

National AIDS Programme, Myanmar

**HIV**  
Estimates  
and Projections,  
**MYANMAR**  
2008–2015



**UNAIDS**  
JOINT UNITED NATIONS PROGRAMME ON HIV/AIDS

UNHCR  
UNICEF  
WFP  
UNDP  
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**National AIDS Programme**  
**Department of Health**  
**Ministry of Health**

## Abbreviations and Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Clinic
ART	Antiretroviral Therapy
BSS	Behavioral Surveillance Survey
EPP	Estimation and Projection Package
FSW	Female Sex Worker
HIV	Human Immunodeficiency Virus
IBBS	Integrated Biological and Behavioral Survey
IDU	Injecting Drug User
IEC	Information Education Communication
INGOs	International Non-Governmental Organizations
MOH	Ministry of Health
MSM	Men who have Sex with Men
MSW	Male sex worker
M&E	Monitoring and Evaluation
NAP	National AIDS Programme
NGO	Non-Governmental Organization
PMCT	Prevention of Mother-to-Child transmission (of HIV)
STD	Sexually Transmitted Diseases
STI	Sexually Transmitted Infections
TB	Tuberculosis
UN	United Nation
VCCT	Voluntary Counseling and Confidential Testing (for HIV)

## 1. Introduction

### 1.1 Epidemiologic situation

The two-decade old HIV epidemic in Myanmar is largely concentrated among population sub groups with high-risk behaviors. Among reported AIDS cases of year 2008 with documented mode of transmission, 73% were due to unsafe sex, 3% due to injecting drug use, 3% from mother-to-child and 2% due to blood transfusion. The male to female ratio among reported HIV positive cases is 2.4:1. Majority of the HIV/AIDS cases are reported from large urban areas and from the northern and north-eastern parts of the country. While the overall HIV prevalence in Myanmar is believed to be below 1%, there is a sizeable most-at risk population (female sex workers and their clients, MSM and injecting drug users), these populations are disproportionately affected by HIV. In 2008, the prevalence of HIV ranged from 16-24% in FSW, 13-54% in IDUs and 24-33% in MSM. In selected sites, STI rates are also high among high-risk populations. Condom use in paid sex with female sex workers is reported to be high but unprotected sex among MSM and IDUs is common. The large size of high-risk population, the high prevalence of STIs, and risk behaviors, population mobility, poverty, HIV associated stigma, and limited coverage of effective prevention programs for high-risk populations are some of the important determinants that make Myanmar highly vulnerable to HIV.

### 1.2 Existing HIV strategic information system

Systematic surveillance is carried out among key population groups in selected geographical areas since 1991. Over the years, the surveillance system has expanded to include new sentinel sites, new population groups and new survey methodologies. Components of second generation surveillance system implemented in Myanmar include: HIV sentinel sero-surveillance; Risk behavior surveillance; STI surveillance, and; HIV/AIDS case reporting.

The 2008 HSS round included data from 32 sites for pregnant women, 34 sites for male STI patients, 5 sites for FSW and 6 sites for IDU, 2 sites each for MSM and new military recruits. In addition, HIV surveillance was carried out among TB patients in 10 sites. The methodology used for HIV surveillance is facility-based, e.g. samples are collected from antenatal clinics, STI clinics etc. Since 2007, NGOs have been involved in the recruitment of sample for surveillance, particularly for high-risk populations.

To track risk behaviours, behaviour surveys using respondent driven sampling were carried out among FSW in Yangon and Mandalay; among IDU in Yangon, Mandalay, Lashio and Myitkyina. Also, behaviour surveys were conducted using a probability based sample among out-of school youth in Yangon, Mandalay, Meiktila, Lashio and Monywa townships and general population (adult male and female) in Shwebo, Kawthoung and Hpa-an townships. For the first time in 2009, an integrated bio-behavioral survey was carried out among MSM in Yangon and Mandalay and behavioural surveillance survey was also conducted on high way truck drivers in Magway, Muse and Mawlamyine.

Since the beginning of the implementation of the National Strategic Plan on HIV 2006-2010 service delivery data is collected from the public sector and NGOs for each of the national indicators. These relate to the major programme components in prevention as well as care, treatment and support (such as ART, VCCT, PMCT, harm reduction and targeted prevention activities). A number of initiatives are underway to strengthen the national monitoring system, including establishment of a technical working group on M&E, decentralized data collection and reporting, standardized M&E framework, training of staff on analyses of ART data, and laboratory quality assurance systems.

## **2. Methodology of HIV estimations and projections**

### **2.1 Process**

Every two years, the NAP in conjunction with national experts and partners undertakes an exercise to update the HIV estimations and projections using the latest data and modelling software's. The process for the 2009 estimations and projections began in April 2009 when a regional training workshop was organised by UNAIDS/WHO in Bangkok. The Myanmar team attending the training workshop produced draft estimates using 2008 surveillance data and updated EPP and Spectrum models. Between May and October 2009, draft estimates were revised using a newer version of EPP (EPP 2009 Beta U) and Spectrum (version 3.41 Beta 7). The Myanmar estimates team revised the draft estimates using the newer version of EPP and Spectrum. On 5-6 October, regional consultants reviewed the methods, inputs, and assumptions and refined the draft estimates prepared by the national team.

On 7 Oct 2009, an interagency meeting was organized under the leadership of NAP, MOH, Government of Myanmar. A total of 74 participants from MOH, UN agencies, local NGOs, and International NGOs attended the workshop. The NAP presented the data inputs, assumptions, methods and results of the draft estimates were presented to the participants of the Workshop to get their consensus. The participants commented on the methods and results and discussed gaps in data quantity and quality and steps to improve HIV strategic information system in the country.

### **2.2 Overall approach**

In a two-step process, EPP was used in conjunction with the Spectrum program to produce HIV estimations and projections. In the first step, surveillance and programme data were entered into EPP. EPP provides a fit to the prevalence data using appropriate adjustments and calibrations, and generates adult HIV incidence curve. The Spectrum program reads the incidence data from EPP and then applies a more demographically correct population model to generate the total PLHIV, incidence, AIDS deaths, ART needs and other output indicators (Figure 1).

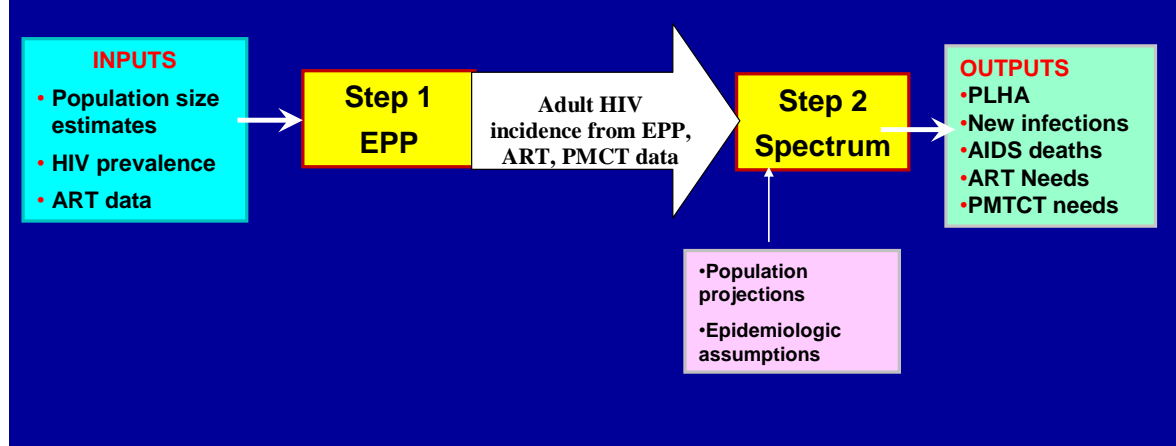
#### **Step 1 Using EPP to generate adult HIV incidence**

##### **2.2.1 Constructing the national epidemic**

According to available data, the HIV epidemic in Myanmar is primarily concentrated among high-risk populations. The following default epidemic structure for concentrated epidemic in EPP 2009 was used:

- IDU
- MSM
- Sex worker clients
- Sex workers
- Remaining male population
- Remaining female population

Figure 1. Overall approach to HIV estimations and projections



### 2.2.2 Defining population groups

Following assumptions were made regarding size and duration of risk behaviour for each population subgroup:

**Injecting drug user:** Based on past estimates, there are 75,000 (range: 60,000-90,000) IDUs in the country; 98% of IDUs are male. The EPP default value of 10 years was used to reflect the average number of years the IDUs remain active injectors. This value is consistent with the findings of the 2008 BSS among IDUs.

**Men who have sex with Men:** According to the 2007 BSS among general population, 1.8% of men reported “ever having sex with another man”. In the BSS among out-of-school youth (2008), 2.3% of male youth reported ever having sex with another man and 1.6% reported having sex with another man in the last 12 months. Applying the same ratio to general population males, the figure 1.25% was calculated as the proportion of men having sex with another man in the last 12 months. Taking 1.25% as a minimum and 1.8% as a maximum, the average of 1.53% was calculated. Applying 1.53% to the adult male population for 2008, there are an estimated 224,000 MSM (range 183,600 to 264,000). Through consensus it was decided that MSM remain sexually active for 20 years.

**Clients of sex workers:** In the 2007 survey among general population, 5.6% of adult men reported having sex with a sex worker in the last year. The population size of clients was derived by applying this rate to the adult male population (aged 15-49 years). The software default value of 5 years was applied for the duration of this group.

**Sex workers:** Based on past estimates, there are 60,000 (range: 40,000-80,000) sex workers in the country. Data from 2008 BSS indicates that FSWs engage in sex work for about 8 years.

**Male and female adult population:** The total adult male and female population size for 2008 was obtained from national population projections of Myanmar. (Source: the Planning Department, Ministry of National Planning and Economic Development) (Annex 1).

### 2.2.3 Entering HIV surveillance data

Site-wise sentinel surveillance data were entered from 1992 to 2008 for each population subgroup. Outliers were excluded. HIV prevalence among ANC attendees was used as a proxy for low-risk “remaining female population”. For sex worker clients, HIV prevalence among male STI patients was used.

### 2.2.4 Entering ART data

The total number of patients on ART in the public and NGO sector was entered, by year up to 2008. These data were interpolated for future years based on targets set for 2015. CD4<200 was used as the threshold for starting treatment. In the absence of data on cohorts of patients on treatment, it was decided to use the default value of 86% surviving at one year after start of treatment.

### **2.2.5 Calibrating the prevalence levels**

To account for bias in surveillance data, HIV prevalence data were calibrated downwards for some population groups. For “remaining female” population, ANC surveillance prevalence data were downwardly calibrated by a factor 0.25. Prevalence for clients of sex worker was calibrated by a factor 0.8. For MSM, the HIV prevalence was adjusted to a value of 10% in 2008.

### **2.2.6 Fitting the data to the model for each sub epidemic:**

For each population subgroup, a model was fitted for all data adjusting various parameters, like  $t_0$  (start year of epidemic),  $r$  (rate of growth of the epidemic),  $f_0$  (fraction of new entrants to the population going into the at-risk category), and  $\phi$  (behaviour change parameter).

### **Step 2 Using Spectrum to produce final outputs**

The UN Census population data in Spectrum was inflated by a factor 1.138 in order to align it with the national population projections. The adult HIV incidence data were read into Spectrum from EPP. Data on the numbers of adults and children on treatment were entered from start year to 2008. These data were interpolated for future years based on targets set for 2015. Similarly, data were entered and interpolated for number of pregnant women receiving single, dual and triple ARV prophylaxis regimens.

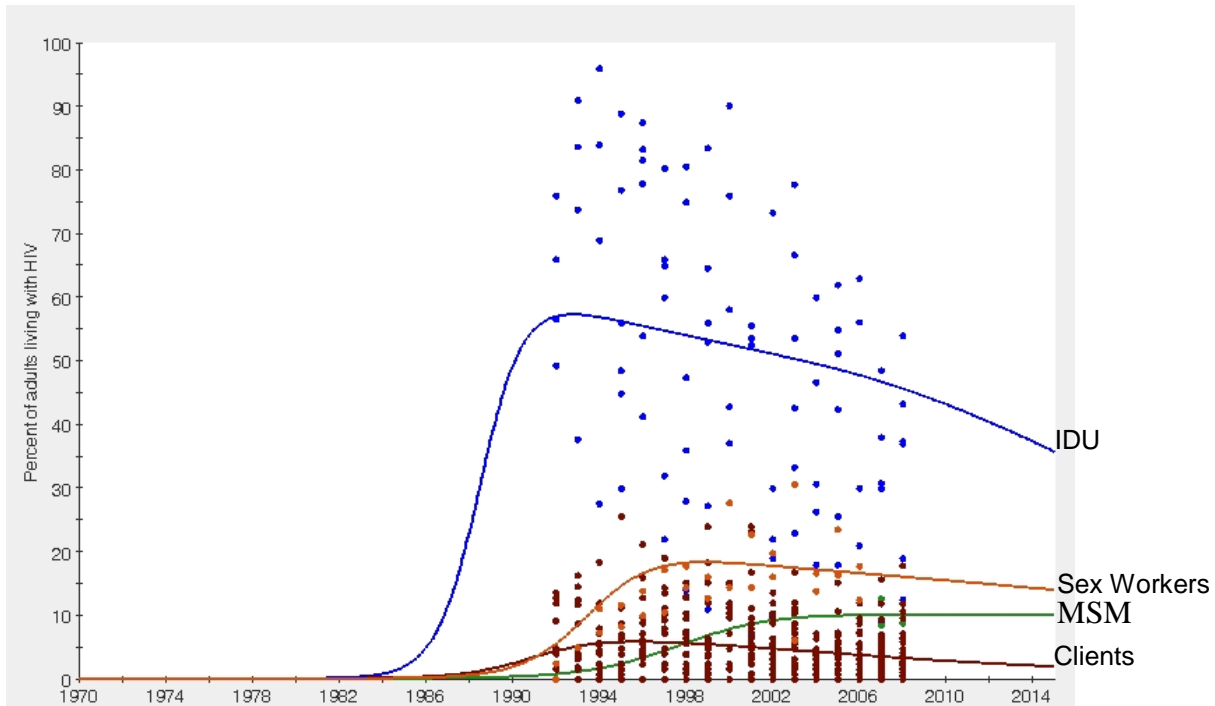


### 3. Results

#### 3.1 Trends in HIV prevalence

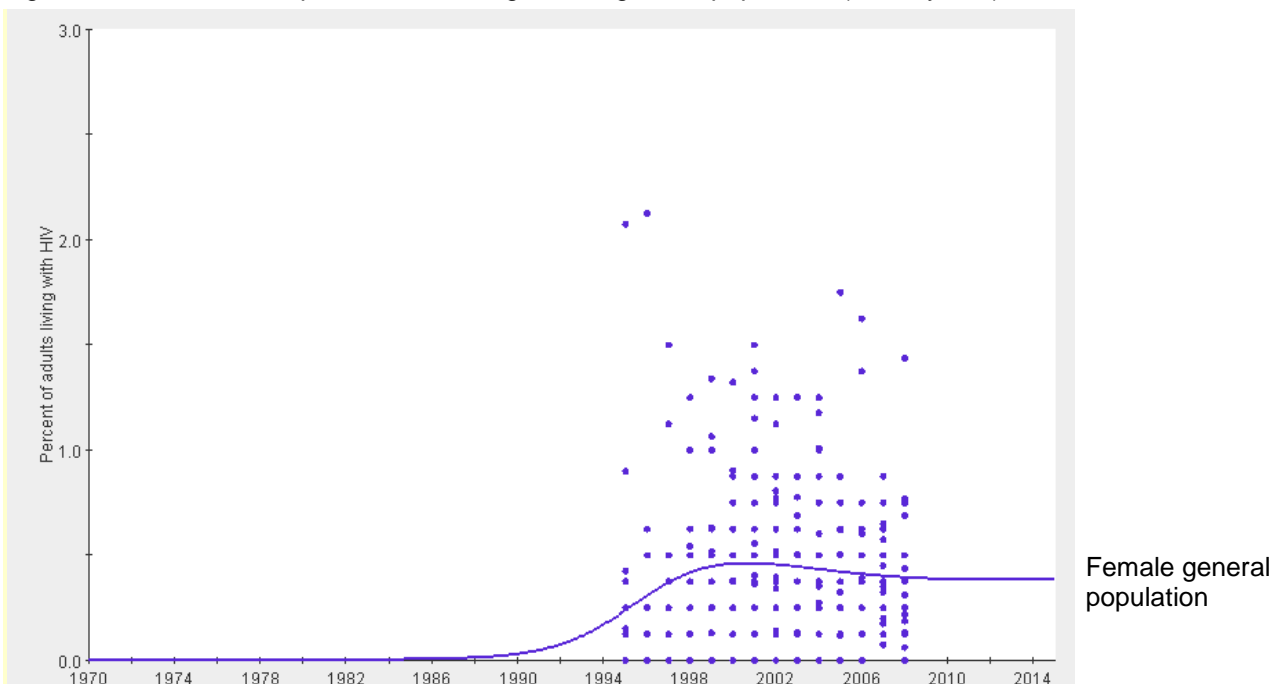
Figure 2 shows HIV prevalence trends among IDU, FSW/clients and MSM. Notably, HIV prevalence is decreasing among all high-risk groups except MSM.

Figure 2. Trends in HIV prevalence among high-risk population groups



Among lower-risk female population, HIV prevalence peaked around 2000 and since then, there is a very slow decline (Figure 3).

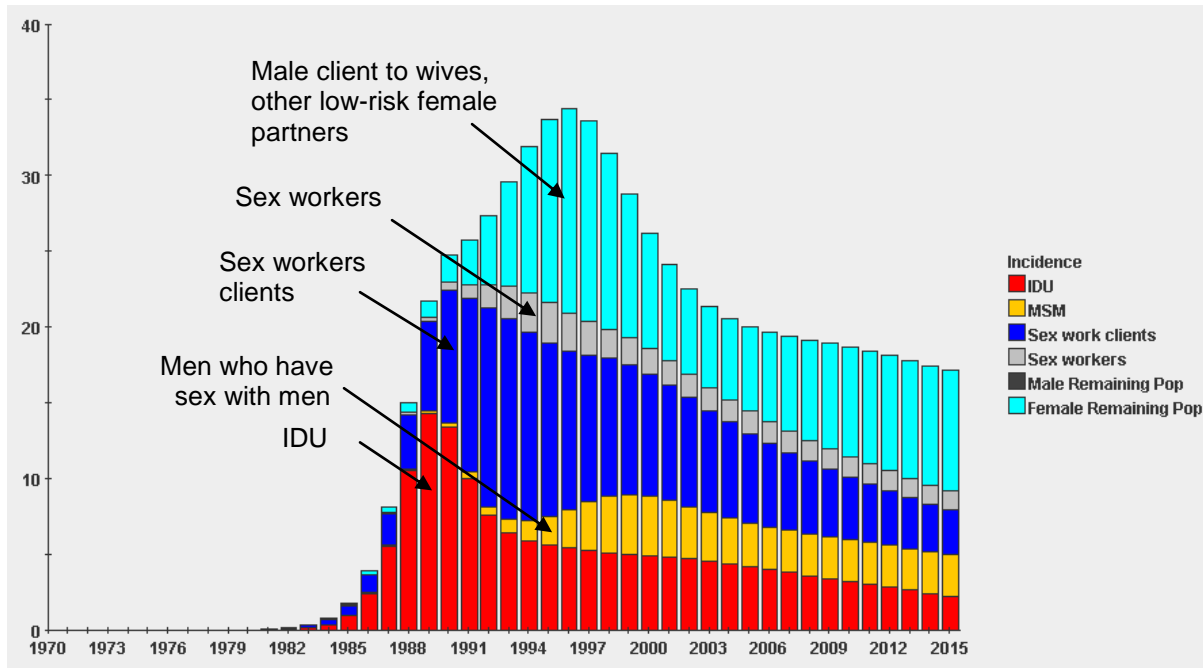
Figure 3. Trends in HIV prevalence among female general population (15-49 years)



### 3.2 HIV incidence

Figure 4 shows trends in distribution of new HIV infections by subpopulation group. Like in other Asian countries, IDU was the first group to be affected. HIV incidence in IDUs peaked in the early 1990s. The IDU epidemic was followed by increase in cases among sex workers and their clients. Finally, following the infection of a large number of male clients of sex worker, HIV incidence reached a peak in the low-risk female population due to transmission from male clients to their low-risk female partners.

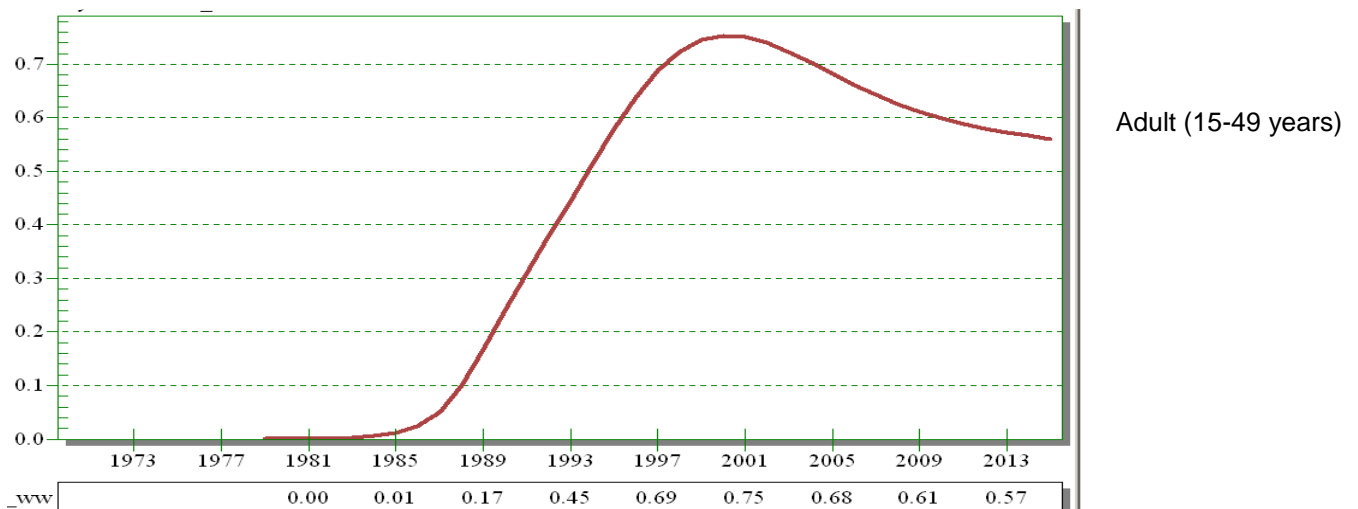
Figure 4. Trends in the distribution of new HIV infections by population subgroup



### 3.3 Impact Results

The following section presents the main results/outputs from Spectrum programme. In 2009, approximately 238,000 people are living with HIV, including children. The adult HIV prevalence is 0.61%. The adult HIV prevalence peaked around 2000-2001 and since then there is a steady decline (Figure 5).

Figure 5. Trends in adult HIV prevalence (15-49 years)



Spectrum can calculate the range of plausible values for each of the output indicators. The process uncertainty analysis was carried out to generate the average curve and the 95% plausibility bounds. The adult HIV prevalence in Myanmar is between 0.52% and 0.71% with the median value of 0.61% as shown in Figure 6.

Figure 6. Range of adult HIV prevalence (15-49 years)

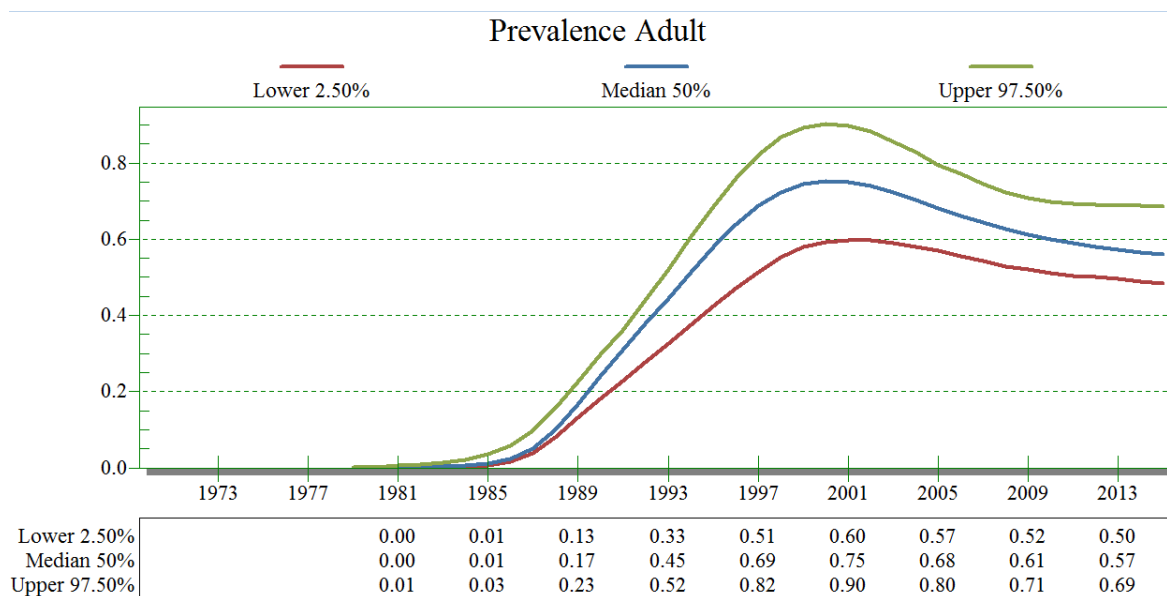
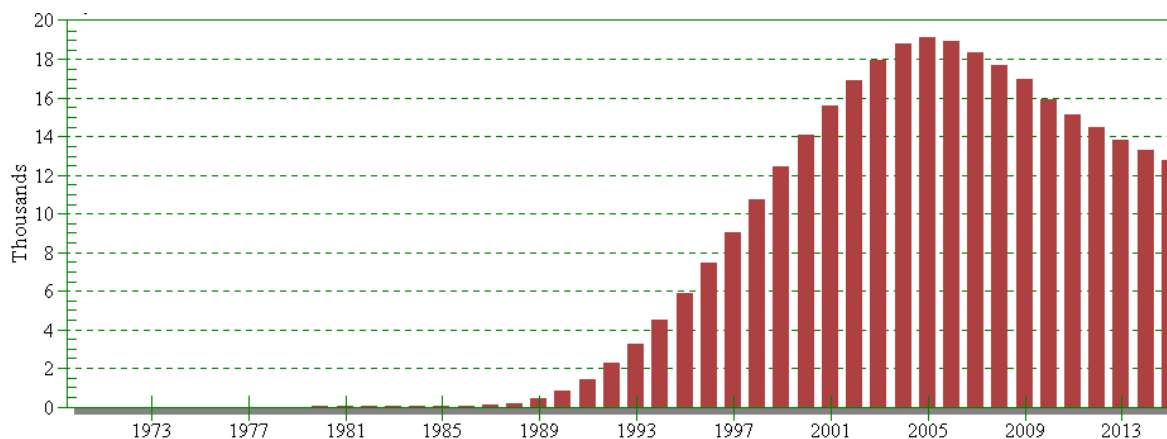


Figure 7 shows that the burden of HIV related deaths after peaking at 19,000 in 2005, has begun to come down. The decrease corresponds with the expected increased access to ART since 2005 in the public and NGO sectors.

Figure 7. Annual AIDS deaths among adult population (aged >15 years)



The HIV/AIDS epidemic in Myanmar has been mostly concentrated in men with the male to female ratio declining from 8 to 1 in 1993 to 1.9 to 1 in 2009. By 2015, it is projected that the male to female ratio will be 1.6:1. Thus the number of women infected has been increasing gradually. These women are largely the married partners of current and former sex worker clients, injecting drug users, and men who have sex with men.

Applying the fertility rate to these women it is possible to estimate the number of women who are pregnant and HIV infected. The estimated number of pregnant women who carry the HIV virus amounts to about 4,300 in 2009.

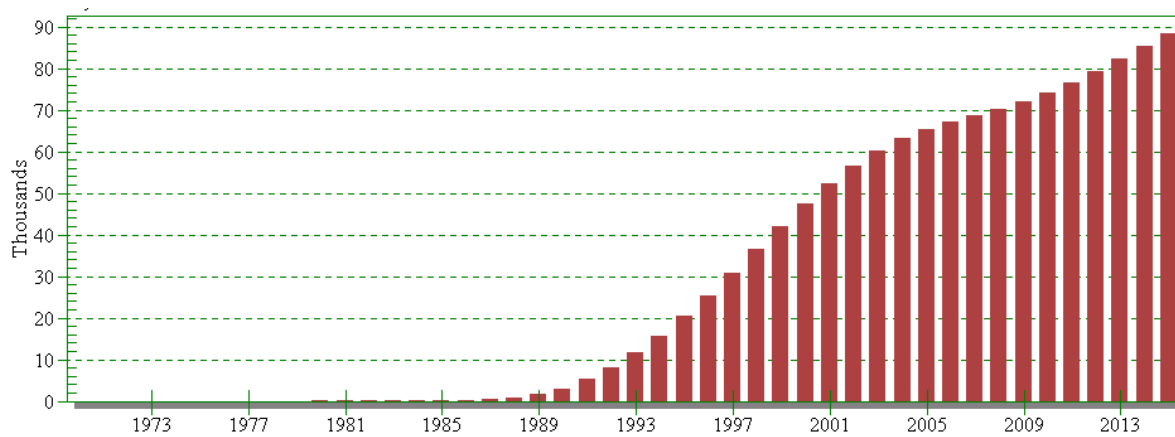
Many of these women will pass HIV on to their newborn children, even with the expansion of MTCT programs expected to occur in Myanmar. The estimated number of children needing treatment in 2009 is 1,900.

In Myanmar, ART is provided by the NAP, International NGOs and local NGOs. Currently, approximately 15,000 patients are on treatment. Estimates of the number of people needing ARV in a given year are based on the NAP

ART guideline recommendations from 2006. According to the national ART guidelines, patients with CD4 <200 should receive ART and those with CD4 200-350 can be considered for treatment. Using a threshold of CD4 <200, approximately 72,000 adults will need ART in 2009. However, as more and more people who need treatment get on treatment, the need for ART will increase as more people will survive longer (Figure 8).

It is likely, that the new WHO ART guidelines will propose starting HIV infected persons on ART earlier, i.e., at CD4 <350 cmm. If and when the national guideline are revised to reflect this change, i.e, start treatment at CD4 <350, then the adult ART needs will accordingly increase.

Figure 8. Number of adults with advanced HIV infection in need of antiretroviral treatment



### 3.4 Summary tables

The following tables present key output indicators for adults and children using the methods described above.

**Table 1. HIV/AIDS Summary - Overall ( Adults and Children)**

	2008	2009	2010	2011	2012	2013	2014	2015
<b>Total people living with HIV/AIDS</b>								
Total	239,408	237,684	236,724	236,261	236,145	236,090	236,307	236,691
Males	157,348	154,690	152,709	151,188	149,941	148,794	147,833	146,996
Females	82,060	82,994	84,015	85,073	86,204	87,296	88,474	89,695
<b>Adult HIV prevalence (15-49)</b>	0.63	0.61	0.60	0.59	0.58	0.57	0.57	0.56
<b>Number of new HIV infections</b>								
Total	17,392	17,101	16,695	16,226	15,731	15,330	14,895	14,481
Males	10,953	10,710	10,408	10,071	9,662	9,308	8,940	8,593
Females	6,439	6,391	6,287	6,155	6,068	6,021	5,955	5,888
<b>Annual AIDS deaths</b>								
Total	18,376	17,566	16,425	15,484	14,664	13,979	13,430	12,919
Males	13,154	12,405	11,452	10,678	10,014	9,452	8,983	8,552
Female	5,222	5,161	4,973	4,807	4,650	4,527	4,447	4,367

**Table 2. Estimated prevalence, incidence and mortality for 15+ population, 2008-2015**

	2008	2009	2010	2011	2012	2013	2014	2015
<b>HIV population</b>								
Total	235,070	233,033	231,830	231,159	230,881	230,902	231,116	231,504
Males	155,142	152,324	150,219	148,592	147,263	146,155	145,193	144,359
Females	79,928	80,709	81,610	82,566	83,618	84,747	85,923	87,146
<b>Adult prevalence</b>	0.56	0.54	0.53	0.52	0.51	0.51	0.5	0.5
<b>New HIV infections</b>								
Total	16,349	16,107	15,843	15,525	15,191	14,838	14,431	14,042
Males	10,419	10,201	9,972	9,712	9,386	9,057	8,703	8,369
Females	5,930	5,906	5,871	5,813	5,805	5,781	5,728	5,674
<b>Incidence (15-49)</b>	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03
<b>Annual AIDS deaths</b>								
Total	17,726	17,004	15,953	15,146	14,461	13,848	13,284	12,759
Males	12,823	12,119	11,211	10,505	9,911	9,386	8,909	8,471
Females	4,903	4,885	4,741	4,641	4,551	4,463	4,375	4,288
<b>Total need for ART</b>								
Total	70,291	72,146	74,186	76,631	79,363	82,265	85,275	88,359
Male	47,958	48,558	49,340	50,454	51,799	53,281	54,845	56,462
Female	22,333	23,588	24,846	26,177	27,564	28,985	30,430	31,897
<b>Total number receiving ART</b>								
Total	15,191	22,307	29,422	36,538	43,653	50,769	57,884	65,000
Male	10,402	15,084	19,675	24,189	28,632	33,012	37,334	41,603
Female	4,789	7,223	9,747	12,349	15,021	17,757	20,550	23,397
Coverage (%)	21.6	30.9	39.7	47.7	55	61.7	67.9	73.6
<b>Number in need of first line therapy</b>								
Total	70,291	72,146	74,186	76,631	79,363	82,265	85,275	88,359
Male	47,958	48,558	49,340	50,454	51,799	53,281	54,845	56,462
Female	22,333	23,588	24,846	26,177	27,564	28,985	30,430	31,897
<b>Number newly needing first line therapy</b>								
Total	20,750	20,360	19,911	19,428	18,930	18,429	17,935	17,449
Male	14,432	13,987	13,519	13,047	12,581	12,129	11,692	11,271
Female	6,318	6,374	6,392	6,382	6,349	6,301	6,243	6,178
<b>Number receiving first line therapy</b>								
Total	15,191	22,307	29,422	36,538	43,653	50,769	57,884	65,000
Male	10,402	15,084	19,675	24,189	28,632	33,012	37,334	41,603
Female	4,789	7,223	9,747	12,349	15,021	17,757	20,550	23,397
Coverage (%)	21.6	30.9	39.7	47.7	55	61.7	67.9	73.6
<b>Number receiving second line therapy</b>								
Total	0	0	0	0	0	0	0	0
Male	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	0	0	0
<b>Unmet need for first line therapy</b>								
Total	57,099	53,397	48,322	43,651	39,267	35,054	30,949	26,917
Male	38,844	35,760	31,903	28,459	25,319	22,383	19,591	16,906
Female	18,256	17,637	16,419	15,193	13,948	12,671	11,358	10,011

**Table 3. Estimated prevalence, incidence and mortality for adult (15-49 years) population, 2008-2015**

	2008	2009	2010	2011	2012	2013	2014	2015
<b>HIV population</b>								
Total	204,679	201,736	199,529	197,782	196,366	195,193	194,161	193,254
Males	132,570	129,343	126,743	124,558	122,617	120,851	119,191	117,624
Females	72,109	72,394	72,786	73,224	73,750	74,342	74,969	75,630
<b>Adult prevalence</b>	0.63	0.61	0.60	0.59	0.58	0.57	0.57	0.56
<b>New HIV infections</b>								
Total	15,900	15,665	15,409	15,101	14,777	14,435	14,039	13,662
Males	10,095	9,884	9,662	9,410	9,094	8,775	8,432	8,108
Females	5,805	5,781	5,747	5,691	5,683	5,660	5,607	5,554
<b>Incidence (15-49)</b>	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04
<b>Annual AIDS deaths</b>								
Total	14,317	13,606	12,649	11,903	11,265	10,689	10,155	9,651
Males	10,106	9,448	8,651	8,025	7,496	7,026	6,597	6,198
Females	4,211	4,158	3,998	3,878	3,769	3,663	3,558	3,453
<b>Total need for ART</b>								
Total	57,155	58,048	59,048	60,323	61,772	63,302	64,867	66,446
Male	37,925	37,934	38,071	38,442	38,962	39,557	40,186	40,833
Female	19,230	20,114	20,977	21,881	22,810	23,745	24,680	25,613
<b>Total number receiving ART</b>								
Total	15,191	22,307	29,422	36,538	43,653	50,769	57,884	65,000
Male	10,402	15,084	19,675	24,189	28,632	33,012	37,334	41,603
Female	4,789	7,223	9,747	12,349	15,021	17,757	20,550	23,397
<b>Number in need of first line therapy</b>								
Total	57,155	58,048	59,048	60,323	61,772	63,302	64,867	66,446
Male	37,925	37,934	38,071	38,442	38,962	39,557	40,186	40,833
Female	19,230	20,114	20,977	21,881	22,810	23,745	24,680	25,613
<b>Number newly needing first line therapy</b>								
Total	17,375	16,940	16,474	15,998	15,528	15,071	14,633	14,214
Male	11,813	11,367	10,920	10,485	10,070	9,678	9,309	8,960
Female	5,562	5,573	5,554	5,513	5,458	5,393	5,325	5,254
<b>Number receiving first line therapy</b>								
Total	15,191	22,307	29,422	36,538	43,653	50,769	57,884	65,000
Male	10,402	15,084	19,675	24,189	28,632	33,012	37,334	41,603
Female	4,789	7,223	9,747	12,349	15,021	17,757	20,550	23,397
<b>Number receiving second line therapy</b>								
Total	0	0	0	0	0	0	0	0
Male	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	0	0	0
<b>Unmet need for first line therapy</b>								
Total	46,565	43,209	38,840	34,899	31,268	27,836	24,537	21,332
Male	30,819	28,120	24,898	22,082	19,565	17,252	15,082	13,017
Female	15,746	15,089	13,942	12,817	11,703	10,584	9,455	8,315

**Table 4. HIV indicators among children ( 0-14 years ), 2008-2015**

	2008	2009	2010	2011	2012	2013	2014	2015
<b>HIV population</b>								
Total	4,338	4,651	4,894	5,102	5,264	5,188	5,191	5,186
Males	2,207	2,366	2,490	2,595	2,678	2,639	2,640	2,637
Females	2,131	2,285	2,404	2,506	2,586	2,549	2,551	2,549
<b>New HIV infections</b>								
Total	1,043	994	852	701	539	491	464	439
Males	534	509	436	359	276	251	237	225
Females	509	485	416	342	263	240	227	215
<b>Annual AIDS deaths</b>								
Total	650	562	472	339	202	130	146	160
Males	331	286	241	173	103	66	74	81
Females	319	275	231	166	99	64	72	79
<b>Children needing cotrimoxazole</b>								
Total	9,426	9,576	9,768	9,911	10,025	10,184	10,302	10,279
Male	4,813	4,889	4,987	5,059	5,117	5,198	5,257	5,245
Female	4,612	4,687	4,782	4,852	4,908	4,986	5,044	5,034
<b>Children receiving cotrimoxazole</b>								
Total	0	0	0	0	0	0	0	0
Male	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	0	0	0
<b>Children needing ART</b>								
Total	1,848	1,912	1,909	1,843	1,737	1,770	1,815	1,941
Male	942	974	972	938	884	901	923	987
Female	907	938	937	905	853	869	892	954
<b>Children receiving ART</b>								
Total	690	877	1,064	1,251	1,439	1,626	1,813	2,000
Male	351	446	541	636	731	826	921	1,016
Female	339	431	523	615	707	799	892	984
<b>PMCT</b>								
Number of HIV+ pregnant women	4,433	4,328	4,243	4,160	4,080	4,004	3,953	3,927
Mothers needing PMCT	3,768	3,679	3,606	3,536	3,468	3,403	3,360	3,338
Mothers receiving PMCT	1,780	1,447	2,089	2,731	3,374	3,403	3,360	3,338
PTR (%)	28	27	24	20	16	14	14	13



**Table 5. Distribution of PLHIV by age and by sex, 2009-2012**

Age	2009			2010			2011			2012		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
<b>0-4</b>	2,337	1,190	1,147	2,342	1,193	1,149	2,339	1,192	1,148	2,273	1,158	1,115
<b>5-9</b>	1,529	777	752	1,636	831	804	1,722	875	847	1,839	935	904
<b>10-14</b>	785	399	386	916	465	451	1,041	529	512	1,152	585	567
<b>15-19</b>	8,953	4,647	4,305	8,865	4,566	4,299	8,802	4,498	4,304	8,761	4,430	4,331
<b>20-24</b>	24,327	13,297	11,030	23,751	12,936	10,814	23,299	12,631	10,668	22,921	12,343	10,578
<b>25-29</b>	35,643	20,493	15,150	34,490	19,728	14,762	33,490	19,092	14,398	32,656	18,554	14,102
<b>30-34</b>	39,502	25,057	14,444	39,069	24,388	14,681	38,603	23,772	14,831	38,073	23,184	14,889
<b>35-39</b>	36,878	25,405	11,473	36,812	25,012	11,800	36,804	24,671	12,132	36,828	24,355	12,473
<b>40-44</b>	31,625	22,569	9,055	31,644	22,324	9,320	31,745	22,148	9,597	31,903	22,018	9,885
<b>45-49</b>	24,810	17,874	6,936	24,898	17,788	7,109	25,039	17,746	7,293	25,225	17,733	7,491
<b>50-54</b>	16,647	11,952	4,694	16,897	12,024	4,872	17,170	12,123	5,047	17,460	12,242	5,218
<b>55-59</b>	9,127	6,661	2,465	9,429	6,808	2,621	9,746	6,969	2,777	10,075	7,141	2,934
<b>60-64</b>	3,931	3,005	926	4,195	3,156	1,040	4,469	3,314	1,156	4,750	3,478	1,272
<b>65-69</b>	1,230	1,026	204	1,365	1,108	257	1,515	1,200	315	1,681	1,301	380
<b>70-74</b>	289	266	23	330	299	31	379	336	42	435	377	58
<b>75-79</b>	58	55	3	68	65	3	80	75	4	93	87	6
<b>80+</b>	16	15	0	17	16	0	18	18	0	20	20	1
<b>Total</b>	237,684	154,690	82,994	236,724	152,709	84,015	236,261	151,188	85,073	236,145	149,941	86,204

## **4. Limitations**

The results presented in this report are the best estimates that are possible with the available information in the country. However, these results should be interpreted in the light of several limitations related to the tools, models and input data.

### **4.1 Limitations of tools/models:**

EPP uses HIV prevalence data and programme data and various statistical parameters to estimate and project HIV burden. The combination of EPP and Spectrum cannot explore impact of prevention program among key sub-populations. For this, one would need to undertake a more detailed analysis of both HIV prevalence AND risk behaviour trends. This can be done with a variety of methods, including simple spreadsheets and/or more complex models such as the Asia Epidemic Model (AEM).

### **4.2 Limitations of data for high-risk population groups**

**4.3** Reliable estimates for the size of high-risk populations are unavailable. The estimates used in the current exercise were based on the best available data and or consensus among experts. However, the current size estimates have not been confirmed through assessment and research. Also, a systematic exercise has not been undertaken to make national level estimates for each population group.

**4.3.1** Surveillance data for high-risk group populations are not geographically representative. Almost all sentinel surveillance sites are located in few urban areas. There are only 5 sites for FSW and 2 sites for MSM. Moreover these data are from facility based surveillance. No data are available from community based samples.

**4.3.2** The definitions of population/subpopulations are not specific/clear or consistent. Moreover, different surveys use different definitions making it difficult to compare and analyse results.

**4.3.3** There are almost no data available on clients of sex workers. The use of male STI patients as a proxy for sex worker clients produces biased results.

**4.3.4** Very limited data are available on MSM. There are just two sites in large urban areas capturing the highest risk “visible” MSM population which is not representative of the entire MSM population.

**4.3.5** Drug use patterns in some areas are changing from injecting to other forms. Data on the size of drug user population and their sexual behaviors is limited. Also, there is little data on female injecting drug users.

### **4.4 Limitations of routine programme/service delivery data**

**4.4.1** Lack of standard recording and reporting formats for various programme components.

**4.4.2** Delays and incomplete reporting by different agencies. No data collection from the private sector.

**4.4.3** Lack of co-ordination among different agencies for reporting and compiling, analysing and using data.

**4.4.4** Lack of data on ART cohort analyses.

**4.4.5** Inadequate mechanisms for checking quality of reported data.

**4.4.6** Inadequate analyses and feedback of data.

**4.4.7** Lack of human resources at all levels for programme data collection, compilation and analyses

## **5. Recommendations**

- 1. Improve collaboration among institutions and partners for collecting and reporting HIV data**
  - a. Use a partnership approach with local authorities and agencies for collecting data particularly for high-risk groups.
  - b. Assign a focal person at each level (township, state, central) to be responsible for co-ordination of data collection, reporting, analyses and use
- 2. Use a systematic approach to make national level size estimates for high-risk populations through additional studies and consensus**
  - a. Ensure that clear/specific definitions are used to define each high-risk group.
  - b. Undertake size estimates of high-risk populations in hot spots, border towns, large cities, mining areas etc.
  - c. Assessments and size estimates should be conducted in additional sites including Western Myanmar and selected rural areas
- 3. Expand and strengthen surveillance in men who have sex with men, clients of sex workers, drug users; undertake integrated bio-behavioral surveys (IBBS) to obtain community based sample of high-risk population**
  - a. Improve surveillance among MSM by increasing the number of sites to include other big cities. Also, increase the number of venues for recruitment of sample, such as, park, public underground toilet, spa, square, fire watcher tent, beauty parlor, festivals, etc.
  - b. Increase geographical representativeness of surveillance data by expanding surveillance to additional urban areas, border towns, junction of economic zones, mining areas, selected peri-urban and rural areas.
  - c. Include clients of sex workers in surveillance. For example truckers, businessmen, seafarers, trishaw-men, service personnel. Analyses of VCCT data by these sub groups may yield useful data on clients.
  - d. Undertake integrated biological and behavioral survey in selected areas to obtain more representative data.
  - e. Improve the existing survey instruments by including more specific/relevant questions.
  - f. Analyze data on the arrest of drug users per township and by drug used to identify where HIV may be emerging.
- 4. Standardize programme related data collection and reporting (formats) and improve timeliness of reporting**
  - a. Strengthen human resources for data collection, reporting and analyses at all levels.
  - b. Avoid reporting delays by identifying and designating a focal person responsible and accountable for programme data reporting at township and central level.
  - c. Standardize reporting forms for each programme component for the public and NGO sector.
  - d. Collect disaggregated data for selected indicators, example for people on treatment, collect data for adults and children by sex and by population risk group.
- 5. Undertake priority quantitative and qualitative research and improve the utilization of research in programmatic reforms. Selected research topics are:**
  - a. Qualitative, in-depth research to improve definitions of each high-risk population
  - b. Social networking among indirect sex workers
  - c. Definition of "high-risk" MSM and who need targeted interventions
  - d. Qualitative study among MSM about social networks, risk behaviors and concurrency of partners

- e. Determinants of risk behaviors among high-risk population
- f. Changing patterns of drug use
- g. Antiretroviral drug resistance surveys
- h. Appropriate CD4 threshold to start ART
- i. Sources of referral for ART
- j. Factors influencing access to VCCT (availability, barriers, demands, service seeking behaviour, esp. among high risk group population)
- k. Frequency of repeat HIV testing
- l. Quality of VCCT, especially counseling
- m. Impact of VCCT on behaviours
- n. Coverage of pregnant women accessing PMCT services
- o. Infant feeding practices

**6. Analyze, interpret and use existing data for programmatic action**

- a. PMCT data can be explored to analyze urban/rural differentials in HIV prevalence among pregnant women
- b. Analysis of VCCT data can provide additional insight into HIV prevalence among different populations groups and geographical areas.
- c. Cohort analyses of patients on ART should be undertaken to evaluate treatment outcomes and survival of patients on treatment
- d. Develop a relational database analyses at the central level to triangulate data for a single geographical unit from multiple sources

## 6. Summary

- Modelling of HIV data show that HIV prevalence in Myanmar peaked in 2001-2002 and has been slowly declining since then. The HIV incidence peaked a few years earlier and is also showing a slow decline.
- Like in other Asian countries, there are three distinct waves of the epidemic. The first group to be affected was the injecting drug users. Next, the sex workers and their male clients were most affected. Finally, transmission from male clients to their wives/other female partners resulted in lower-risk female population being increasingly infected. Although a large number of low-risk female have become infected, IDUs, MSM and sex workers continue to have the highest incidence rate of HIV infection.
- In 2009, an estimated 238,000 people are living with HIV/AIDS. The adult HIV prevalence is 0.61%.
- Currently, there are approximately 17,000 new HIV infections each year. Nearly 60% of all new infections are among sex workers and their clients, MSMs and IDUs.
- The number of AIDS deaths is showing a downward trend since 2005. Currently, there are approximately 17,500 AIDS deaths per year.
- Roughly 74,000 (including old and new persons needing treatment) people in Myanmar are currently in need of antiretroviral care and this number will continue to increase over the next years as more people are put under ART.
- Roughly 4,300 HIV-positive women will give birth annually. As PMCT programme expand, fewer number of children will be born with HIV. Approximately 1,900 children are in need of ART in 2009.

**Annex. Total and adult population, by sex, 2008**

**Population (2008)**

➤ Total Population	-	57,504,000
➤ 15+ Population	-	38,933,000
➤ Total Male Population	-	28,586,000
➤ 15+ Male Population	-	19,230,000
➤ Total Female Population	-	28,918,000
➤ 15+ Female Population	-	19,703,000

Source: Planning Department, Ministry of National Planning and Economic Development

