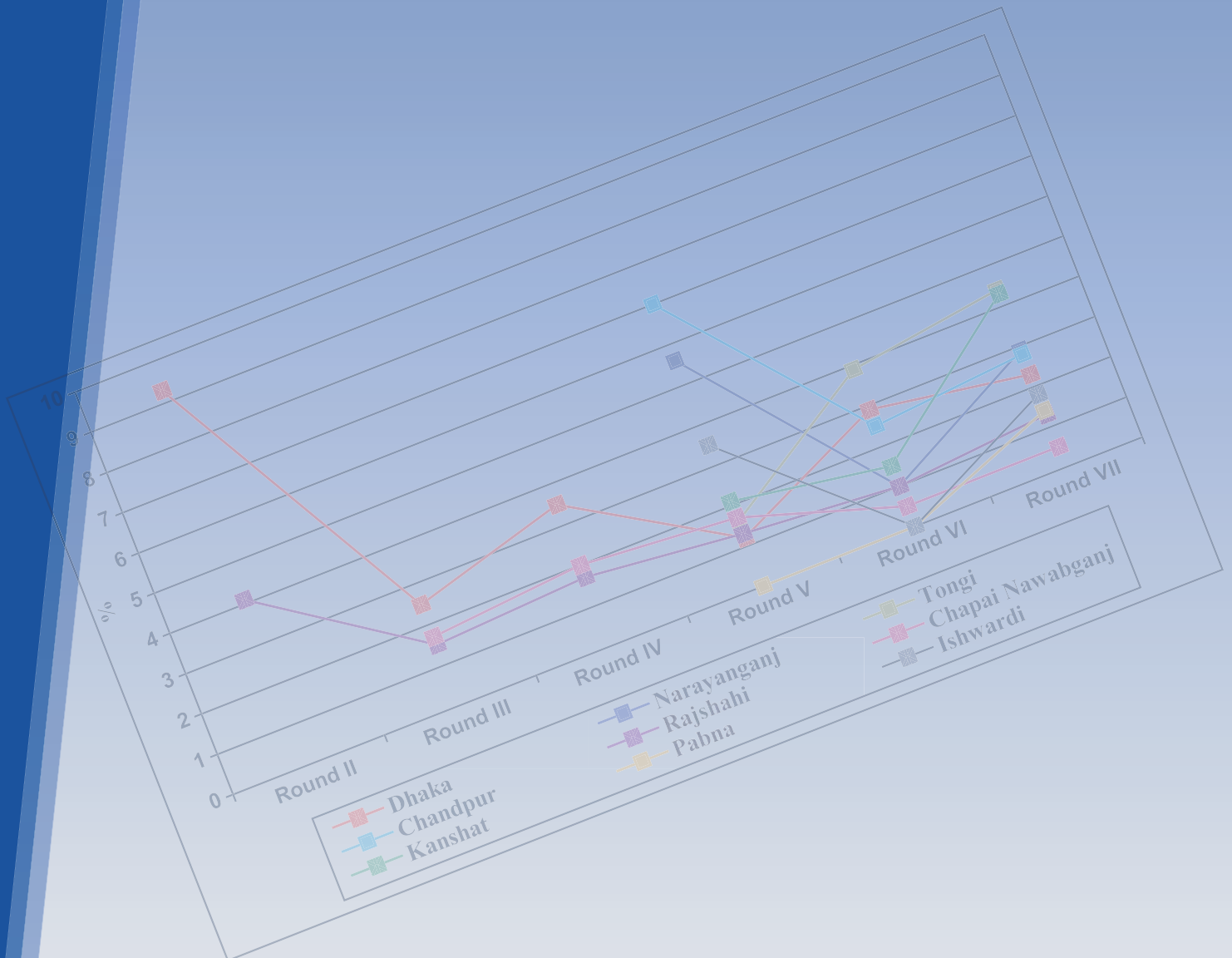


National HIV Serological Surveillance, 2006 Bangladesh

7th Round Technical Report

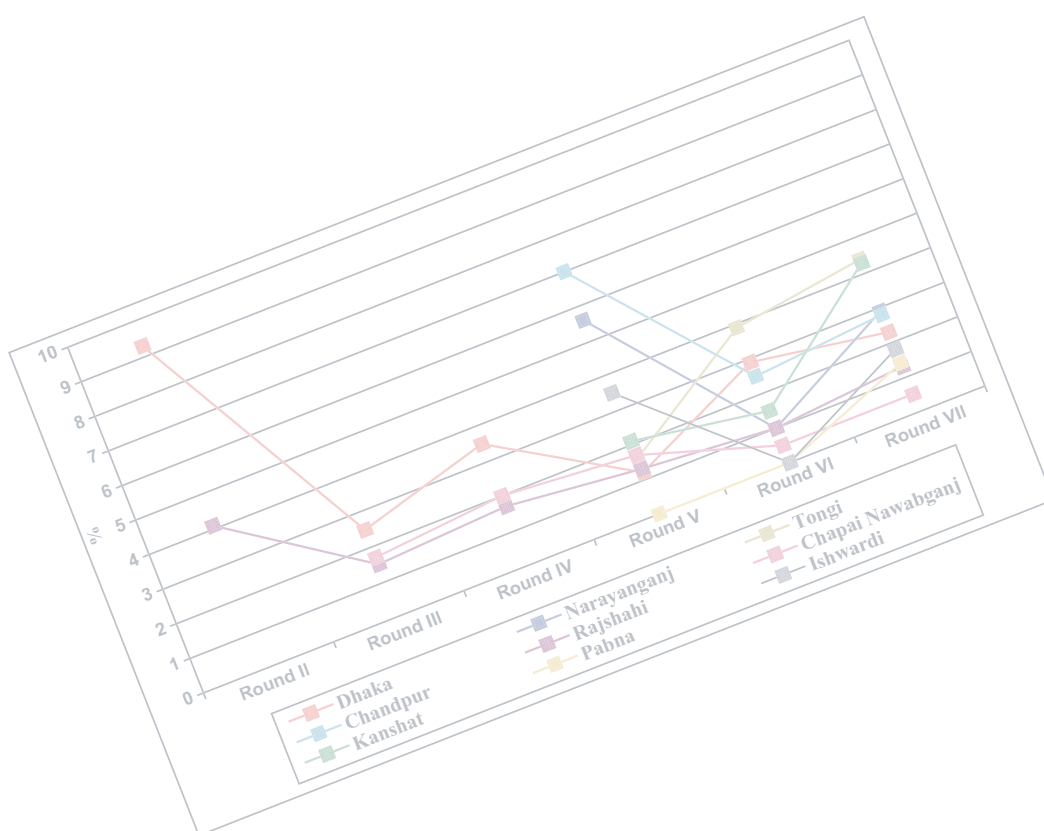


NATIONAL AIDS/STD PROGRAMME (NASP)
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of the Peoples Republic of Bangladesh



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FOREWORD

This report summarises the findings of the 7th round of HIV serological surveillance, which has been carried out during the period from January – June 2006. On behalf of the Government of Bangladesh, ICDDR,B in close collaboration with Institute of Epidemiology, Disease Control and Research (IEDCR) conducted the surveillance.

This report documented a concentrated epidemic of HIV (7%) among male Injection drug users (IDU) in Dhaka. This is the first time that Bangladesh has recorded >5% HIV prevalence in any most-at-risk-population which is the cut-off between a low prevalence and a concentrated epidemic state. Thus Bangladesh has now moved from being a low prevalence country for HIV to one with a concentrated epidemic among IDU. HIV has also been detected, albeit at very low levels among injectors from new sites or cities, from sex workers (males and females) and males having sex with males. However, the data from the 7th round of serological surveillance also shows that the HIV epidemic among IDU in Dhaka has remained localised within one neighbourhood so that concentrated efforts targeted to that neighbourhood can help prevent spread of the epidemic. Moreover, declines in active syphilis rates among sex workers and IDU from many sites have been documented.

The Government of Bangladesh is committed to an evidence based approach for programming. The data being presented in this document is of importance for these efforts. The experience of other HIV affected countries tells us that early action is essential to prevent escalation and spread of the epidemic from most-at-risk-population groups to the general population. It is also the most cost effective option for a country with limited resources like ours to halt the spread of HIV virus before the economic burden becomes too large to bear. Stigmatisation of the most at risk population groups like IDU will not help in stemming the epidemic, as it will only serve to drive them underground. Rather, an open minded and humane approach is essential to allow intervention programmes to be able to reach people who are extremely marginalized for effective services.

Our nation is being confronted by HIV epidemic, and we have to respond to safeguard our future. No single agency can solely be responsible, but a collective coordinated response from the Government, donors, NGOs and community bodies is called for.

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Ministry of Health and Family Welfare

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The 7th round of annual HIV surveillance is the result of the combined efforts and contributions of many individuals and organisations. Thanks are due to all those listed below as well as to the many participants who gave their blood and shared some of their personal information.

The National AIDS/STD Programme (NASP), Directorate General of Health Services, Ministry of Health and Family Welfare, is responsible for HIV surveillance in Bangladesh. The 7th round was conducted by ICDDR,B in close collaboration with the Institute of Epidemiology, Disease Control and Research (IEDCR) and the funding was provided by GOB/DFID/IDA.

A large number of NGOs, private organisations and community groups participated in the surveillance by providing access to the vulnerable population groups and helped in various aspects of the surveillance. These organisations are listed in annexe 3.

The Principal Investigators (PI) were Dr Tasnim Azim, Laboratory Sciences Division (LSD) ICDDR,B and Prof (Dr) Mahmudur Rahman, PhD, Director, Institute of Epidemiology, Disease Control and Research (IEDCR). Co-investigators were Dr Md Shah Alam, LSD, ICDDR,B and Dr Motiur Rahman, LSD, ICDDR,B. Dr Imtiaz Ashraf Choudhury, IEDCR, DGHS helped in coordination of field activities. Mr Md Humayun Kabir, LSD, ICDDR,B provided support in the field management as and when required. Laboratory staffs for serological surveillance were Dr Khandokar Mahbuba Jamil, Dr ASM Alamgir, Mr Mohammed Repon Khan, Mr Md Zafrul Hasan, Mr Palash Chandra Karmakar, Mr Md Zahid Hassan, Mr Sk Abdul Matin, Mr A Karim and Mrs Anjuman Ara. Field staffs for serological surveillance were Mr S M Akramul Haque, Mr Md Awlad Hossain, Mr Abdus Salam, Mr Kazi Nurul Haque, Mr Porimol Sarker, Mr Md Reaz Uddin Ahmed, Mr Md Mahbubur Rahman, Mr Gour Nitai Halder, Mr Ashish Kumar Sarker, Mr Md Ahsan Ullah, Mr Basu Deb Mallick, Mr Amal Sarker, Mr. Mazharul Islam, Mr Md Abul Kalam, Mr Md Saiful Alam, Mr Raquibur Rahman, Mr Md Aynal Sarder, Mr Farid Ahmed, Mr Md Nayebur Rahman, Mr Sarwar Hossain, Mr Md Mizanur Rahman, Mr Hamidul Islam, Mr Manzurul Alam, Mr Abu Jafar, Mr Abdullah Al Mamun, Mr Meganur Rahman Patwary, Mr Kartic Chandra Das and Mr Md Morshed Alam Khan. Data analysis support was provided by Mr Masud Reza, LSD, ICDDR,B and data entry was done by Mr Mohammed Sha Al Imran, Mst Salima Sultana and Mr Md Abdul Hakim. All logistics and administrative support was provided by Mr Mohammed Ishaque, LSD, ICDDR,B.

The Surveillance Advisory Committee, which is chaired by the chairperson of the TC-NAC, provided advice and direction throughout the surveillance round. The members of the Surveillance Advisory Committee are listed in annexe 4.

ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CBO	Community Based Organisation
DFID	Department for International Development
DIC	Drop in Centre
DGHS	Directorate General of Health Services
ELISA	Enzyme Linked Immunosorbent Assay
GOB	Government of Bangladesh
HIV	Human Immunodeficiency Virus
HSID	Health Systems and Infectious Diseases Division
HCV	Hepatitis C Virus
ICDDR,B	International Centre for Diarrhoeal Diseases Research, Bangladesh
IDA	International Development Association
IDU	Injection Drug User
IEDCR	Institute of Epidemiology, Disease Control and Research
LSD	Laboratory Sciences Division
LIA	Line Immuno Assay
MOHFW	Ministry of Health and Family Welfare
MSM	Males Who Have Sex With Males
MSW	Male Sex Worker
NASP	National AIDS/ STD Programme
NEP	Needle/syringe Exchange Programme
NGO	Non-Government Organisation
RPR	Rapid Plasma Reagin
SAC	Surveillance Advisory Committee
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
TPPA	<i>Treponema Pallidum</i> Particle Agglutination Assay
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organisation

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EXECUTIVE SUMMARY

The national HIV surveillance system set up by the Government of Bangladesh has now been active since 1998. It is based on the UNAIDS/WHO guidelines for Second Generation HIV Surveillance. Over the last six rounds of serological surveillance, Bangladesh has been reported to be a low prevalent country for HIV. Therefore, according to the guidelines for the 2nd Generation HIV surveillance, sampling in all rounds of surveillance has concentrated on those who are at most risk for HIV infection. These include male and female Injection drug users; heroin smokers; female sex workers from streets, brothels, hotels and casual sex workers; males who have sex with males; male sex workers and hijras. In contrast with the previous rounds of surveillance, mobile men who are likely to be the clients of the sex workers were excluded during the 7th round of sampling.

The highest HIV infection has always been recorded in injection drug users (IDU) from Dhaka city and during the 7th round it was at 7%. Applying UNAIDS/WHO criteria that a concentrated epidemic is one where HIV prevalence is >5% in a specific risk population, Bangladesh has therefore now moved from being a low prevalent country for HIV to one with a concentrated epidemic. The HIV epidemic in Dhaka city is not uniformly distributed; it is concentrated in one neighbourhood where 10.5% of the IDU were HIV positive and this is likely to be the epicentre of the epidemic. Apart from Dhaka city, HIV has been detected in IDU from four more cities, although the numbers are very low. It is of importance to note that for the first time, a female injector from Dhaka, Tongi and Narayanganj tested positive for HIV. Male injectors had low levels of active syphilis rate but 9.9% of the female injectors had active syphilis, which confirms behavioural data from research studies showing that many of the female IDU sell sex. Hepatitis C infection remained high among IDU from many cities, ranging as low as 0.9% in Sathkhira to as high as 77.0% in Chapai Nawabganj. Interestingly, the rate declined in male IDU from Dhaka city over the rounds.

As with the previous rounds, HIV prevalence among female sex workers remained low (<1%). However, active syphilis rates were high in this population group. Those from the streets of Chittagong had the highest rate (10.1%) among female sex workers and the trend remained unchanged over the rounds. In contrast, active syphilis rate declined significantly ($p < 0.001$) over the rounds among the female street sex workers from Dhaka. Brothel based sex workers showed a mixed picture with rates declining significantly in five brothels and remaining unchanged in four brothels. Hotel based sex workers also showed no change in active syphilis rates over the rounds.

Three of five cities sampled for casual female sex workers (part time sex workers) were border areas. Teknaf and Hili reported high rates of cross border movement (23% - 75.8%) among the casual female sex workers and a considerable proportion of those who crossed the border also sold sex (65.2% - 92.8%) across the border. Fortunately, other than in Hili (where one female sex worker was found to be HIV positive) no HIV was detected. In Burimari, the proportion of sex workers crossing the border was low but all those who crossed the border sold sex. Active syphilis rates were low among the casual female sex workers.

HIV prevalence remained <1% percent in males who have sex with males, male sex workers and in Hijras. Although, over the rounds, active syphilis rate declined among Hijras there was no change in males who have sex with males and male sex workers.

The data presented in this report shows the urgent need to expand and strengthen ongoing intervention programmes. It has been fortunate that the rise in the IDU epidemic has been gradual and that an epicentre has been recognised before a full blown epidemic has taken off. But the current situation requires immediate attention with a heightened co-ordinated response from all quarters – government and non-government.

1. HIV SURVEILLANCE IN BANGLADESH

In 1998, the Government of Bangladesh set up the National HIV Surveillance System. This surveillance system is based on the UNAIDS/WHO “Guidelines for Second Generation HIV Surveillance” (1), which not only monitors the spread of HIV epidemic by serological surveillance but also tracks the risk behaviours that provides warning signs for the spread of HIV epidemic. This Second Generation Surveillance System was in place till the end of the 5th round of surveillance (2003-2004) and both serological surveillance and behavioural surveillance were done in tandem. However, during the 6th (2004-2005) and 7th (2006) rounds only serological surveillance for HIV was carried out; behavioural surveillance for 2006-2007 is expected to start during the latter part of 2006.

During the 7th round, the Institute of Epidemiology, Disease Control and Research (IEDCR) was intimately associated with the serological surveillance activities. Thirteen personnel from IEDCR at different professional and technical levels were involved with the entire process of surveillance. A representative at the medical officer level participated in all field level surveillance activities including meetings with the collaborating NGOs and CBOs, orientation workshops, field site preparation, quality control of the sample collection and maintenance of liaison with the National AIDS/STD Programme (NASP) office. The active collaboration between ICDDR,B and IEDCR is further described below in section 3.

This report presents the methodology, findings and conclusions from the 7th round of serological surveillance for HIV that was conducted between January 2006 to June 2006. Funding for the 7th round of serological surveillance was provided by the Government of Bangladesh/Department for International Development (DFID)/International Development Association (IDA).

2. DESIGN AND METHODOLOGY

2.1 SELECTION OF POPULATION GROUPS FOR SURVEILLANCE

As with previous rounds, Bangladesh selected the population groups to be sampled by following the guidelines of the 2nd Generation Surveillance System (1) for a low prevalence country. The groups included female sex workers in brothels, hotels, streets, and casual sex workers, male sex workers, males who have sex with males (MSM), transgender (Hijras), injection drug users (IDU) and heroin smokers (Table 1). As the time available for conducting the 7th round was considerably shorter than that of the previous rounds, mobile population groups such as rickshaw pullers, dockworkers, truckers etc were not included.

Decisions taken by SAC, which were followed during the 7th round of sampling were:

- To increase coverage of IDU as much as possible for a wider geographical representation and based on this IDU were sampled from two new cities, both of which were new to interventions
- As in the 6th round, Dhaka was divided into two areas – A1 and A2 and the reasons for doing so remained the same. In brief,

A1 was the neighbourhood covered by the research cohort study of ICDDR,B and attempts were made to enrol as many IDU as could be found in that area.

A2 was the rest of Dhaka city from where 400 IDU were sampled through proportionate sampling from the DICs of CARE, Bangladesh.

As surveillance progressed, a few more changes were incorporated. The changes and reasons for change are provided below:

1. As in the 6th round, it was not possible to include hotel based female sex workers from Dhaka in the 7th round. This was because of ongoing STI research studies in hotel based sex workers where blood was being drawn and other samples were being collected at regular intervals. Repeated blood draws would be resisted by the sex workers and would jeopardise the activities of the intervention organisation. For surveillance, we have ethical clearance for collecting samples for HIV only after obtaining written consent, so that using left over serum drawn for other purposes, for HIV testing, is not a possibility. Therefore, we were obliged to exclude this group of sex workers from the 7th round of surveillance.
2. The coverage area for MSM and MSW in Dhaka was expanded in the 7th round to include intervention areas covered by one CBO and two NGOs. In the previous round, the intervention area covered by one CBO and one NGO only was included.
3. From one new site (Khulna) drug users were sampled as a combined group of IDU and heroin smokers as it was not possible to distinguish them from each other. Such a combination has been done for the first time in surveillance and the decision was taken based on the premise that IDU from as many sites as possible need to be covered.

The definitions of the population groups sampled for surveillance were the same as in previous rounds and are shown in Box 1 below:

Box 1. Definitions used for each population group

Injection drug users: Those who were primarily injectors and had injected in the previous year

Heroin smokers: Those who were primarily heroin smokers and had not injected more than twice in the previous six months

Combined injection drug users and heroin smokers: When injection drug users and heroin smokers could not be distinguished from each other

Female sex workers:

Brothel sex workers: Those who were selling sex in a brothel during the previous month

Street sex workers: Those who were selling sex on the street during the previous month

Hotel sex workers: Those who were selling sex in hotels during the previous month

Casual sex workers: Those who were selling sex either in the street, residence or hotel during the previous month and had either one or more main sources of income

Males who have sex with males:

Male sex workers: Males who were selling sex to other males during the previous month

Non-sex workers: Males who had male sex partners but did not sell sex

Hijras (Transgender or third gender): Those who identified themselves as belonging to a traditional Hijra sub-culture (Transgender)

The groups finally selected for surveillance are shown in Table 1 where populations covered in all rounds are also listed.

Table 1. Population groups sampled in serological surveillance 1998-1999 (round I), 1999-2000 (round II), 2000-2001 (round III), 2002 (round IV), 2003-2004 (round V), 2004-2005 (round VI) and 2006 (round VII)

Population group	Division	Geographical Location	1998-1999	1999-2000	2000-2001	2002	2003-2004	2004-2005	2006	
			Round I	Round II	Round III	Round IV	Round V	Round VI	Round VII	
Injection drug users (IDU)	Dhaka	Dhaka	√	√	√					
		Dhaka†		√	√	√				
Out of detoxification clinics	Dhaka	Dhaka A1						√	√	
		Dhaka A2						√	√	
	Rajshahi	Mymensingh						√		√
		Narayanganj					√		√	√
		Tongi					√		√	√
		Rajshahi		√	√		√		√	√
		Chapai Nawabganj			√		√		√	√
		Char Norendrapur					√			
		Kanshat					√		√	√
		Rangpur								√
		Naogaon							√	√
		Pabna						√		√
		Ishwardi						√		√
		Sirajganj							√	√
Dinajpur								√		
Chittagong	Chandpur					√		√		
Khulna	Teknaf							√	√	
	Jessore							√	√	
	Sathkhira							√	√	
Barisal	Barisal						√	√		
Dhaka	Dhaka				√		√	√		
Heroin smokers	Khulna									
					√			√	√	
Combined IDU and heroin smokers:	Dhaka									
		Dhaka, Narayanganj and Tongi (Female)						√	√	

Population group	Division	Geographical Location	1998-1999		1999-2000		2000-2001		2002		2003-2004		2004-2005		2006		
			Round I	Round II	Round III	Round IV	Round V	Round VI	Round VII								
Brothel based female sex workers	All brothels																
	Dhaka	Tangail	√	√	√	√					√		√			√	
		Mymensingh		√													
		Doulatdia			√												
Street based female sex workers	Dhaka	Narayanganj	√														
		Fultola, Baniasanta, Bagerhat		√	√	√											
		Jessore			√	√											
		Dhaka		√	√	√											√
Hotel based female sex workers	Dhaka	Tangail															
		Chittagong															√
		Khulna															
		Dhaka															
Casual female sex workers	Dhaka	Chittagong															√
		Sylhet															√
		Chandpur															√
		Teknaf															√
Male sex workers (MSW)	Dhaka	Hili															√
		Burimari															√
		Barisal															√
		Dhaka															√
Males who have sex with males (MSM)	Dhaka	Dhaka															√
		Dhaka															√
		Dhaka															√
		Dhaka															√
MSM and MSW combined	Dhaka	Dhaka	√	√													
		Mymensingh															
		Chittagong															
		Sylhet															
Partners of Hijra Babus†	Dhaka	Dhaka															
		Dhaka, Manikganj															
		Dhaka, Manikganj															
		Tangail															
Hijras	Central	Doulatdia															
		Doulatdia															
		Jamalpur															
		Jamalpur															

Population group	Division	Geographical Location	1998-1999		1999-2000		2000-2001		2002		2003-2004		2004-2005		2006	
			Round I	Round II	Round III	Round IV	Round V	Round VI	Round VII							
STI patients	Dhaka	Dhaka	√	√												
	Chittagong	Chittagong	√	√	√											
	Rajshahi*	Rajshahi, Rangpur	√	√	√											
	Sylhet	Sylhet	√		√	√										
Truckers	Dhaka	Dhaka	√		√	√										
	Khulna	Jessore			√											
		Benapole								√						
Dockworkers	Chittagong	Chittagong			√								√			
	Khulna	Khulna			√											
Rickshaw pullers	Dhaka	Dhaka									√					
	Chittagong	Chittagong			√						√					
	Khulna	Jessore			√											
Launch workers	Dhaka	Dhaka							√							

†Dhaka represents the merged result of Dhaka A1 and Dhaka A2

‡Babus are boyfriends/regular partners of brothel based female sex workers

*In the first round, sampling was done only in Rajshahi, in the subsequent rounds sampling was done from Rajshahi and Rangpur and these two sites together represent a single site

2.2 STRATEGY FOR SEROLOGICAL SURVEILLANCE

For serological surveillance sampling has always been through organisations running intervention programmes for HIV prevention. Since the 5th round considerable expansion of the surveillance took place and new groups in new geographical areas were added in each round. During the 7th round, IDU were sampled from two additional cities – Rangpur and Dinajpur and a new group consisting of a combination of IDU and heroin smokers were sampled from Khulna.

For all rounds of serological surveillance sampling has been done through intervention organisations so that services can be provided in an ethical way and these have been described in detail in earlier reports (2). However, intervention programmes for HIV/AIDS are in a constant flux and the resultant changes are reflected in field conditions. In many of the previously established intervention sites, with the changes, established programmes are no longer existent and surveillance was conducted in areas where no field activities are at present ongoing. A similar situation was observed during the 7th round of serological surveillance. The sites where surveillance was conducted where no intervention activities were available are listed below in Table 2.

Table 2. Population groups in different geographical sites where intervention activities were absent at the time of serological surveillance sampling, 2006

Population Groups, Geographical Location	2006 Round VII
Casual female sex workers: Hili Burimari	√ √
Males who have sex with males (MSM): Dhaka	√
Hijras: Dhaka, Manikganj	√

In Dhaka, although the intervention programme for street sex workers was still existent, but because of restricted funds, the services available and the number of DICs open were restricted and this may have had some implications on sampling.

For those sites where interventions were interrupted the following strategies were adopted:

1. Local guides were hired for access to the population groups of interest. Most of these guides were the ex-employees of those organisations who were previously providing the intervention.
2. Hired local guides were informed about the purpose and methodology of surveillance activity who then disseminated this information in the field and encouraged participants to give blood.

3. As there was no intervention programme, the same local guides along with the ICDDR,B field staff helped in distribution of the syphilis test results. Syphilis treatment was ensured in those sites by recruiting local physicians.

Sampling from male IDU in Dhaka was done following a similar methodology to that in the 6th round but different from earlier rounds. The reasons for doing so were the same as in the 6th round, i.e. this was because of several ongoing research studies summarised in Box 2 below:

Box 2. Sampling of male IDU from Central-A

Dhaka was divided into two areas: A1 and A2

This was done because the findings from the 5th and 6th rounds showed that IDU in one neighbourhood of Dhaka were experiencing a concentrated epidemic and also as IDU cohort research studies of ICDDR,B were covering a large proportion of male IDU from that neighbourhood. The areas were:

i) A1 – this included the area covering the neighbourhood with the concentrated HIV epidemic. Attempts were made to sample as many IDU from this area as possible and the IDU included in this area were those:

- who were part of the ICDDR,B HIV positive cohort study during 1.1.06 to 22.6.06
- who were part of the ICDDR,B HIV negative male cohort study during 1.1.06 to 5.4.06
- who were specifically sampled from that area for surveillance during 1.1.06 to 5.4.06 and who were not members of the cohort studies

ii) A2 – this included the rest of Dhaka city from where approximately 400 were sampled. Sampling from this area followed the same methodology as in previous rounds so that IDU were sampled from the areas covered by the Drop-In Centres (DICs) of the NGO running the needle/syringe exchange programme (NEP). Each DIC covers a known number of IDU and in order to obtain 400 samples, proportionate sampling from the areas covered by each DIC was done.

The data obtained from Dhaka A1 and A2 were combined to reflect Dhaka.

Sample size

The sample size was calculated as 380 with an estimation of the HIV prevalence rate of 1% with a 1% precision and 95% confidence level. It was decided to take the first four hundred individuals who came to the clinic. At sites where the numbers of individuals available were less than 400, a take all approach was employed.

A total of 10,368 samples were collected during the 7th round of serological surveillance. The total number of samples and dates of sample collection from the different sites are shown below (Table 3).

Table 3. Population groups sampled with sampling dates, 2006

Population Groups, Geographical Location	Number of samples collected	Start date	End date
Injection drug users:			
Dhaka [†]	1072	1.1.06	22.6.06
Dhaka- A1	674	1.1.06	22.6.06
Dhaka-A2	398	1.3.06	15.3.06
Mymensingh	301	2.4.06	20.4.06
Narayanganj	105	1.2.06	14.2.06
Tongi	160	1.2.06	16.2.06
Chandpur	178	1.2.06	30.3.06
Teknaf	120	27.3.06	13.4.06
Rajshahi	393	25.4.06	16.5.06
Chapai Nawabganj	200	24.4.06	11.5.06
Kanshat	69	18.5.06	25.5.06
Rangpur	187	24.5.06	1.6.06
Naogaon	193	18.5.06	1.6.06
Pabna	69	2.4.06	9.4.06
Ishwardi	55	2.4.06	9.4.06
Sirajganj	122	6.4.06	18.4.06
Dinajpur	279	6.4.06	1.5.06
Jessore	132	22.3.06	5.4.06
Sathkhira	226	22.3.06	6.4.06
Barisal	234	22.2.06	12.3.06
Heroin smokers: Dhaka	401	1.2.06	13.2.06
Combined injection drug users and heroin smokers:			
Khulna	387	18.4.06	9.5.06
Female: Dhaka, Narayanganj and Tongi [§]	121	17.1.06	11.5.06
Brothel based female sex workers:			
Tangail	400	14.2.06	24.2.06
Mymensingh	150	14.5.06	27.5.06
Doulatdia	401	2.2.06	19.2.06
Jamalpur	168	1.2.06	9.2.06
Faridpur	373	1.3.06	14.3.06
Madaripur	222	20.2.06	2.3.06
Fultola, Baniasanta, Bagerhat	260	1.2.06	23.2.06
Jessore	174	23.4.06	11.5.06
Patuakhali	52	22.2.06	26.2.06
Street based female sex workers:			
Dhaka	386	18.4.06	30.4.06
Chittagong	405	19.3.06	13.4.06
Hotel based female sex workers:			
Chittagong	118	21.3.06	20.4.06
Sylhet	169	14.2.06	1.4.06
Casual female sex workers:			
Chandpur	88	18.4.06	25.5.06
Teknaf	200	27.3.06	10.4.06
Hili	128	17.5.06	22.5.06
Burimari	235	7.5.06	25.5.06
Barisal	397	22.2.06	15.3.06
Male sex workers (MSW): Dhaka	284	6.2.06	20.3.06
Males who have sex with males (MSM): Dhaka	401	6.2.06	14.3.06
Hijras: Dhaka, Manikganj	353	1.2.06	10.4.06
Total	10,368	1.1.06	22.6.06

[†]Dhaka-A1 and Dhaka-A2 were merged together to represent Dhaka, [§]Comparable with the same group sample of the 6th round

Blood collection

A 5ml blood sample was collected from each individual by venepuncture into sterile, plain Vacutainers (Becton Dickinson, Rutherford, NJ, USA). Serum was separated by centrifugation. Whole blood and serum samples were transported to the Virology Laboratory of ICDDR,B, while maintaining the cold chain, and were stored at -20°C until testing was done.

As in previous rounds, each blood sample was split into two: one unlinked sample was screened for HIV, and the other linked sample that could be traced to the individual was screened for syphilis, so that treatment could be given if necessary. The unlinked anonymous samples were also used to assay for hepatitis C (HCV) among IDU.

Informed consent and confidentiality

Informed and signed consent was obtained from all study participants prior to drawing blood. The summary of the consent paper was read out for those study participants who could not read and the left thumb impression was obtained from those who could not sign.

All the sample tubes containing serum for HIV and HCV testing were unlinked and anonymous, i.e. they were labelled only with information about age, sex, site, and surveillance round. The samples were also stored in such a way that the sampling period was unidentifiable. Tubes containing serum for syphilis tests were labelled with all information so that the test results could be linked back to the individuals for the purpose of treatment.

Personnel and training

Serological surveillance was conducted by a team from ICDDR,B and IEDCR comprising of laboratory and field staffs. Prior to sampling, a weeklong (15th January 2006 to 21st January 2006) training was provided to the field staffs covering areas on basic concepts of HIV/AIDS, current situation of HIV/AIDS in Bangladesh and interview techniques. In addition, hands on training for the field staffs were provided on Universal Precaution, serum separation, labelling, de-linking, sample transportation and preservation. Trained team members and other resource persons from the HIV/AIDS Programme of ICDDR,B conducted the training.

Questionnaire

A brief questionnaire was administered to all participants where a few demographic questions were asked. The exception was with female casual sex workers, where questions on other occupations, client accessing spots and mobility were also asked. In those areas where research studies were being conducted available data was taken from those studies.

Laboratory methods

Tests were done for syphilis, HCV (in IDU only) and HIV. The methodology followed was the same as in previous rounds (2). Quality control was done through the External Quality Assessment Schemes of the National Serology Reference Laboratory, Australia.

Syphilis result and treatment

As in previous rounds, syphilis results were provided to participating organisations within two weeks of sample collection, along with the drugs for treatment. The particular clinic or intervention site personnel were then responsible for providing treatment to individuals who tested positive for syphilis. However, in sites where there were no intervention programmes, local guides and clinical staffs were recruited by the surveillance team for distribution of the results and to provide treatment for the syphilis positive cases.

Data entry and analysis

All data were entered in the Statistical Package for Social Sciences (SPSS, version 11.5 for Windows, SPSS Inc., Chicago, IL, USA). Data analyses were carried out using SPSS and Epi Info Windows Version 3. For comparison of continuous non-parametric data between any two sites the Mann-Whitney U test was used. For categorical data, z-test was used. For comparison of data over time chi-square for trends was used.

3. TECHNOLOGY TRANSFER

Since the inception of the Second Generation HIV Surveillance in 1998, ICDDR,B trained a number of both laboratory and field level personnel of IEDCR on different aspects of the surveillance. During the 7th round of surveillance, thirteen personnel from IEDCR at different professional and technical levels worked in close collaboration with ICDDR,B.

1. One principal investigator
2. One field coordinator
3. Two laboratory scientists
4. Three laboratory technicians
5. Two field assistants
6. Two data entry personnel
7. Two laboratory attendant

Personnel from IEDCR actively participated during the weeklong training held in January 2006 prior to commencement of sampling in the field. Personnel from IEDCR worked alongside those from ICDDR,B both in the field and the laboratory. Initially all activities were conducted at ICDDR,B while IEDCR made preparations to make necessary facilities available for sample reception, storage, testing, data management, etc. When these facilities at IEDCR were ready on 17th April 2006 the surveillance team moved from ICDDR,B to IEDCR. Prior to the move several meetings were held between the investigators of IEDCR and ICDDR,B to ensure a smooth transition. Apart from a two week disruption due to problems with the water supply, work continued at IEDCR till sampling was completed (till third week of June 2006).

All decisions regarding the moves between ICDDR,B and IEDCR were taken jointly by the PIs of ICDDR,B and IEDCR in consultation with their respective teams.

Out of total 10,368 samples collected during the 7th round, 2,948 samples for HIV and 2,833 samples for syphilis were tested at IEDCR. However, as all laboratory equipment for HCV testing were not available at IEDCR, tests for HCV were conducted at ICDDR,B.

4. RESULTS

Findings from the 7th round of serological surveillance have been grouped into the following categories:

- Injection drug users (IDU) and heroin smokers
- Female sex workers
- Male sex workers, MSM, Hijras

4.1 INJECTION DRUG USERS AND HEROIN SMOKERS

Samples were collected from IDU from eighteen cities covering Dhaka, Chittagong, Khulna, Barisal and Rajshahi divisions of Bangladesh (Table 1). All IDU sampled were male and were under the Needle/Syringe Exchange Programme (NEP).

For the first time, samples were collected from Khulna where it was not possible to differentiate between IDU and heroin smokers. This group was therefore, considered as a combined group of IDU and heroin smokers. Female drug users from Dhaka, Narayanganj and Tongi were also considered as a combined group of IDU and heroin smokers. All combined group samples were also covered by NEP; an exception was 28 female drug users from Dhaka, Narayanganj and Tongi who were not covered by NEP at the time of sampling but were members of the ICDDR,B cohort research study.

As in the previous rounds, heroin smokers were sampled from Dhaka.

Demographic characteristics

Demographic characteristics of IDU and heroin smokers are summarised in Table 4. IDU from Chapai Nawabganj were the oldest amongst all groups of IDU sampled ($p < 0.001$). The proportion of male IDU who ever attended school and also the median duration of schooling varied from site to site. The median duration of coverage by NEP was lowest in IDU from Barisal ($p < 0.05$ for all comparisons) and IDU from this city had also been Injection drugs for a significantly shorter period than IDU from other cities ($p < 0.05$ for all comparisons).

Female drug users were younger than the male injectors in Dhaka ($p < 0.001$). Fewer female drug users ever attended school and their schooling duration was also lower compared to male IDU in Dhaka ($p < 0.001$ and $p = 0.02$ respectively). Both median duration of drug use by injection and coverage by NEP were significantly lower in female drug users compared to male injectors in Dhaka ($p < 0.001$ for all comparisons).

Heroin smokers sampled were younger than the IDU in Dhaka ($p < 0.001$). The proportion of heroin smokers who ever attended school and their median duration of education were similar to that of IDU in Dhaka.

Table 4. Demographic characteristics of IDU and heroin smokers, 2006

Geographical Location (N)	Age in years median (IQR*)	Ever attended school, % (n), 95% CI	Education (years) median (IQR)	Duration as IDU/heroin smoker (months) (IQR)	Duration in NEP (months) Median (IQR)
Injection drug users (Male):					
Dhaka (1072) †	32 (28-38)	52.5 (563), 49.5-55.5	5 (3-8)	60 (36-108)	36 (15-60)
Dhaka- A1 (674)	33 (28-40)	48.1 (324), 44.2-51.9	5 (3-8)	72 (42-115.3)	45 (21-72.8)
Dkaka-A2 (398)	32 (28-38)	60.1 (239), 55.1-64.9	6 (4-9)	60 (30-96)	24 (12-36)
Mymensingh (301)	27 (24-30)	89.7 (270), 85.7-92.9	8 (5-10)	36 (12-60)	7 (3-15)
Narayanganj (105)	35 (30-40)	61.0 (64), 50.9-70.3	5 (3-7)	60 (36-120)	24 (12-36)
Tongi (160)	28 (26-32)	51.3 (82), 43.2-59.2	8 (5-10)	36 (24-48)	12 (9-24)
Chandpur (178)	27 (24-30)	82.0 (146), 75.6-87.4	8 (4-10)	42 (23.9-74.8)	18 (13-19)
Teknaf (120)	26 (23-30)	62.5 (75), 53.2-71.2	5 (3-9)	24 (12-48)	10 (5-12)
Rajshahi (393)	38 (31-45)	55.5 (218), 50.4-60.5	6 (3-9)	84 (60-120)	60 (48-63)
Chapai Nawabganj (200)	42 (35-48)	46.5 (93), 39.4-53.7	6 (4-9)	84 (48-120)	60 (24-60)
Kanshat (69)	35 (30-40)	50.7 (35), 38.4-63.0	8 (5-12)	36 (21-102)	18 (12-30)
Rangpur (187)	30 (26-35)	78.1 (146), 71.5-83.8	10 (8-11)	24 (12-60)	4 (3-6)
Naogaon (193)	28 (25-34)	74.6 (144), 67.9-80.6	9 (5-10)	8 (5-36)	3 (1-5)
Pabna (69)	33 (28-38)	84.1 (58), 73.3-91.8	8 (5-10)	72 (24-120)	9 (4.5-24)
Ishwardi (55)	29 (28-35)	76.4 (42), 63.0-86.8	7 (4-9)	36 (14-60)	12 (9-20)
Sirajganj (122)	35 (30-40)	61.5 (75), 52.2-70.1	8 (5-10)	48 (24-84)	12 (6.8-18)
Dinajpur (279)	32 (28-36)	75.3 (210), 69.8-80.2	8 (6-12)	36 (24-60)	12 (9-18)
Jessore (132)	35 (28-40)	62.1 (82), 53.3-70.4	8 (5-9)	60 (36-96)	6 (4-12)
Sathkhira (226)	28 (25-32)	74.3 (168), 68.1-79.9	8 (5-10)	18 (12-48)	6 (2-9.3)
Barisal (234)	28 (24-30)	79.9 (187), 74.2-84.9	9 (8-12)	12 (7-36)	2 (2-3)
Heroin smokers:					
Dhaka (401)	30 (26-35)	49.1 (197), 44.1-54.1	5 (3-8)	96 (60-144)	NA [§]
Combined injection drug users and heroin smokers:					
Khulna (387)	28 (25-30)	70.5 (273), 55.7-75.0	8 (6-10)	8 (6-24)	3 (2-5)
Female:					
Dhaka, Narayanganj and Tongi (121)	28 (24-36)	35.5 (43), 27.0-44.8	4 (3-6)	24 (12-48)	24 (12-36)

†Dhaka-A1 and Dhaka-A2 were merged together to represent Dhaka; §NA = Not applicable; *IQR refers to inter quartile range

HIV and syphilis prevalence (Table 5)

IDU from Dhaka had an HIV prevalence of 7%. For the first time in the country, a concentrated epidemic among male injectors in Dhaka has been documented. In Dhaka-A1, 10.5% of the IDU tested positive for HIV while in Dhaka-A2, 1% of the IDU were HIV positive.

During the 7th round, HIV was also detected in IDU from Chandpur (1.1%), Ishwardi (1.8%), Narayanganj (1%) and among combined female IDU and heroin smokers from Dhaka, Narayanganj and Tongi (0.8%). No HIV was detected in heroin smokers from Dhaka.

Active syphilis rates varied from as low as 0 to as high as 9.9% among IDU in different cities and the highest rate was recorded in the combined group of female IDU and heroin smokers from Dhaka, Narayanganj and Tongi. Active syphilis rate for heroin smokers was comparable to that of IDU from the same city.

Table 5. Prevalence of HIV and active syphilis among IDU and heroin smokers, 2006

Study Populations, Geographical Location (N)	HIV % (n), 95% CI	Active syphilis % (n), 95% CI
Injection drug users (Male):		
Dhaka (1072) [†]	7.0 (75), 5.5-8.7	2.3 (25), 1.5-3.4*
Dhaka- A1 (674)	10.5 (71), 8.3-13.1	3.7 (25), 2.4-5.5*
Dhaka-A2 (398)	1.0 (4), 0.3-2.3	0
Mymensingh (301)	0	0.7 (2), 0.1-2.4
Narayanganj ((105)	1.0 (1), 0-5.2	2.9 (3), 0.6-8.1
Tongi (160)	0	4.4 (7), 1.8-8.8
Chandpur (178)	1.1 (2), 0.1-4.0	2.8 (5), 0.9-6.5 [§]
Teknaf (120)	0	5.8 (7), 2.4-11.6
Rajshahi (393)	0	1.3 (5), 0.4-2.9
Chapai Nawabganj (200)	0	0.5 (1), 0-2.8
Kanshat (69)	0	4.3 (3), 0.9-12.2
Rangpur (187)	0	2.7 (5), 0.9-6.1
Naogaon (193)	0	0.5 (1), 0-2.9
Pabna (69)	0	1.4 (1), 0-7.8
Ishwardi (55)	1.8 (1), 0-9.7	1.8 (1), 0-9.7
Sirajganj (122)	0	0.8 (1), 0-4.5
Dinajpur (279)	0	1.1 (3), 0.2-3.1
Jessore (132)	0	2.3 (3), 0.5-6.5
Sathkhira (226)	0	0.9 (2), 0.1-3.2
Barisal (234)	0	0
Heroin smokers:		
Dhaka (401)	0	3.0 (12), 1.6-5.2
Combined injection drug users and heroin smokers:		
Khulna (387)	0	1.0 (4), 0.3-2.6
Female:		
Dhaka, Narayanganj and Tongi (121)	0.8 (1), 0-4.5	9.9 (12), 5.2-16.7

[†]Dhaka-A1 and Dhaka-A2 were merged together to represent Dhaka

*Syphilis test was not performed for six samples from Dhaka-A1 due to inadequate serum. Therefore, for syphilis test sample size in Dhaka-A1 was 668 and in Dhaka was 1066 (combined Dhaka A1+A2)

[§]Syphilis test was not performed for one sample from Chandpur due to inadequate serum. Therefore, sample size for syphilis test in Chandpur was 127.

Hepatitis C (HCV) prevalence (Table 6)

All IDU were tested for HCV and the prevalence varied among the sampled sites from as low as 0.9% in Chandpur to as high as 77.0% in Chapai Nawabganj.

Table 6. Prevalence of HCV in IDU and combined IDU & heroin smokers, 2006

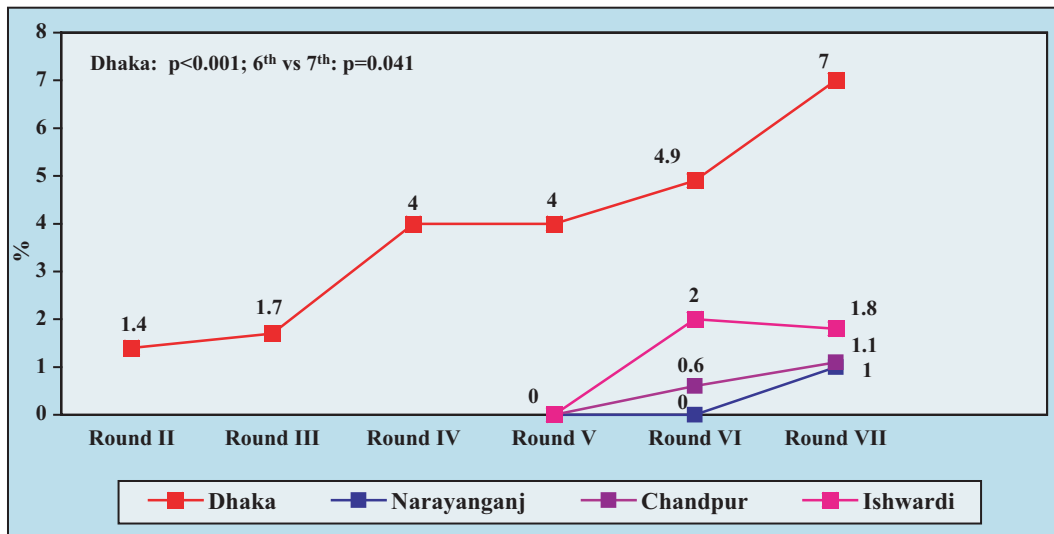
Study Populations, Geographical Location (N)	HCV % (n), 95% CI
Injection drug users (Male):	
Dhaka (1071) [†]	56.4 (604), 53.4-59.4
Dhaka- A1 (673)	61.4 (413), 57.6-65.1
Dhaka-A2 (398)	48.0 (191), 43.0-53.0
Mymensingh (301)	5.3 (16), 3.1-8.5
Narayanganj ((105)	29.5 (31), 21.0-39.2
Tongi (160)	7.5 (12), 3.9-12.7
Chandpur (177)	49.2 (87), 41.6-56.8
Teknaf (120)	36.7 (44), 28.1-45.9
Rajshahi (393)	65.9 (259), 61.0-70.6
Chapai Nawabganj (200)	77.0 (154), 70.5-82.6
Kanshat (69)	73.9 (51), 61.9-83.7
Rangpur (187)	10.7 (20), 6.7-16.0
Naogaon (193)	49.2 (95), 42.0-56.5
Pabna (69)	10.1 (7), 4.2-19.8
Ishwardi (55)	20.0 (11), 10.4-33.0
Sirajganj (122)	51.6 (63), 42.4-60.8
Dinajpur (279)	62.7 (175), 56.8-68.4
Jessore (132)	7.6 (10), 3.7-13.5
Sathkhira (226)	0.9 (2), 0.1-3.2
Barisal (234)	15.4 (36), 11.0-20.7
Combined injection drug users and heroin smoker: Female :	
Dhaka, Narayanganj and Tongi (121)	20.7(25), 13.8-29.0

[†]Dhaka-A1 and Dhaka-A2 were merged together to represent Dhaka

Comparison over the rounds (Fig 1, 2, 3, 4 & 5)

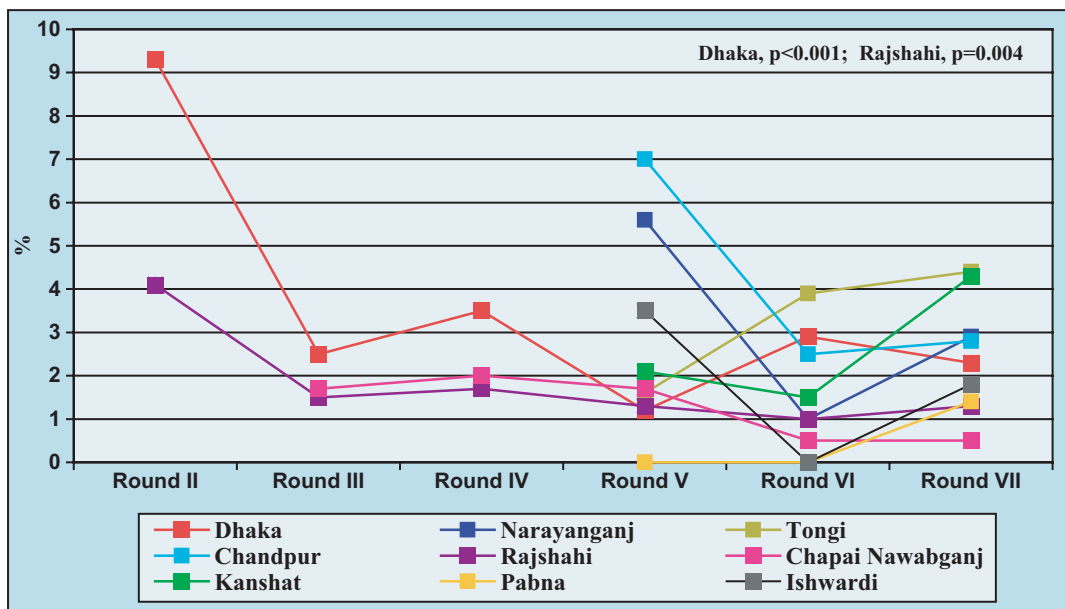
Over the rounds of serological surveillance, HIV prevalence increased significantly ($p < 0.001$) in Dhaka (Fig 1) and the differences between the rates from the 6th and 7th rounds in Dhaka was also significant ($p = 0.041$). In other cities, where HIV was detected in IDU, the numbers that were HIV positive were very low and there were no changes in rates over time.

Fig 1. HIV in IDU over the rounds of serological surveillance in Bangladesh (where HIV has been detected)



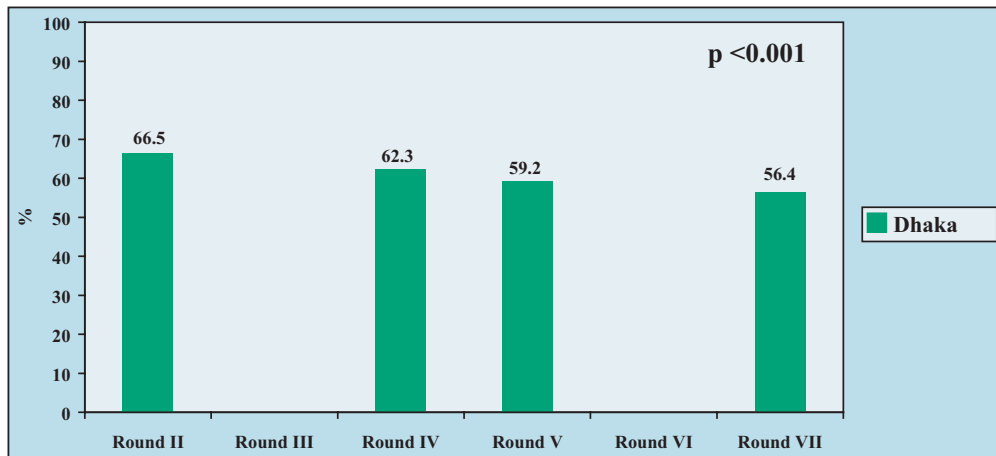
Comparison of active syphilis rates in IDU over the rounds was done in those sites where sampling was conducted for three or more rounds. Such comparisons showed significant decline in active syphilis rates in IDU from Dhaka and Rajshahi ($p < 0.001$ and $p = 0.004$ respectively) (Fig 2). For IDU from Narayanganj, Tongi, Chandpur, Chapai Nawabganj, Kanshat, Pabna and Ishwardi no significant changes in the active syphilis rates were observed.

Fig 2. Active syphilis in IDU over the rounds of serological surveillance in Bangladesh



Data for HCV is available for the rounds II, IV, V and VII in IDU from Dhaka. Comparison of this data showed a significant decline ($p < 0.001$) in HCV prevalence over the rounds (Fig 3).

Fig 3. HCV in IDU over the rounds of surveillance in Dhaka



Heroin smokers from Dhaka have been sampled since the 4th round; there were no changes in the prevalence rates of HIV and active syphilis over the rounds (Fig 4).

Fig 4. HIV and active syphilis in heroin smokers over the rounds of surveillance in Dhaka

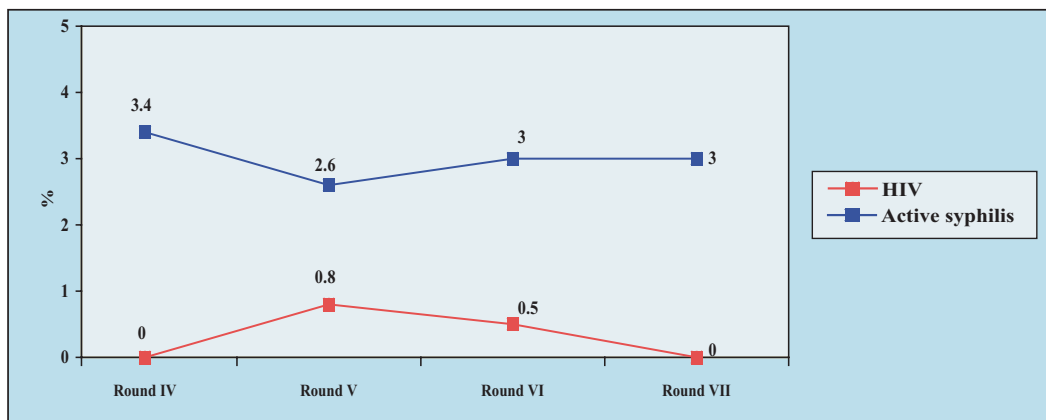
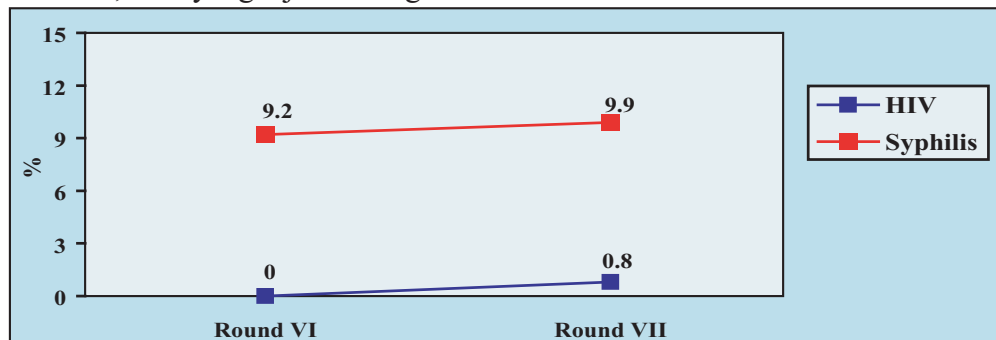


Fig 5. HIV and syphilis among the combined group of IDU and heroin smokers (Female) from Dhaka, Narayanganj and Tongi



Female IDU and heroin smokers have been sampled as a combined group from Dhaka, Narayanganj and Tongi during 6th and 7th rounds. Samples collected from Dhaka, Narayanganj and Tongi constituted a single sampling site. There were no changes in the prevalence rates of HIV and syphilis over the rounds (Fig 5).

4.2 FEMALE SEX WORKERS

Female sex workers sampled from all brothels in the country, streets in two cities (Dhaka and Chittagong); and hotels in two cities (Chittagong and Sylhet). In addition, casual female sex workers, i.e. women who were part-time sex workers were sampled from five cities (Chandpur, Teknaf, Hili, Burimari and Barisal). Of the five cities from where casual sex workers were sampled, three were border cities; Hili and Burimari border India and Teknaf borders Myanmar.

Demographic characteristics (Table 7)

Demographic characteristics of female sex workers are summarised in Table 7. Questionnaires for basic demographic information were administered to female sex workers from all sites. However for the casual female sex workers, a separate set of questionnaire was administered where some questions on other occupations, spots for accessing clients and mobility were added.

Among all groups of sex workers, hotel based sex workers in Chittagong were the youngest ($p < 0.001$). The proportion of female sex workers who had some schooling varied from as low as 9.4% to as high as 55.1%. Of those who were educated the median duration of education ranged from 3-6 years.

Hotel based sex workers from Chittagong were in the sex trade for the lowest duration among all groups of sex workers ($p < 0.001$) while brothel based sex workers from Jessore were in the sex trade for the longest duration ($p < 0.05$).

Table 7. Demographic characteristics of female sex workers, 2006

Geographical Location (N)	Age in years median (IQR*)	Ever attended school % (n), 95% CI	Education (years) median	Duration as sex worker (months) median (IQR)	Duration at same site (months) median (IQR)
Brothel based female sex workers:					
Tangail (400)	20 (18-22)	35.0 (140), 30.3-39.9	6 (5-8)	18 (6-48)	12 (6-48)
Mymensingh (150)	25 (22-30)	26.7 (40), 19.8-34.9	2 (2-5)	84 (48-135)	60 (36-120)
Doulatdia (401)	22 (18-28)	15.5 (62), 12.1-19.4	5 (3-6)	48 (24-120)	48 (18-96)
Jamalpur (168)	25 (22-35)	19.0 (32), 13.4-25.8	4 (2-5)	72 (36-153)	48 (13.5-120)
Faridpur (373)	25 (20-32)	22.5 (84), 18.4-27.1	5 (4-7)	60 (24-127)	36 (12-120)
Madaripur (222)	23 (20-30)	18.9 (42), 14.0-24.7	4 (2-5)	48 (24-96)	36 (24-87)
Fultola, Baniasanta, Bagerhat (260)	25 (20-30)	28.1 (73), 22.7-34.0	5 (2-7)	72 (30-120)	60 (24-120)
Jessore (174)	25 (22-32)	22.4 (39), 16.5-29.3	5 (2-6)	120 (60-181)	96 (24-171)
Patuakhali (52)	25 (23-32)	21.2 (11), 11.1-34.7	5 (3-5)	72 (48-120)	60 (36-120)
Street based female sex workers:					
Dhaka (386)	25 (20-30)	38.1 (147), 33.2-43.0	5 (3-7)	48 (24-108)	48 (24-96)
Chittagong (405)	25 (20-30)	20.0 (81), 16.2-24.2	5 (3-7)	36 (18-60)	36 (12-60)
Hotel based female sex workers:					
Chittagong (118)	18 (17-20)	55.1 (65), 45.7-64.3	5 (5-8)	12 (3-36)	11.5 (3-36)
Sylhet (169)	20 (19-25)	41.4 (70), 34.0-49.2	5 (3-7)	24 (12-36)	12 (3-24)
Casual female sex workers:					
Chandpur (88)	26 (22-35)	34.1 (30), 24.3-45.0	5 (3-6)	36 (12-57)	30 (12-48)
Teknaf (200)	25 (19-30)	23.5 (47), 17.8-30.0	5 (4-6)	NQ [§]	NQ
Hili (128)	30 (26-35)	9.4 (12), 4.9-15.8	5 (3-5)	NQ	NQ
Burimari (235)	30 (23-35)	45.5 (107), 39.0-52.1	6 (3-9)	NQ	NQ
Barisal (397)	28 (25-32)	52.1 (207), 47.1-57.1	4 (2-5)	36 (24-60)	36 (24-48)

*IQR refers to inter quartile range; [§]NQ = This question was not asked

Other characteristics of casual female sex workers (Table 8)

In Chandpur and Teknaf, most of the women interviewed were primarily sex workers but a few were casual sex workers and they worked as maids, were involved in a business or worked in a job (service). In the other three cities, the majority of the women interviewed were casual sex workers with more than two thirds involved in smuggling in Hili while in Burimari, most were stone crushers.

Table 8. Other characteristics of casual female sex workers, 2006

Geographical location	Other occupation (%)	Spot for accessing clients (%)
Chandpur	Service- 6.8 Maid- 5.7	Residence- 78.4 Multiple site- 9.1 Street- 5.7 Hotel- 3.4 Railway station- 3.4
Teknaf	Business- 15.5 Service-6.5 Maid- 3.0	Residence- 60.0 Multiple site- 32.5 Street-5.0 Hotel- 2.5
Hili	Smuggling- 70.3 Maid- 14.8	Multiple site- 56.3 Railway station-29.7 Street- 6.3 Shop- 4.7 Residence- 3.1
Burimari	Stone crusher- 67.7 House wife- 14.9 Service- 6.8 Maid- 6.0	Residence- 63.0 Multiple site- 31.5 Stone crushing spot- 3.8
Barisal	Maid- 16.4 Labourer- 15.4 Service- 5.3 Business- 4.8 Stone crusher- 4.0	Residence- 41.8 Multiple- 41.8 Street- 9.1 Hotel- 3.5 Launch Ghat- 3.0

As it is believed that people frequently cross over the border to India from Hili and Burimari and to Myanmar from Teknaf, the female sex workers were asked questions regarding their mobility to India and Myanmar. Responses revealed that they did frequently cross the border to India and Myanmar where a considerable proportion sold sex (Table 9). The proportion of sex workers who crossed the border was highest in Hili compared to those in Burimari and Teknaf ($p < 0.001$ for both comparison). In Burimari, four sex workers had crossed the border and all four sold sex while abroad but from the other two cities the total numbers of sex workers selling sex while abroad was higher.

Table 9. Mobility of the casual female sex workers in the border area, 2006

Variables	Teknaf N = 200	Hili N = 128	Burimari N = 235
Proportion crossed the border to India or Myanmar % (n), 95% CI	23.0 (46), 23.4-38.7	75.8 (97), 72.6-87.4	1.7 (4), 0.5-5.0
Proportion sold sex across the border, % (n), 95% CI	65.2 (30), 49.8-78.6 N = 46 [§]	92.8 (90), 85.7-97.0 N = 97 [§]	100.0 (4) N = 4 [§]
Average time of last visit (months), median (IQR*)	2 (0.4-6)	0.1 (0.1-0.2)	12 (4.5-21)
Average time of last episode of selling sex across the border (months), median (IQR)	2 (0.2-5)	0.1 (0.1-0.2)	12 (4.5-21)

*IQR refers to inter quartile range; [§]These are the number of the sex workers who crossed the border

HIV and syphilis prevalence (Table 10)

As with the previous rounds, HIV prevalence was <1% amongst all groups of female sex workers. Active syphilis rates varied but generally, the rate was high in female sex workers, especially in street based sex workers from Chittagong where the rate was 10.1%.

Table 10. Prevalence of HIV and active syphilis among female sex workers, 2006

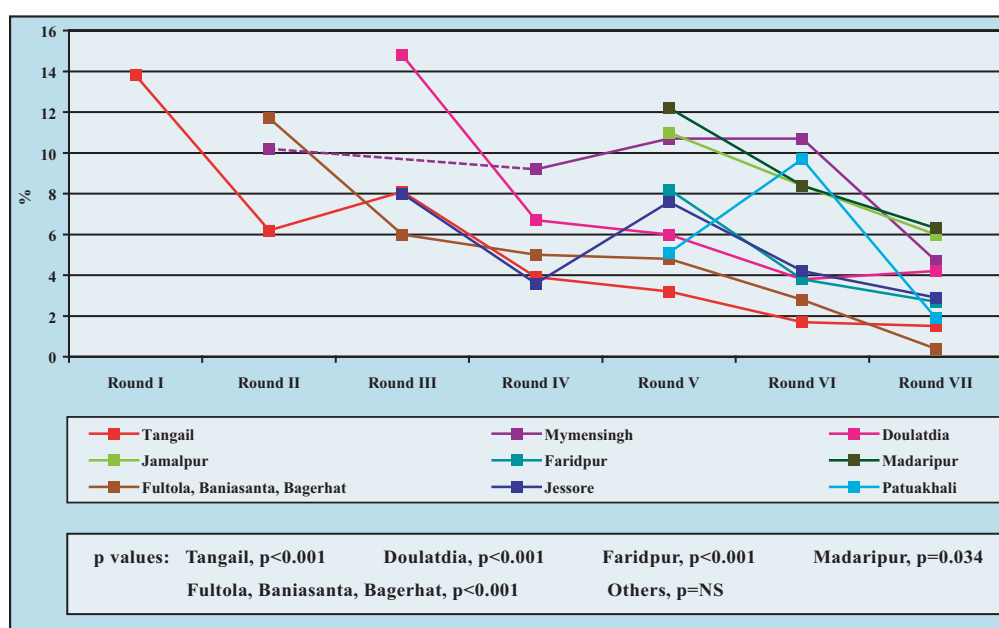
Study Populations, Geographical Location (N)	HIV % (n), 95% CI	Active syphilis % (n), 95% CI
Brothel based female sex workers:		
Tangail (400)	0.3 (1), 0-1.4	1.5 (6), 0.6-3.2
Mymensingh (150)	0.7 (1), 0-3.7	4.7 (7), 1.9-9.4
Doulatdia (401)	0.2 (1), 0-1.4	4.2 (17), 2.5-6.7
Jamalpur (168)	0	6.0 (10), 2.9-10.7
Faridpur (373)	0	2.7 (10), 1.3-4.9
Madaripur (222)	0.5 (1), 0-2.5	6.3 (14), 3.5-10.4
Fultola, Baniasanta, Bagerhat (260)	0	0.4 (1), 0-2.1
Jessore (174)	0	2.9 (5), 0.9-6.6
Patuakhali (52)	0	1.9 (1), 0-10.3
Street based female sex workers:		
Dhaka (386)	0.3 (1), 0-1.4	7.0 (27), 4.7-10.0
Chittagong (405)	0	10.1 (41), 7.4-13.5
Hotel based female sex workers:		
Chittagong (118)	0	4.2 (5), 1.4-9.6
Sylhet (169)	0	8.3 (14), 4.6-13.5
Casual female sex workers:		
Chandpur (88)	0	5.7 (5), 1.9-12.8
Chittagong (200)	0	3.5 (7), 1.4-7.1
Hili (128)	0.8 (1), 0-4.3	4.7 (6), 1.7-9.9
Burimari (235)	0	0.9 (2), 0.1-3.0
Barisal (397)	0	1.5 (6), 0.6-3.3

Comparison over the rounds (Fig 6, 7, 8 and annexe 1, 2)

Annexe 1 and 2 show the comparisons between HIV and active syphilis rates between the rounds in female sex workers from different sites. Low rates of HIV infection have been recorded in female sex workers from all sites with no significant changes over the rounds.

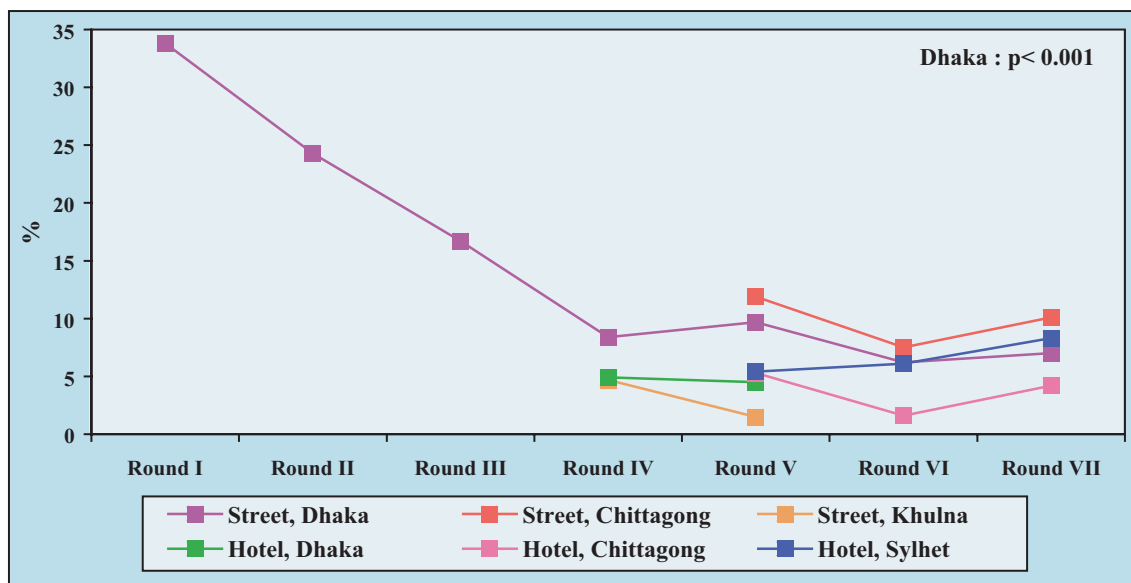
Active syphilis rates over the rounds declined significantly in brothels from Tangail ($p < 0.001$); Doulatdia ($p < 0.001$), Faridpur ($p < 0.001$), Madaripur ($p = 0.034$) and Fultola, Baniasanta, Bagerhat ($p < 0.001$), but remained unchanged in four brothels from Mymensingh, Jamalpur, Jessore and Patuakhali (Fig 6).

Fig 6. Active syphilis in brothel based sex workers over the rounds of serological surveillance



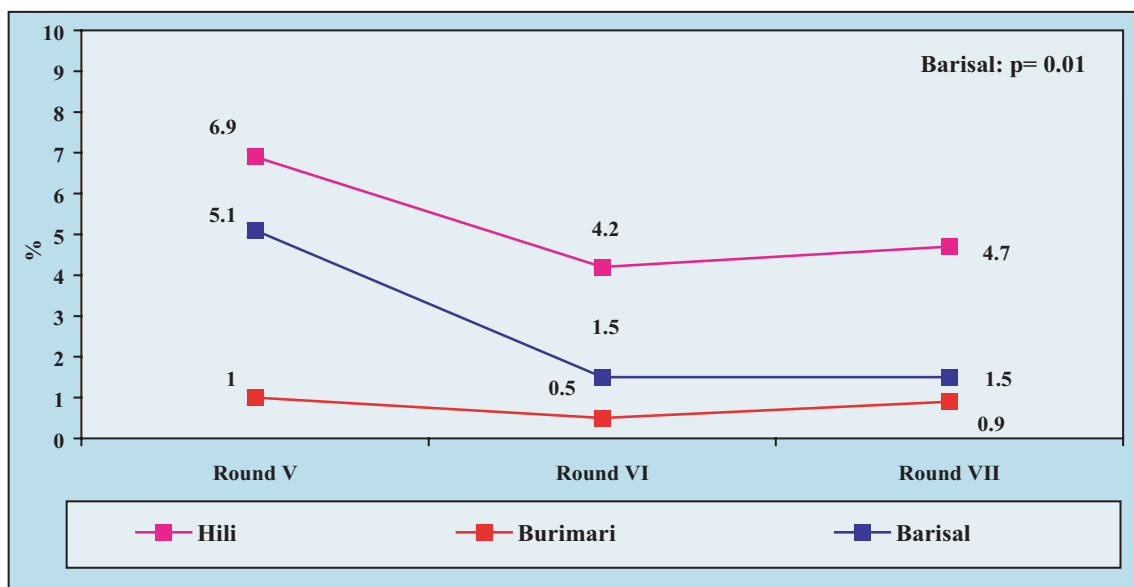
Over the rounds, active syphilis rates declined significantly in street based sex workers from Dhaka ($p < 0.001$). Declines were not significant for the street based sex workers from Chittagong and Khulna. In hotel based sex workers from Dhaka, Chittagong and Sylhet there were no changes in active syphilis rates over the rounds (Fig 7).

Fig 7. Active syphilis in street and hotel based sex workers over the rounds of serological surveillance



Over the rounds, active syphilis rate declined significantly in casual female sex workers from Barisal and remained unchanged in those from Hili and Burimari (Fig 8).

Fig 8. Active syphilis in casual female sex workers over the rounds of serological surveillance



4.3 MALE SEX WORKERS, MSM, HIJRAS

MSM and MSW were sampled from Dhaka. Hijras were sampled from Dhaka and Manikganj which were together considered to represent a single site.

Demographic characteristics (Table 11)

Median ages were similar among MSM, MSW and Hijras. Hijras had a lower median duration of education and a smaller proportion had ever attended school compared to MSM ($p < 0.05$ for both comparisons). However, Hijras and MSW were similar in these two parameters (median duration of education and proportion who ever attended school).

Table 11. Demographic characteristics of MSM, MSW and HIJRas, 2006

Geographical location (N)	Age in years median (IQR*)	Ever attended school % (n), 95% CI	Education (years) median (IQR)	Duration as male/Hijra sex worker (months) median (IQR)	Duration at the same site as male/Hijra sex worker (months) median (IQR)
Males who have sex with males:					
Dhaka (401)	23 (20-27)	81.0 (325), 76.9-84.8	7 (5-9)	NA [§]	NA
Male sex workers:					
Dhaka (284)	23 (20-28)	76.8 (218), 71.4-81.5	8 (5-10)	84 (36-144)	72 (36-120)
Hijras:					
Dhaka, Manikganj (353)	22 (20-28)	23.2 (66), 14.8-23.2	8 (5-9)	84 (48-144)	72 (36-120)

*IQR refers to inter quartile range; §NA = Not applicable

HIV and syphilis prevalence (Table 12)

Only one MSM out of 401 samples tested positive for HIV in Dhaka and two MSW out of 284 samples tested positive from the same city. As with the previous rounds, HIV remained below 1% among Hijras in Dhaka and Manikganj. Active syphilis rate was significantly higher in MSW than in MSM from the same city ($p < 0.001$), but it was similar between MSW and Hijras.

Table 12. Prevalence of HIV and syphilis among MSM, MSW and Hijras, 2006

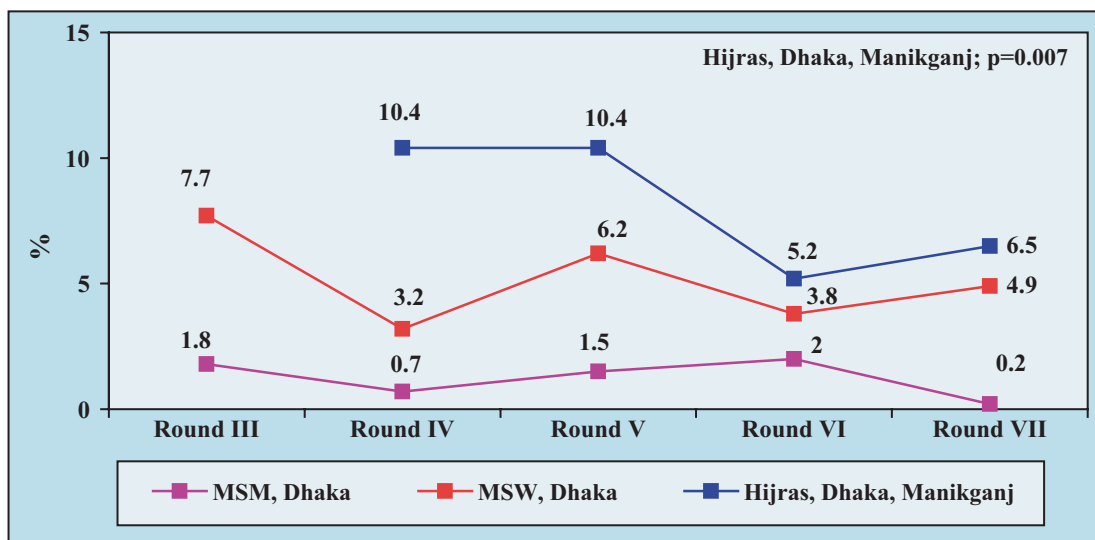
Study Populations, Geographical Location (N)	HIV % (n), 95% CI	Active syphilis % (n), 95% CI
Males who have sex with males: Dhaka (401)	0.2 (1), 0-1.4	0.2 (1), 0-1.4
Male sex workers: Dhaka (284)	0.7 (2), 0.1-2.5	4.9 (14), 2.7-8.1
Hijras: Dhaka, Manikganj (353)	0.6 (2), 0.1-2.0	6.5 (23), 4.2-9.6

Comparison over the rounds (Fig 9)

Trends in active syphilis rates could be determined for MSM and MSW from the third round and for Hijras from the fourth round.

HIV prevalence remained below one percent in MSM and MSW from Dhaka and in Hijras from Dhaka and Manikganj. Although, over the rounds, active syphilis rate declined among Hijras ($p=0.007$), it remained similar in MSM and MSW.

Fig 9. Active syphilis rates in MSM, MSW and Hijras over the rounds



5. CONCLUSIONS

Data from the seventh round of serological surveillance show for the first time that HIV exceeded 5% (the concentrated epidemic mark) in any one group, which was recorded in male IDU from the capital city, Dhaka (1). As in the last year, fortunately, the HIV positive IDU appear to be still largely concentrated in one neighbourhood, which may be the possible epicentre of the HIV epidemic. Such localisation of the epidemic is not unique to Bangladesh and has also been reported from Chennai, India (3).

In contrast to HIV, HCV rates declined in the IDU from Dhaka. Very recent data from an ongoing cohort study that is being conducted since 2002 among IDU from two neighbourhoods from Dhaka reveal that risky injection sharing (needles/syringes and other injection paraphernalia) practices are declining in this cohort of IDU (unpublished data). Such improvements in risk behaviour could explain the declining rates of HCV.

HIV in IDU from other cities is still low and also in combined female IDU and heroin smokers. However, combined female IDU and heroin smokers had very high rates of active syphilis. Approximately two thirds of female IDU sampled in a research cohort study were found to be sex workers (4) forming a strong network between IDU, sex workers and their clients. This is worrying as data from two cities in India have confirmed HIV transmission from IDU to their sexual partners (3, 5) and modelling exercises demonstrate that an initial IDU epidemic can seed a generalized heterosexual epidemic (6).

Other than IDU in Dhaka, data from other population groups was encouraging showing low HIV prevalence and in many cases declining active syphilis rates. This decline was most marked in female sex workers from the streets of Dhaka. The decline may be attributed to increased adoption of safer behaviours, i.e. condom use or to treatment for syphilis on a regular basis through the large numbers of intervention programmes that have been put in place by the Government of Bangladesh. However, the data shows considerable cross border mobility of sex workers living in border cities and many have sold sex while abroad.

Although it is alarming that there now is a concentrated HIV epidemic in IDU in Dhaka, other data from the 7th round of surveillance are very encouraging. There are two important observations that can be used to prevent an escalation of the epidemic; i) the IDU epidemic has remained localised to a specific neighbourhood in Dhaka so that enhanced efforts in those areas may be helpful in further delaying or even halting the epidemic, and ii) the intervention organisations may be having an effect in lowering syphilis rates in female sex workers at least in some areas and in Hijras, whether it is through treatment or through promotion of condom use.

The country therefore must further build on these efforts and address the gaps that have been highlighted particularly in relation to services for MSM, street based sex workers and casual sex workers in border areas.

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ANNEXE: 1

Prevalence of active syphilis over seven rounds of serological surveillance, 1998-1999, 1999-2000, 2000-2001, 2002, 2003-2004, 2004-2005 and 2006

Study Populations, Geographical Location	Active syphilis % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
Injection Drug Users (IDU):							
Detoxification Clinic:							
Dhaka	4.5 (2.7-7.0), 18 (402)	4.0 (2.3-6.4), 18 (402)	4.3 (1.2-10.8), 4 (92)	ND	ND	ND	ND
Out of detoxification clinic:							
Dhaka [†]	ND	9.3 (6.7-12.5), 39 (418)	2.5 (1.2-4.5), 10 (401)	3.5 (1.9-5.8), 14 (403)	1.2 (0.4-2.9), 5 (404)	2.9 (2.0-4.1), 31 (1061)	2.3 (1.5-3.4), 25 (1066)
Dhaka-A1	ND	ND	ND	ND	ND	3.8 (2.5-5.5), 25 (664)	3.7 (2.4-5.5), 25 (668)
Dhaka-A2	ND	ND	ND	ND	ND	1.5 (0.6-3.3), 6 (397)	0 (398)
Mymensingh	ND	ND	ND	ND	ND	1.8 (0.7-3.6), 7 (395)	0.7 (0.1-2.4), 2 (301)
Narayanganj	ND	ND	ND	ND	5.6 (2.1-11.8), 6 (107)	1.0 (0.5-3), 1 (103)	2.9 (0.6-8.1), 3 (105)
Tongi	ND	ND	ND	ND	1.6 (0.2-5.8), 2 (122)	3.9 (1.6-7.9), 7 (178)	4.4 (1.8-8.8), 7 (160)
Chandpur	ND	ND	ND	ND	7.0 (2.6-14.6), 6 (86)	2.5 (0.7-6.3), 4 (159)	2.8 (0.9-6.5), 5 (177)
Teknaf	ND	ND	ND	ND	ND	9.0 (5.0-14.7), 14 (155)	5.8 (2.4-11.6), 7 (120)
Rajshahi	ND	4.1 (2.4-6.5), 17 (416)	1.5 (0.5-3.2), 6 (402)	1.7 (0.7-3.5), 7 (405)	1.3 (0.4-2.9), 5 (394)	1.0 (0.3-2.3), 4 (398)	1.3 (0.4-2.9), 5 (393)
Chapai Nawabganj	ND	ND	1.7 (0.2-5.9), 2 (120)	2.0 (0.5-5.0), 4 (200)	1.7 (0.5-4.2), 4 (239)	0.5 (0.2-6), 1 (208)	0.5 (0.2-8), 1 (200)
Char Norendrapur	ND	ND	ND	ND	1.3 (0-6.9), 1 (78)	ND	ND
Kanshat	ND	ND	ND	ND	2.1 (0.1-11.3), 1 (47)	1.5 (0-8.2), 1 (66)	4.3 (0.9-12.2), 3 (69)
Rangpur	ND	ND	ND	ND	ND	ND	2.7 (0.9-6.1), 5 (187)
Naogaon	ND	ND	ND	ND	ND	0 (120)	0.5 (0-2.9), 1 (193)
Pabna	ND	ND	ND	ND	0 (85)	0 (57)	1.4 (0-7.8), 1 (69)
Ishwardi	ND	ND	ND	ND	3.5 (0.4-12.1), 2 (57)	0 (49)	1.8 (0-9.7), 1 (55)
Strajganj	ND	ND	ND	ND	ND	1.8 (0.2-6.4), 2 (111)	0.8 (0-4.5), 1 (122)
Dinajpur	ND	ND	ND	ND	ND	ND	1.1 (0.2-3.1), 3 (279)
Jessore	ND	ND	ND	ND	ND	3.0 (0.6-8.5), 3 (100)	2.3 (0.5-6.5), 3 (132)
Sathkhira	ND	ND	ND	ND	ND	1.0 (0.1-3.5), 2 (201)	0.9 (0.1-3.2), 2 (226)
Barisal	ND	ND	ND	ND	ND	0 (202)	0 (234)

Study Populations, Geographical Location	Active syphilis % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
Heroin Smokers: Dhaka	ND	ND	ND	3.4 (1.8-5.7), 13 (388)	2.6 (1.2-4.7), 10 (391)	3.0 (1.6-5.2), 12 (399)	3.0 (1.6-5.2), 12 (401)
Combined Injection Drug Users and Heroin Smokers: Khulna	ND	ND	ND	ND	ND	ND	1.0 (0.3-2.6), 4 (387)
Female: Dhaka, Narayanganj and Tongi	ND	ND	ND	ND	ND	9.2 (4.7-15.9), 11 (119)	9.9 (5.2-16.7), 12 (121)
Brothel Based Female Sex Workers: Tangail	13.8 (10.5-17.6), 54 (392)	6.2 (4.1-9.0), 25 (402)	8.1 (5.6-11.2), 33 (407)	3.9 (2.3-6.3), 16 (406)	3.2 (1.7-5.4), 13 (404)	1.7 (0.7-3.6), 7 (401)	1.5 (0.6-3.2), 6 (400)
Mymensingh	ND	10.2 (7.2-14.1), 33 (322)	ND	9.2 (5.1-15.0), 14 (152)	10.7 (6.4-16.6), 17 (159)	10.7 (6.2-16.7), 16 (150)	4.7 (1.9-9.4), 7 (150)
Doulatdia	ND	ND	14.8 (11.4-18.8), 57 (384)	6.7 (4.5-9.6), 27 (402)	6.0 (3.9-8.8), 24 (401)	3.8 (2.1-6.2), 15 (397)	4.2 (2.5-6.7), 17 (401)
Narayanganj	28.7 (23.5-34.4), 81 (282)	ND	ND	ND	ND	ND	ND
Jamalpur	ND	ND	ND	ND	11.0 (6.3-17.5), 15 (136)	8.4 (4.7-13.7), 14 (166)	6.0 (2.9-10.7), 10 (168)
Faridpur	ND	ND	ND	ND	8.2 (5.7-11.5), 31 (376)	3.8 (2.1-6.3), 14 (370)	2.7 (1.3-4.9), 10 (373)
Madaripur	ND	ND	ND	ND	12.2 (8.0-17.5), 25 (205)	8.4 (4.9-13.3), 16 (190)	6.3 (3.5-10.4), 14 (222)
Fultola, Bamiasama, Bagerhat [†]	ND	11.7 (8.5-15.5), 41 (351)	6.0 (3.7-9.1), 20 (335)	5.0 (2.6-8.5), 12 (241)	4.8 (2.6-7.9), 14 (293)	2.8 (1.1-5.6), 7 (252)	0.4 (0-2.1), 1 (260)
Jessore	ND	ND	8.0 (4.6-12.9), 15 (187)	3.6 (1.5-7.3), 7 (195)	7.6 (4.1-12.6), 13 (171)	4.2 (1.7-8.4), 7 (167)	2.9 (0.9-6.6), 5 (174)
Patuakhali	ND	ND	ND	ND	5.1 (1.1-14.1), 3 (59)	9.7 (3.6-19.9), 6 (62)	1.9 (0-10.3), 1 (52)
Street Based Female Sex Workers: Dhaka	33.8 (29.1-38.6), 135 (400)	24.3 (20.3-28.7), 103 (423)	16.7 (13.3-20.6), 70 (419)	8.4 (5.9-11.6), 34 (403)	9.7 (7.0-13.1), 39 (401)	6.2 (4.1-9.0), 25 (402)	7.0 (4.7-10.0), 27 (386)
Tangail	ND	ND	ND	(1.1-6.4), 6 (199)	ND	ND	ND
Chittagong	ND	ND	ND	ND	11.9 (8.9-15.5), 48 (402)	7.5 (5.1-10.5), 30 (402)	10.1 (7.4-13.5), 41 (405)
Khulna	ND	ND	ND	4.7 (2.7-7.7), 15 (317)	1.5 (0.5-3.2), 6 (403)	ND	ND
Hotel Based Female Sex Workers: Dhaka	ND	ND	ND	4.9 (3.0-7.5), 20 (405)	4.5 (2.7-7.0), 18 (400)	ND	ND
Chittagong	ND	ND	ND	ND	5.3 (2.2-10.6), 7 (132)	1.6 (0.2-5.5), 2 (128)	4.2 (1.4-9.6), 5 (118)
Sylhet	ND	ND	ND	ND	5.4 (2.5-10.0), 9 (166)	6.1 (2.9-10.9), 10 (165)	8.3 (4.6-13.5), 14 (169)

Study Populations, Geographical Location	Active syphilis % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
Casual Female Sex Workers: Chandpur	ND	ND	ND	ND	ND	9.3 (4.3-16.9), 9 (97)	5.7 (1.9-12.8), 5 (88)
Teknaf	ND	ND	ND	ND	ND	10.0 (5.7-16.0), 15 (150)	3.5 (1.4-7.1), 7 (200)
Hili	ND	ND	ND	ND	6.9 (2.8-13.8), 7 (101)	4.2 (1.4-9.5), 5 (120)	4.7 (1.7-9.9), 6 (128)
Burimari	ND	ND	ND	ND	1.0 (0.3-2.7), 4 (381)	0.5 (0-2.8), 1 (200)	0.9 (0.1-3.0), 2 (235)
Barisal	ND	ND	ND	ND	5.1 (2.5-9.1), 10 (197)	1.5 (0.6-3.2), 6 (400)	1.5 (0.6-3.3), 6 (397)
Male Sex Workers (MSW): Dhaka	ND	ND	7.7 (5.0-11.3), 24 (310)	3.2 (1.7-5.5), 13 (401)	6.2 (3.7-9.7), 17 (274)	3.8 (1.8-7.1), 9 (235)	4.9 (2.7-8.1), 14 (284)
Males Who Have Sex With Males (MSM): Dhaka	ND	ND	1.8 (0.7-3.6), 7 (399)	0.7 (0.2-2.1), 3 (406)	1.5 (0.6-3.2), 6 (399)	2.0 (0.9-3.9), 8 (405)	0.2 (0-1.4), 1 (401)
MSM and MSW combined*: Dhaka	7.0 (4.7-9.9), 28 (401)	6.7 (4.4-9.7), 26 (388)	ND	ND	ND	ND	ND
Mymensingh	ND	ND	ND	2.3 (1.0-4.2), 9 (400)	2.5 (1.2-4.5), 10 (400)	ND	ND
Chittagong	ND	ND	ND	4.3 (2.5-6.8), 17 (397)	2.8 (1.4-4.9), 11 (398)	4.9 (2.7-8.2), 14 (283)	ND
Sylhet	ND	ND	ND	3.0 (1.6-5.2), 12 (402)	3.3 (1.7-5.5), 13 (400)	5.6 (3.0-9.4), 13 (231)	ND
Hijras: Dhaka	ND	ND	ND	10.4 (7.6-13.9), 41 (393)	ND	ND	ND
Dhaka, Manikganj	ND	ND	ND	ND	10.4 (7.6-13.8), 42 (405)	5.2 (1.1-3.2), 20 (381)	6.5 (4.2-9.6), 23 (353)
Partners of Hijra: Dhaka, Manikganj	ND	ND	ND	ND	2.3 (0.3-8.0), 2 (88)	ND	ND
Babus (Brothel): Tangail	ND	ND	ND	1.6 (0.4-4.0), 4 (252)	2.0 (0.6-4.6), 5 (251)	ND	ND
Doulatdia	ND	ND	ND	6.0 (3.1-10.2), 12 (200)	6.3 (3.2-11.0), 11 (175)	ND	ND
Jamalpur	ND	ND	ND	ND	5.4 (1.1-14.9), 3 (56)	ND	ND
STI Patients: Dhaka	11.0 (8.1-14.5), 44 (399)	5.2 (3.2-7.8), 21 (404)	ND	ND	ND	ND	ND
Chittagong	7.6 (5.2-10.6), 31 (409)	4.2 (2.5-6.7), 17 (404)	2.2 (1.0-4.2), 9 (403)	ND	ND	ND	ND
Rajshahi, Rangpur*	2.2 (1.0-4.2), 9 (401)	1.7 (0.7-3.5), 7 (408)	1.5 (0.6-3.3), 6 (392)	ND	ND	ND	ND
Sylhet	8.1 (5.6-11.2), 32 (397)	ND	5.1 (3.2-7.8), 20 (389)	0.9 (0-5.1), 1 (106)	ND	ND	ND

Study Populations, Geographical Location	Active syphilis % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
Truckers: Dhaka	2.0 (0.9-3.9), 8 (403)	ND	2.1 (0.9-3.9), 9 (437)	1.1 (0.3-2.5), 4 (402)	ND	ND	ND
Jessore	ND	ND	1.8 (0.7-3.6), 7 (392)	ND	ND	ND	ND
Benapole	ND	ND	ND	ND	ND	0 (398)	ND
Dockworkers: Chittagong	ND	ND	2.8 (1.4-5.0), 11 (392)	ND	ND	1.8 (0.7-3.6), 7 (395)	ND
Mongla	ND	ND	1.0 (0.3-2.5), 4 (401)	ND	ND	ND	ND
Rickshaw pullers: Dhaka	ND	ND	ND	ND	0.2 (0-1.4), 1 (401)	0 (401)	ND
Chittagong	ND	ND	1.0 (0.3-2.5), 4 (400)	ND	1.2 (0.4-2.9), 5 (401)	ND	ND
Jessore	ND	ND	1.0 (0.3-2.5), 4 (401)	ND	ND	ND	ND
Launch Workers: Dhaka	ND	ND	ND	1.5 (0.5-3.2), 6 (402)	ND	ND	ND
TOTAL	11.3 (10.3-12.4), 440 (3886)	8.0 (7.2-8.8), 347 (4338)	4.6 (4.1-5.1), 322 (7063)	3.9 (3.5-4.4), 311 (7877)	4.5 (4.1-4.9), 471 (10445)	3.4 (3.1-3.8), 376 (11,029)	3.1 (2.8-3.5), 325 (10361)

†Dhaka-A represents the merged result of Dhaka-A1 and Dhaka-A2

‡Three geographical related areas Fulola, Baniasanta and Bagerhat together representing one site

§In some sites male sex workers (MSW) and non-sex worker MSM could not be differentiated and they were sampled as a single group

*In the first round, sampling was done only in Rajshahi, in the subsequent rounds sampling was done for Rajshahi and Rangpur and these together represented a single site

ANNEXE: 2

Prevalence of HIV over seven rounds of serological surveillance, 1998-1999, 1999-2000, 2000-2001, 2002, 2003-2004, 2004-2005 and 2006

Study Populations, Geographical Location	HIV % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
Injection Drug Users (IDU):							
Detoxification Clinic: Dhaka	2.5 (1.2-4.5), 10 (402)	0.2 (0-1.4), 1 (402)	0 (92)	ND	ND	ND	ND
Out of detoxification clinic: Dhaka†	ND	1.4 (0.5-3.1), 6 (418)	1.7 (0.7-3.6), 7 (401)	4.0 (2.3-6.4), 16 (403)	4.0 (2.3-6.3), 16 (404)	4.9 (3.7-6.4), 52 (1061)	7.0 (5.5-8.7), 75 (1072)
Dhaka-A1	ND	ND	ND	ND	ND	7.1 (5.2-9.3), 47 (664)	10.5 (8.3-13.1), 71 (674)
Dhaka-A2	ND	ND	ND	ND	ND	1.3 (0.4-2.9), 5 (397)	1.0 (0.3-2.3), 4 (398)
Mymensingh	ND	ND	ND	ND	ND	0 (395)	0, (301)
Narayanganj	ND	ND	ND	ND	0 (107)	0 (103)	1.0 (0-5.2), 1 (105)
Tongi	ND	ND	ND	ND	0 (122)	0 (178)	0 (160)
Chandpur	ND	ND	ND	ND	0 (86)	0.6 (0-3.5), 1 (159)	1.1 (0.1-4.0), 2 (178)
Teknaf	ND	ND	ND	ND	ND	0 (155)	0 (120)
Rajshahi	ND	0 (416)	0 (402)	0 (405)	0 (394)	0 (398)	0 (393)
Chapai Nawabganj	ND	ND	0 (120)	0 (200)	0 (239)	0 (208)	0 (200)
Char Norendrapur	ND	ND	ND	ND	0 (78)	ND	ND
Kanshat	ND	ND	ND	ND	0 (47)	0 (66)	0 (69)
Rangpur	ND	ND	ND	ND	ND	ND	0 (187)
Naoogaon	ND	ND	ND	ND	ND	0 (120)	0 (193)
Pabna	ND	ND	ND	ND	0 (85)	0 (57)	0 (69)
Ishwardi	ND	ND	ND	ND	0 (57)	2.0 (0.1-10.9), 1 (49)	1.8 (0-9.7), 1 (55)
Sirajganj	ND	ND	ND	ND	ND	0 (111)	0 (122)
Dinajpur	ND	ND	ND	ND	ND	ND	0 (279)
Jessore	ND	ND	ND	ND	ND	0 (100)	0 (132)
Sathkhira	ND	ND	ND	ND	ND	0 (201)	0 (226)
Barisal	ND	ND	ND	ND	ND	0 (202)	0 (234)

Study Populations, Geographical Location	HIV % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
Heroin Smokers: Dhaka	ND	ND	ND	0 (388)	0.8 (0.2-2.2), 3 (391)	0.5 (0.1-1.8), 2 (399)	0 (401)
Combined Injection Drug Users and Heroin Smokers: Khulna	ND	ND	ND	ND	ND	ND	0 (387)
Female: Dhaka, Narayanganj and Tongi	ND	ND	ND	ND	ND	0 (119)	0.8 (0-4.5), 1 (121)
Brothel Based Female Sex Workers: Tangail	0 (392)	0 (402)	0.5 (0.1-1.8), 2 (407)	0.2 (0-1.4), 1 (406)	0.5 (0.1-1.8), 2 (404)	0.2 (0-1.4), 1 (401)	0.3 (0-1.4), 1 (400)
Mymensingh	ND	0 (322)	ND	0 (152)	0 (159)	0.7 (0-3.7), 1 (150)	0.7 (0-3.7), 1 (150)
Doulatdia	ND	ND	0.3 (0-1.4), 1 (384)	0.7 (0-2.2), 3 (402)	0.5 (0.1-1.8), 2 (401)	0.3 (0-1.4), 1 (397)	0.2 (0-1.4), 1 (401)
Narayanganj	1.5 (0.4-3.8), 4 (267)	ND	ND	ND	ND	ND	ND
Jamalpur	ND	ND	ND	ND	0 (136)	0 (166)	0 (168)
Faridpur	ND	ND	ND	ND	0 (376)	0 (370)	0 (373)
Madaripur	ND	ND	ND	ND	0.5 (0-2.7), 1 (205)	0 (190)	0.5 (0-2.5), 1 (222)
Fultola, Baniasanta, Bagerhat	ND	0 (351)	0 (335)	0 (241)	0 (293)	0.4 (0-2.2), 1 (252)	0 (260)
Jessore	ND	ND	0.5 (0-2.9), 1 (187)	0.5 (0-2.8), 1 (195)	0.6 (0-3.2), 1 (171)	0.6 (0-3.3), 1 (167)	0 (174)
Patuakhali	ND	ND	ND	ND	0 (59)	0 (62)	0 (52)
Street Based Female Sex Workers: Dhaka	0 (400)	0.2 (0-1.3), 1 (423)	0.5 (0.1-1.7), 2 (419)	0.2 (0-1.4), 1 (403)	0.2 (0-1.4), 1 (401)	0.2 (0-1.4), 1 (402)	0.3 (0-1.4), 1 (386)
Tangail	ND	ND	ND	0 (199)	ND	ND	ND
Chittagong	ND	ND	ND	ND	0 (402)	0 (402)	0 (405)
Khulna	ND	ND	ND	0 (317)	0 (403)	ND	ND
Hotel Based Female Sex Workers: Dhaka	ND	ND	ND	0.2 (0-1.4), 1 (405)	0 (400)	ND	ND
Chittagong	ND	ND	ND	ND	1.5 (0.2-5.4), 2 (132)	0 (128)	0 (118)
Sylhet	ND	ND	ND	ND	0.6 (0-3.3), 1 (166)	0.6 (0-3.3), 1 (165)	0 (169)

Study Populations, Geographical Location	HIV % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
Casual Female Sex Workers: Chandpur Teknaf Hili Burimari Barisal	ND	ND	ND	ND	ND	0 (97)	0 (88)
	ND	ND	ND	ND	ND	0 (150)	0 (200)
	ND	ND	ND	ND	2.0 (0.2-7.0), 2 (101)	1.7 (0.2-5.9), 2 (120)	0.8 (0-4.3), 1 (128)
	ND	ND	ND	ND	0 (381)	0 (200)	0 (235)
	ND	ND	ND	ND	0 (197)	0 (400)	0 (397)
	ND	ND	0 (310)	0 (401)	0 (274)	0 (235)	0.7 (0.1-2.5), 2 (284)
Male Sex Workers (MSW): Dhaka	ND	ND	0 (399)	0.2 (0-1.4), 1 (406)	0 (399)	0 (405)	0.2 (0-1.4), 1 (401)
Males Who Have Sex With Males (MSM): Dhaka	ND	ND	ND	ND	ND	ND	ND
MSM and MSW combined ^a : Dhaka Mymensingh Chittagong Sylhet	0.2 (0-1.4), 1 (401)	0 (388)	ND	ND	ND	ND	ND
	ND	ND	ND	0 (400)	0 (400)	ND	ND
	ND	ND	ND	0 (397)	0.3 (0-1.4), 1 (398)	0.4 (0-2.0), 1 (283)	ND
	ND	ND	ND	0 (402)	0.3 (0-1.4), 1 (400)	0.4 (0-2.4), 1 (231)	ND
Hijras: Dhaka Dhaka, Manikganj	ND	ND	ND	0.8 (0.2-2.2), 3 (393)	ND	ND	ND
	ND	ND	ND	ND	0.2 (0-1.4), 1 (405)	0.8 (0.2-2.3), 3 (381)	0.6 (0.1-2.0), 2 (353)
Partners of Hijra: Dhaka, Manikganj	ND	ND	ND	ND	0 (88)	ND	ND
Babus (Brothel): Tangail Doulatdia Jamalpur	ND	ND	ND	0 (252)	0 (251)	ND	ND
	ND	ND	ND	0 (200)	0 (175)	ND	ND
	ND	ND	ND	ND	0 (56)	ND	ND

Study Populations, Geographical Location	HIV % Positive (95% CI), number positive (total number tested)						
	1998-1999 Round I	1999-2000 Round II	2000-2001 Round III	2002 Round IV	2003-2004 Round V	2004-2005 Round VI	2006 Round VII
STI Patients: Dhaka	0.3 (0-1.4), 1 (399)	0 (404)	ND	ND	ND	ND	ND
Chittagong	0.2 (0-1.4), 1 (409)	0 (404)	0.2 (0-1.4), 1 (403)	ND	ND	ND	ND
Rajshahi, Rangpur*	0 (401)	0 (408)	0 (392)	ND	ND	ND	ND
Sylhet	0 (397)	ND	0 (389)	0 (106)	ND	ND	ND
Truckers: Dhaka	0 (403)	ND	0 (437)	0 (402)	ND	ND	ND
Jessore	ND	ND	0 (392)	ND	ND	ND	ND
Benapole	ND	ND	ND	ND	ND	0 (398)	ND
Dockworkers: Chittagong	ND	ND	0 (392)	ND	ND	0 (395)	ND
Mongla	ND	ND	0 (401)	ND	ND	ND	ND
Rickshaw pullers: Dhaka	ND	ND	ND	ND	0.2 (0-1.4), 1 (401)	0 (401)	ND
Chittagong	ND	ND	0 (400)	ND	0 (401)	ND	ND
Jessore	ND	ND	0 (401)	ND	ND	ND	ND
Launch Workers: Dhaka	ND	ND	ND	0 (402)	ND	ND	ND
TOTAL	0.4 (0.3-0.7), 17 (3871)	0.2 (0.1-0.4), 8 (4338)	0.2 (0.1-0.3), 14 (7063)	0.3 (0.2-0.5), 27 (7877)	0.3 (0.2-0.5), 35 (10445)	0.6 (0.5-0.8), 70 (11,029)	0.9 (0.7-1.1), 91 (10,368)

† Dhaka-A represents the merged result of Dhaka-A1 and Dhaka-A2

‡ Three geographical related areas Fultola, Baniasantia and Bagerhat together representing one site

§ In some sites male sex workers (MSW) and non-sex worker MSM could not be differentiated and they were sampled as a single group

* In the first round, sampling was done only in Rajshahi, in the subsequent rounds sampling was done for Rajshahi and Rangpur and these together represented a single site

ANNEXE: 3**PARTICIPATING ORGANISATIONS**

1. Alliance for Co-operation & Legal Aid Bangladesh (ACLAB)
2. Badhan Hijra Sangha
3. Bandhu Social Welfare Society (BSWS)
4. Bangladesh Womens Health Coalition (BWHC)
5. CARE-Bangladesh
6. Community Health Care Project (CHCP)
7. Concern for Environmental Development and Research (CEDAR)
8. Durjoy Nari Shangha
9. Family Planning Association of Bangladesh (FPAB)
10. Grassroots Health and Rural Organization for Nutrition Initiative (GHARONI)
11. Health and Education for the Less Privileged (HELP)
12. Joy Nari Kallayan Sangha
13. Jagrata Juba Shangha (JJS)
14. Jagorony Janakallyan Sangstha
15. Karmajibi Kallayan Sangstha (KKS)
16. Kalikapur Jubo Sangshad (KAJUS)
17. Khulna Mukti Seba Sangstha (KMSS)
18. Let There Be Light
19. Light House
20. Marie Stopes Clinic Society (MSCS)
21. Mukti Mohila Samittee (MMS)
22. Nari Mukti Sangha
23. Nari Maitree
24. Organization of Development Program for the Underprivileged (ODPUP)
25. Peoples Resource Oriented Voluntary Association (PROVA)
26. Population Services and Training Center (PSTC)
27. Punarjibon
28. Padakhep Manobik Unnayan Kendra
29. PIACT Bangladesh
30. Proyas Manobik Unnayan Society
31. Social Marketing Company (SMC)
32. Save the Children (Australia)
33. SAWRAB Samaj Kallyan Sangstha
34. Shapla Mohila Sangstha
35. Sustha Jibon
36. Shuktara Kallayan Sangstha
37. Semonti Mohila Unnayan Sangstha.
38. Sylhet Jubo Academy (SJA)
39. Social Advancement Society (SAS)
40. The Salvation Army
41. Voluntary Family Welfare Association (VFWA)
42. World Vision
43. Young Power in Social Action (YPSA)

ANNEXE: 4**MEMBERS OF THE SURVEILLANCE ADVISORY COMMITTEE**

1. Director General Health and Line Director, NASP & SBTP, Directorate General of Health Services
2. Major General (Rtd) A S M Matiur Rahman, Chairperson TC-NAC and Chief Advisor, National AIDS/STD Programme (NASP), DGHS
3. Director General, Department of Narcotics Control
4. Director, IEDCR
5. Programme Manager, National AIDS/STD Programme, DGHS
6. Deputy Programme Managers, National AIDS/STD Programme, DGHS
7. Prof Nazrul Islam, Head, Department of Virology, BSMMU
8. Secretary General, Bangladesh Medical Association
9. Representative of the Inspector General of Police
10. Dr M Kamruzzaman Biswas, National Professional Officer, WHO
11. Dr Robert J Kelly, Country Director, FHI
12. Ms Tara O'Day, Deputy Country Director, FHI
13. Mr Parvez Sazzad Mallick, Senior Technical Officer, FHI
14. Ms Ali Forder, Health and Population Advisor, DFID
15. Dr Najmus S Sadiq, Assistant Resident Representative, UNDP
16. Ms Sheri Nouane Johnson, Deputy Team Leader, P, H & N Team, USAID
17. Dr Dinesh Nair, PAFK Team Leader, World Bank
18. Dr Ivonne Camaroni, Project Officer HIV/AIDS, UNICEF
19. Dr Evaristo Marowa, Country Coordinator, UNAIDS
20. Mr Mahboob Aminur Rahman, M & E Advisor, UNAIDS
21. Ms Ismat Bhuiyan, Project Director, The Population Council
22. Dr Imtiaz Ashraf Chowdhury, Curator, IEDCR
23. Dr G B Nair, Director, Laboratory Sciences Division (LSD), ICDDR,B
24. Dr Motiur Rahman, Head, RTI/STI Laboratory, LSD, ICDDR,B
25. Mr Masud Reza, LSD, ICDDR,B
26. Dr Rasheda Khanam, HSID, ICDDR,B
27. Dr Md Shah Alam, LSD, ICDDR,B
28. Dr Tasnim Azim, Scientist and Head, HIV/AIDS Programme, LSD, ICDDR,B