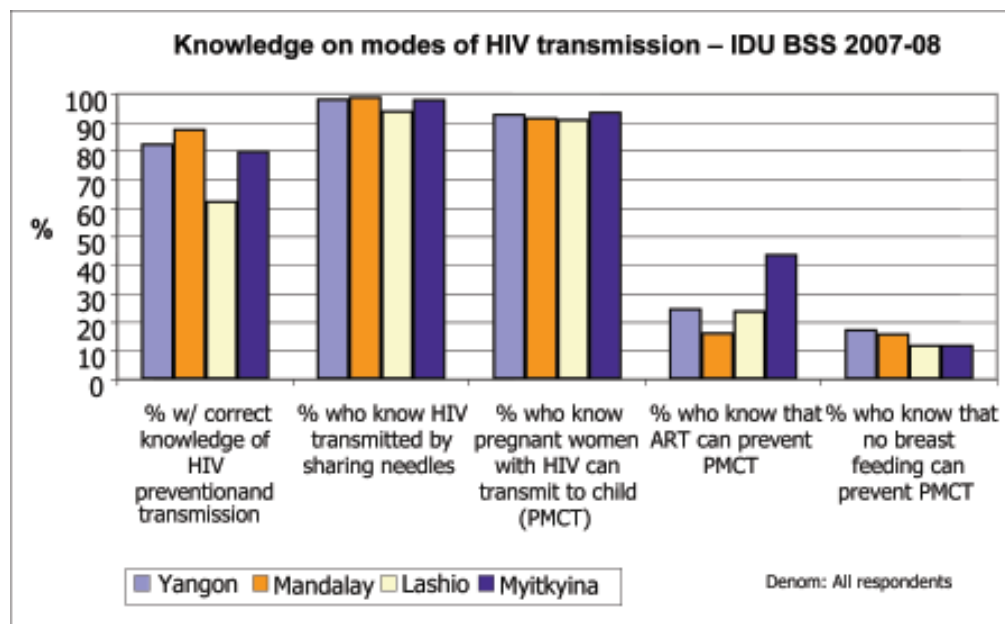
F. Knowledge and attitudes toward HIV

The vast majority of respondents in all sites especially Yangon and Mandalay reported personal experience with HIV/AIDS. More than 90% in Yangon (94%) and Mandalay (92%) knew someone who was infected with HIV. While 74% of respondents in Lashio and 77% of respondents in Myitkyina. knowing a close friend or relative with HIV ranged from 78% of IDU in Yangon to 42% in Lashio. Indications of acceptance of people living with HIV was evident in terms of attitudes toward sharing meals, caring for infected relatives, and supporting HIV positive students and teachers from continuing to go to school or teach. Positive attitudes towards persons with HIV were the lowest among IDU in Lashio. Respondents also expressed the most hesitation about eating at a shop owned by a HIV positive vendor (range:69-94%)

Knowledge about prevention and methods of transmission² was moderately high inn Yangon (83%), Mandalay (88%), and Myitkyina (80%). Levels of correct knowledge was much lower in Lashio (63%). However, almost all IDU knew that sharing needles could result in transmission of HIV. High levels of awareness of the dangers of mother to child transmission were reported (range 91-93%). However less than a quarter of respondents in all townships knew that there were drugs (antiretroviral therapy) that infected pregnant women could take to prevent transmission to their unborn child.

Very few were aware that avoiding breast feeding could also reduce transmission between infected others and their newborns (range 12-18%).

Fig 16. Knowledge of modes of HIV transmission



²This knowledge score is based on correctly answering four standard questions about HIV prevention and transmission. See detailed tables for specific questions used.

IV. Results - Female Sex workers

A. *Assessment of the recruitment and characteristics of FSW networks*

The population of FSW in Yangon and Mandalay is diverse, particularly in terms of the manner of soliciting clients. Both cities have large populations of direct (e.g. street based and brothel based) and indirect (e.g. karaoke bar or restaurant based) FSW. The latter are often termed entertainment establishment based FSW. One of the key concerns in applying RDS to these populations was whether there were sufficient network ties between direct and indirect sex workers to ensure that the sample included both groups. Both survey data and program experience suggests that indirect FSW have higher earning power and are more difficult to reach through interventions, both factors making their interest in participating and recruiting others for a survey less likely.

Just as for the IDU survey, the other areas scrutinized were whether the sample was skewed toward a more intervened population and what geographic area was covered through the survey and consequently what portion of the total FSW population in each city was represented by the sample.

Yangon:

The RDS site was located in one township within Yangon (Insein) where a large number of street based sex workers were known to practice. The site was also in close proximity to a clinic run by the AIDS/STD team in Yangon. Despite the location of the RDS center, respondents came from more than 20 townships spanning the larger Yangon metropolitan area and suburbs, not only those from within the township where the RDS center was located.

The sample in Yangon was also seeded by street based sex workers, which were the predominant type of FSW known in the areas. Consequently, an assessment of the sample shows a very high proportion of women who practiced direct SW. It is interesting to note that within each seed's chain of recruitment at least some indirect sex workers were recruited (see recruitment chains Yangon Annex 4a). This suggests that, at least in this part of Yangon, network ties between direct and indirect FSW were weak, but existed to some degree. Within the direct sex work it is also useful to note that a majority of FSW solicited clients from multiple settings, for example both street, through guest houses, brokers, and sometimes brothels or entertainment venues.

The population surveyed reported high levels of accessing services, especially clinical services as well as being contacted by an outreach worker. This profile is not surprising considering the location of the RDS center being near a population clinic for FSW. It is likely that the sample includes a higher proportion of women who practice sex work within the township and who may also be more aware of and more frequent users of services.

Mandalay:

To achieve greater diversity in the Mandalay sample, seeds were selected from three segments of the FSW population: street, brothel, and entertainment establishment. This diversity is reflected in the final sample, which included roughly equal portions of FSW who usually found their clients through brothels, at entertainment establishments, or at street solicitation points. Examination of the recruitment chains from each seed shows that most respondents recruited within their sex work typology. (see recruitment chains Mandalay, Annex 4b). This indicates that the sample is not necessarily represent the distribution of sex work typology in the larger FSW population in Mandalay.

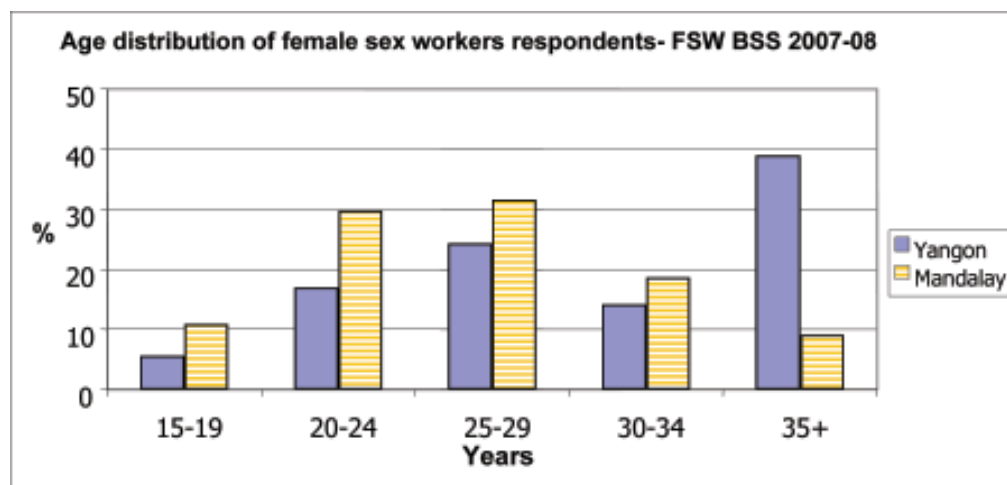
Given that risk behaviour varies substantially among direct and indirect sex workers, the results of the Mandalay FSW survey must be interpreted with this sampling bias in mind.

The RDS center was located at some distance (i.e. different townships) from the large NGO drop in center providing services to FSW in the city.

B. Basic socio-demographics of the sample

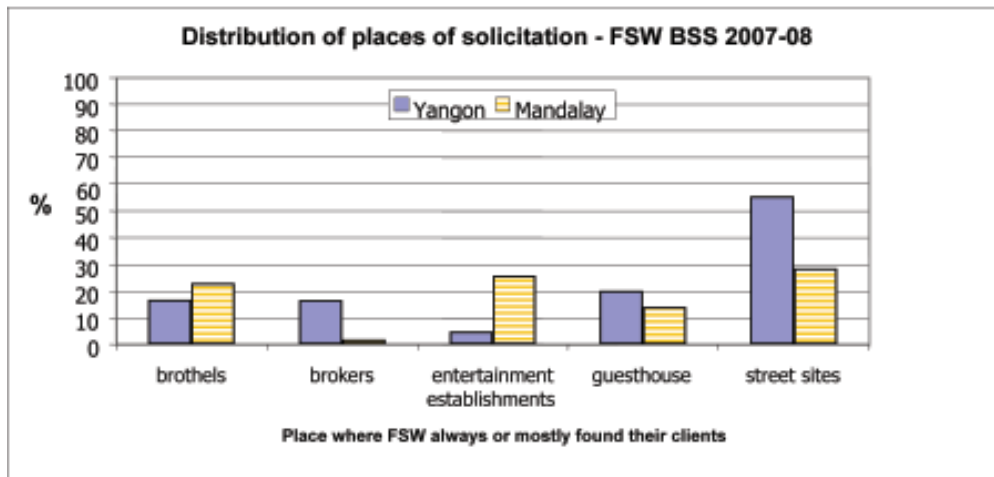
FSW in Yangon and Mandalay were markedly different in socio demographic characteristics. The sample of FSW in Yangon were older (median age >30) and almost all (94%) had previously been married.

Fig 1. Age distribution by site



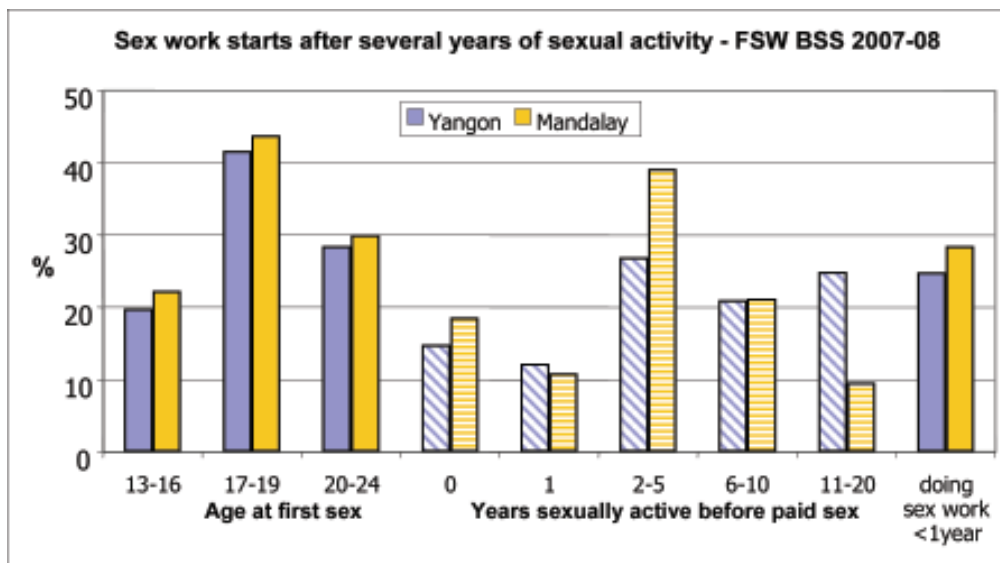
More than half of the Yangon FSW were street based sex workers and the amounts earned at last sex with client ranged from kyats 1000 to 30,000, but a median value close to kyats 5000. In contrast FSW in the Mandalay survey had a median age closer to 25, and less likely to have ever been married (62%). The Mandalay respondents were more equally distributed between brothel based (23%), entertainment based (26%), and street based sex work (28%). Although the median amount paid by their last client was approximately Kyats 5500, almost one fifth of the respondents reported earning more than Kyats 30,000 from their last client. This likely reflects the higher earning power by entertainment based FSW.

Fig 2. Places of solicitation



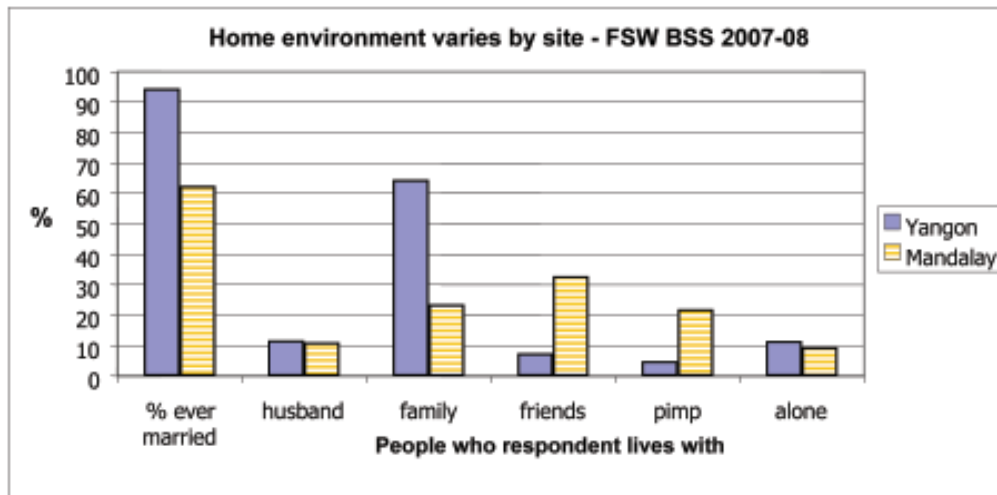
Other socio-demographic characteristics of the two samples were more similar. Sex work was the major source of income almost uniformly for FSW in both townships. Approximately, one quarter of the respondents in both Yangon and Mandalay had been doing sex work for less than a year. The distribution of age at first sex was also very similar, with a majority of women having sex before the age of 19. The median age of starting sex work was 23 years for the Mandalay sample and 24 years for Yangon.

Fig 3. Age at first sex and duration of sex work



Approximately, 10% of FSW in both sites lived with a husband and a similar percentage lived alone. However, a higher proportion of FSW in Mandalay lived with a pimp or broker (22%) or friends (33%). While a majority of FSW in Yangon (64%) lived with family members.

Fig 4. Living environment

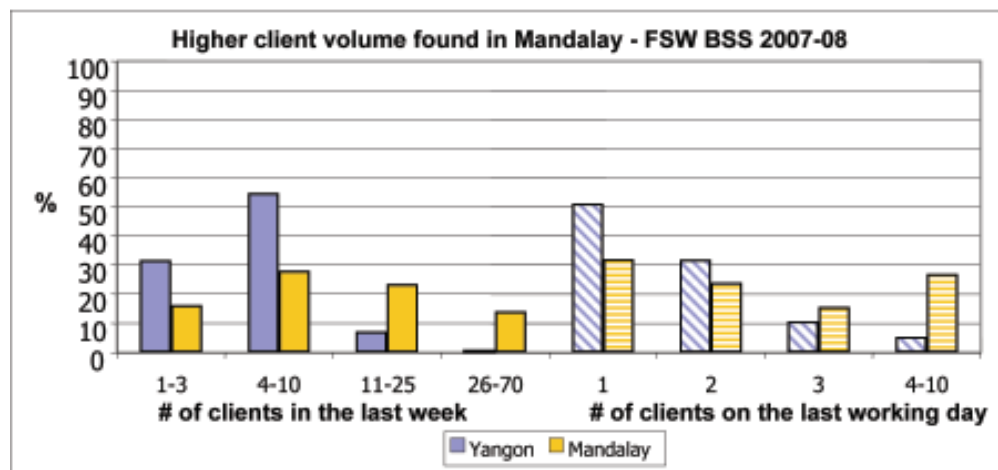


Substance related risk taking appeared low. Respondents in both Yangon and Mandalay reported almost no experimentation with drug use and approximately 80% of women in both sites reported never having or taking alcohol less than once a week.

C. Patterns of sex work

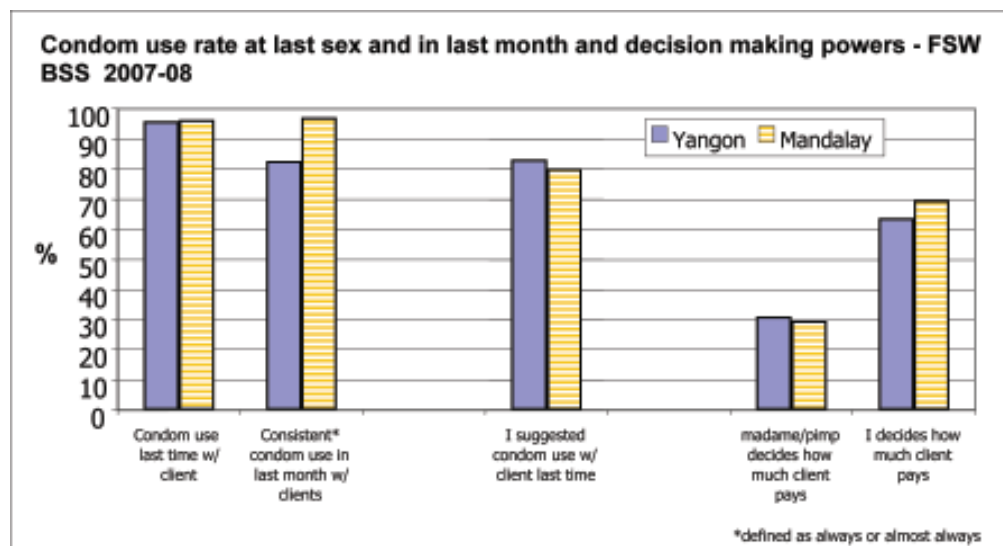
The intensity of commercial sex activity was lower among Yangon FSW compared to those in the Mandalay survey. More than 80% of FSW in Yangon had 10 or less clients in the last week, compared to about 45% of FSW in Mandalay. Similarly, about one quarter of the FSW in Mandalay reported having more than 4 partners on their last day of work, compared to only 5% in Yangon. Half of the FSW in Yangon reported having only one client the last day they worked. Further exploration of the sex work patterns in Mandalay are needed due to the inclusion of large proportions of street, brothel, and entertainment based sex workers included in the sample. When making direct comparisons with the Yangon survey, it will be more useful to confirm whether street based or brothel based sex workers in Mandalay have substantially higher numbers of clients than their counterparts in Yangon.

Fig 5. Number of clients – in the last week and last working day



Reported condom use was uniformly high among FSW in both sites, at greater than 95% for using condoms at the last sex act with a client. Reported consistent condom (defined as always or almost always using condoms in the last 6 months with clients) was very high (97%) among FSW in Mandalay, and slightly lower in Yangon (83%). In both sites, respondents reported being the one to be proactive about condom use, with 80% saying they suggested using condoms to their last client.

Fig 6. Condom use and decision making powers



The FSW in Yangon and Mandalay also appeared to have similar levels of control in determining the amount their clients paid. Roughly, two thirds of respondents reported that they determine how much their clients paid, compared to about 30% who said a madame, pimp or broker negotiated the amount.

Further analysis of these power dynamics revealed that a substantial percentage of FSW operated under the financial and possibly social control of an agent. In both sites, approximately 100 respondents reported having to give a madame, pimp, or broker a portion of the money earned from their last client. The median amount given in Yangon was Kyats 2750, representing approximately 37% of the amount earned. In Mandalay, the median amount given was Kyats 3000, representing 59% of earnings. Given how substantial these amounts are as a proportion of earnings, further analysis will be useful to determine whether for these sex workers, the influence of these power structures also determine the likelihood of condom use with clients.

D. Sexual Behaviour with regular partners

In addition to sex with clients, the questionnaire included questions about sexual behaviour with their regular partners. The proportion of FSW with a regular partner was 46% in Yangon, compared to 63% in Mandalay. In Yangon, about 20% of FSW had sex more than five times with their regular partner in the last month. While FSW in Mandalay had slightly more frequent sex with their regular partners (32% had sex >five times).

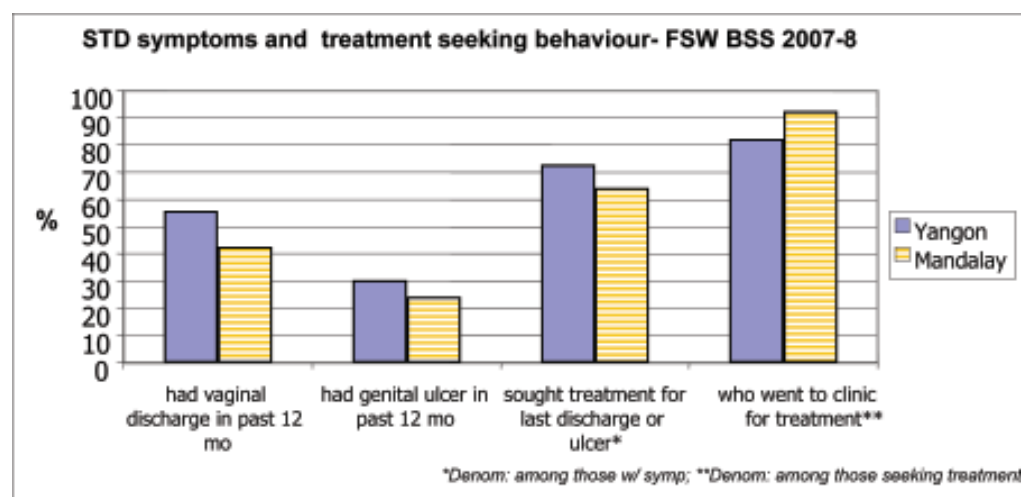
Reported condom use with regular partners was relatively high compared to FSW surveys in other countries in Asia. More than 50% of FSW in both sites reported condom use at last sex with regular partners and for consistent condom use with regular partners in the last six months. Respondents who did not always or almost always use condoms with their regular partners were asked an open

ended question on the reasons for not using condoms. The most common reasons given, were that their regular ‘partner didn’t like condoms’ (Yangon: 53% and Mandalay: 44%, respectively) and ‘didn’t think it was necessary to use condoms with their regular partners’ (Yangon: 27%; Mandalay: 45%)

E. STD history and relationship to condom use

Despite very high levels of condom use reported with clients, a high percentage of FSW reported a history of STD symptoms in the last year. In Yangon, 56% of respondents reported having vaginal discharge, and 30% reported a genital ulcer. Levels of reported symptoms were slightly lower in Mandalay at 43% who reported a discharge and 24% reporting a genital ulcer. While a self-reported vaginal discharge is not always specific to a STD, report of an ulcer may be a more reliable indicator of STD history. Considering that levels of asymptomatic disease is also generally high among women, the level of STD symptoms experienced by respondents suggests continued high levels of exposure to HIV.

Fig 7. History of STD symptoms and treatment seeking behaviour



It is unclear whether these data suggest that condom use with commercial partners is not as high as self-reported, or that regular partners also constitute a high risk group that should be addressed by interventions. Potentially, high levels of reported STD symptoms may also help challenge the notion of those respondents who thought that condom use with regular partners “ was not necessary.”

On a positive note, a majority of FSW sought treatment the last time they had vaginal discharge or an ulcer, primarily going to some type of clinic for treatment (rather than self treating or using traditional medicine).

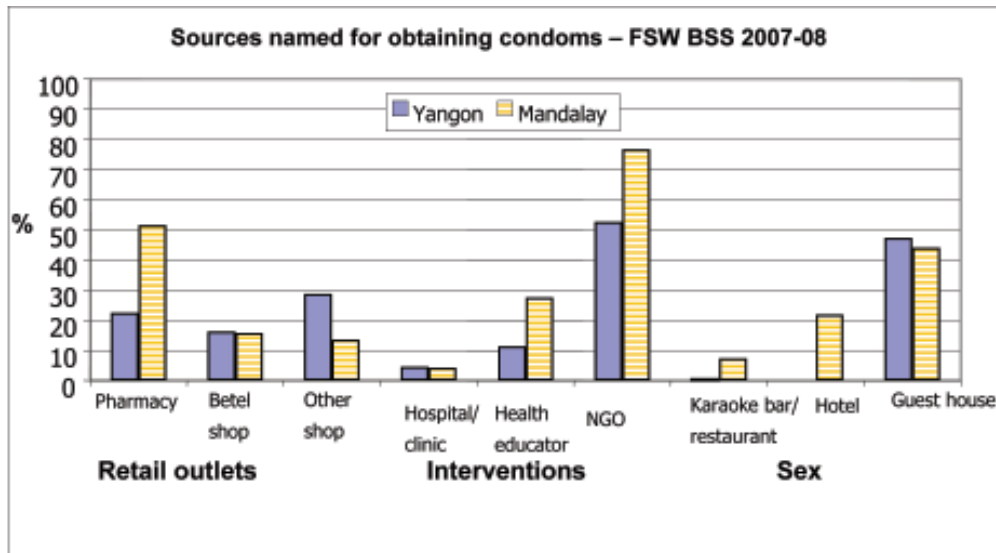
F. Access to commodities and services

Data from the BSS cover a wide range of questions on respondents’ access and utilization of services.

High levels of reported condom use among clients are consistent with more than 90% of FSW knowing where to access condoms. The most commonly reported places were retail outlets such as pharmacies, betel shops, and other stores and from NGO workers. Increasing access to condoms at sex venues is a key structural intervention to promote condom use. The combined proportion of

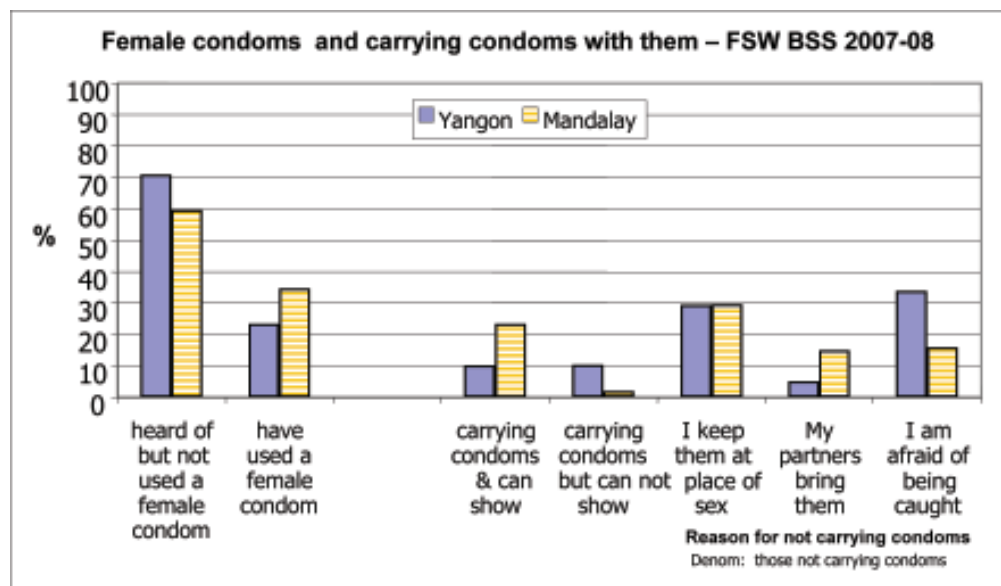
FSW who reported knowing condoms were available at karaoke bars, restaurants, hotels, or guest houses where they worked was 50% in Yangon, and 60% in Mandalay. However, the largest proportion of these mentioned guesthouses as the type of sex venue where condoms were known to be available.

Fig 8. Known sources of condoms



Besides knowledge about where to get condoms, having condoms readily available at the time of sex is another important factor related to actual use. Only about 20% of respondents reported carrying condoms on their person at the time of the interview. About 30% of respondents in both sites gave the reason for not carrying condoms was that they were kept at the place of sex. A substantial proportion of women, 34% in Yangon, and 16% in Mandalay, report being afraid of being caught with condoms by authorities and said that was the reason they did not carry condoms for that reason.

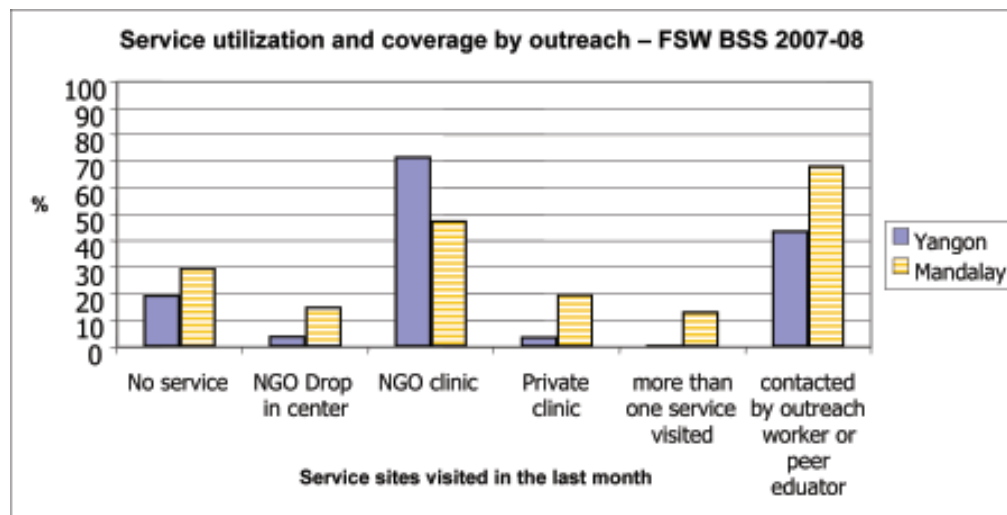
Fig 9. Use of female condoms and the reasons for not carrying condoms



Promotion of female condoms appears highly successful in both townships. In Yangon, 71 % of FSW had heard of the female condom, while another 23% reporting having actually used female condoms. In Mandalay, 60% of FSW had heard of the female condom, and 35% had used the product.

Targeted interventions providing prevention services for FSW including STD clinic services, have been in place in both Yangon and Mandalay for several years. Respondents were asked about both fixed location services such as drop in centers and clinics, as well as outreach services conducted by NGO staff and peer educators. Service coverage of the FSW captured in the survey was high. Nearly 72% of FSW in the Yangon survey had visited an NGO clinic in the last month, and 44% had been contacted by an outreach worker or peer. Use of other types of services were not very common among Yangon respondents. In Mandalay, 15% of respondents had visited a drop in center, 48% had gone to an NGO clinic, and 68% had been contacted through outreach. Besides services from NGOs, 20% of FSW in Mandalay reported accessing a ‘private clinic’.

Fig 10. Service utilization and outreach coverage



Another important area of service for FSW is availability of confidential voluntary counseling and testing for HIV. Results from these surveys show high levels of testing. In both townships, 80% of the respondents report having had an HIV test, with about 40% of those tested having gone three or more times. A majority of respondents tested (Yangon: 74%; Mandalay 62%) had gone for a test within the last six months. The proportion receiving their test results was very high, 94% in both Yangon and Mandalay, with a similar proportion saying the reason they got tested was to ‘know their status’ rather than being urged by friends, families, health care providers, or as part of some form of routine blood testing.

By far, the most common place to go for HIV testing was an NGO clinic (Yangon: 89%; and Mandalay: 78%). In Mandalay 10% of respondents went to a private clinic, and about 9% went to a government clinic.

Fig 11. Experience of HIV testing

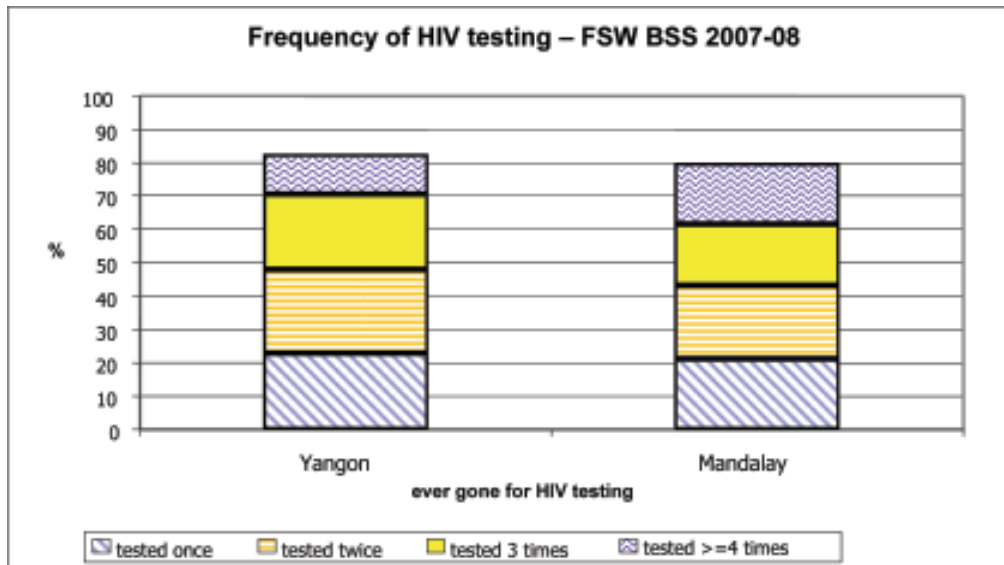
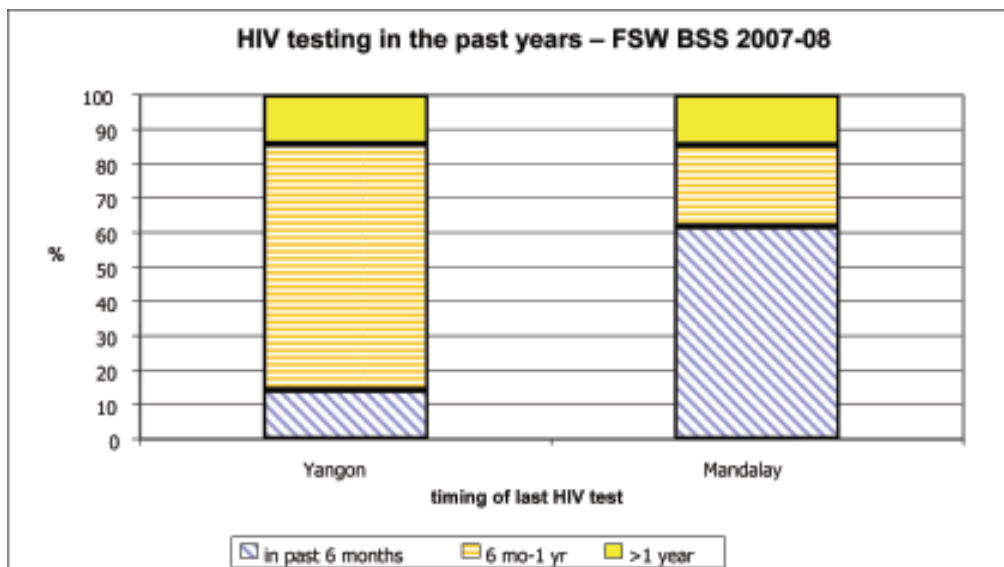
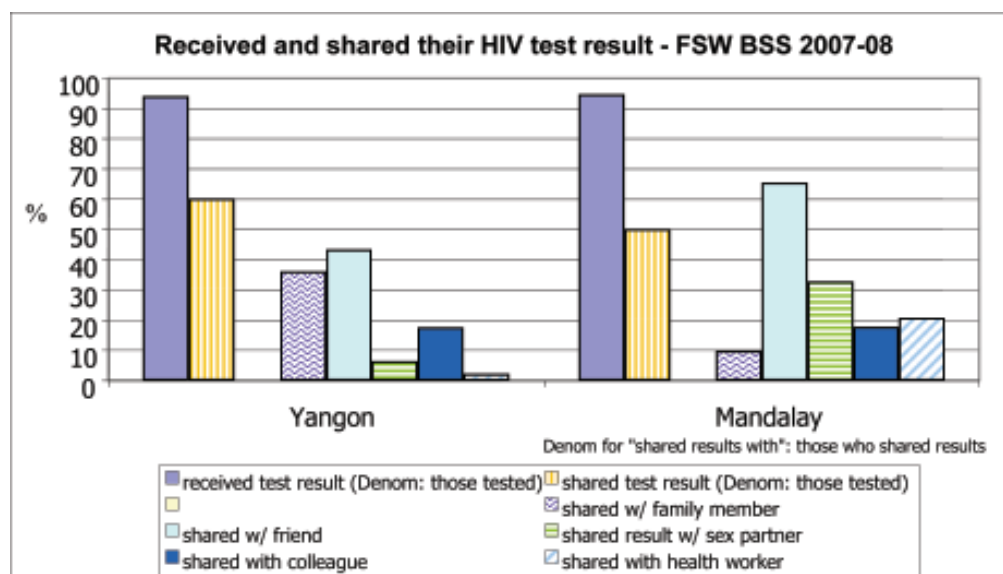


Fig 12. HIV testing in the last year



Respondents were not asked to disclose their HIV status, but were asked whether they shared their test result with others. More than 50% of respondents had shared their last test result. Patterns of sharing their test result were quite different between FSW in Yangon and Mandalay. In Yangon, respondents who got their test results mentioned telling friends (43%) and family members (36%), and colleagues (18%). Very few (7%) shared their test results with a sex partner or a health worker (2%). In Mandalay, respondents also commonly shared their test result with a friend (66%) or a colleague (18%), but many report having told a sex partner (33%) or a health worker (21%). Only a few respondents in Mandalay shared their test result with a family member (9%). In part, this may reflect the different living arrangements of FSW in the two townships, and the proportion of FSW who had a regular partner.

Fig 13. Receipt and sharing of HIV test results (FSW)



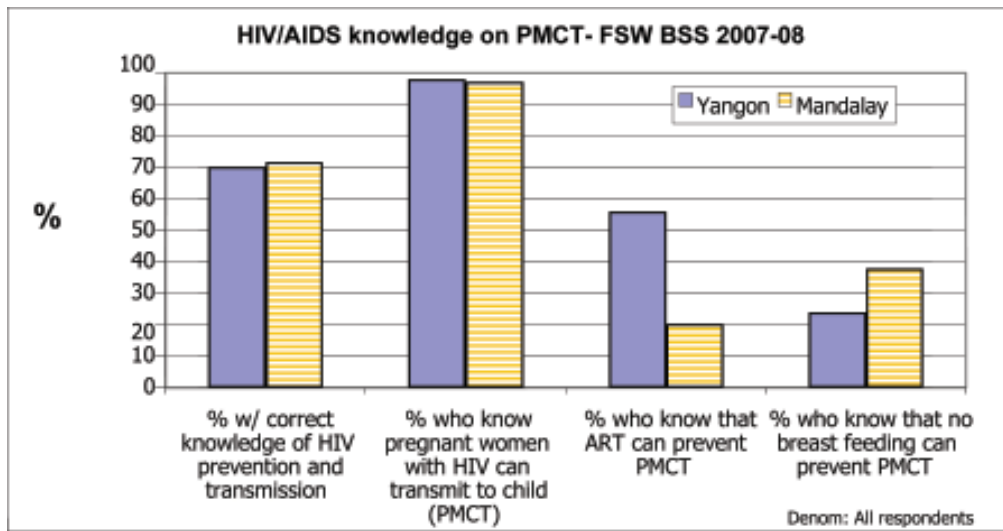
G. Knowledge and attitudes about HIV

The last section of the BSS questionnaire addressed issues related to respondents attitudes about HIV/AIDS and basic knowledge regarding prevention and transmission. When asked standard questions about sharing meals with infected persons, whether HIV positive people should be able to go to school or work, and whether they would care for infected family members in their own home, most times more than 90% of respondents reported supportive, positive attitudes towards HIV positive individuals. FSWs in Yangon showed slightly less acceptance towards HIV positive students continuing school (80%) and eating at shops owned by HIV positive vendors (79%).

The personal impact of HIV/AIDS on respondents' lives was also high. Of the FSW in Yangon, 84% reported knowing someone infected with HIV and for 61% this was a closer friend or relative. A slightly smaller majority of FSW in Mandalay (68%) knew an infected person, and 47% reported that this person was a closer friend or relative.

Levels of knowledge of methods of preventing HIV transmission were moderately high. In both sites, 70% of respondents gave correct answers to four standard questions about HIV transmission. Given the high prevalence of HIV reported among FSW in the HSS for both Yangon and Mandalay, knowledge about both ART and PMCT services are very relevant to this group. Almost all respondents knew that pregnant women with HIV could transmit the disease to their unborn child. However, a much smaller proportion of women knew that ART or some type of medicine could be used to prevent transmission from mother to child (Yangon: 56%; Mandalay: 20%), and few women were aware that avoiding breast feeding could also reduce transmission (Yangon: 24%, Mandalay 40%).

Fig 14. Knowledge of modes of HIV transmission



V. Discussion and Conclusions

Yangon:

In Yangon, the population of IDU surveyed both moderately frequent and infrequent injectors. These findings may accurately reflect the composition of IDU found in Yangon and may suggest that there is a smaller group of higher risk IDU whom may be the more important target for interventions. It is also important to interpret the BSS findings carefully when triangulating with HSS and program monitoring data as the overlap between groups included in each dataset may not be high. Yangon city covers a large population and geographic area which also must be considered when looking at multiple data sources.

The risk potential for HIV transmission in Yangon must be assessed in terms of risk among IDU and FSW populations as well as the interactions between these groups. Although IDU in Yangon injected infrequently, they did report moderately high levels of sharing both receiving and giving used injection equipment to each other. Sex workers in the Yangon survey appeared to be older women, many of whom started sex work relatively late, and whom earned moderate sums of money from each client. The FSW population operated mostly in street based venues, with most having only one client a night. While reported condom use with clients was very high almost one third reported a genital ulcer in the last year, and more than half had a vaginal discharge. These levels of STD symptoms suggest that FSW respondents face considerable exposure to disease. While, respondents in the FSW in the Yangon survey did not report frequent alcohol or drug use, sexual risk behaviour among IDU was very high in terms of the interaction between IDU and FSW populations.

Given the underground nature of IDU behaviours, it is not surprising that there are relatively low levels of service utilization among IDU in the Yangon survey. In contrast, 72% of FSW in the Yangon survey went to an NGO clinic in the last month and almost half had been contacted through outreach. HIV testing also appears to have been heavily promoted recently by NGO clinics in the past 6 months, accounting for 74% of the FSW who had last been tested in the past 6 months. It is encouraging that 96% of FSW who had been tested said the reason was because they were interested in knowing their status and an equally high number had received their test results. This suggests that FSW were willing to and voluntarily tested.

Mandalay:

In Mandalay, the IDU included in the survey were between 20-30 years, a majority of whom injected at least several times a week. Unlike IDU in other cities, the location where respondents injected was most frequently at a dealer's place (87%), where more than one third also reported their dealer as a place to get new or unused needles. At the same time the reported level of sharing injecting equipment was low, more than 90% reported no sharing behaviours in the last six months. Nonetheless, the HSS data for Mandalay IDU suggests that risk behaviour is occurring as HIV prevalence has been consistently reported above 30%. These findings suggest that further exploration of the role of the dealer in harm reduction and the use of sterile injecting equipment may be important for reducing risk of IDUs in Mandalay. Sexual risk behaviour among IDU poses another important risk determinant for the further spread of the HIV epidemic in Mandalay. IDU report high levels of sexual activity, including almost half of respondents having paid for sex in the last six months. Given that FSW in Mandalay report very high client volume and having symptoms of STDs in the last year, the interaction between IDU and FSW populations must be specifically

addressed in behaviour change communication messages and condom promotion by local programs.

While IDU in Mandalay do not appear to proactively seek out services, it is encouraging that 43% of the respondents had been contacted through outreach in the last month. Services for FSW appear to have much higher coverage than for IDU, especially for clinical services, however the frequency with which vaginal discharge and genital ulcers in the last year are reported, suggest that FSW continue to be highly exposed to sexually transmitted diseases.

The sampling of FSW was not successful in achieving strong cross over of respondents with respect to the type of sex work practiced (e.g. brothel based, street based, or entertainment based). More analytical work is needed to conduct sub-group analysis to further profile the different risk and socio-demographic characteristics of these different types of sex workers, in order to make conclusions about ways to improve programming.

Lashio:

Lashio has long been known to have a large IDU population and has benefited from a history of prevention services. Injectors included in the Lashio survey suggest high levels of injection related risk, in terms of injection frequency and substantial sharing of injection equipment. However, sexual risk transmission from IDU to either paid or regular partners appeared lower than for IDU in other townships. The sample also confirmed the relatively high level of program coverage both through services located at fixed sites (e.g. drop in centers and clinics) as well those delivered through outreach. Most IDU were aware of where to obtain new needles and condoms at both retail and free condom distribution sources. Many injectors were interested and aware of their HIV status as evidenced by high levels by a large number who have tested multiple times and within the last six months. Use of government services for both obtaining condoms and HIV testing was relatively high in Lashio.

Despite respondents having high levels of service utilization, knowledge levels about HIV transmission and STD symptoms were relatively low among IDU in Lashio. This finding suggests that further efforts to educate and make IDU aware about these issues may still help injectors avoid greater exposure to HIV for themselves and their regular sex partners. Further exploration of the knowledge gaps of IDU and whether this is associated with not being accessed for service can be conducted.

Myitkyina:

Injectors included in the BSS represent a group of relatively young, frequent injectors of very high risk. Myitkyina IDU has the highest levels of sharing across all four survey sites on almost all measures of sharing injection equipment. And nearly 20% reported not knowing a source for obtaining clean needles. Due to their younger age, and lower likelihood of being married, IDU in Myitkyina often lived at home. It is interesting to note that the usual place of injection was in a home setting. In addition to injection related risk, the IDU population in Myitkyina appear to have high levels of sexual activity with a range of partners (regular, paid, and casual). Access to services among IDU in Myitkyina was moderate in terms of both the use of DICs and clinics, the proportion contacted through outreach, and knowing their HIV status. It does appear that HIV testing services have been heavily promoted more recently as 86% of those who have tested, have been tested in the past 6 months.

General recommendations:

High Degrees of Overlap Between IDU and FSW populations – The high proportion of IDU who report having a FSW partner in the past six months is an important area for programmatic intervention. Asian epidemic models demonstrate how the interaction between IDU and FSW populations can exacerbate and refuel sex work driven epidemics. Condom use is variable among IDU and their paid partners and is an area that may be addressed through additional focus. The high levels of IDU who buy sex in Myitkyina may warrant adding a FSW sentinel site in Myitkyina to the HSS system.

Continued Risk of Transmission Among FSW – While reported condom use with clients is very high among FSW in both Yangon and Mandalay, the high levels of vaginal discharge and genital ulcers reported in the last year suggest that respondents remain at risk from sexually transmitted infections, including HIV. Further investigation is needed into whether regular sexual partners constitute an important risk groups, or if condom use with clients is substantially over-reported. Similarly, the high level of prevalence among FSW according to the HSS data, coupled with high levels of STDs, suggest high risk transmission among HIV positive FSW to their various sexual partners.

Linking Testing to Care, Support, and Treatment Services – High percentages of IDU and FSW report having ever been tested for HIV and having recently been tested. While it is important for high risk groups to be aware of their HIV status, it is critical that those who are diagnosed as positive are linked to services in care, support, and treatment. Further investigation with other sources of data can be used to determine if this is the case. Future surveys can also explore the awareness and utilization of care, support, and treatment services among those who know their status.

PMCT awareness – Levels of knowledge regarding methods of preventing mother to child transmission were relatively low among all survey sites and risk groups. Given the high levels of HIV prevalence reported among both IDU and FSW populations according to the HSS data, as well as the high levels of sexual risk behaviour found in most sites, awareness and access to PMCT services for FSW and IDU partners is critical for these groups.

Condom Distribution – According to program monitoring data, both free and socially marketed condom distribution has decreased substantially from 2006 to 2007 and continued to decline in 2008. However, both IDU and FSW populations surveyed in 2007-08 suggest condoms are still readily accessible. Neither was availability cited as a reason among those with inconsistent condom use patterns.

Methodological Issues – Rigorous application of RDS has been shown to be feasible in four diverse townships and should continue to be a strong option for conducting probability surveys among high risk groups. Ensuring the quality of these surveys depends on following a strict protocol, building in supervision and quality control procedures, and investing in documentation of the implementation process to allow thoughtful and appropriate interpretation of the findings. Lessons learned from the Mandalay FSW sample confirm that networks of sex workers are largely divided by type of solicitation point and future rounds of these surveys should not attempt to combine both direct and indirect sex workers in the same sample.

Annex 1. Detailed Tables – IDU

Table 1. Age Distribution

Site	15-19	20-24	25-29	30-34	35+	Mean SPSS	Median SPSS
Yangon	2.9 (0.6, 5.8)	22.9 (14.8, 1.1)	22.4 (15.7, 9.9)	21.1 (14.3, 8.5)	30.6 (21.4, 42.3)	30.2	30
Mandalay	12.2 (7.8,17.7)	32.4 (26.1, 40.1)	23.6 (16.7, 30.6)	20.6 (14.2, 26.5)	11.2 (7.2, 15.4)	27.2	27
Lashio	4.8 (1.9,8.4)	21.8 (14.7,30)	16.9 (11.5,23)	23.2 (16.8, 30.8)	33.4 (23.7, 43.3)	30.5	30
Myitkyina	37.4 (28.3, 5.1)	32.3 (26.1, 9.7)	16.3 (11.8, 1.2)	7.6 (4, 11.8)	6.4 (2.8, 10.9)	23.1	22
(Denominator)	All	All	All	All	All	All	All

Table 2. Religion, Employment and Place of Residence

Site	% Buddhist	% employed	% living in the township of survey	% living in township <1 yr
Yangon	85.5 (79.2, 91.5)	61.2 (49.7, 0.72)	100	1.6 (0.3, 4)
Mandalay	85.1 (79.1,91.19)	72.4 (64.6,80.7)	100	0
Lashio	75.5 (67.5, 82.9)	44.7 (36.2,53.4)	100	0.7 (0.1,1.6)
Myitkyina	57.1 (49.1, 65.3)	26.2 (20.3, 32.1)	100	1.2 (0.2, 2.7)
(Denominator)	(All)	(All)	(All)	(All)

Table 3. Marital Status and Living Arrangements

Site	% ever married	% still married	% live with wife	% live with other sex partner	% live with family	% live alone
Yangon	44.8 (35.9, 54.4)	21.3 (15.4, 28.4)	20.8 (14.8, 28.4)	0.7 (0.1, 2.3)	73 (62.9, 80.8)	4.5 (1.2, 8.7)
Mandalay	39.5 (32.1,47.8)	34.5 (27.2,42.8)	35.1 (27.6, 43.7)	0	58.8 (50.8,66.2)	0.7 (0.2,1.7)
Lashio	51.2 (42.1,60.4)	38.8 (30.4,48.8)	39.1 (30.6,48.4)	0	53.1 (44.4,61.7)	6.7 (3.2,10.6)
Myitkyina	21.1 (13.6, 28.6)	15.0 (9.2, 20.4)	12.3 (7.6, 17.1)	1.5 (0.4, 2.9)	80.9 (75.4, 86.4)	0.7 (0.2, 1.7)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)

Table 4. Age of Initiation of Drug Use

Site	Age at first drug use - SPSS		Age at first injection - SPSS		# years of injecting - SPSS		% injecting one year or less*
	Mean	Median	Mean	Median	Mean	Median	
Yangon	19.3	19	21.4	20	5.7	4	18.3 (10.1, 25.9)
Mandalay	19.5	19	21.8	21	5.4	4	24.9 (18.5, 30.7)
Lashio	20.6	20	26.4	25	4.1	3	23.6 (15.4, 31.9)
Myitkyina	18.5	18	20.6	19	2.5	1	58.2 (50.6, 65.3)
(Denominator)	(All)		(All)		(All)		(All)

Table 5. Frequency of Injection

Site	% Inject more than once a day (during last 6 mo)	Frequency of injection in the past 6 months						
		2-3 times	Once a week	2-3 times a week	4-6 times a week	Once a day	2-3 times a day	4+ times a day
Yangon	1.4 (0.4, 2.6)	51 (42, 59.9)	18.9 (11, 25.5)	18.9 (11, 25.5)	17.2 (11.6, 22.9)	3.4 (1.5, 7.1)	3.4 (1.5, 7.1)	1.3 (0.4, 2.5)
Mandalay	22.7 (16.5, 30.8)	18.5 (12.8, 24)	10.6 (6.7, 15.5)	35.8 (28.3, 42.6)	9.2 (5.6, 13.5)	8.3 (4.1, 12.1)	13.8 (8.9, 20.1)	1.4 (0.2, 4.1)
Lashio	55.2 (46.9, 63.1)	32.7 (25.1, 41.6)	2.4 (0.6, 5.2)	4.2 (2.7, 3)	3.7 (1.4, 6.6)	10.6 (5.9, 15.1)	35.8 (27.8, 42.6)	8.2 (4.2, 11.8)
Myitkyina	65.4 (58.5, 71.6)	9.5 (6, 14.1)	3.5 (1.1, 6.5)	12.8 (8.5, 18.4)	6.5 (3.5, 9.6)	14.4 (10.1, 19.2)	45 (37.3, 51)	6.8 (3.2, 10.2)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 6. Substances Used in the Last 6 Months

Site	% used heroin in last 6 months	% inject heroin	% use (2 nd most common drug)	% inject (2 nd most common drug)	% who used ATS, amphetamines
Yangon	78.4 (71, 85.5)	77.2 (69.7, 84.7)	Tranq: 88.6 (82.2, 94.2)	69.1 (60.6, 77.6)	31.3 (23.7, 39.9)
Mandalay	100	100	Tranq: 17.9 (12.3, 23.7)	6.6 (3, 10.9)	20.3 (14.1, 27.3)
Lashio	100	99.5 (98.2, 99.6)	Tranq: 56.3 (46.8, 65.6)	36.5 (27.9, 45.1)	42.1 (33.3, 51)
Myitkyina	95.6 (93, 98.4)	95.0 (92, 97.4)	Codeine, cough syrup: 59 (53.1, 65.9)	0	26.9 (21.7, 33.6)
(Denominator)	(All)	(All)	(All)	(All)	(All)

Table 7. Place of drug use

Site	% usually inject at home or someone else's home	% usually inject in street/park or latrine	% inject at private injection room	% who inject at the dealers'
Yangon	86.3 (80.3, 91.2)	22.9 (16.6, 30.6)	0 (n=1)	0 (n=0)
Mandalay	27.3 (20.4,35)	1.6 (0.3,3.8)	2.5 (0.5,5.3)	86.9 (80.9,92.9)
Lashio	56.9 (47.5,65.9)	46.7 (37.5, 55.6)	0 (n=2)	59 (50,67.3)
Myitkyina	64.2 (56.9, 70.4)	34.5 (28.2, 41.3)	2.6 (0.1, 4.5)	17.5 (12.7, 21.9)
(Denominator)	(All)	(All)	(All)	(All)

Table 8. Pattern of Sharing Injecting Equipment Last Time and Past Six Months

Site	% Used a needle from someone else at last injection	% Used a needle from someone else		% Gave their used needle to someone else		% Never shared	% who used pre filled syringe
		Every-time/ almost every time	Sometimes	Every-time/ almost every time	Sometimes		
Yangon	31.5 (21.3, 41.3)	11.9 (6.1, 9.4)	26 (17.5, 33.6)	11.1 (5.5, 18.4)	30.6 (21.4, 38.4)	58 (48.3, 68.7)	7 (2.7, 11.4)
Mandalay	5.2 (2.5,8.5)	1.3 (0.1,3.2)	5.2 (1.9,9.2)	0.4 (0.4,1.4)	6.4 (3,10.4)	90.6 (85.7,94.7)	3.4 (0.1,6.1)
Lashio	19.3 (12.7, 28.1)	1.2 (0.4,3.4)	19 (11.7, 28.1)	0	22.9 (16.1, 31)	67.5 (57.9, 74.6)	4.9 (1.6, 8.8)
Myitkyina	22 (16.1, 26.7)	2.2 (0.1, 4)	33.3 (25.9, 39.7)	1.5 (0.3, 2.5)	34.9 (27.1, 42.6)	53.8 (46.5, 61.8)	15.4 (10.7, 19.8)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 9. People Who Respondent Shared Injecting Equipment With

Site	% with regular sex partner	% with casual sex partner	% with injecting friend	% with dealer	% with person met at shooting gallery	% with skilled injector
Yangon	1.8 (0.4, 4)	1.8 (0.4, 4.1)	37.9 (27.1, 46.6)	3.6 (1.4, 6.3)	2.2 (0.5, 4.5)	2.4 (0.3, 5.2)
Mandalay	0	0	4.8 (1.7,8.9)	2 (0.4,4.2)	2.1 (0.2,5.2)	1.2 (0.2,2.6)
Lashio	0	2.1 (0.5,5.6)	17.2 (9.4,25.6)	1.4 (0.2,4.1)	1.3 (0.2,3.5)	1.7 (0.2,4.5)
Myitkyina	4.7 (2.4, 7.6)	6.8 (4, 10.1)	33.5 (27.4, 39.5)	11 (6.9, 14.9)	5.5 (2.4, 9.2)	8.7 (4.8, 12.8)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)

Table 10. Habits of Cleaning Injection Equipment

Site	% Everytime/ almost everytime cleaned shared equipment	% used cold water to clean	% used hot water to clean	% who used bleach to clean	% who used alcohol to clean
Yangon		16.9 (10.7, 23.8)	2.9 (0.8, 5.5)	0	0
Mandalay	2.9 (1.8,10)	N too small	N too small	N too small	N too small
Lashio		40.5 (33.4,48.4)	25.7 (19.3,33.1)	2.9 (0.7,6)	3.1 (0.5, 8.5)
Myitkyina	22.9 (17.4, 28.2)	29.9 (23.7, 36.7)	17.2 (12.5, 22.7)	1.3 (0.4, 2.4)	4.3 (1.9, 7.1)
(Denominator)	(All)	(All)	(All)	(All)	(All)

Table 11. Known Sources of Sterile Injecting Equipment

Site	% knows source to get new needles	% phar- macy	% health worker s	% clinic/ hospital	% sex partner	% drug dealer	% a friend	% NGOs	% other
Yangon	100	91.8 (87, 95.8)	0.5 (0.4, 1.8)	2.3 (0.6, 4.5)	0	4.1 (1.3, 7.7)	43.9 (34.3, 53.5)	15.1 (9.8, 20.5)	0
Mandalay	100	91.3 (86.7, 95.7)	0	9.5 (6, 13.9)	0	35.7 (28.4, 41.8)	4.3 (1.6, 7.5)	51.6 (43.4, 59.7)	0
Lashio	98.8 (97, 99.8)	52.1 (43, 62.4)	42.5 (34.5, 50.5)	1.7 (0.3, 3.4)	0	12 (7.2, 18.4)	7.2 (3.5, 11.4)	84.5 (78.4, 91)	0
Myitkyina	78 (72, 83.7)	78 (72, 83.7)	3.4 (1.7, 5.3)	3.5 (0.6, 7.2)	0	15.8 (11.1, 20.9)	20.8 (15.3, 26.2)	29.6 (22.6, 36.7)	19.8 (14.8, 26)
(Denominator)	(All)	(All)	(All)	(All)	(all)	(All)	(All)	(All)	(All)

Table 12. History of Arrest and Detainment

Site	% ever arrested or detained	% ever arrested for drug use	% ingested/inhaled drugs in prison	% injected drugs in prison/jail
Yangon	31.8 (24.4,40.1)	18.6 (12.1,26.4)	11 (6.7,17.1)	6/26
Mandalay	20.2 (13.5,27.4)	7.5 (3.3, 12.5)	2.1 (0.2,4.4)	3/6
Lashio	40.9 (33.3, 49.7)	19 (13,26.5)	9.6 (4.5,15.5)	4/20
Myitkyina	18.6 (14.3, 25.5)	4.3 (0.2, 8.7)	1.9 (0.1, 4.1)	2/4
(Denominator)	(All)	(all)	(All)	Of those who ingested/inhaled

Table 13. History of Treatment for Drug Addiction

Site	% ever received drug treatment	% currently in treatment	% had treatment with methadone*	% had outpatient counselling	% had detox w/ non-methadone	% help to quit cold turkey	% more than one type of treatment
Yangon	34.7 (29,44.5)	6.9 (2.9, 12.7)	4.5 (0.9, 11.1)	2.7 (0.2, 6.8)	15.4 (10.5, 23.9)	5.6 (1.6, 11)	7.6 (3.5, 13.6)
Mandalay	41.4 (34.3,49)	6.7 (2.9,10.9)	3.8 (1.2,7.1)	0.7 (0.2,1.7)	25.2 (19.2, 31.1)	10.4 (6.2, 14.9)	2 (0.4, 4.3)
Lashio	71.8 (63.2, 79.2)	14.7 (8.6, 20.6)	6.9 (3.5, 11.3)	21.6 (13.8, 29.9)	24 (17.5,32)	27 (18.4, 36.2)	10.7 (5.7, 16)
Myitkyina	52.2 (44.6, 61)	22 (12.9, 31.8)	5 (1.9, 8.8)	0.6 (0.2, 1.3)	12.5 (7.6, 18.8)	13.4 (8.4, 18.5)	6.9 (3.7, 10.3)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

*Includes detoxification or methadone maintenance therapy with methadone

Table 14. Sexual Activity

Site	Ever had sex	Had sex in the last 6 months	Ever had sex with a man
Yangon	93.3 (86.8, 98.8)	60.1 (51.5,70.7)	19.1 (13.6,25.9)
Mandalay	97.6 (95.5, 99.3)	71.3 (64.9,77.9)	8.9 (4.3,14.5)
Lashio	92.2 (88.1,95.9)	38.9 (31.3,47.9)	4.1 (1.5,7.6)
Myitkyina	94 (90.5, 96.5)	59 (53, 66.1)	3.5 (0.6, 4.9)
(Denominator)	(All)	(All)	(All)

Table 15. Types and Numbers of Partners

Site	Had sex with regular partner last 6 mo	Had sex with paid partner last 6 mo	# of FSW in last 6 mo – SPSS		Had sex with casual prtn last 6 mo	# of casual prtns last 12 mo - SPSS	
			Mean (SE)	Median		Mean (SE)	Median
Yangon	35 (27.6,43.9)	41.5 (33.4,50.4)	4.3 (0.94)	2	21.2 (14.5,30.4)	2.1 (0.31)	1
Mandalay	56.6 (48.9,64.6)	47.7 (38.8,56.2)	2.8 (0.30)	2	17.3 (13,22.5)	1.8 (0.36)	1
Lashio	31.1 (24.1,39.9)	9.1 (5.5,13.7)	2.8 (0.55)	2	11.5 (6.9,18.4)	1.8 (0.27)	1
Myitkyina	36.3 (30.3, 42.9)	31.1 (25.4, 37.7)	3.8 (0.44)	3	26 (20.4, 31.7)	3.1 (0.37)	2
(Denominator)	(All)	(All)	(among those w/ paid partner)		(All)	(among those w/ casual prtn)	

Table 16. Condom use with different partners

Site	Regular Partners		Paid Partners		Casual Partners	
	% condom use at last sex	% every time/almost every time	% condom use at last sex	% every time/almost every time	% condom use at last sex	% every time/almost every time
Yangon	10.4 (4.8,20.8)	15.8 (7.8,27.5)	61 (47.9,73.7)	60 (47.5, 71.1)	13.8 (3.3, 26.7)	57.9 (29.4,95.2)
Mandalay	26.3 (16.1,35.1)	23.2 (12.7,31.1)	46 (36.6,54.9)	96.6 (93.6, 98,9)	77 (58.8,90.1)	80.3 (64.7,93)
Lashio	31.3 (21.1,45.8)	24 (14.8,40.6)	86.8 (78.7,98)	71 (56.6,86.3)	50.1 (28.7,79.4)	44.4 (22.5,72.6)
Myitkyina	34.5 (25, 46.9)	57.3 (37.4, 73.9)	73.4 (59.7, 85.1)	N too small	57.8 (43.9, 70.1)	N too small
(Denominator)	(among those having sex w/ regular partners)		(among those w/ paid partners)		(among those w/ casual partners)	

Table 17. Condom use decision making

Site	Regular partner			Paid partner		
	% respondent suggested condom use	% partner suggested condom use	% both suggested condom use	% respondent suggested condom use	% partner suggested condom use	% both suggested condom use
Yangon	3/12	1/12	8/12	67.3 (54.2,81.7)	19/65	0
Mandalay	78.9 (60.8,92.3)	2/30	2/30	66.4 (57.5,77)	26.3 (15.5,35.2)	7.3 (0.2,13.9)
Lashio	83.9 (60.5,95.7)	2/29	2/29	89 (77.3,97.4)	4/23	0
Myitkyina	82.3 (67.7, 90.8)	0.8 (0.4, 1.8)	1.1 (0.4, 2.6)	95.7 (86.8, 98.9)	4.3 (1.1, 13.2)	0
(Denominator)	(those used condom at last sex with reg partner)			(those used condom at last sex with paid partner)		

Table 18. Reasons for not using condoms

Site	Not using condoms with regular partners			Not using condoms with paid partners		
	% condom not easily available	% I don't like to use condoms	% don't think it's necessary	% not easily available	% I don't like to use condoms	% don't think it is necessary
Yangon	3.8 (0.4,10.1)	44.9 (29.4,59.3)	47.2 (33.3,61.8)	27.8 (12.7,44.9)	65 (47.2,80.4)	0
Mandalay	13 (5.1,21.4)	17.7 (10.6,26.6)	63.3 (52,73.8)	N too small	N too small	N too small
Lashio	8.2 (2.2,19.1)	39.4 (21.7,57.2)	47.5 (27.6,62.7)	N too small	N too small	N too small
Myitkyina	26.3 (16.7, 39.4)	48 (35.5, 62.2)	54.2 (42.1, 67.3)(N=58)	43.8 (19.6, 62.1) (N=30)	39.4 (20.5, 62.3)	0
(Denominator)	(among those inconsistently using condom with reg prtnr)			(among those inconsistently using condom with paid prtnr)		

Table 19. Use of Yama/ATS during sex

Site	% had sex under the influence of ATS	% had paid sex partner when using ATS	% had reg sex partner when using ATS	% had sex with casual partner when using ATS	% used condom when having sex while using ATS
Yangon	20.2 (14.2,26.4)	66.9 (50.6,83.2)	13 (2.8,25.2)	20.1 (6.6,35.4)	26 (13.8,41.2)
Mandalay	36.2 (28.2,43.7)	58.4 (45.3,69.7)	40.3 (29,53.1)	1.3 (0.2,4)	57.5 (45,69.1)
Lashio	43.4 (35.8,52.6)	66.4 (53.2, 78)	15.5 (6.3,28.8)	18.1 (10.2,27)	55.3 (41.5,68)
Myitkyina	37 (31, 43.1)	*20.4 (16.2, 27.6)	5.1 (3, 9)	12 (6.6, 15.2)	60.1 (48.4, 68.8)
(Denominator)	(All)		(All)		(of those who had sex with ATS;

Table 20. Known Sources for Condoms

Site	% who know a place to get condoms	% who know pharmacy or shop has condoms	% who know hospital clinic or health educator has condoms	%who know NGO worker has condoms	% who know karaoke, restaurant, hotel, guest house has condoms
Yangon	95 (90.7,97.3)	88 (82.6,92.6)	6.3 (2.5,11.1)	22.2 (15,31.1)	24.9 (17.7,32.6)
Mandalay	100	96.6 (93.3,99.2)	30.8 (24,38.5)	59.3 (51,67.9)	28.2 (20.6,36.4)
Lashio	93.3 (77.3,96.1)	51.5 (43.2,60.6)	58.2 (49.9,66.5)	84.4 (78.1,89.8)	6.1 (3.5,10.1)
Myitkyina	96.8 (94.9, 98.5)	66.6 (59.3, 72.9)	30.8 (24, 38.8)	57.6 (49.8, 65.1)	22.7 (17.1, 28.8)
(Denominator)	(All)	(All)	(All)	(All)	(All)

Table 21. STD knowledge and history

Site	% heard of STDs	% who know at least 1 symptom in females	% who know at least 1 symptom of males	% had discharge in past 12 mo	% who had ulcer in past 12 mo	% who sought treatment for discharge or ulcer	% who went to clinic for treatment
Yangon	98.7 (96.7,99.4)	31.5 (24,40.5)	92.4 (88.1,96.2)	13.2 (7.6,19.5)	14.8 (8,21.7)	30/30	16/30
Mandalay	100	46.9 (39.2,54.7)	96.5 (92.5,99.2)	9.8 (5.4,14.5)	10.5 (6.1,15.3)	1/21	5/20
Lashio	88.5 (82.6,93.5)	26.5 (21.1,35.1)	61.2 (52.9,70.6)	9.7 (5.8,14.5)	11.6 (6.4,17.1)	24/28	4/24
Myitkyina	93.2 (89, 97)	45.3 (38, 52.7)	77.5 (71.6, 83.6)	10.3 (6,14.7)	8 (4.5, 11.9)	19/25	8/19
(Denominator)	(All)	(All)	(All)	(All)	(All)	(those with symptoms)	those seeking treatment

Table 22. Personal Experience and Attitudes Towards People with HIV/AIDS

Site	% heard of HIV/AIDS	% who know someone with HIV/AIDS	% who have close relative or friend with HIV/AIDS	% would eat with someone with HIV/AIDS	% think infected students should continue school	% would care for infected relative in their home	% think infected teacher should still teach if healthy	% who would eat from infected vendor stall
Yangon	100	93.9 (90.5, 97.3)	77.9 (69.6, 86)	94.1 (90, 97.3)	87.9 (82.7, 92.9)	90.1 (85.9, 93.8)	89.2 (84.5, 93.9)	69.1 (60.7, 75.4)
Mandalay	100	92.1 (87.1, 95.9)	64.8 (57.1, 71.1)	97.7 (95.3, 99.4)	95.5 (92, 98.5)	96 (92.7, 98.8)	94.3 (90.1, 98.1)	93.7 (89.7, 96.9)
Lashio	100	74.1 (67.1, 81.8)	42.5 (34.4, 50.7)	87.5 (81.6, 92.7)	87.2 (81.3, 92.7)	88 (82.3, 93.9)	82.8 (76.1, 88.7)	70.4 (63.2, 78.1)
Myitkyina	100	76.9 (69.5, 82.7)	52.5 (43.8, 59.5)	93.1 (89.5, 96.6)	83.1 (77.7, 88.5)	92.4 (89.6, 95.6)	83.7 (77.8, 89.1)	74.4 (67.9, 80.5)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 23. Knowledge of Prevention and Modes of Transmission

Site	% who answered correctly to 4 prevention /transmission questions:	% who know HIV is transmitted by sharing needles	% who know pregnant women with HIV can transmit to child (MTCT)	% who know that ART can prevent MTCT	% who know that no breast feeding can prevent MTCT
Yangon	82.6 (74.6, 88.5)	98.3 (96,99.7)	93.1 (86.2,97.5)	24.9 (15.5,33.1)	17.6 (11,25.1)
Mandalay	87.7 (82.1,92.9)	99.1 (97.9,99.9)	91.7 (86.9,96.2)	16.4 (11.4,22.8)	16.1 (11.121.6)
Lashio	62.5 (54.5,71.9)	94.1 (86.6,98.5)	91.3 (86.4,95.3)	24.1 (17.8,32.1)	12 (7.2,17.1)
Myitkyina	80 (74.7,85.8)	98.1 (95.7, 99.3)	93.7 (90, 97.1)	43.9 (N=56) (29.9, 54.7)	12 (4.1, 18.8)
(Denominator)	(All)	(All)	(All)	(All)	(All)

*the 4 knowledge questions were:

- can prevent sexually by using a condom correctly every time
- cannot get HIV from mosquito bites
- cannot get HIV if faithful to uninfected partner
- cannot get HIV from eating a meal with infected person. Traditionally, a fifth question (“can a healthy-looking person be infected with HIV”) is included as a standard assessment of correct knowledge, but there was some problem in the translation of the question into Myanmar. For this reason, correct knowledge was assessed according to only 4 questions.

Table 24. Service History – Prevention Services in the Last Month

Site	% did not visit any service	% visited DIC	% visited an NGO clinic	% visited private clinic	% visited by ORW or PE	% have visited more than one service	% who have been to fixed site & contacted by ORW
Yangon	60.6 (50.5,67.9)	2.2 (0.6,6.3)	27.1 (19.6,35.4)	17.3 (11.7,23.3)	21.4 (14.4,29.2)	6 (3.1,9.5)	18.5 (14.2,25.8)
Mandalay	85.9 (79.5,91.5)	6.7 (3.3,11.8)	6.1 (2.5,10.7)	6.5 (2.6,10.4)	42.6 (35.1,50.6)	4.2 (1.5,8.5)	5 (2.7,8)
Lashio	21.8 (14.3,29.9)	69.6 (61.3,77.5)	32.6 (25.4,40.1)	1.2 (0.3, 2.5)	73.8 (65.9,81.4)	25.4 (18.7,32.5)	68 (61.8,75)
Myitkyina	59.7 (52.8, 66.7)	1.9 (0.6, 3.4)	27.8 (20.6, 34.8)	12.9 (8.5, 17.6)	27.8 (22.9, 33.2)	4.3 (1.4, 7.5)	9.5 (6.6,13.1)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 25. Service History - HIV testing

Site	% Have taken an HIV test	% tested once	% tested twice	% tested 3 times	% tested 4 times	Last test in past 6 months	Last test in >1 year
Yangon	48.4 (39.9,57.3)	36.2 (27.1,49)	36.8 (27,46.7)	23.5 (13.8,31.6)	4-5 times 3.6 (1.4,6.7)	50.4 (38.8,63.3)	19.3 (10.7,27.3)
Mandalay	52.5 (44.6,60.9)	39.9 (30.3,49.6)	39.5 (30.4,50.9)	14.5 (7.4,21.5)	4-6 times 6.1 (1.7,11.2)	31.8 (21.5,41.9)	37 (27.8,47.6)
Lashio	69.5 (61.3,78.1)	35.4 (23.5,42.8)	37 (27.9,48.2)	13.4 (9.7,19.2)	5.4 (2.5,9.9)	57.3 (48.9,67.6)	31.5 (21.1,39.9)
Myitkyina	48.5 (41,55.7)	37.7 (25.5,45.3)	38.2 (28.5,52.9)	15.4 (5.9, 23.8)	6.4 (2.4, 13.6)	85.6 (76.1,93.7)	7.8 (2,17.3)
(Denominator)	(All)	(Among those tested)					

Table 26. Places of HIV Testing and Reason for Testing for Last Test

Site	Place of Last Test			Reason for Last Test		
	% went to govt hospital	% went to private clinic	% went to NGO clinic	% wanted to know my status	% recommended by a doctor	% for regular blood testing
Yangon	33 (22.5,45.3)	34.1 (23.4, 45.9)	34.4 (22.5,45.7)	77.8 (70.5,86.1)	12.3 (6,20.3)	11.8 (6,18.8)
Mandalay	42.9 (33.3,51.6)	32.9 (23,44.2)	24.2 (14.7,35.2)	41.2 (34.5,48.9)	6.8 (3,11.3)	0
Lashio	26.3 (19.6,32.9)	4.2 (1.5,7.4)	69.5 (62.5,76.6)	49.7 (41.7,58.9)	15.3 (9.3,21.5)	0
Myitkyina	17.4 (7.7,26.9)	21.2 (11.8,33.4)	57.3 (45,68.9)	35.2 (28.8,43.4)	6.2 (3.1,9.7)	1.8 (0.2,4.2)
(Denominator)	(Among those tested)			(All)		

Table 27. Received Last HIV Test Results and Sharing Results

Site	% received test result at last test	% who shared test result	% who shared w/ sex partner	% who shared w/ friend	% who shared w/ family
Yangon	88.5 (78.3,95.9)	77.4 (65.9, 87.5)	14.5 (4.8,25.6)	61.6 (47.3,75.1)	85.4 (74.6,94.6)
Mandalay	96.8 (91.9,98.7)	88 (82,94.4)	46.1(33.5,57.4)	43.6 (33.9,56.8)	44.9 (31.7,56.1)
Lashio	90.1 (81.8,96.3)	60.7 (51.2,70.7)	10.2 (4.7,17.4)	41.1 (29.5,54.5)	63.4 (51.7,75.2)
Myitkyina	93.9 (89.8, 97.2)	84.3 (79.6, 90.1)	5.4 (1.6, 9.3)	69.4 (58.7, 79.6)	42.2 (30.4, 56.5)
(Denominator)	(among those tested)	(among those who got result)	(among those who shared result)		

Table 28. Sub-group Analysis of Yangon IDU Comparing Respondent Characteristics by Frequency of Injection

Injection Frequency in the past 6 months	% Age >30 years	% employed	% usually inject in home settings	% had a FSW partner past 6 months	% used non-sterile equipment at last injection
Inject 2-3 times (N=102)	49.6 (37,62.6)	66.8 (51.2,80.7)	85 (77.4, 92)	71.2 (57.4, 85)	33.4 (19.5, 45.7)
Inject at least once a week (N=107)	51.8 (37.9, 65.5)	55.9 (43.7,69)	89.6 (81.7,96.9)	62.4 (48.2,73.4)	22.8 (12, 31.9)
(Denominator)	(All)	(All)	(All)	(All)	(All)

Annex 2. Detailed Tables – FSW

Table 1. Age Distribution

Site	15-19	20-24	25-29	30-34	35+	Mean (SE) SPSS	Median SPSS
Yangon	5.6 (3.3,8.3)	17 (12.3,21.8)	24.3 (18.6,29.6)	14.2 (10.5,18)	39 (33,46.2)	30.6 (0.43)	30
Mandalay	10.9 (6,15.6)	29.8 (22.9,34.8)	31.6 (26.4,37.8)	18.6 (13,24.4)	9.1 (5.5,14.4)	26.9 (0.34)	26
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 2. Religion, Other Employment and Place of Residence

Site	% Buddhist	% job other than sex work	% living in the township of survey	% living in township <1 yr
Yangon	93.4 (90.6,96)	0.5 (0.2,1.5)	97.6 (95.8,99.3)	5.8 (3.1,8.7)
Mandalay	88.3 (84.3,92.1)	0	38.8 (32.4,44.9)	26.8 (20.6,31.3)
(Denominator)	(All)	(All)	(All)	(All)

Table 3. Marital status and Living Arrangements

Site	% ever married	% still married	% live with husband	% live with other sex partner	% lives with family	% live with friends	% live with pimp	% live alone
Yangon	94.4 (91.4,97)	17.7 (12.1,24)	11.7 (7.9,16.9)	0	64.4 (57.9,70)	7.4 (4.4,10.6)	4.9 (2.1,7.9)	11.5 (8.5,14.8)
Mandalay	62.4 (55.6, 70.1)	13 (8.4, 18.2)	11.1 (6.6, 16.2)	0.9 (0.2, 1.9)	23.6 (18.1, 31)	32.9 (25.2, 39.7)	21.9 (12.9, 32.2)	9.5 (5.7, 13)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 4. Initiation into Sex and Sex Work

Site	Age at first sex			Age at first sex work				% sex worker <1 year
	13-16	17-19	20-24	14-16	17-19	20-24	25+	
Yangon	19.8 (15.6, 25.7)	41.7 (35.9, 46.5)	28.5 (23, 34.6)	6.7 (3.2, 11)	10.8 (7.3, 14.5)	29.7 (24.9, 35)	52.8 (45.9, 58.8)	24.9 (18.7, 31.7)
Mandalay	22.3 (16.6, 27.2)	43.8 (38.9, 50.7)	30.1 (24.2, 35.2)	6.3 (2.6, 11.1)	18.4 (13, 22.1)	38.3 (32.4, 44.9)	37.1 (31.1, 44.1)	28.5 (21.7, 34.2)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 4 (cont.)

	Age at first sex (SPSS)		Age at first paid sex (SPSS)	
	Mean (SE)	Median	Mean (SE)	Median
Yangon	19.1 (0.21)	18	25.2 (0.37)	24
Mandalay	18.7 (0.16)	18	23.5 (0.29)	23
(Denominator)	(All)	(All)	(All)	(All)

Table 5. Duration of Sex Work

Site	Mean years sexually active before starting sex work					Duration of Sex work (SPSS)	
	0	1	2-5	6-10	11-20	Mean (SE)	Median
Yangon	14.8 (9.8,19.8)	12.2 (8.9,15.5)	27 (22.1,33.5)	21 (15.6,25)	25 (19.2,31.8)	6.1 (0.35)	5
Mandalay	18.6 (12.7,24.7)	10.9 (6.8,13.8)	39.2 (33.1,44.6)	21.2 (15.9,26.9)	9.6 (6.4,15)	4.7 (0.27)	3
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 6. Alcohol and Drug Use Patterns

Site	% had alcohol daily	% never had alcohol or <once a week	% ever tried drugs	% ever injected drugs
Yangon	0.7 (0.3,1.7)	80.5 (74.9,86.2)	4.2 (2.2,6.4)	0/14
Mandalay	2.7 (1.2, 4.1)	79.2 (72.2,85.2)	3.3 (1.6,5.4)	3/13
(Denominator)	(All)	(All)	(All)	Those who tried drugs

Table 7. Place of Where Respondents Always or Mostly Solicit Clients

Site	% at brothels	% through brokers	% at night club or restaurant	% at guesthouse	% at street/car gate/ railway	% at multiple places
Yangon	16.8 (11.8,21.5)	16.5 (11.9,20.5)	4.9 (2.5,7.5)	20.1 (15.8,24.2)	55.4 (48.9,61)	44.9 (38.2,52)
Mandalay	23 (4.3,52)	1.8 (0.4,3.5)	25.8 (13.6,40.5)	14 (3.6,30.3)	28.5 (16.2,41.7)	37.6 (29.3,46.4)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)

Table 8. Amount Earned and Negotiation Power

Site	Amount paid by last client (kyats) - SPSS		Who decides how much client pays		
	Mean(SE)	Median	% madame/pimp	% FSW	% client
Yangon	7131 (296)	5500	31 (25,37.3)	63.7 (56.8,70.4)	18 (13,24.4)
Mandalay	15648 (1170)	5000	29.6 (15,46.6)	69.7 (58.6,79.4)	4.1 (1.3,8)
(Denominator)	(All)	(All)	(all)	(All)	(All)

Table 9. Amount Paid to Local Authorities

Site	# respondents who gave money to madame/pimp/police from last client	Amount given to madame/pimp/police (Kyats) - SPSS		
		Mean	Median	As % of earned – Mean (SE)
Yangon	98	3223 (259)	2750	37.2 (2.0)
Mandalay	103	3160 (294)	3000	59 (2.0)
(Denominator)	(All)	(Those who gave money to madame/pimp/police)		

Table 10. Numbers of Clients in the Last Week and Last Work Day

Site	Number of clients in the last week						Mean number of clients in the last work day					
	1-3	4-10	11-25	26-70	Mean	Median	1	2	3	4-10	Mean	Median
Yangon	31.7 (26.2, 37.7)	54.8 (49.6, 0.5)	7.2 (4.5, 9.9)	0.6 (0.1, 0.7)	6.5	5	51.3 (44.5, 58.3)	31.9 (25.4, 38.3)	10.6 (7.3, 14.3)	5.5 (2.6, 7.9)	1.7	1
Mandalay	16.3 (11.2, 22.5)	28 (21.9, 35.1)	23.4 (16.9, 27.4)	14.2 (9.7, 20.1)	14.6	10	32.1 (22.8, 42.3)	24 (16.9, 30.8)	15.6 (10.5, 20.5)	26.9 (17.2, 37.3)	2.9	2
(Denominator)	(All)	(All)	(All)	(All)	SPSS	SPSS	(All)	(All)	(All)	(All)	SPSS	SPSS

Table 11. Sexual Activity with Regular Partners

Site	% with regular partners	Number of times sex with regular partner last month				% last sex w/ RP was in last 3 months	% last sex w/ RP was > 1 yr ago
		0	1-5	6-10	11-20		
Yangon	46.1 (39.7, 52.6)	0	79.6 (73.6, 85.5)	11.8 (7,16.6)	8.6 (4.6,13)	>95%	0
Mandalay	62.8 (57.2, 68.6)	2.8 (0.8,5.3)	66.4 (53.3, 75.5)	24.1 (15, 37.2)	6.7 (3, 11.4)	85.9 (80.9, 90.2)	5.1 (2.5,8.4)
(Denominator)	(All)	those with reg partner				(those w/ regular partner)	

Table 12. Patterns of Condom Use With Clients and Regular Partners

Site	Condom Use with Client		Condom Use with Regular Partner		Reason for Not Using ** condoms w/ Regular Partners	
	last time	Consistent* use last month	last time	Consistent use last month	% partner doesn't like it	%– don't think it's necessary
Yangon	95.8 (93.3,98)	82.7 (78.5,86.3)	61.7 (52.5,70.7)	52.3 (43,63.6)	52.6 (37.8,64.1)	26.9 (15.8,38.4)
Mandalay	96.3 (93.4,98.5)	97.1 (95.1,98.6)	54.9 (47.3,63.4)	53.5 (45.6,61.8)	44.1 (32.2,55.5)	44.9 (32.6,55.2)
(Denominator)	(All)	(All)	(Those w/ regular partner)		(Those no condom last time)	

*Consistent use defined as Always or Almost Always using condoms.

**N was too small to examine reason for not using condoms with Clients

Table 13. Condom Negotiation with Clients and Regular Partners

Site	SW suggested condom use last time w/ client	Client suggested condom use last time w/ client	SW suggested condom use last time w/ regular partner	Reg partner suggested condom use last time
Yangon	83.1 (78.8,88)	7.7 (4.3,10.9)	62.2 (51.5,76.3)	~6 % couldn't be calculated directly
Mandalay	80.1 (74,9,84.8)	3.5 (1.4,7.2)	51.9 (43,63.2)	9.7 (2.3,15.7)
(Denominator)	(those who used condom last time w/ client)		(Those who used condom last time w/ regular partner)	

Table 14. Known Sources for Obtaining Condoms

Site	% who know a place to get condoms	% who know pharmacy or shop or betel shop has condoms	% who know hospital clinic or health educator has condoms	% who know NGO worker has condoms	% who know karaoke, restaurant, hotel, guest house has condoms
Yangon	93.4 (88.9,97.4)	54.8 (47.8,63.7)	17.4 (11.7,24.5)	52.7 (46.3,58.6)	50.1 (40.8,60.1)
Mandalay	97.3 (95.5,98.9)	63.9 (55.8,70.6)	29.8 (22.8,38.4)	76.9 (71.5,82.6)	59.8 (51.5,68)
(Denominator)	(All)	(All)			

Table 15. Experience with Femal Condoms and Habits of Carrying Condoms

Site	Female Condoms		Carrying Condoms		Reason for not Carrying Condoms		
	% Have heard of but not used	% Have used the product	% Yes, can show	% Yes, can not show	Kept them at place of sex	My partners bring them	Afraid of being caught
Yangon	71 (66,76.4)	23.3 (18.2,28.5)	10.1 (7.4,14.1)	10.3 (7.3,13.7)	29.3 (22.8,36.1)	5.1 (0.2,8.9)	33.9 (27,39.7)
Mandalay	59.7 (53,65.5)	34.8 (29.5,41.2)	23.3 (17.8,31)	1.9 (0.6,3.9)	29.6 (23.7,36.7)	15 (10.2,20.2)	15.8 (10.7,21.7)
(Denominator)	(All)	(All)	(All)	(All)	(Among those who don't carry condoms)		

Table 16. Factors that Would Increase the Use of Condoms

Site	Easy availability	Knowledge about condoms	For disease prevention	Use as a contraceptive	No harassment
Yangon	17.4 (10.5,26.2)	5/65	86 (76.4,94.2)	6.7 (2.1,12.9)	0
Mandalay (N=65)	27.8 (14.2,38.4)	40.8 (28.8,56.3)	66.7 (54.5,77.9)	27.6 (14.9,38)	0
(Denominator)	(Among those who don't use)				

Table 17. STD Knowledge and History of Symptoms in the Past 12 months

Site	% heard of STDs	% who know at least 1 symptom in females	% who know at least 1 symptom of males	% had discharge in past 12 mo	% who had ulcer in past 12 mo	% who sought treatment for discharge or ulcer	% who went to clinic for treatment
Yangon	98.4 (96.7,99.6)	91.7 (88.5,94.6)	75.3 (68,81.1)	55.8 (49.6,61.3)	30.5 (24,36.5)	72.8 (62.2,80.2)	82.3 (74.6,87.9)
Mandalay	97.2 (93.6,99.6)	89.7 (84.9,93.3)	75.4 (69.5,80.8)	42.6 (36.2,47.8)	24.3 (18.5,29.7)	64.2 (55.3,73.1)	92.4 (84.3,98.4)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(Among those with discharge or ulcer)	

Table 18. Personal Experience and Attitudes towards people with HIV/AIDS

Site	% heard of HIV/AIDS	% who know someone with HIV/AIDS	% who have close relative or friend with HIV/AIDS	% would eat with someone with HIV/AIDS	% think infected students should continue school	% would care for infected relative in their home	% think infected teacher should still teach if healthy	% who would eat from infected vendor stall
Yangon	100	84.4 (79.6, 88.5)	60.8 (55.2,68)	94.3 (91.5,97)	79.9 (75.5, 85.9)	94.1 (91.2, 96.9)	92.8 (90.1, 96.3)	78.6 (73.4, 83.3)
Mandalay	100	67.7 (61.2, 73.1)	46.8 (39.7, 53.2)	91.4 (86, 95.3)	91.6 (87.8, 95.4)	90 (85.7, 93.9)	91.2 (87.5, 95.2)	89.1 (84.8, 93.5)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 19. Knowledge of Prevention and Modes of Transmission

Site	% who answered correctly to 4 prevention /transmission questions*:	% who know pregnant women with HIV can transmit to child (MTCT)	% who know that ART can prevent MTCT	% who know that no breast feeding can prevent MTCT
Yangon	70.2 (63.4,76.5)	98 (96.2,99.2)	55.9 (29.1,61.5)	24 (19.3,29.2)
Mandalay	71.7 (65.4, 78.7)	97.2 (95.3,98,6)	20.2 (15.3,25.5)	37.9 (32.1,44.8)
(Denominator)	(All)	(All)	(All)	(All)

*the 4 knowledge questions were:

—can prevent sexually by using a condom correctly every time; —cannot get HIV from mosquito bites
 —cannot get HIV if faithful to uninfected partner; —cannot get HIV from eating a meal with infected person.
 Traditionally, a fifth question (“can a healthy-looking person be infected with HIV”) is included as a standard assessment of correct knowledge, but there was some problem in the translation of the question into Myanmar. For this reason, correct knowledge was assessed according to only 4 questions.

Table 20. Service History – Prevention Services in the Past Month

Site	% did not go to any service	% visited DIC	% visited an NGO clinic	% visited a private clinic	% have visited more than one service	% who have been contacted by ORW	% visited fixed service and contacted through outreach
Yangon	19.5 (14.8,25.9)	4.2 (2.4,7.3)	71.9 (65.4,77.2)	3.9 (2,6.1)	0.8 (0.5,2.5)	43.9 (37.1,50.2)	39.6 (31.9,46.5)
Mandalay	30 (23.1,35.8)	15.1 (11.2,19.6)	47.7 (41.8,54.4)	19.9 (14.5,25.7)	13.3 (10,17.2)	68.4 (61.6,74.6)	51.1 (44.8,58.5)
(Denominator)	(All)	(All)	(All)	(All)	(All)	(All)	(All)

Table 21. Service History – HIV testing

Site	% Have taken an HIV test	Number of times tested for HIV				Timing of last test	
		% once	% 2 times	% 3 times	% 4 or more times	in past 6 months	>1 yr ago
Yangon	82.7 (76.5,88.1)	27.8 (21.1,34.7)	30.1 (24.5,35.8)	27.4 (21.5,34)	14.7 (10.3,19.3)	73.7 (66.7,78.8)	14.3 (9.4,20.9)
Mandalay	80 (75.3,84.9)	26.6 (19.7,32.6)	27.3 (21.2,34.6)	23.1 (17.4,29.9)	23 (17.9,27.9)	61.8 (55.3,68.8)	14.6 (8.6,20.5)
(Denominator)	(All)	(Among those tested)					

Table 19. Place of HIV testing and Reason for Testing

Site	Place of Last Test			Reason for Last Test				
	% govt hospital	% private clinic	% NGO clinic	% to know my own status	% urged by spouse	% urged by friend	% recommended by doctor	% regular blood testing
Yangon	5.2 (3.1,7.5)	1.1 (0.3,2.2)	89.5 (86.2,93)	96.1 (93.7, 98.4)	0	0	0	0
Mandalay	8.7 (4.5,16.6)	10 (5.9,14.5)	78.4 (69.8, 83.5)	94 (88.8, 98.3)	12.5 (6.9, 19.4)	7.9 (4.3, 12.1)	5.9 (2.3, 9.7)	6.4 (3.9, 9.3)
(Denominator)	(Among those tested)							

Table 20. Receiving the Last Test Result and Sharing of Results

Site	% received test result at last test	% who shared test result	Who Shared Test Results With				
			% sex partner	% w/ friend	% family member	% health worker	% colleague
Yangon	94 (91.1,96.6)	64.2 (57.8,70)	6.5 (1.9,13.6)	43.5 (34.8,50.5)	36.3 (27.7,44.9)	2.3 (0.5,5)	17.6 (11,23.6)
Mandalay	94.7 (90.2,98.6)	53.1 (45.8,59.8)	32.9 (23.5,42.8)	65.6 (54.6,74.8)	9.9 (4.5,16.3)	20.7 (12.4,30)	17.8 (10.9,23.2)
(Denominator)	(among those tested)	(among those who got result)					

Annex 3: UNGASS indicators

Injection Drug Users

	Yangon	Mandalay	Lashio	Myitkyina
1. % IDU covered by targeted interventions	39.4 (32.1,49.5)	14.1 (9.5,20.5)	79.2 (71.1,85.7)	40.3 (33.3, 47.2)
2. % of IDU who have been tested in the last 12 months and know their status	39.1 (32.2,46.2)	33.1 (28.1,38.4)	47.6 (42.0,53.5)	44.7 (37.8, 51.3)
3. % of IDU who used sterile injecting equipment at last injection	31.5 (21.3,41.3)	5.2 (2.5, 8.5)	19.3 (12.7,28.1)	22 (16.1, 26.7)
4. % of IDU who used condoms at last sex --with regular partner	10.4 (4.8,20.8)	26.3 (16.1,35.1)	31.3 (21.1,45.8)	34.5 (25, 46.9)
--with FSW partner	61 (47.9,73.7)	46 (36.6,54.9)	73.4 (59.7,85.1)	73.4 (59.7,85.1)
5. % of IDU with correct knowledge about prevention and HIV transmission	82.6 (74.6,88.5)	87.7 (82.1,92.9)	62.5 (54.5,71.9)	80 (74.7, 85.8)

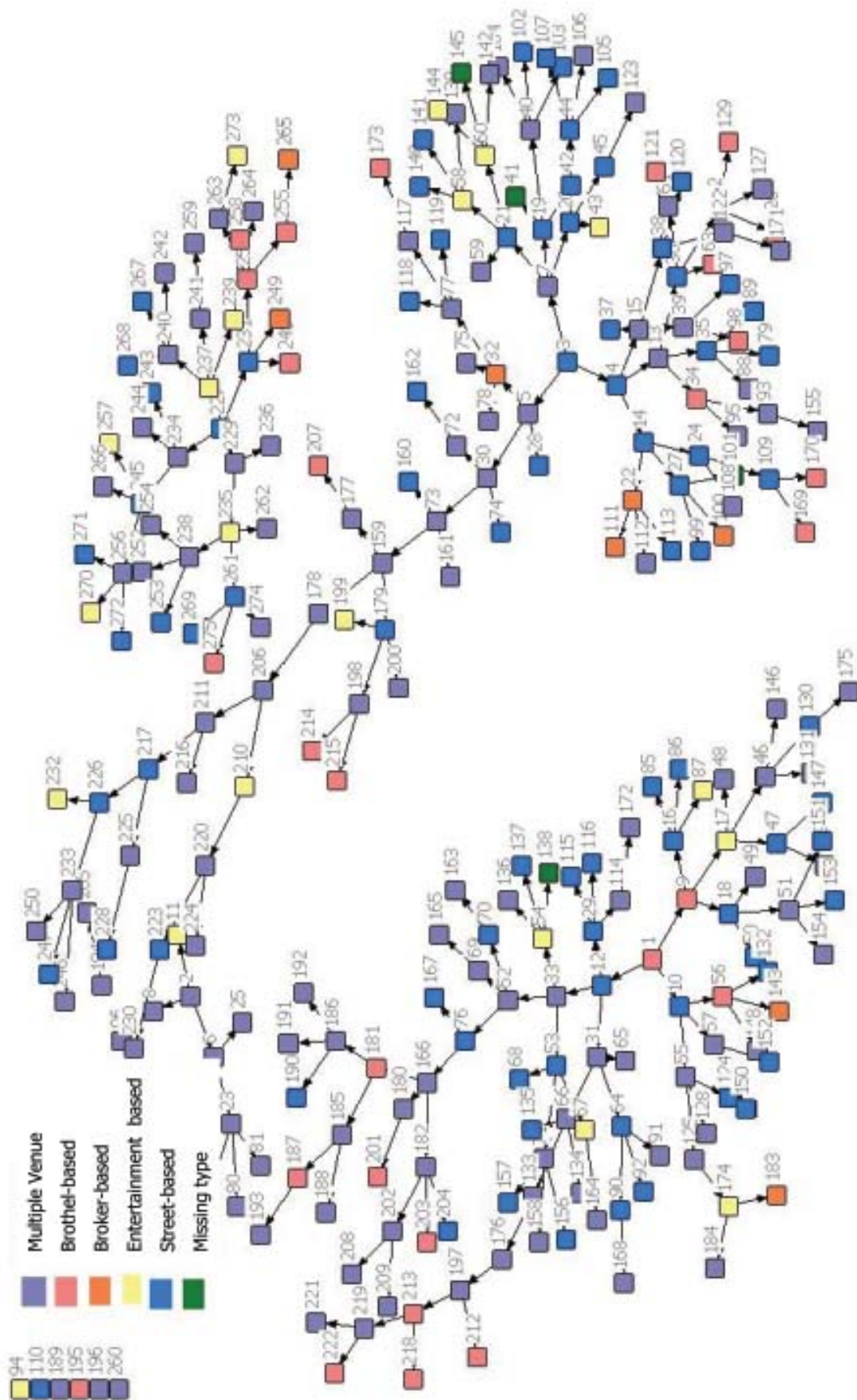
Female Sex Workers

	Yangon	Mandalay
1. % FSW covered by targeted interventions	80.5 (74.1, 85.2)	70 (64.2, 76.9)
2. % of FSW who have been tested in the last 12 months and know their status	70.9 (65.6, 75.5)	68.3 (64.3, 72.5)
3. % of FSW who used condoms at last sex with client	95.8 (93.4,98.5)	96.3 (93.4,98.5)
4 % of FSW with correct knowledge about prevention and HIV transmission	70.2 (63.4,76.5)	71.7 (65.4,78.7)

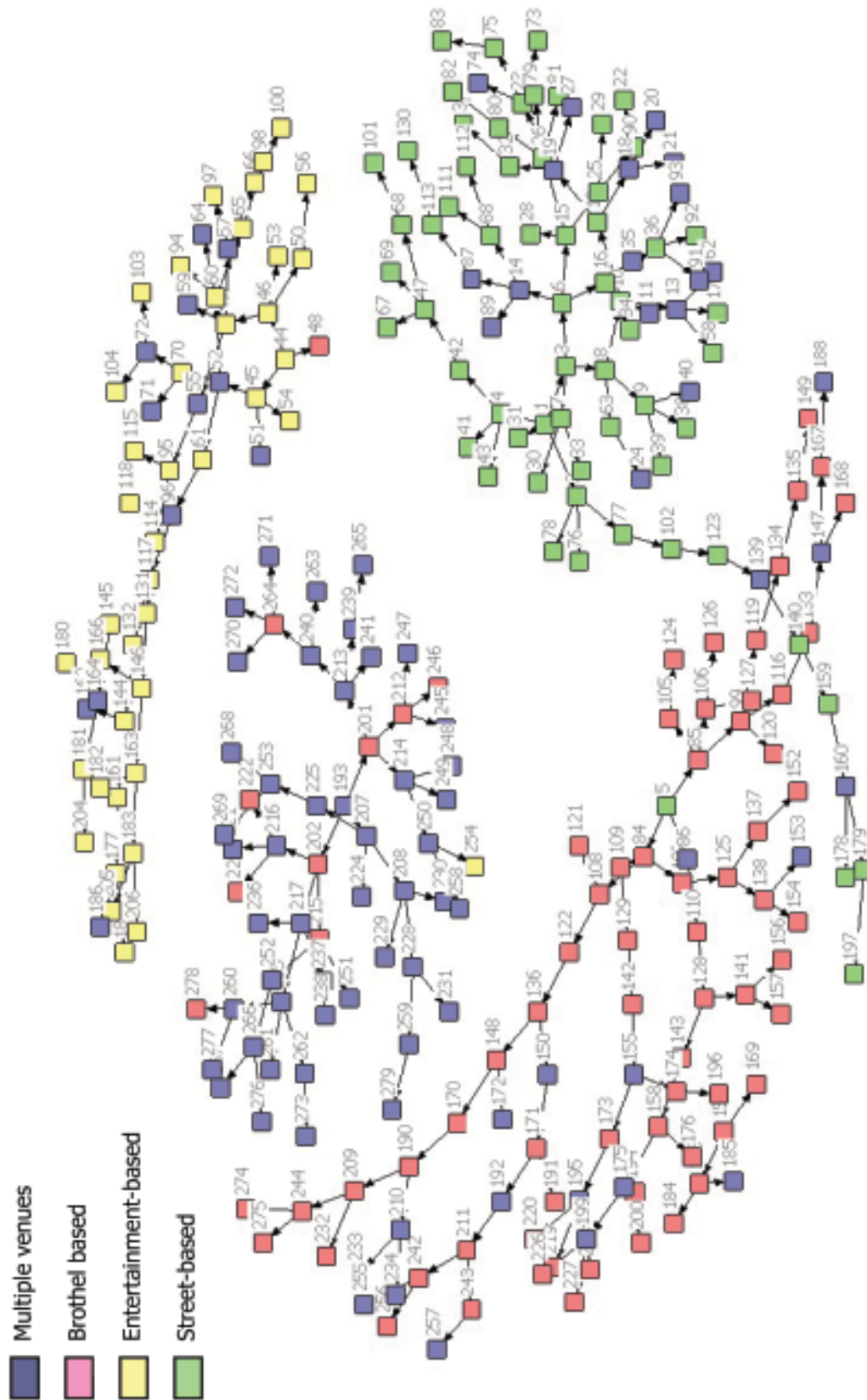
Annex 4: Review of Seed Characteristics

	#	Date recruited	Age	Marital status	NGO exposure	Other details
IDU seeds						
Yangon	1	15 Jan 08	36	Single	None	Tamwe township, unemployed
	2	15 Jan 08	20	Single	None	South Okkalapa, employed
	3	17 Jan 08	34	Separated	Tamwe DIC	unemployed
	4	30 Jan 08	30	Married	Yankin DIC	South Okkalapa, employed
	5	23 Feb 08	27	Separated	None	Yankin township, employed
	6	23 Feb 08	35	Married	None	Yankin township, employed
	7	9 Mar 08	35	Married	None	Yankin township, employed
	8	11 Mar 08	34	Single	None	Tamwe township, unemployed
Mandalay	1	7 Jan 08	20	Married	?	Periurban (Pa Thein Gyi township)
	2	7 Jan 08	33	Single	CARE	Aung Myay Thar San Township
	3	7 Jan 08	24	Single	MANA	Chan Aye Thar San Township
	4	16 Fe 08	37	Married	?	Char Aye Thar San township, Trishaw driver
	5	5 Mar 08	33	Married	?	Aung Myay Thar San township, Truck driver
	6	5 Mar 08	27	Single	DDTR unit	Char Mya Thar Si township
Lashio	1	29 Dec 07	25	Single	MANA	Block 11
	2	29 Dec 07	28	Married	LOP	Block 1
	3	31 Dec 07	23	Married	AHRN	Block 6
	4	22 Jan 08	40	Divorced/Sep	AHRN	Block 5
	5	29 Jan 08	32	Widowed	AHRN	Block 9
	6	27 Feb 08	22	Single	CARE	Block 2
Myitkyina	1	?	19	Single	?	
	2	?	25	Divorced/Sep	MDM	
	3	?	28	Single	AHRP	
	4	?	27	Single	?	
	5	?	20	Single	?	
FSW seeds						
Yangon	1	15 Jan 08	22	Divorced/Sep	None	Street based
	2	15 Jan 08	37	Married	AZG	Street based
	3	15 Jan 08	43	Divorced/Sep	AIDS/STD team project	Street based
	4	26 Jan 08	21	Married	None	Street based
Mandalay	1	7 Jan 08	42	Divorced/Sep	PSI	Street based
	2	7 Jan 08	20	Divorced/Sep	None	Brothel based
	3	11 Jan 08	19	Single	PSI	Entertainment based
	4	24 Feb 08	28	Single	?	Hotel/guest house based

Annex 4a: Strong Mixing of Recruitment Chains by Type of FSW - Yangon BSS 2007-08



Annex 4b: Strongly segregated recruitment by type of FSW - Mandalay BSS 2007-08





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