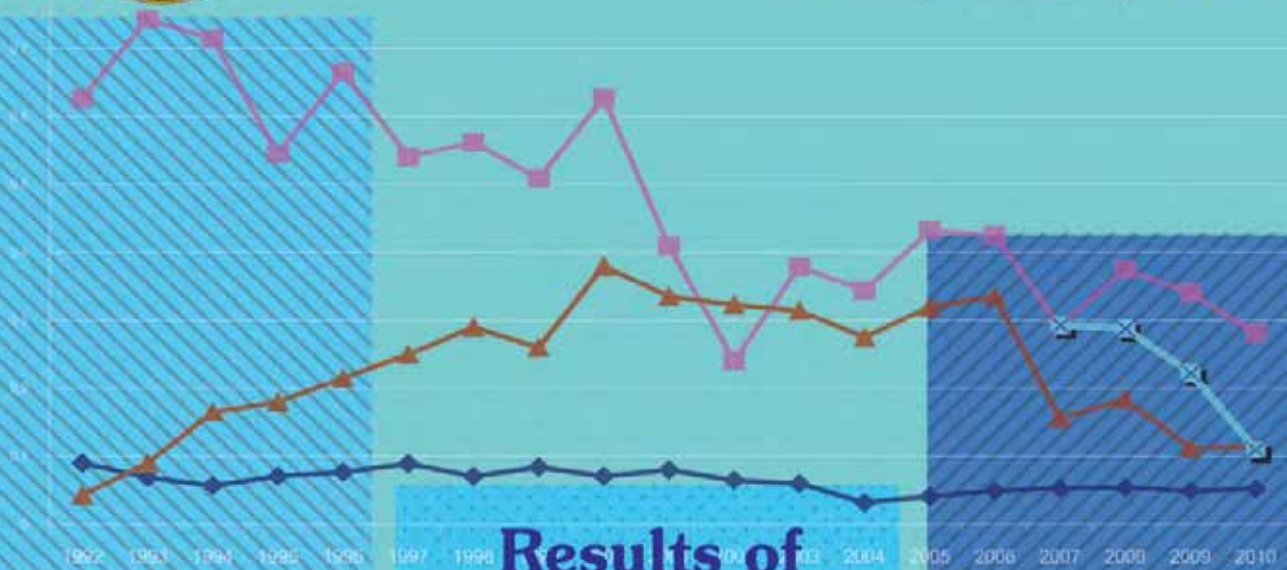




World Health
Organization

Country Office for Myanmar



Results of HIV Sentinel Sero-surveillance 2011 Myanmar

National AIDS Programme
Department of Health
Ministry of Health

2012 March



National AIDS Programme

DEPARTMENT OF HEALTH

Results of HIV Sentinel Sero-surveillance 2011, Myanmar

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List of abbreviations

ANC:	Antenatal care
DoH:	Department of Health
FSW:	Female Sex Worker
HSS:	HIV Sentinel Sero-Surveillance
IDU:	Injecting Drug User
INGO:	International Non-Government Organization
M&E:	Monitoring and Evaluation
MSM :	Men who Have Sex with Men
NAP:	National AIDS Programme
NTP:	National TB Programme
NGO:	Non-Government Organization
PMCT:	Prevention of Mother to Child Transmission
STD:	Sexually Transmitted Diseases
STI:	Sexually Transmitted Infections
TB:	Tuberculosis
UAT:	Unlinked Anonymous Testing
WHO:	World Health Organization
3DF:	Three Diseases Fund

1. Background

The annual HIV Sentinel Sero-surveillance survey, the systematic and regular collection of information on the occurrence, distribution and trends of HIV infection and factors associated with the infection, has been carried out since 1992. The survey has been conducted among 8 targeted sentinel groups: Pregnant Women attending the antenatal clinics (ANC), New Military Recruits, Blood Donors, newly diagnosed TB patients, Injecting Drug Users (IDU), Men who have Sex with Men (MSM), Female Sex Workers (FSW) and Male patients attending sexually transmitted infection (STI) clinic.

Methodology

In 2011 HSS round, the survey was conducted from 1st March to 31st May 2011 in all 35 sentinel sites where the HSS guideline (2010) was followed. The facility-based sampling approach, in which consecutive eligible participants were recruited until the required sample size, was applied. Unlinked anonymous testing (UAT) was used for pregnant women and male STI patients as they had to undergo routine syphilis testing. For the populations at high-risk of HIV: injecting drug users, female sex workers, and men who have sex with men, blood specimen was drawn after obtaining informed verbal consent. Table 1 shows the sentinel groups, number of sentinel sites, and target sample size for each site.

Table 1: Number of sentinel sites and sample size for each sentinel group, HSS 2011

Sr. No.	Sentinel groups	Number of sentinel site	Sample size per site
1	Male STI patients	35	150
2	Female sex workers	6	200
3	Injecting drug users	6	200
4	Men who have sex with men	2	200
5	Pregnant women attending ANC clinics	35	400
6	New military recruits	2*	400
7	New TB patients	20	150
8	Blood donors	2	Not identified**

* The specimens from Military Recruits were collected from the new conscripts in Yangon and Pyin Oo Lwin.

** Data compilation, based on the reports of HIV testing for donated blood units, was done for blood centers and blood banks located in Yangon and Mandalay

2. HIV Antibody Testing

In 2011 HSS round, all sentinel sites performed HIV antibody testing at the site laboratory according to WHO testing strategy II. Serum specimens were screened using an HIV rapid test kit (Determine) and the reactive specimens were further confirmed by a second HIV rapid test

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kit (Unigold). Serum specimens of all tested positive and 10% of negative were sent to: State and Regional team laboratories, National Health Laboratory and Public Health Laboratory. The same testing algorithm and test kits were used at both local and reference laboratories. The test results from the thirty five sentinel sites as well as those from the reference laboratories were sent to NAP - Nay Pyi Taw and the results were compared to observe the discrepancies.

3. Data analysis

Data entry and cleaning were undertaken by National AIDS Programme (NAP) by using a simple Excel worksheet. Using SPSS software, the prevalence of each sentinel group disaggregated by age and sex and/or by sentinel site was calculated. The test results of the local and the reference laboratories were compared and analyzed using percent agreement using McNemar chi-square test. The results of this quality assessment are also presented in this report.

4. Findings

4.1 Sample collection

Overall, **39,654** participants were included in 35 sentinel sites during the 2011 round. Most of the sentinel sites were able to achieve the desired sample size. Table 2 provides comparison between the required and achieved sample sizes among different sentinel populations. Sample size achievement was about 83% for FSW; more than 90% for Male STI patients and IDU, Pregnant women and new TB patients; and 100% for MSM and new military conscripts.

Table 2: Comparison between the required and achieved sample size among different sentinel Population groups – HSS 2011

Sentinel Group	Required sample size per site	No. of sites	No (%) of sites achieving targeted sample size		Total sample size	Achieving sample size	
			No	%		No	%
Male STI patients	150	35	27	77.1%	5250	4,874	92.8%
FSW	200	6	3	50%	1200	990	82.5%
IDU	200	6	5	83.3%	1200	1,100	91.7%
MSM	200	2	2	100%	400	400	100%
Pregnant Women	400	35	33	94.3%	14000	13,802	98.6%
New Military Recruits	400	2	2	100%	800	800	100%
New TB patients	150	20	16	80%	3000	2,870	95.7%
Blood Donors	not specified					14,818	

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Information on age, residence and marital status was collected from all groups except military recruits and blood donors. For pregnant women, the parity status (primiparous vs. multiparous) was also recorded. Female sex workers were also distinguished as either direct or indirect sex workers, and TB patients were categorized according to the type of TB they have been diagnosed with.

4.2 HIV prevalence by sentinel population

Table 3 shows HIV prevalence among different population groups. HIV prevalence was highest among IDUs followed by New TB patients, FSW and MSM. HIV prevalence per population group for each sentinel site is presented in annex 1. Among **pregnant women**, the median HIV prevalence was 0.8%, ranging from 0 to 4.5% across 35 sentinel sites. This indicated the right sided skew of data and few sites had higher prevalence than others. With more in-depth analysis, it was found out that one of the border area sentinel sites, Muse, had the highest prevalence among all sites for more than 3 consecutive rounds of survey. Being a site located at Myanmar-China border, there will be targeted groups with high risk of HIV transmission thus low risk pregnant women became infected. HIV preventions tailored for the risky target groups and their regular partners should be defined and implemented urgently in this area. Comparing the HIV prevalence between primipara (0.88%) and multipara (0.84%), no significant difference was found.

Although the mean prevalence for **blood donors** was 0.2%, it ranged from 0% to 1.7% indicating the need for strengthening **donor deferral system** in the blood center where the prevalence was more than (0.3%) upper limit of 95% confidence interval.

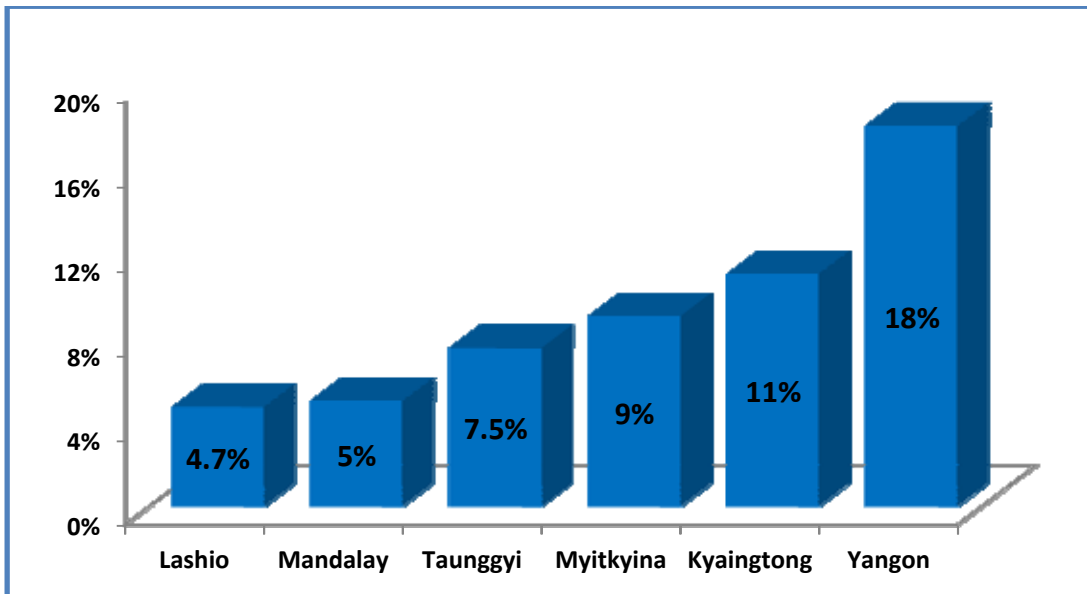
Table 3: HIV Prevalence among sentinel populations – HSS 2011

Sentinel Group	# tested for HIV	# HIV positive	sero positive (%)	Range			95% CI
				Minimum (%)	Median (%)	Maximum (%)	
Male STI patients	4874	225	4.6%	0%	4%	16.7%	4.0%-5.2%
FSW	990	93	9.4%	4.7%	8.3%	18.0%	7.6% - 11.2%
IDU	1100	241	21.9%	11.0%	20.3%	32.5%	19.5% - 24.4%
MSM	400	31	7.8%	6.5%	7.8%	9%	5.1% - 10.4%
Pregnant Women	13802	118	0.9%	0%	0.8%	4.5%	0.7%-1.0%
New Military Recruits	800	12	1.5%	1.3%	1.5%	1.8%	0.7%-2.3%
New TB patients	2870	284	9.9%	2.0%	10%	19.1%	8.8% - 11.0%
Blood Donors	14818	33	0.22%	0%	0.18%	1.7%	0.1% - 0.3%

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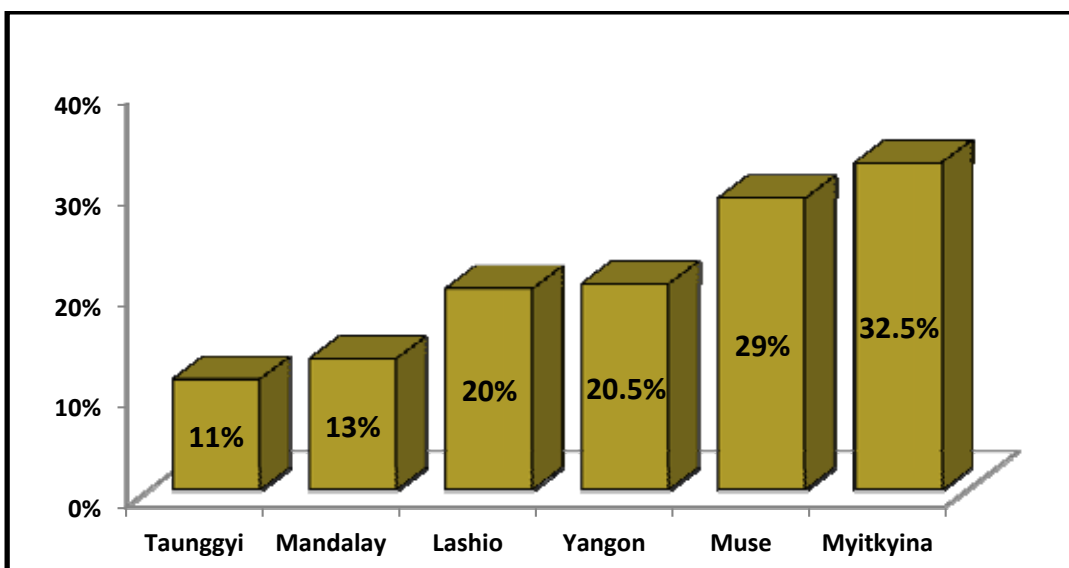
Among female sex workers, out of 6 sentinel sites only 3 (Yangon, Mandalay, and Taunggyi) had achieved targeted sample size of 200 and the rest could get less than 150 samples. Based on the achieved samples, HIV prevalence was the highest in Yangon (18%) followed by Kyaingtong (11%), Myitkyina (9%), Taunggyi (7.5%), Mandalay (5%), and Lashio (4.7%). The prevalence was found to be significantly higher among direct sex workers 12.2% (66/541) than indirect sex workers 6% (27/449) ($p < 0.001$).

Figure 1. HIV prevalence among female sex workers, HSS 2011



As shown in Figure 2, HIV prevalence among **Injecting Drug Users**, Myitkyina had the highest prevalence (32.5%) followed by Muse (29%), and Lashio (20.5%). The prevalence in other sites was 20% and less. In this round Taunggyi could not achieve the targeted sample size ($n=100$).

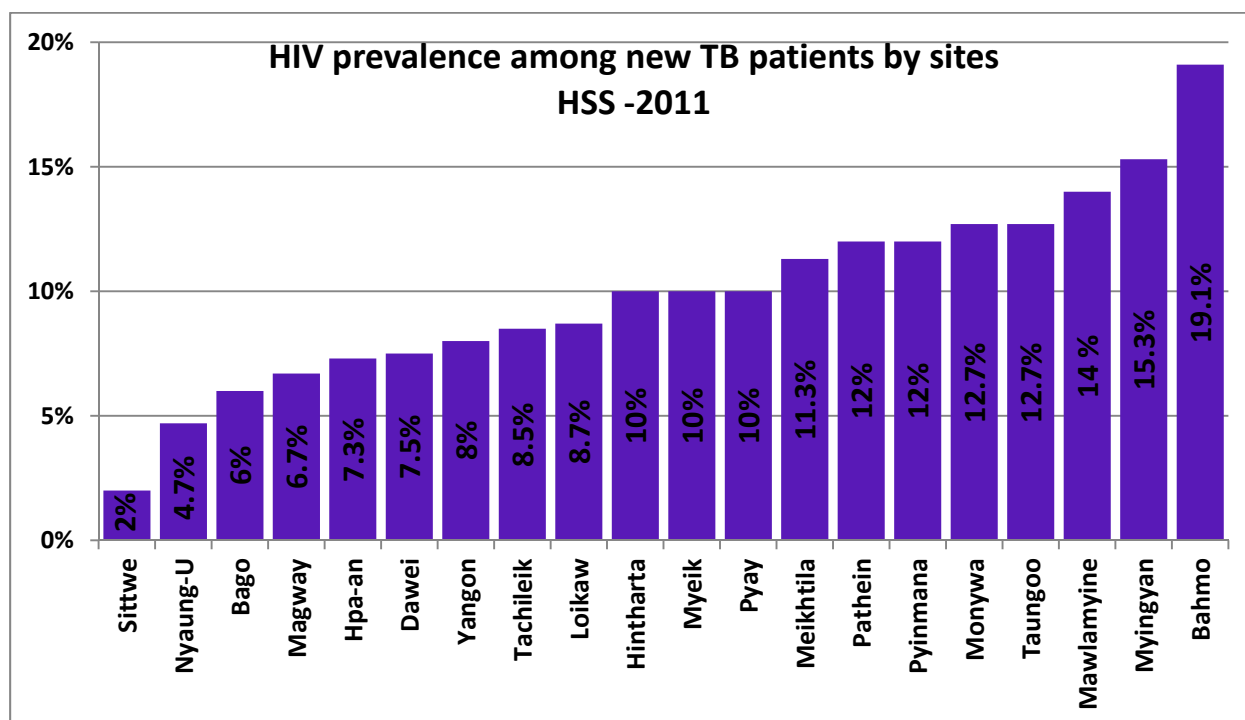
Figure 2. HIV prevalence among injecting drug users, HSS 2011



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Regarding the **new TB patients**, new sites expansion could not be carried out in 2011 and thus the survey has been conducted in the previous twenty sentinel sites. The HIV prevalence among this target group ranged from 2% in Sittwe to 19.1% in Bahmo. Analysed by type of TB showed that HIV prevalence was higher among smear-negative TB patients (12.3%, 186/1513) compared to smear-positive TB patients (6.9%, 83/1199) and extra-pulmonary tuberculosis patients (9.5%, 15/158) ($p=0.0001$).

Figure 3. HIV prevalence among new TB patients, HSS2011



4.3 HIV prevalence by sex and age

The HIV prevalence among male TB patients 11.3% (209/1845) was found to be significantly higher than female 7.3% (75/1025) ($p<0.001$).

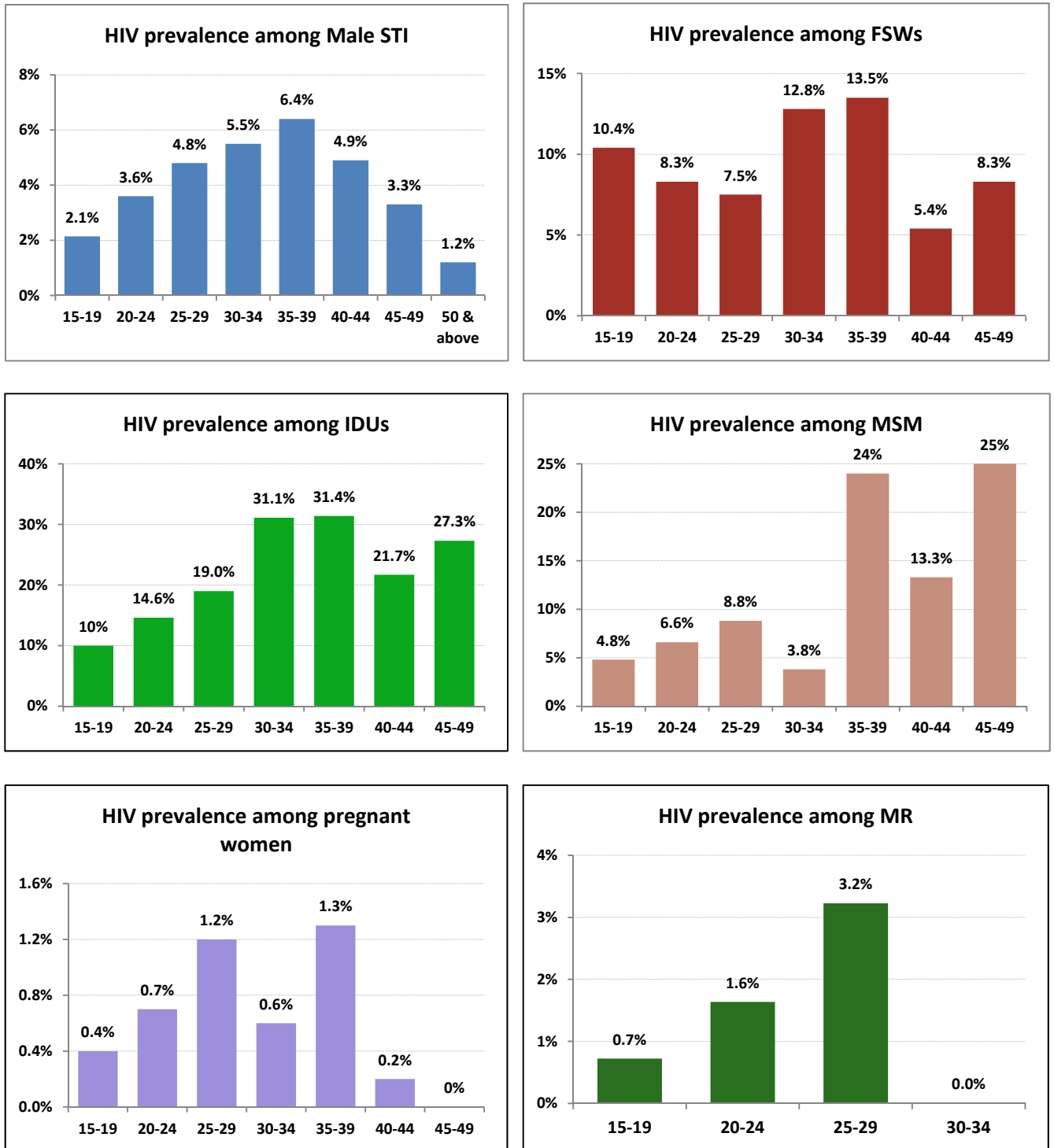
According to the reports from Blood Banks and Blood Centers located in Yangon and Mandalay, during the 3 months of survey period, 29% of blood units were donated by female donors 4,275/14,818. Among 14,818 units of donated blood, 0.1% (5/4275) of those donated by female and 0.3% (28/10,543) of those donated by male were found to have positive HIV test results.

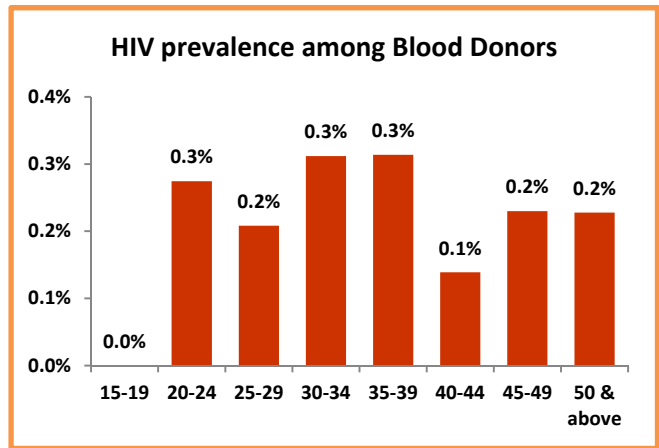
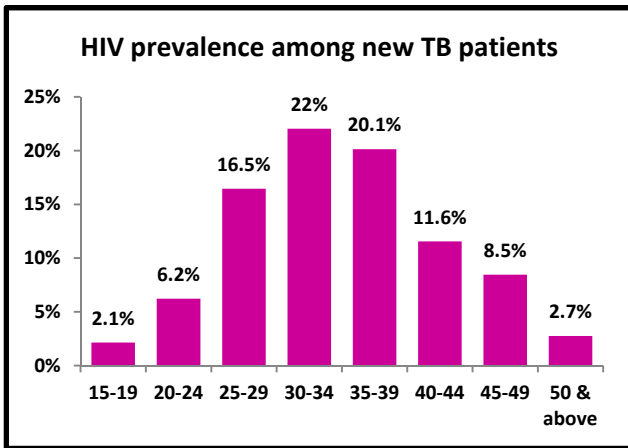
HIV prevalence by age groups is presented for each sentinel group in Figure 4. HIV prevalence appeared to be peak between 30 -39 years age group in male STI patients, FSWs, IDUs and new TB patients. One alarming point is relatively high prevalence among 15-19 age group of FSW. This pointed out the present of recent transmission of HIV among this target group and urgent prevention actions specially focused on those newly entering the target group is needed. For MSM, the higher level of prevalence was seen in 35 and older and this may assume that there was high proportion of old infections. In fact the relatively low number of sample in older age groups was also one of the attributes.

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Among pregnant women, HIV prevalence was higher in the 25-29 and 35-39 year age groups. Looking into the HIV prevalence among younger age 15-19 year and 20-24 year groups, it was found to be 0.37% and 0.7% for pregnant women; 0.7% and 1.6% for military recruits (Figure 4).

Figure 4. HIV prevalence by age group and sentinel population – HSS 2011

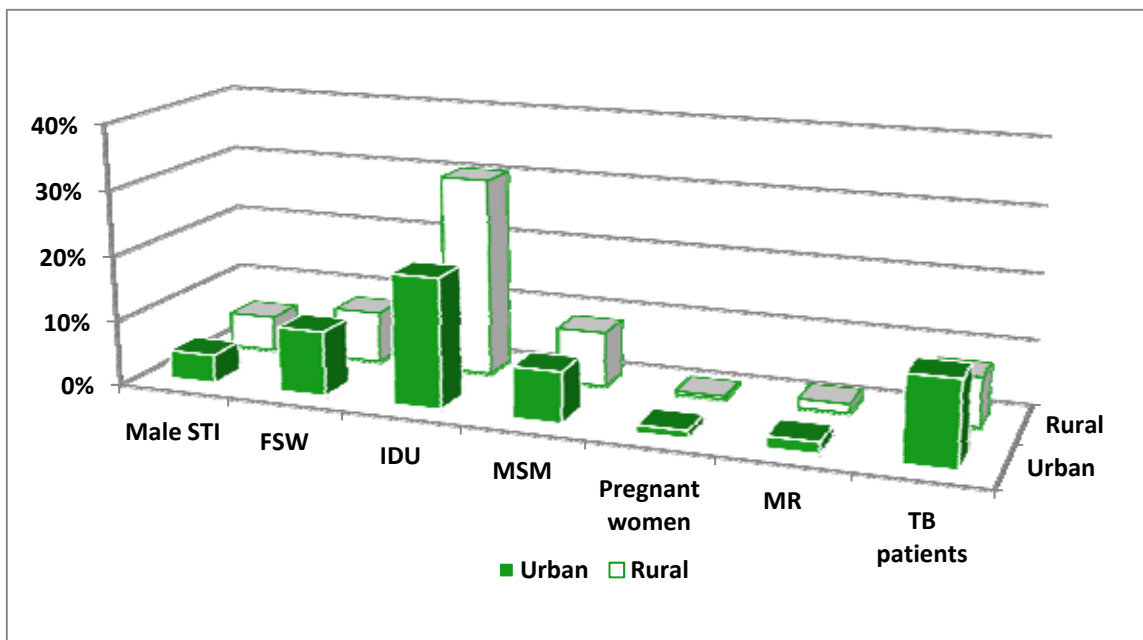




4.4 HIV prevalence by place of residence and marital status

The status of HIV prevalence by residence was presented in Figure 5. In 2011 round, some degree of difference in HIV prevalence was found between Urban and Rural population in each target group. Significant difference was found in two groups – IDU and TB patients. HIV prevalence was found to be higher in rural IDU and indicated the need to assess the availability and accessibility of harm reduction services for rural IDUs. For TB patients, HIV prevalence was nearly two times higher in urban population.

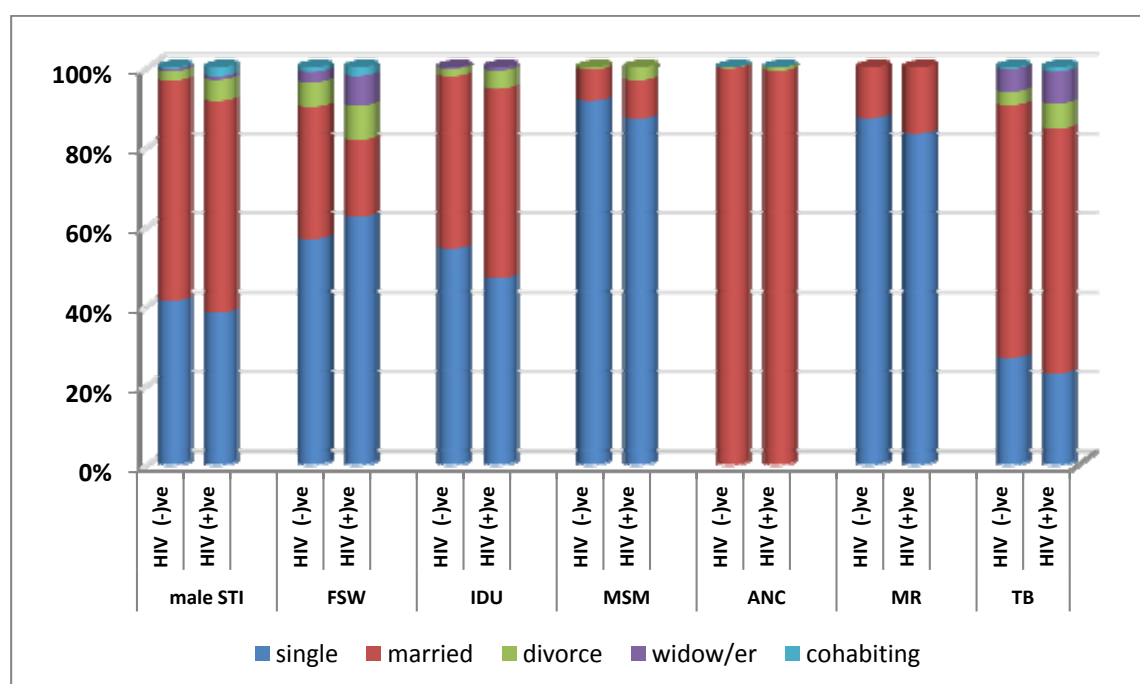
Figure 5 : HIV prevalence in different sentinel groups by residence– HSS 2011



The distribution of marital status of different sentinel groups did not differ significantly by HIV status (Figure 6). However, the significant proportion of married among those with HIV infection is calling for the vigilant prevention services targeting regular sexual partners, intimate partners (spouses) of these Most at Risk Population groups.

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Figure 6 : Distribution by marital status according to HIV status in different sentinel populations-HSS 2011



4.5 Results of syphilis screening

Syphilis testing has been introduced since 2007 round of HSS. In 2011 round, the prevalence of VDRL positive was highest (3.9%) among male STI patients and Female Sex Workers, followed by MSM (2.5%) and IDU (1.1%). (Table 4)

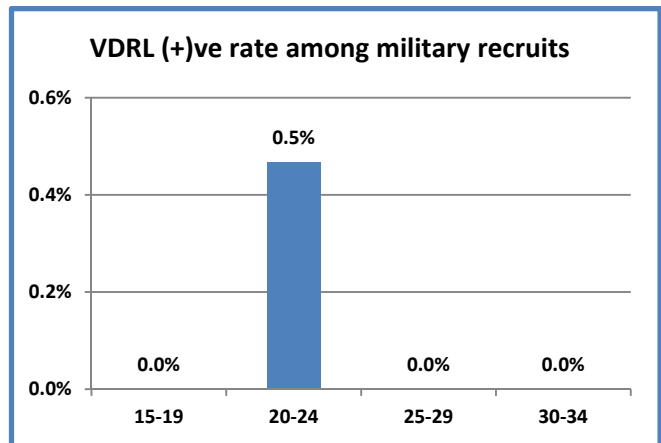
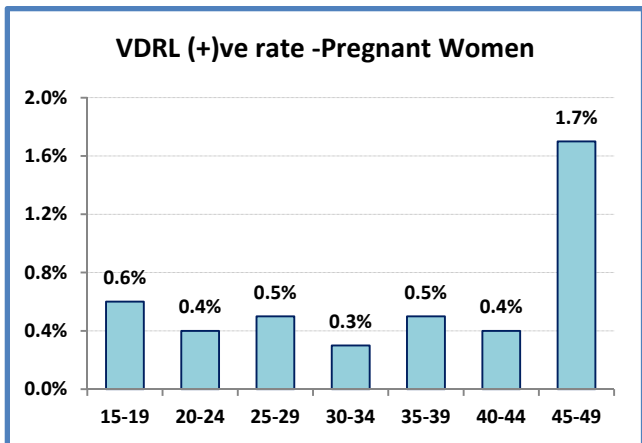
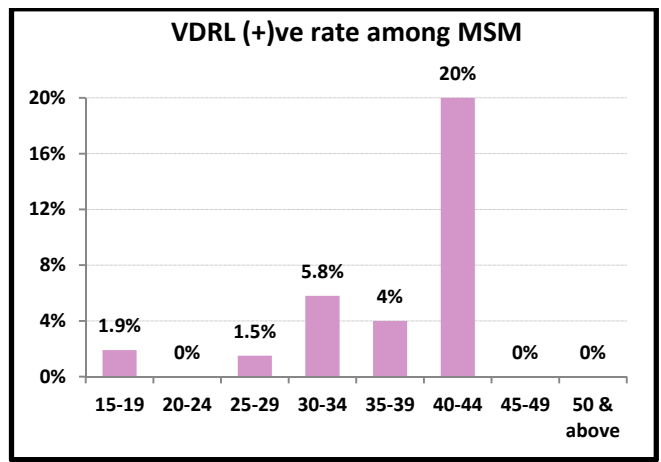
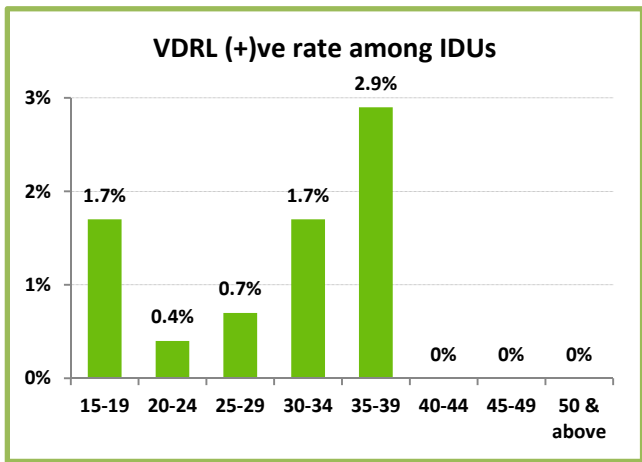
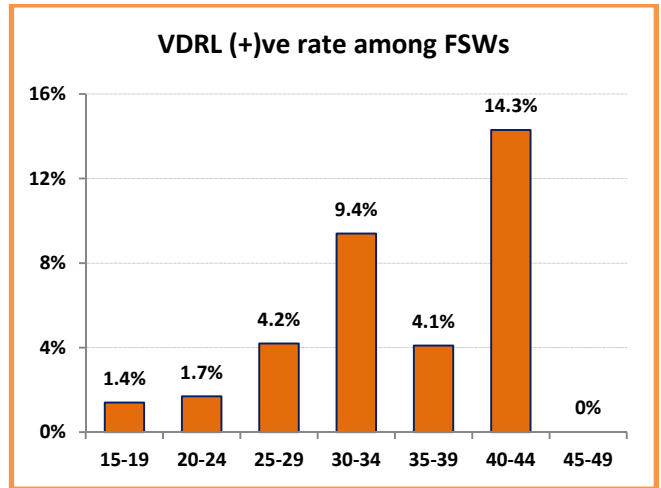
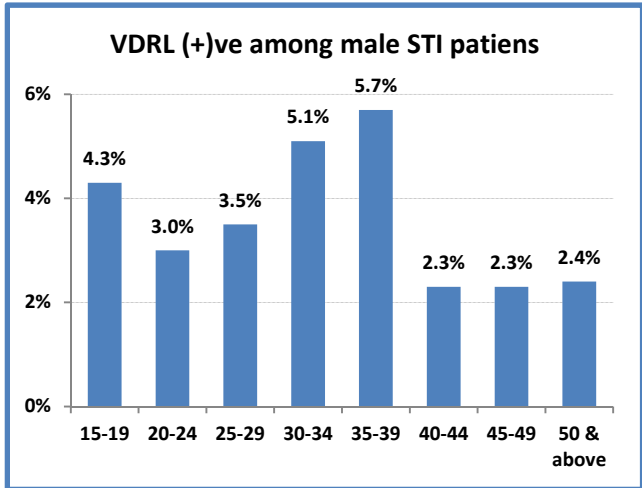
Table 4: Prevalence of syphilis (VDRL+) among sentinel population, HSS 2011

Sentinel Group	Sample (n)	# VDRL (+)	VDRL (+)ve (%)
Male STI Patient	4,874	190	3.9%
FSW	990	39	3.9%
IDU	1100	12	1.1%
MSM	400	10	2.5%
Pregnant Women	13,802	61	0.4%

Figure 7 revealed the variation of syphilis rate by age group in sentinel populations. The distribution of Syphilis prevalence by age groups was found to be similar to that of HIV prevalence in most of the sentinel groups. The presence of certain level of prevalence among 15-19 age group for Male STI patients and IDU indicating the risk of sexual transmission of HIV in these young people and thus calling for urgent prevention actions to be taken.

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Figure 7: Prevalence of syphilis (VDRL+) by groups, HSS 2011



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Figure 8 : VDRL positive rate among sentinel groups, by place of residence, HSS 2011

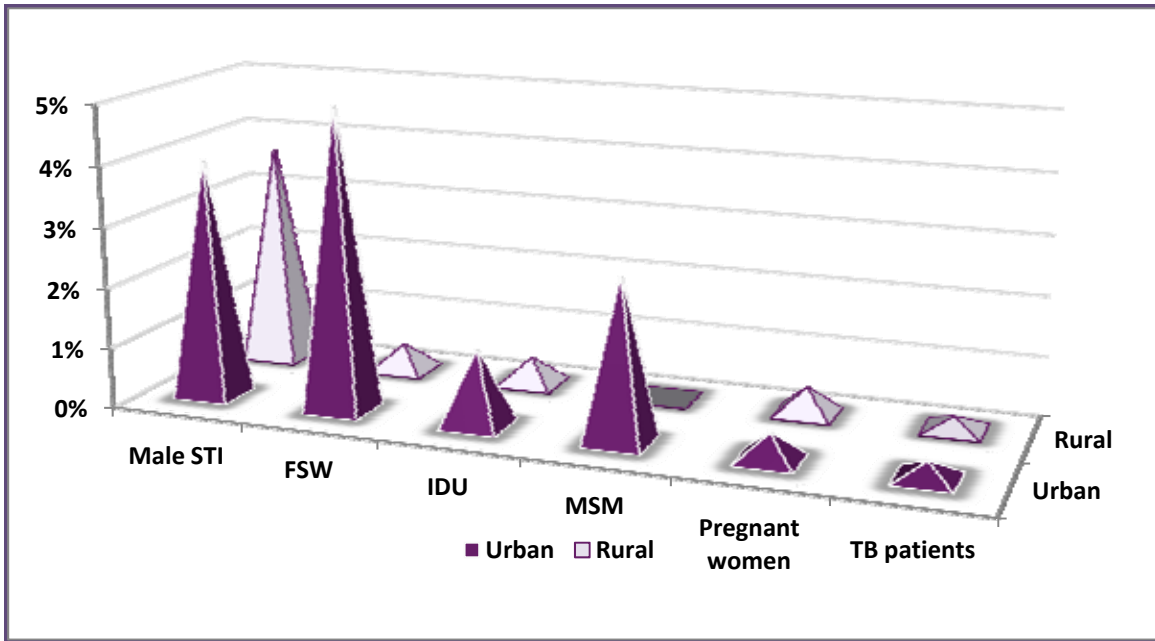
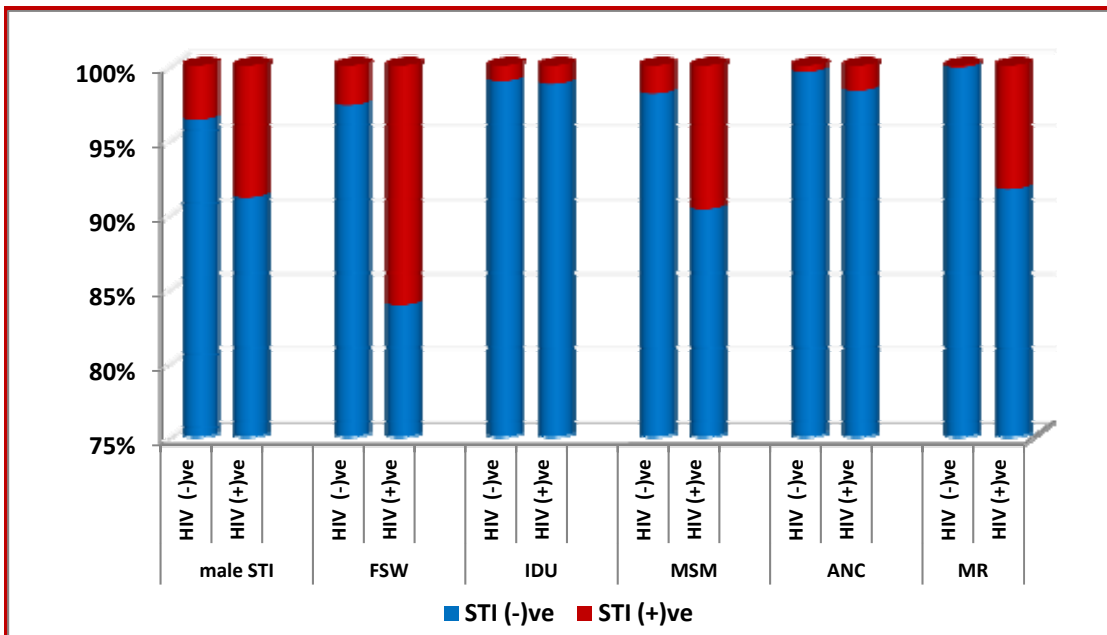


Figure 8 showed the comparison of VDRL positive rate between urban and rural populations. Although Syphilis prevalence was found to be higher in urban areas in FSW, IDU and MSM, it was significant only for FSW ($p < 0.001$). Nevertheless, the expanding spread of sexually transmitted diseases to rural populations is quite concerning.

Figure 9 : Prevalence of syphilis (VDRL+) by HIV status and sentinel population group, HSS 2011



Prevalence of syphilis was found to be significantly higher in people living with HIV than who did not have HIV in male STI, FSW, MSM and Military Recruits. The strength of association was weaker for IDU and pregnant women.

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Among FSWs and IDUs, there were wide variations in the syphilis prevalence by sites (Figure 10 & 11). A sharp raise was observed in Yangon and Taunggyi for both groups where the effectiveness of the preventive services needed to be reassessed. Nowadays, there was changing in pattern of drug use with most of IDU using both injecting and oral drugs. Sexual stimulation, one of the well-known side effects of oral stimulants, was alleged to be the major attribute for the rising syphilis rate among IDUs. Nevertheless, prevention interventions for IDUs should emphasize not only on preventing HIV transmission through injection but also the prevention of sexual transmission.

Figure 10 : VDRL positive rate among FSW by sites- HSS 2007-2011

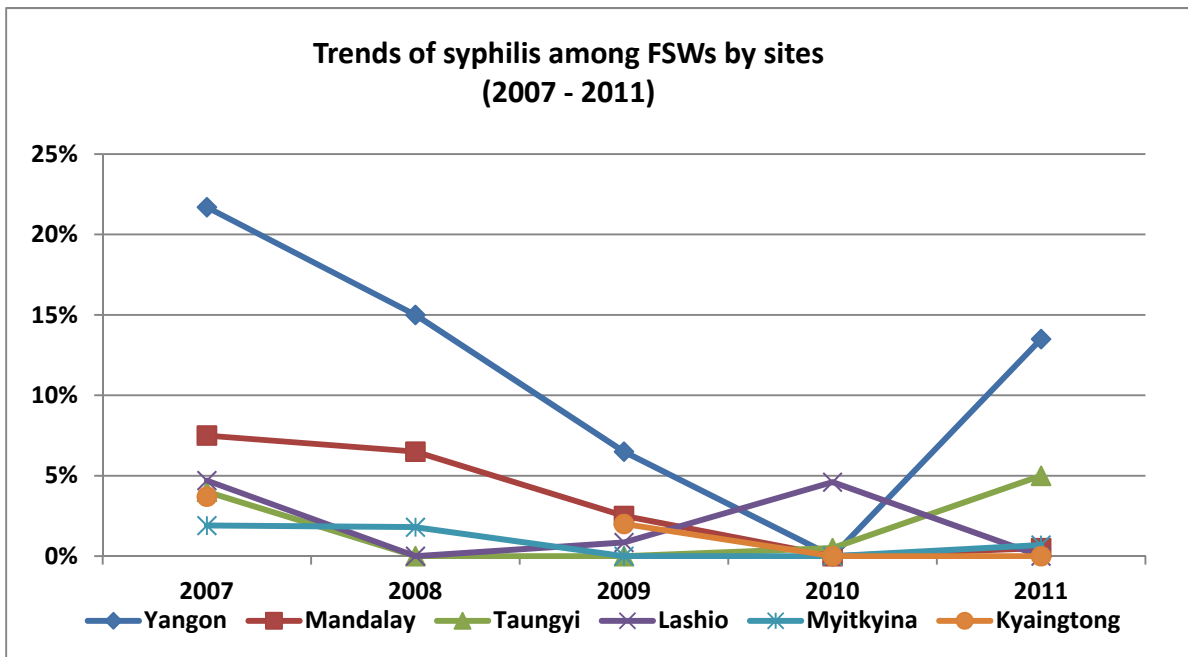
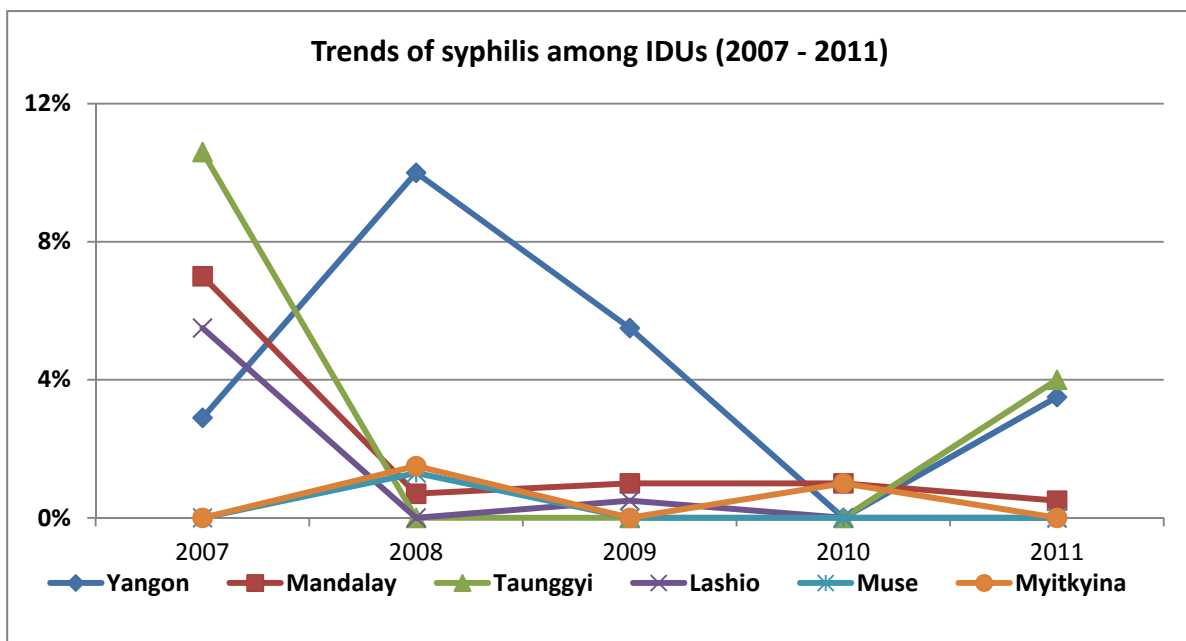


Figure 11. VDRL positive rate among injecting drug users by sites- HSS 2007-2011



5. HIV trends over time

5.1 HIV prevalence among sentinel groups 1992-2011

Trends analysis on HIV prevalence revealed that the trend for pregnant women has continued moving in the declining direction since its peak in late 1990s; and that for blood donors also continued the declining direction after the peak in early 2000s. The HIV prevalence among new military recruits showed somewhat downward movement in the recent years, but it was fluctuating and had set three peaks in the past decade. Thus it was difficult to say that the HIV prevalence for military recruit was on the declining. (Figure 12)

Figure 12 : Trends of HIV prevalence among low risk sentinel groups 1992-2011

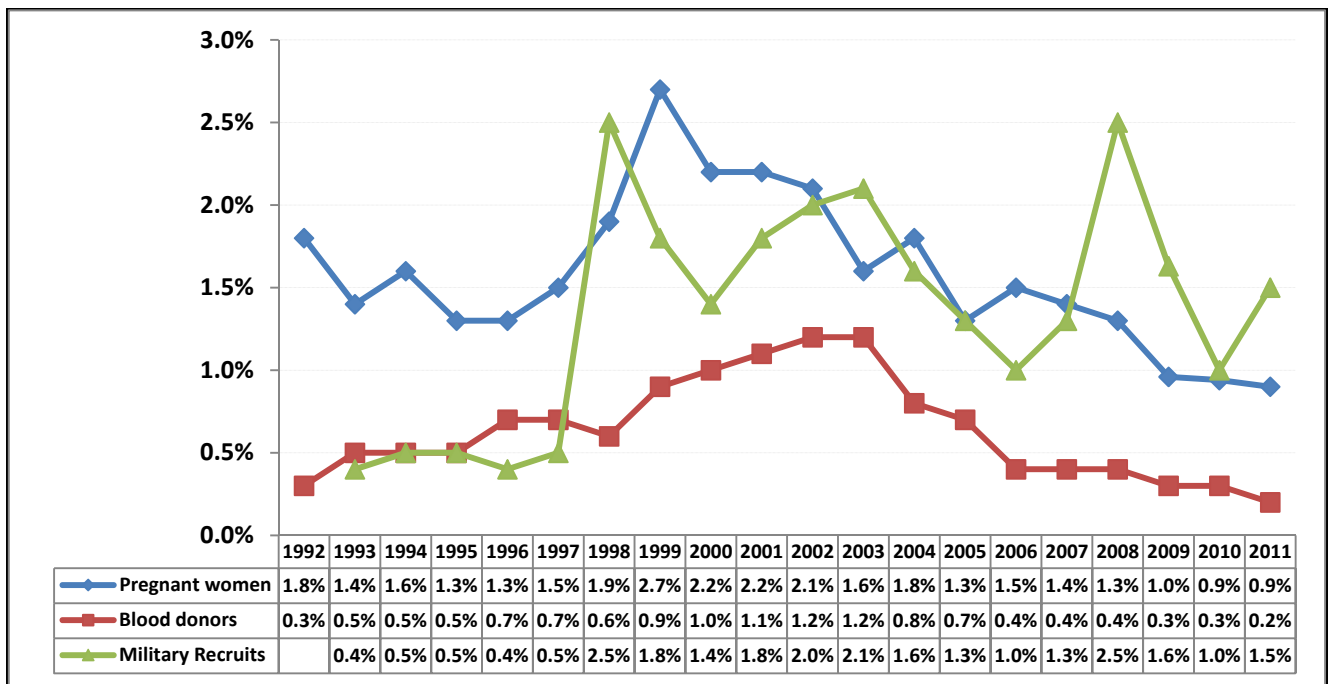
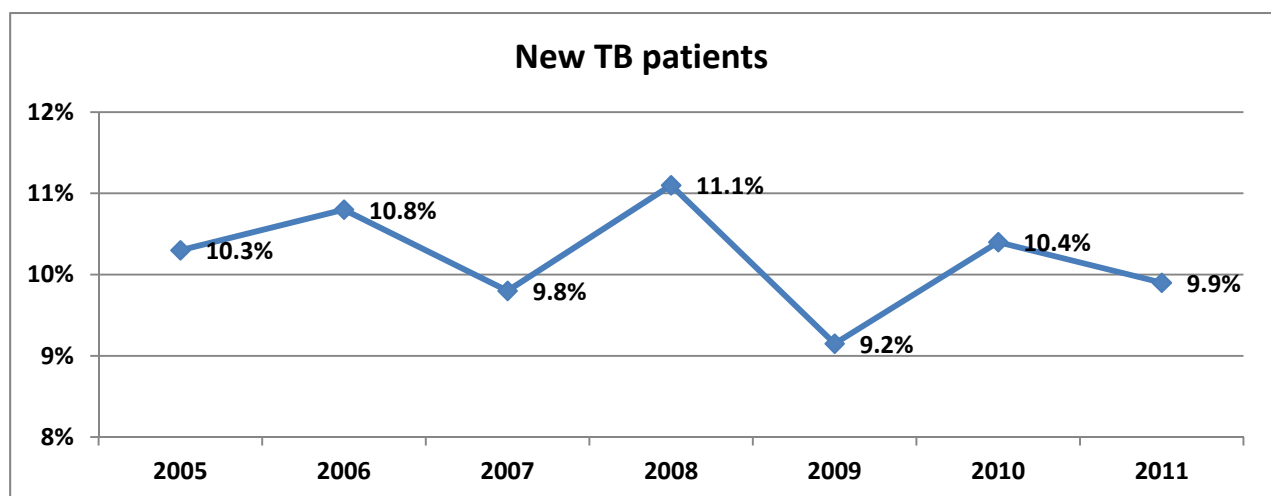


Figure 13 : Trends of HIV prevalence among new TB patients HSS (2005-2011)

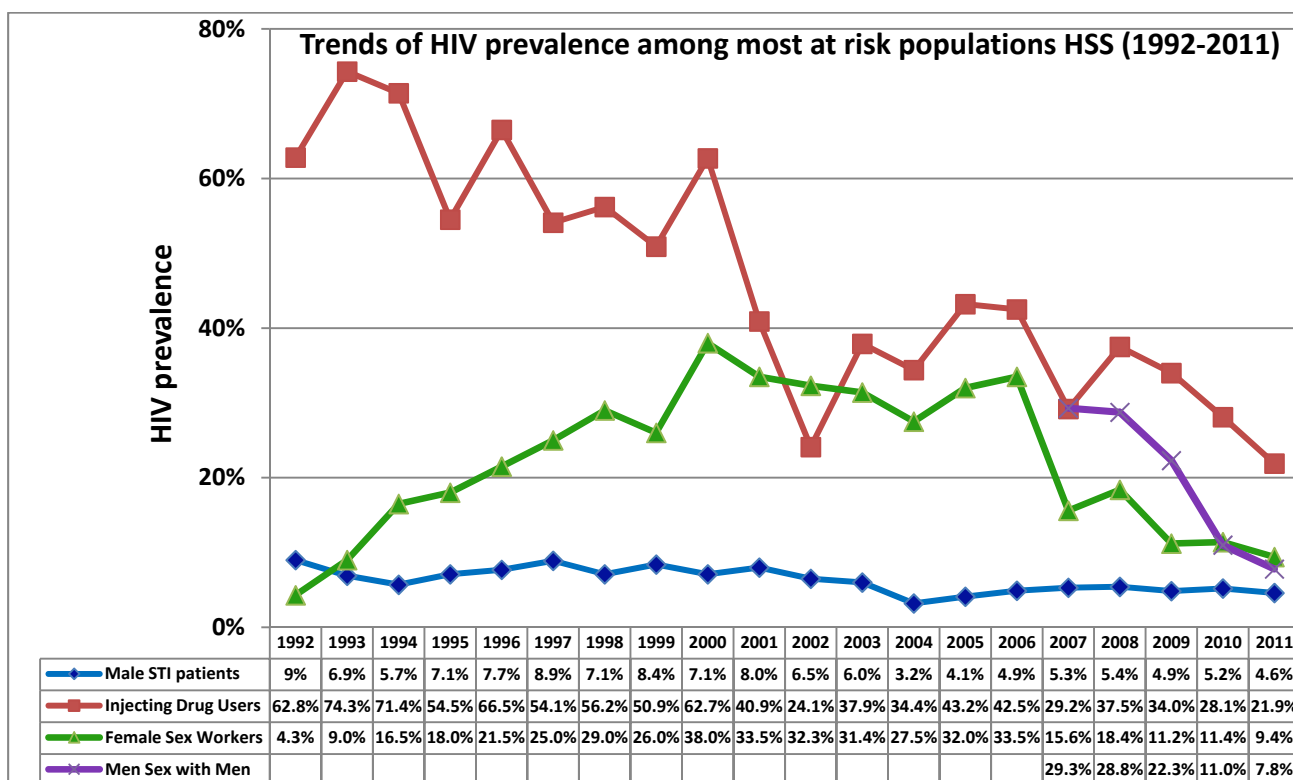


Since 2005, the HIV prevalence for new TB patients has been fluctuating round about 1% above and below the 10% level.

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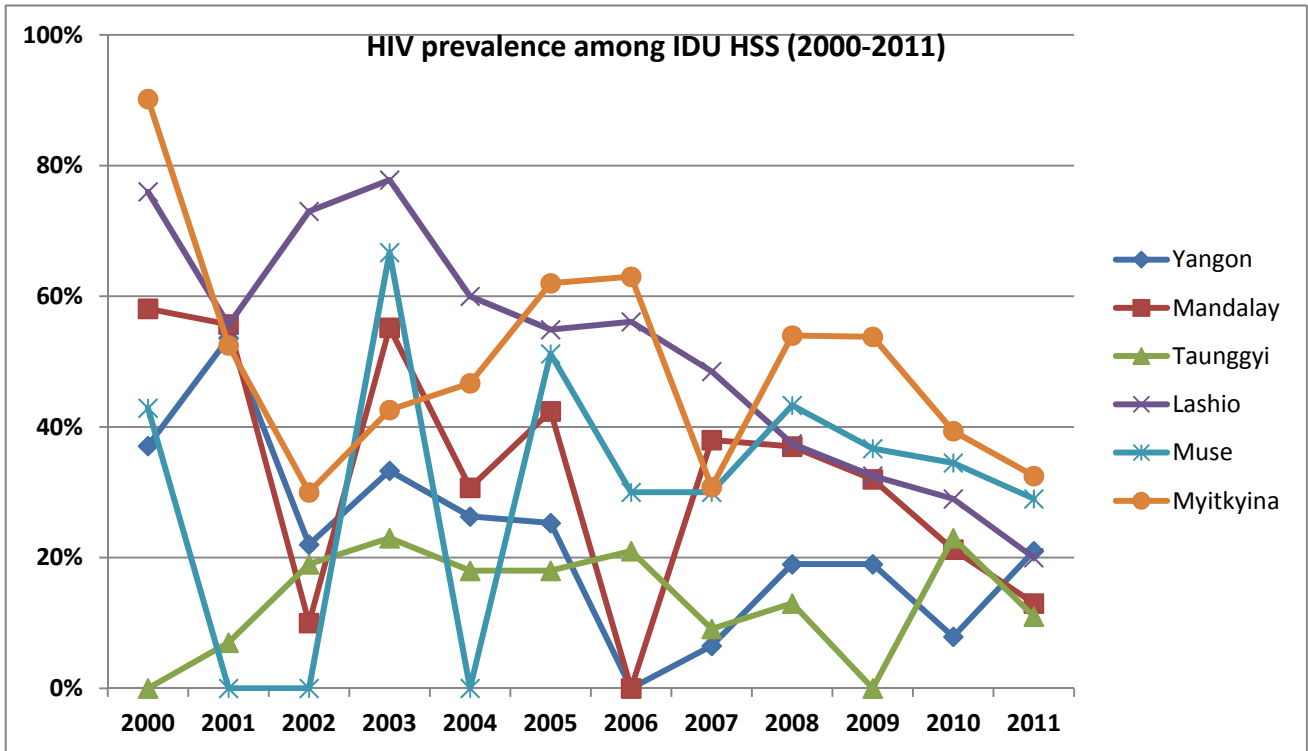
Figure 14 revealed the trends of HIV prevalence among most at risk populations which have been slowly declining since 2000 and sharp decline were observed in 2007. In 2011, HIV prevalence among IDUs, FSWs, and MSM continued the slow declining direction that has started since 2009. A slight decline was observed in male STI patients. For MSM the sharp decline was observed for consecutive 2 years, this may be explained by a couple of facts that more and more new MSM have been captured; or/and sick MSM rarely joined the facility based activities/services; actual less infection transmission in the target group. Nevertheless, the limited sentinel sites led to uncertainty of the results; thus IBBS among MSM should be conducted to be able to triangulate the prevalence.

Figure 14 : Trends of HIV prevalence among high risk sentinel groups 1992-2011



In 2011, the prevalence among IDUs showed a decline in all sentinel sites except Yangon. The decline was more obvious in Myitkyina site. Lashio's trend revealed the continuous steady decline since its peak in 2003 showing one of the fruitful results of coordinated effort of all implementing partners working in that area. The trends for other sites revealed fluctuations but the consecutive decline was observed in Myitkyina, Muse and Mandalay sites for the recent 3 consecutive years. It was interesting to find out that Myitkyina's trend has relatively sharp up and down movement in 2002 and 2007 with the declines coinciding with that observed at overall level. It was interested to know whether these declines were associated with some locally prevailing significant issue(s) such as availability of drugs, mobility of risk population etc. This call for more coordinated efforts among partners identifying the hidden/ associated issue(s) and thus interventions tailored to the local need could be planned and provided and another rising wave that might as usual follows the marked decline could be prevented. (Figure 15)

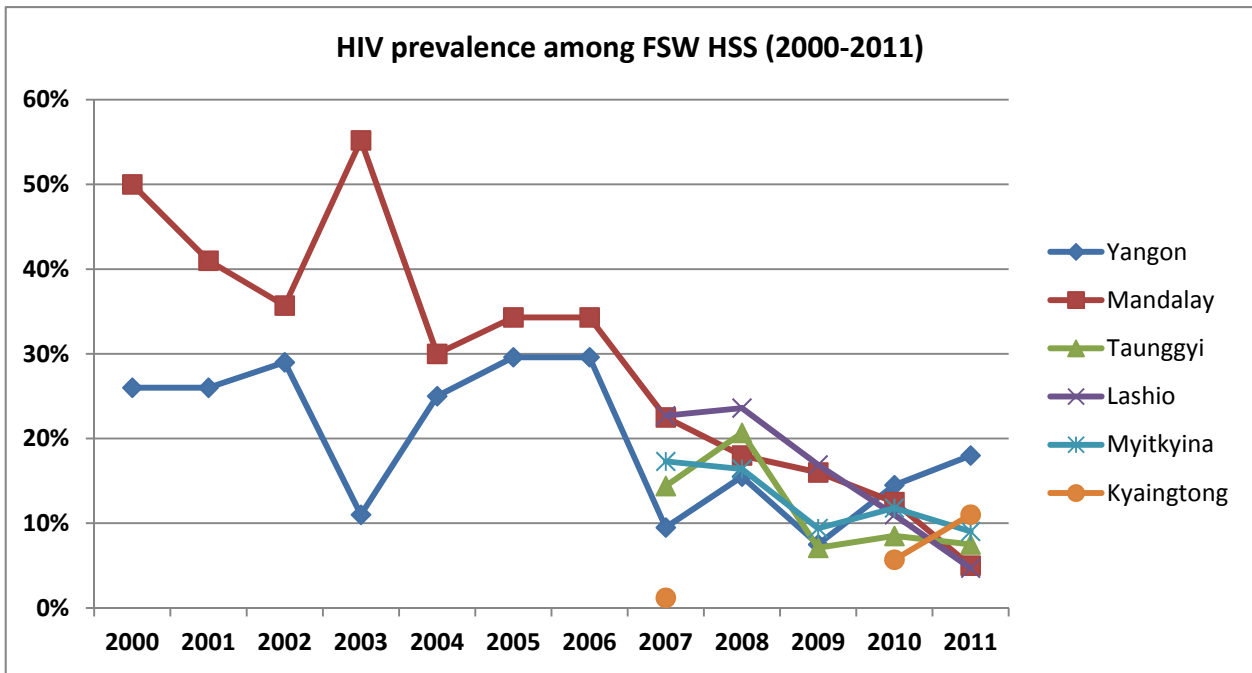
Figure 15 : Prevalence of HIV among IDUs by sites- HSS 2000-2011



A close look at FSW trend for each sentinel site revealed that there was a continuous declining trend of prevalence in Mandalay since the peak at 2007. Lashio also showed a declining trend since 2007, the first year of being included as new sentinel site for FSW. For Yangon, although there was a slight upward fluctuation of the positive rate, there was a declining trend in general. The apparent decline trends observed in decades old sentinel sites, Yangon and Mandalay, since 2007 may be explained by a couple of reasons: getting more representative sample through better coordination with partners in sample collection; turning over of the FSW and thus catching the newly recruited group; or the actual declines in HIV prevalence with the intensive TCP programme in place for a long time. The first reason was supported by having the positive rate within the acceptable range of those of newly expanded sentinel sites. The last reason was supported by declining HIV prevalence among younger group (15-24) in these two sites. Figure 16 depicts trends of HIV prevalence among female sex workers by sites.

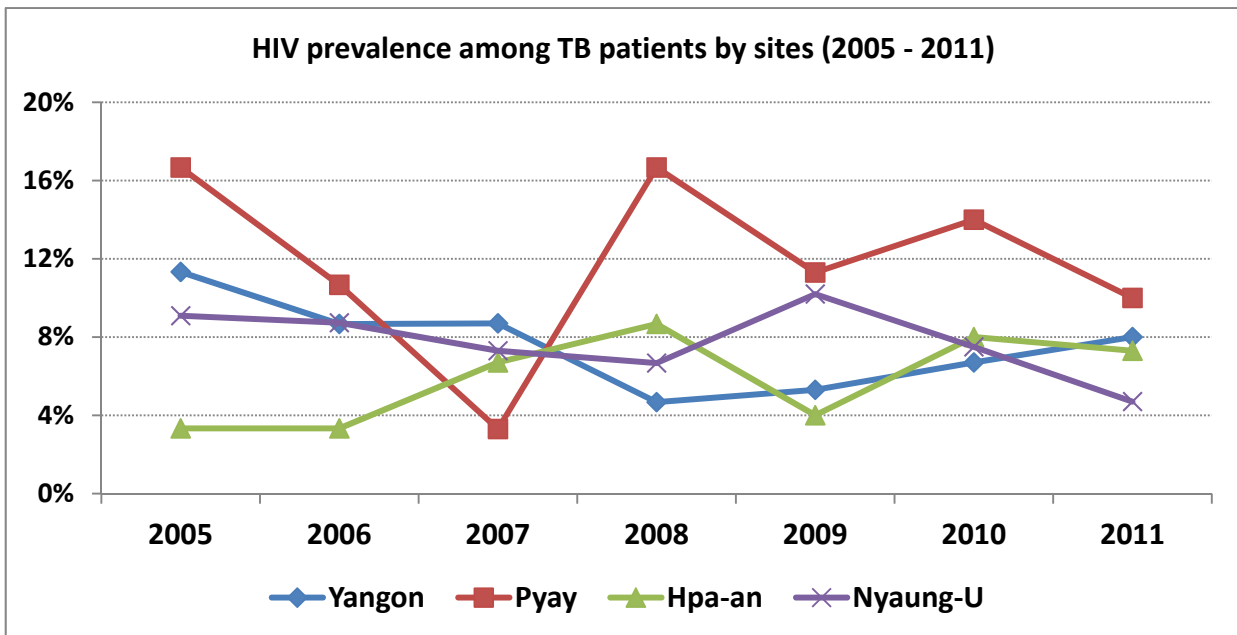
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Figure 16 : Prevalence of HIV among Female Sex Workers by sites- HSS 2000-2011

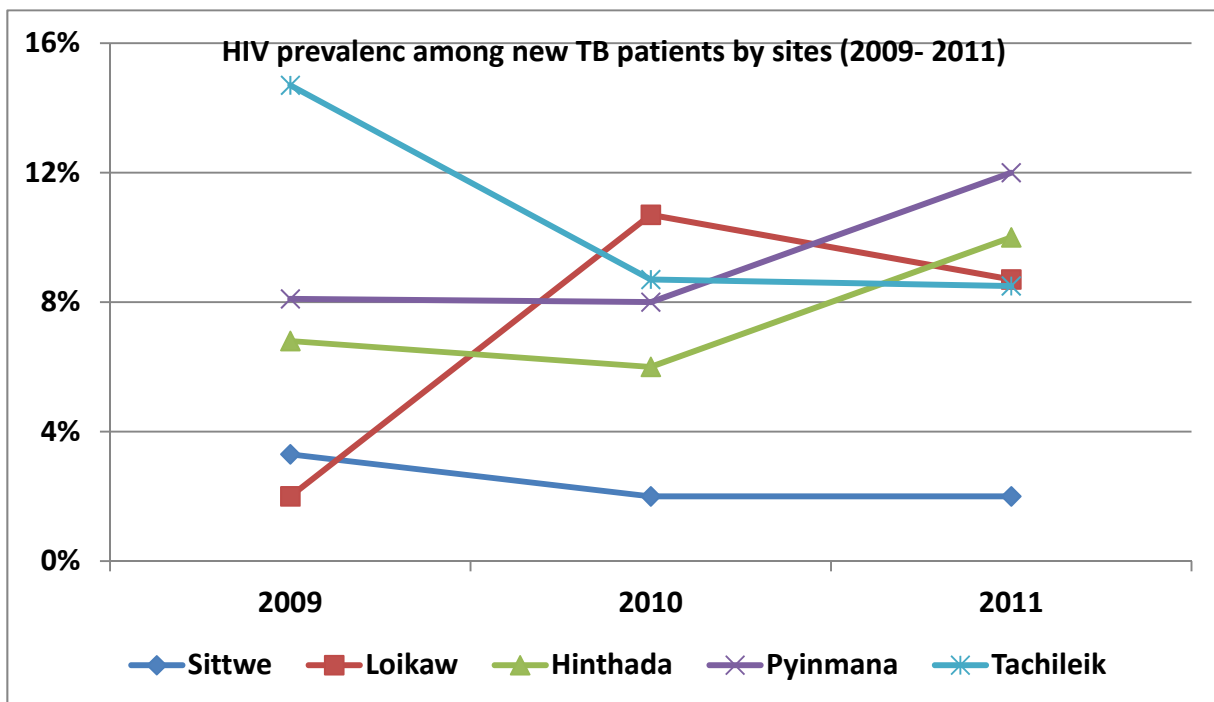
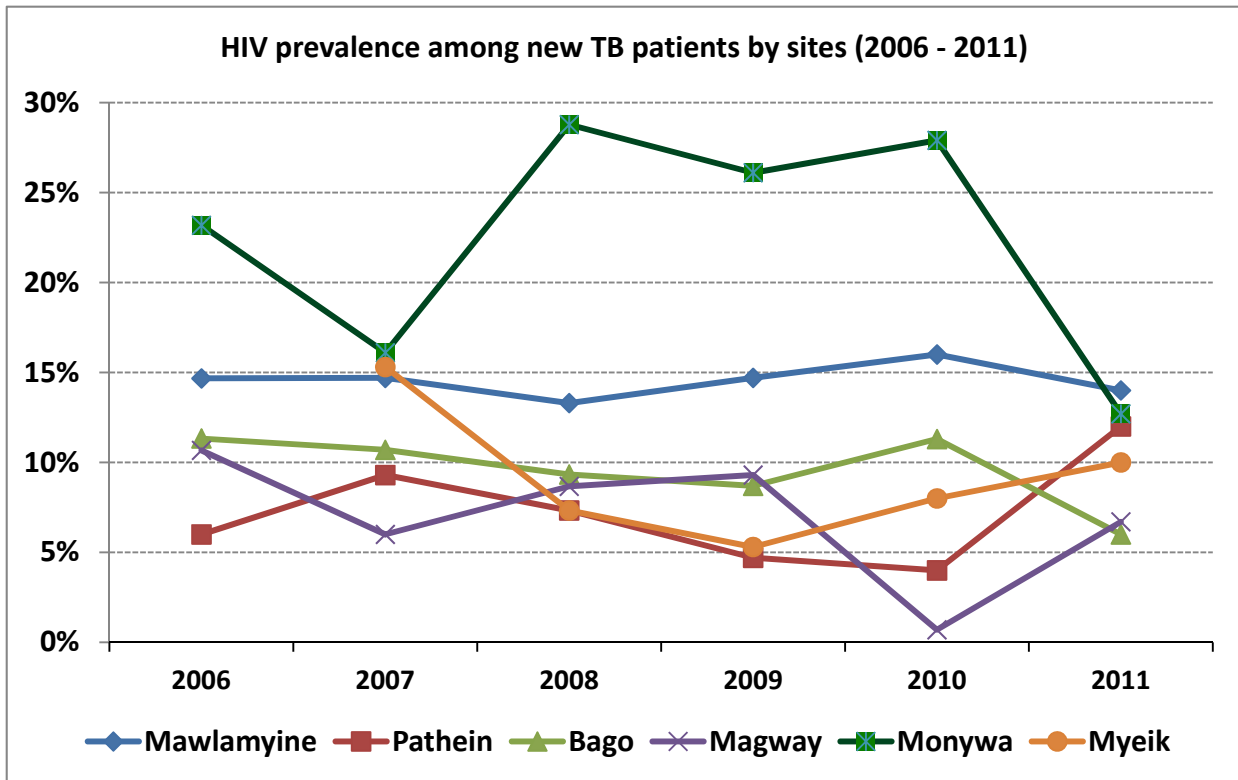


The overall HIV prevalence among tuberculosis patients showed slight fluctuation from 2005 to 2011. Having included as a sentinel group since 2005 and expanded to five sites in 2006, 2009 and 2010; trend analysis could be done for 15 sites only. The trends varied with the sentinel sites: Pyay and Mawlamyine showed a consistent level of HIV prevalence more than 10% and Myeik, Yangon, Pyinmana, Hinthada, and Pathein showed increasing trends. These sites should be considered for implementing complete package of TB-HIV services. (Figure 17)

Figure 17 : HIV prevalence among tuberculosis patients by site - 2005-2011

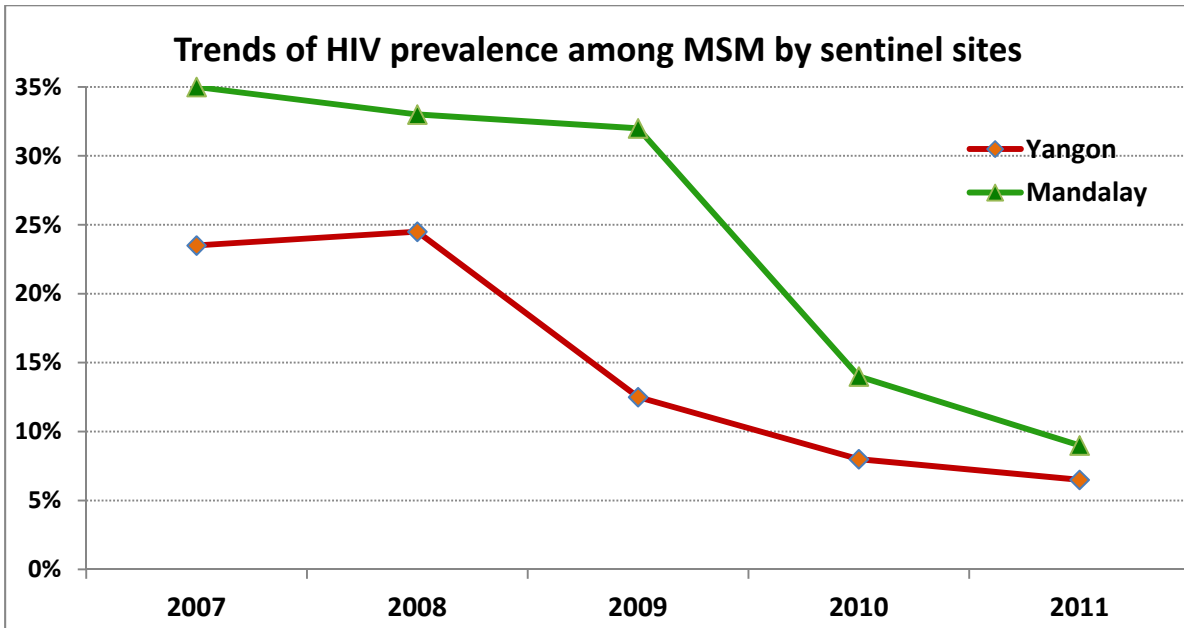


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Since 2007, Men who have sex with men have been included as one of the sentinel groups for Yangon and Mandalay. Although the HIV prevalence was high at the beginning years, a continuous declining trend was observed at both sites for recent 3 consecutive years. Getting a wider sample collection network and thus more representative sample may explain the decline. It was alleged that reduced attendance to facility based activities/services by sick MSM may also contribute to the decline. Nevertheless, intensifying the targeted prevention interventions for this group must be continued (Figure 18).

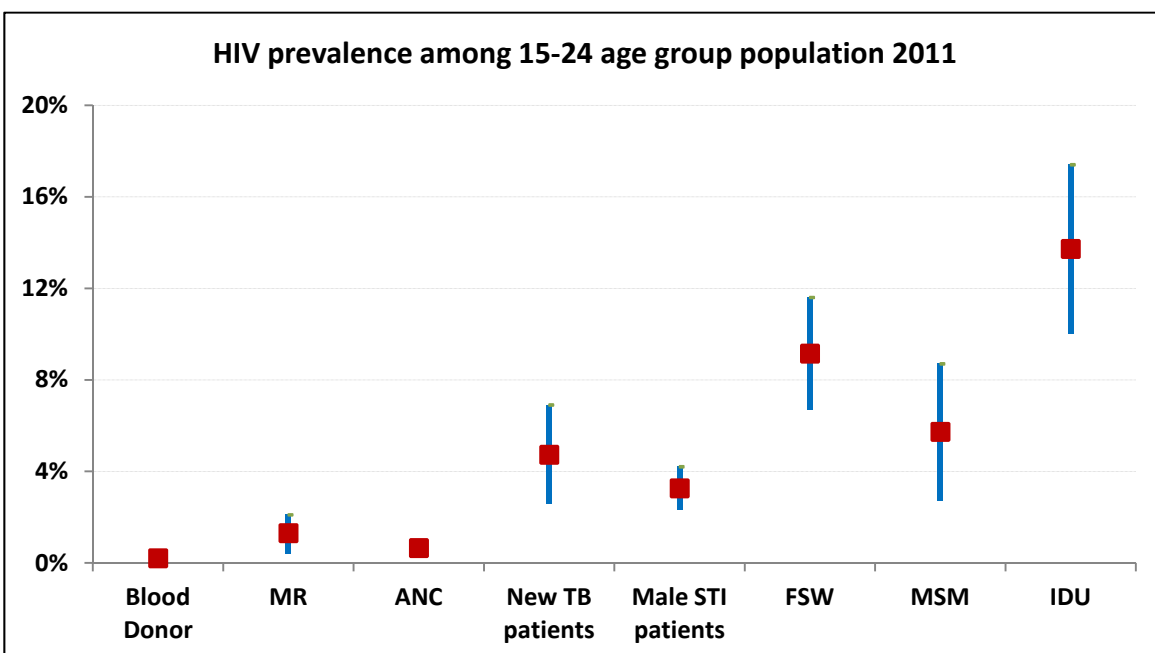
Figure 18 : HIV prevalence among men who have sex with men – HSS 2007-2011



5.2 HIV prevalence among young population

Being taken as a proxy for HIV incidence, the HIV prevalence among young sentinel populations showed a continuous decline in recent years. However, the prevalence among most at risk youth still remained at high level. Thus, the prevention programmes must be strengthened with interventions focusing on prevention of new infection among youth with risky behavior. (Figure 19, 20 & 21)

Figure 19 . HIV prevalence among 15-24 years of age populations, by sentinel groups, HSS 2011



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Figure 20 : Prevalence of HIV among young injecting drug users and female sex workers, HSS 2000-2011

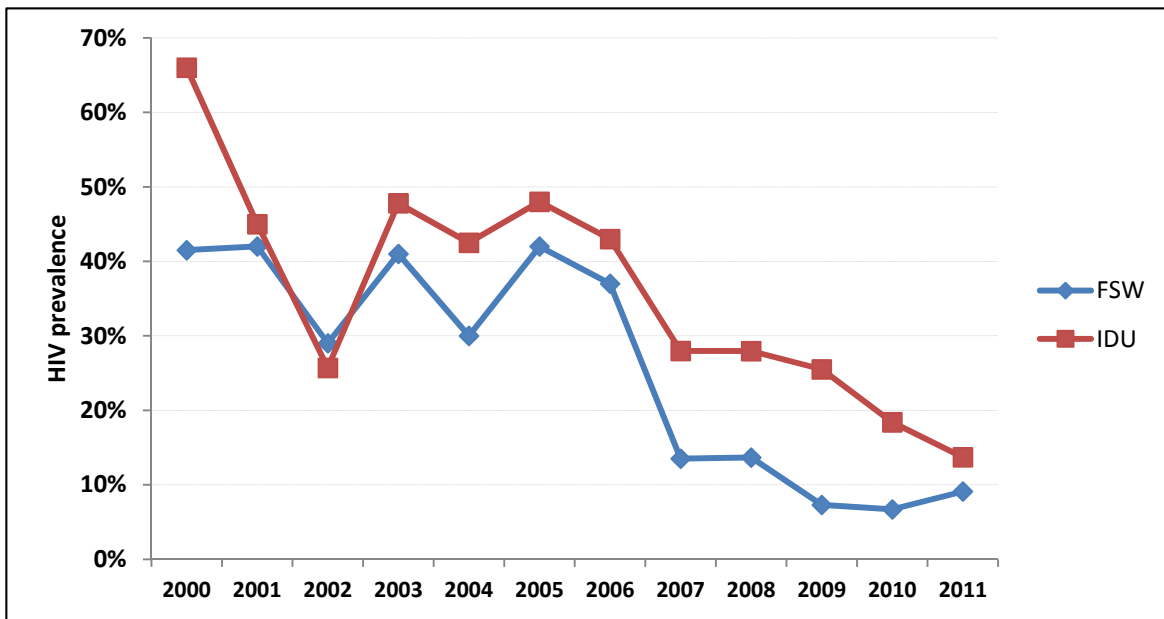
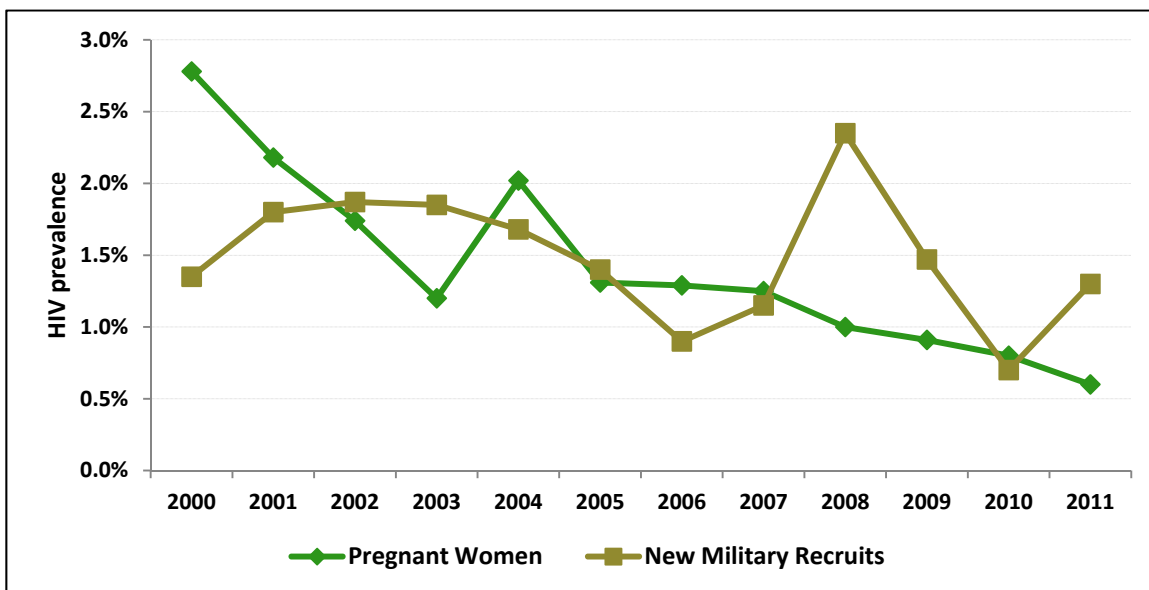


Figure 21 : Prevalence of HIV among young pregnant women and military recruits, HSS 2000-2011



6. Decentralization of HIV testing

The decentralized HIV testing approach was continued in 2011. In this round, HIV antibody testing was performed at the local level in 35 sites and all tested positive and 10% of negative blood samples were sent to reference laboratories where the tests were repeated. The results of the reference laboratories were regarded as the gold standard. In total, the number of false positive and false negative was minimal (0.3%) for both; this could have minimal underestimation of the true prevalence but this quantity of false negative and positive is acceptable for the purpose of surveillance (Table 5).

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Table 5: Comparing HIV test results of local and reference laboratories

		Reference Lab (NHL/ PHL& State/Regional team)		Total
		<i>Negative</i>	<i>Positive</i>	
Local Lab	<i>Negative</i>	1,037	3	1,040
		(99.7%)	FN (0.8%)	
	<i>Positive</i>	3	365	368
		FP (0.3%)	(99.2%)	
TOTAL		1,040 (100%)	368 (100%)	1,408

Out of 18 sites involved in sending sample to reference lab for quality checking, 4 sites showed discordant results. (Table 6)

Table 6: Comparison of local and reference HIV testing by sentinel sites – HSS 2011

No.	Site	Local lab		Reference lab		False (-) ve	False (+) ve
		(-) ve	(+) ve	(-) ve	(+) ve		
1	Meikthila	69	29	69	29	0	0
2	Muse	63	89	63	89	0	0
3	Kawthoung	52	13	52	13	0	0
4	Bahmo	69	38	70	37	2	1
5	Hpa-an	15	10	14	11	0	1
6	Loikaw	72	19	72	19	0	0
7	Haka	32	4	32	4	0	0
8	Hinthata	69	42	70	41	1	0
9	Maubin	55	4	55	4	0	0
10	Myingyan	67	27	66	28	0	1
11	Pakkoku	55	8	55	8	0	0
12	Shwebo	56	8	56	8	0	0
13	Myawaddy	60	16	60	16	0	0
14	Nyaung-U	66	9	66	9	0	0
15	Taungoo	63	23	63	23	0	0
16	PyinOoLwin	54	7	54	7	0	0
17	Pyinmana	69	18	69	18	0	0
18	Kalay	54	4	54	4	0	0
Total		1040	368	1040	368	3	3

7. Recommendations

7.1 Recommendations for programme implementation

- To understand the overall picture of HIV epidemic in the country, HSS data should be triangulated with other available data sources: behavioral surveillance surveys, programme monitoring data, rapid assessments and other surveys data.
- The prevention intervention activities must be intensified not only for most at risk populations, but also for general population and rural population.
- Human resources and institutional capacity in surveillance should be strengthened.

7.2 Recommendations for surveillance

- With the continuing updating of the estimation and projection software, the information on years of initiating the risk behavior among each MARP group becomes essential for the estimation of incidence among MARPs. The information will be collected starting from the next round of HSS.
- All implementers at field level must strictly follow the HSS protocol (2010).
- Before starting any round of HSS, all State & Regional AIDS/STD and TB officers and team leaders must gather together with the central level surveillance officers to discuss and share the field experience, difficulties in conducting the survey and find the ways to overcome difficulties.
- In order to avoid possible sampling bias and achieve required sample size for sentinel groups, coordination and networking at township level with INGOs, national NGOs, Drug Treatment Centers and Myanmar Medical Associations especially with general practitioners before the commencement of HSS should be improved.
- National AIDS Programme must strengthen the supervisory mechanism for the sentinel surveillance sites. State and Regional AIDS/STD officers must conduct preliminary assessment for the needs and attempt to arrange the mechanisms of specimen collection at the respective areas where they cover before the HSS commences.
- State and Regional AIDS/STD officers and team leaders must supervise overall process of specimen collection and specimen transportation.
- HIV antibody testing should be decentralized in 35 sentinel sites, however, the internal and external quality assurance must be assured and all AIDS/STD teams must participate in the external quality control procedures.
- The new sites for military recruits should be considered to participate in the next rounds.
- The expansion of sentinel sites for TB, FSW, MSM, and IDU must be carried out in the next rounds.

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8. Annexes

8.1 Annex 1: Total number of blood samples collected (n) and HIV prevalence (%) by sentinel population and sites - HSS 2011

Sr. no	Sentinel site		Sentinel Groups								Total
			Male STI	FSW	IDU	MSM	Preg women	Military Recruit	New TB patient	Blood Donor	
1	Yangon	(N)	150	200	200	200	400	400	150	12,601	14,301
		(%)	2.7%	18.0%	20.5%	6.5%	1.3%	1.25	8%	0.2%	
2	Mandalay	(N)	150	200	200	200	400	400		2217	3767
		(%)	9.3%	5%	13%	9.0%	1.3%	1.8%		0.2%	
3	Meikthila	(N)	150				400		149		700
		(%)	5.3%				1.0%		11.3%		
4	Taunggyi	(N)	150	200	100		400				850
		(%)	11.3%	7.5%	11%		1.5%				
5	Lashio	(N)	114	128	200		400				842
		(%)	7.0%	4.7%	20%		1.0%				
6	Tachileik	(N)	148				400		106		654
		(%)	4.1%				1.3%		8.5%		
7	Muse	(N)	150		200		400				750
		(%)	8.7%		29%		4.5%				
8	Dawei	(N)	150				400		120		670
		(%)	4%				0.8%		7.5%		
9	Kawthoung	(N)	150				400				550
		(%)	4.7%				1.5%				
10	Myitkyeena	(N)	67	144	200		400				811
		(%)	7.5%	9%	32.5%		1.3%				
11	Bahmo	(N)	150				400		136		686
		(%)	6%				0.8%		19.1%		
12	Mawlamyine	(N)	150				400		150		700
		(%)	2.7%				0.8%		14%		
13	Pathein	(N)	150				400		150		700
		(%)	4%				0.8%		12%		
14	Bago	(N)	150				400		150		700
		(%)	6%				0.8%		6%		
15	Pyay	(N)	150				400		150		700
		(%)	4%				0.5%		10%		
16	Magway	(N)	139				400		150		689
		(%)	4.3%				0.5%		6.7%		
17	Hpa-an	(N)	150				400		150		700
		(%)	3.3%				1%		7.3%		

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Sr. no	Sentinel site		Sentinel Groups								
			Male STI	FSW	IDU	MSM	Preg women	Military Recruit	New TB patient	Blood Donor	Total
18	Sittwe	(N)	150				400		150		700
		(%)	0.0%				0.0%		2%		
19	Monywa	(N)	150				400		150		700
		(%)	1.3%				0.5%		12.7%		
20	Loikaw	(N)	150				400		150		700
		(%)	2.7%				0.5%		8.7%		
21	Haka	(N)	42				275				317
		(%)	2.4%				1.1%				
22	Hintharta	(N)	150				400		150		700
		(%)	16.7%				0.3%		10.0%		
23	Maubin	(N)	150				400				550
		(%)	1.3%				0.5%				
24	Myeik	(N)	150				400		150		700
		(%)	6.7%				0.5%		10.0%		
25	Myingyan	(N)	150				400		150		700
		(%)	1.3%				0.8%		15.3%		
26	Pakkoku	(N)	150				400				550
		(%)	4.0%				0.5%				
27	Shwebo	(N)	150				400				550
		(%)	3.3%				0.8%				
28	Kyaingtong	(N)	105	118			400				623
		(%)	7.6%	11.0%			0.3%				
29	Myawaddy	(N)	150				399				549
		(%)	6.7%				1.5%				
30	NyaungU	(N)	111				400		147		659
		(%)	0.9%				0.3%		4.7%		
31	MyaungMya	(N)	98				328				426
		(%)	5.1%				0.0%				
32	Taunggo	(N)	150				400		110		660
		(%)	4.7%				0.5%		12.7%		
33	PyinOoLwin	(N)	150				400				550
		(%)	1.3%				1.3%				
34	Pyinmana	(N)	150				400		150		700
		(%)	0.0%				0.0%		12.0%		
35	Kalay	(N)	150				400				550
		(%)	1.3%				0.5%				
Total			4874	990	1100	400	13802	800	2868	14,818	39,654

8.2 Annex 2: HIV prevalence by age group HSS-2011

Age group	Male STI patients		FSW		IDU		MSM	
	sample	HIV (+)ve %	sample	HIV (+)ve %	sample	HIV (+)ve %	sample	HIV (+)ve %
15-19 yr	327	2.1%	211	22 10.4%	60	6 10.0%	105	5 4.8%
20-24 yr	962	3.6%	303	25 8.3%	268	39 14.6%	122	8 6.6%
25-29 yr	1262	4.8%	212	16 7.5%	295	56 19.0%	68	6 8.8%
30-34 yr	913	5.5%	117	15 12.8%	241	75 31.1%	52	2 3.8%
35-39 yr	684	6.4%	74	10 13.5%	137	43 31.4%	25	6 24%
40-44 yr	426	4.9%	56	3 5.4%	60	13 21.7%	15	2 13.3%
45-49 yr	215	3.3%	12	1 8.3%	33	9 27.3%	8	2 25%
≥ 50 yr	85	1.2%	5	1 20%	6	0 0%	5	0 0%
Total	4874	4.6%	990	93 9.4%	1100	241 21.9%	400	31 7.8%

Age group	Pregnant women		New Military Recruits		New TB patients		Blood Donors	
	sample	HIV (+)ve %	sample	HIV (+)ve %	sample	HIV (+)ve %	sample	HIV (+)ve %
15-19 yr	1084	0.4%	277	2 0.7%	140	3 2.1%	1680	0 0.0%
20-24 yr	3712	0.7%	428	7 1.6%	241	15 6.2%	4009	11 0.3%
25-29 yr	4044	1.2%	93	3 3.2%	322	53 16.5%	2883	6 0.2%
30-34 yr	2805	0.6%	2	0 0%	295	65 22.0%	1924	6 0.3%
35-39 yr	1596	1.3%			313	63 20.1%	1594	5 0.3%
40-44 yr	501	0.2%			303	35 11.6%	1440	2 0.1%
45-49 yr	59	0%			272	23 8.5%	870	2 0.2%
≥ 50 yr	1	0%			982	27 2.7%	418	1 0.2%
Total	13802	0.9%	800	12 1.5%	2868	284 9.9%	14818	33 0.2%

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8.3 Annex 3: Prevalence of syphilis (VDRL +) by sentinel population and by sites,
2011

HSS

Sr. no	site		Sentinel Groups					
			Male STI	FSW	IDU	MSM	Preg women	Military Recruit
1	Yangon	(N)	150	200	200	200	400	400
		(%)	20.7%	13.5%	3.5%	4.5%	1.5%	0%
2	Mandalay	(N)	150	200	200	200	400	400
		(%)	0.7%	0.5%	0.5%	0.5%	0.3%	0.5%
3	Meikthila	(N)	150				400	
		(%)	0.7%				0.0%	
4	Taunggyi	(N)	150	200	100		400	
		(%)	6.0%	5.0%	4.0%		0.0%	
5	Lashio	(N)	114	128	200		400	
		(%)	2.6%	0.0%	0.0%		0.0%	
6	Tachileik	(N)	148				400	
		(%)	2.0%				0.5%	
7	Muse	(N)	150		200		400	
		(%)	2.0%		0.0%		0.0%	
8	Dawei	(N)	150				400	
		(%)	3.3%				0.3%	
9	Kawthoung	(N)	150				400	
		(%)	17.3%				2.8%	
10	Myitkyeena	(N)	67	144	200		400	
		(%)	0.0%	0.7%	0.0%		0.0%	
11	Bahmo	(N)	150				400	
		(%)	0.7%				0.0%	
12	Mawlamyine	(N)	150				400	
		(%)	5.3%				0.3%	
13	Pathein	(N)	150				400	
		(%)	1.3%				1.5%	
14	Bago	(N)	150				400	
		(%)	1.3%				0.8%	
15	Pyay	(N)	150				400	
		(%)	2.7%				0.0%	
16	Magway	(N)	139				400	
		(%)	7.2%				0.0%	
17	Hpa-an	(N)	150				400	
		(%)	0.0%				0.0%	
18	Sittwe	(N)	150				400	
		(%)	4.0%				0.8%	
19	Monywa	(N)	150				400	
		(%)	0.7%				0.3%	

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Sr. no	site		Sentinel Groups					Military Recruit
			Male STI	FSW	IDU	MSM	Preg women	
20	Loikaw	(N)	150				400	
		(%)	1.3%				0.3%	
21	Haka	(N)	42				275	
		(%)	4.8%				0.4%	
22	Hintharta	(N)	150				400	
		(%)	5.3%				1.0%	
23	Maubin	(N)	150				400	
		(%)	1.3%				0.5%	
24	Myeik	(N)	150				400	
		(%)	2.0%				0.3%	
25	Myingyan	(N)	150				400	
		(%)	0.0%				0.0%	
26	Pakkoku	(N)	150				400	
		(%)	1.3%				0.0%	
27	Shwebo	(N)	150				400	
		(%)	4.0%				0.3%	
28	Kyaingtong	(N)	105	118			400	
		(%)	0.0%	0.0%			0.0%	
29	Myawaddy	(N)	150				399	
		(%)	2.7%				0.5%	
30	NyaungU	(N)	111				400	
		(%)	8.0%				0.0%	
31	MyaungMya	(N)	98				328	
		(%)	5.1%				0.0%	
32	Taunggo	(N)	150				400	
		(%)	4.7%				0.5%	
33	PyinOoLwin	(N)	150				400	
		(%)	0.0%				0.0%	
34	Pyinmana	(N)	150				400	
		(%)	0.7%				0.3%	
35	Kalay	(N)	150				400	
		(%)	1.3%				1.0%	
	Total		4874	990	1100	400	13802	800

