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HIV Surveillance in Bangladesh

Surveillance for human immunodeficiency virus (HIV) infection is conducted annually among population groups most vulnerable to HIV infection. The rate of HIV prevalence among injecting drug users in an urban area in central Bangladesh has increased significantly over the past three years to a level of 4% in 2002. Through 2002, in all other population groups sampled, HIV prevalence has remained <1%. The findings of this report suggest a trend in Bangladesh toward a concentrated HIV epidemic among injecting drug users.

Since 1998, the Government of Bangladesh has been conducting surveillance (known as 2nd generation surveillance) for HIV (1–5) which includes serological and behavioural surveillance; 2nd generation surveillance attempts to capture the potential diversity of HIV distribution by classifying an epidemic into low, concentrated, and generalised categories, and sampling population groups based on the epidemic situation in the country. On behalf of the Government of Bangladesh, ICDDR,B has conducted the serological component for each of the four rounds, while other organisations have conducted behavioural surveillance.

Surveillance is conducted among population groups that are most vulnerable to HIV infection. They include male and female sex workers, transgenders (hijra), injecting drug users (IDU), men who have sex with men (MSM), clients of sex workers, such as "babus" who are regular partners of female sex workers in brothels, patients with symptoms of sexually transmitted infections (STI), and transport workers, including truckers, rickshaw pullers, launch workers and dockworkers.

Table 1: Prevalence of HIV and syphilis during the 4th round of surveillance

Study population geographical Location (total no. tested)	HIV-Positive %; 95% CI	Syphilis-Positive %; 95% CI	
		Non-active	active
IDU:			
NEP* Central A (403)	4.0; 2.3-6.4	19.4; 15.6-23.6	3.5; 1.9-5.8
NEPNorth West A (405)	0; 0-0.9	9.4; 6.7-12.7	1.7; 0.7-3.5
NEPNorth West B (200)	0; 0-1.8	11.0; 7.0-16.2	2.0; 0.5-5.0
Heroin smokers:			
Central A (388)	0; 0-0.9	13.9; 10.6-17.8	3.4; 1.8-5.7
Brothel Based Female Sex workers:			
Central B (406)	0.2; 0-1.4	23.2; 19.1-27.6	3.9; 2.3-6.3
Central C (152)	0; 0-2.4	40.1; 32.3-48.4	9.2; 5.1-15.0
Central D (402)	0.7; 0-2.2	32.6; 28.0-37.4	6.7; 4.5-9.6
South West A,C (241)	0; 0-1.5	17.4; 12.9-22.8	5.0; 2.6-8.5
South West B (195)	0.5; 0-2.8	26.2; 20.1-32.9	3.6; 1.5-7.3
Street Based Female Sex Workers:			
Central A (403)	0.2; 0-1.4	29.8; 25.4-34.5	8.4; 5.9-11.6
Central B (199)	0; 0-1.8	12.1; 7.9-17.4	3.0; 1.1-6.4
South West A** (317)	0; 0-1.2	13.6; 10.0-17.8	4.7; 2.7-7.7
Hotel Based Female Sex Workers:			
Central A (405)	0.2; 0-1.4	11.4; 8.4-14.9	4.9, 3-7.5
Hijra:			
Central A (393)	0.8; 0.2-2.2	34.9; 30.2-39.8	10.4, 7.6-13.9
Male Sex Workers:			
Central A (401)	0; 0-0.9	14.2; 10.9-18.0	3.2; 1.7-5.5
MSM (non sex workers):			
Central A (406)	0.2; 0-1.4	3.7; 2.1-6.0	0.7; 0.2-2.1
MSM group (sex workers and non sex workers): †			
Central C (400)	0; 0-0.9	8.8; 6.2-12.0	2.3; 1-4.2
South East A (397)	0; 0-0.9	11.8; 8.8-15.4	4.3; 2.5-6.8
North East A (402)	0; 0-0.9	6.2; 4.1-9.0	3.0; 1.6-5.2
Babus (Brothel):			
Central B (252)	0; 0-1.5	10.7; 7.2-15.2	1.6; 0.4-4
Central D (200)	0; 0-1.8	23.0; 17.4-29.5	6.0; 3.1-10.2
STI Patients:			
North East A (106)	0; 0-3.4	3.8; 1-9.4	0.9; 0-5.1
Truckers:			
Central A (402)	0; 0-0.9	7.0; 4.7-9.9	1.0; 0.3-2.5
Launch Workers:			
Central A (402)	0; 0-0.9	5.0; 3.1-7.6	1.5; 0.5-3.2
Total: (7877)	0.3; 0.2-0.5	15.8; 15.0-16.6	3.9; 3.5-4.4

*NEP–Needle/syringe exchange programme

**Southwest A and C, two geographical related areas 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

These population groups are sampled from five regions, based on five of the divisions of Bangladesh. People within vulnerable population groups are accessed for serological surveillance from a variety of sentinel sites through organisations providing intervention programmes. Blood specimens are obtained within clinical settings following community mobilisation, and tested for HIV, syphilis and hepatitis C (HCV). HCV is tested only among IDUs. In order to achieve ±1% precision and 95% confidence, approximately 380 people are tested within each group, based on an assumption of HIV prevalence of 1%. For groups with fewer than 380 people available for testing, all individuals agreeing to participate are surveyed.

During the 4th round of serological surveillance between May and October 2003, 7,877 blood samples were collected. Samples were initially tested for HIV by an ELISA kit (Organon Teknika, Boxtel, The Netherlands); positive assays were confirmed by Line Immunoassay (LIA, Organon Teknika). An indeterminate result in the LIA test was considered to be negative. Syphilis was tested by the Rapid Plasma Reagin test (RPR; Organon Teknika) and the ***Treponema pallidum*** haemagglutination assay (TPHA; Organon Teknika). Specimens positive for TPHAwith an RPR titre of ≥8 were considered to reflect active syphilis. Sera from IDU were tested for HCV using an ELISA kit (UBI HCV EIA, United Biomedical Inc., USA). All HCV ELISA-positive specimens were re-tested with a second ELISA kit (Abbott IMx HCV, version 3.0, Abbott Laboratories, USA). Specimens with discrepant results were retested by LIA (INNO-LIA HCV Ab III update, Innogenetics N.V., Ghent, Belgium). Samples positive for any two tests were considered to be positive for HCV.

Overall HIV prevalence was 0.3% (Table 1). This figure is comparable to that found during previous rounds (0.4%, 0.2%, and 0.2% in the 1st, 2nd and 3rd rounds respectively). However, prevalence of HIV in IDU in one city in central Bangladesh (City A), has increased dramatically to 4% (Fig. 1). This figure represents the highest recorded rate in any group during any surveillance round. IDUs also had high rates of HCV (ranging from 59.8-79.5%) which are similar to findings in the 2nd surveillance round (Table 2).

While HIV infection was documented in other population groups, the prevalence was less than 1%. No HIV was detected among male sex workers or among male clients of female sex workers (truckers, launch workers, STI patients and babus).

Syphilis rates have remained high, especially among female sex workers and hijra (Table 1). Declining rates for syphilis were observed at many of the brothel sites (but not all of them) (Fig. 2) and from the streets of City A, possibly as a result of intense interventions in those groups.

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Figure 1: HIV among injecting drug users in Bangladesh

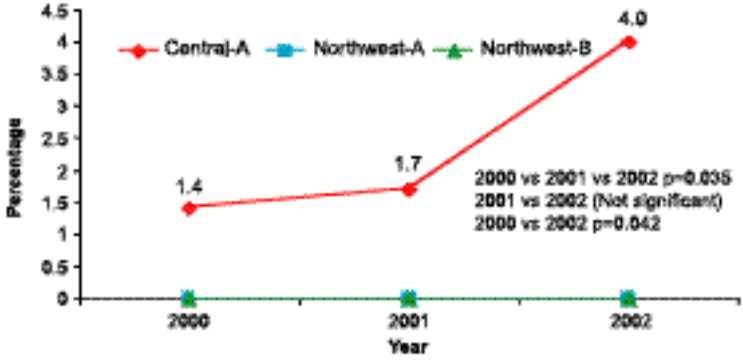
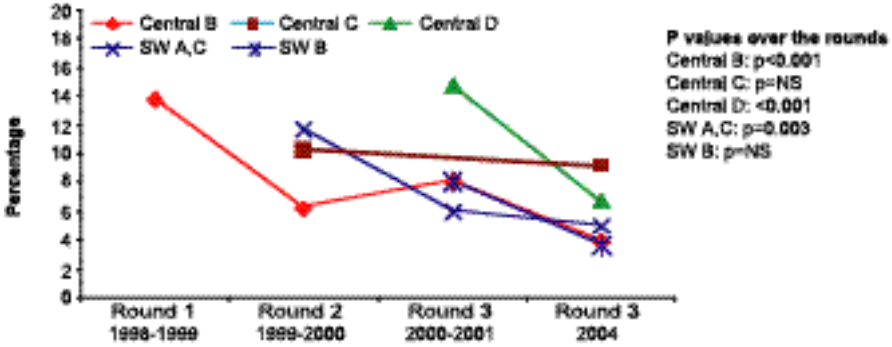


Table 2: Prevalence of hepatitis C among injecting drug users

	Hepatitis C positive, % positive, (95% CI), (total number tested)		
	Round II	Round IV	P value§
IUD from detoxification clinics in Central Bangladesh	17.4 (13.9-21.5) (402)	ND±	
IUD from the NEP* from Central Bangladesh	66.5 (61.8-71.0) (418)	62.3 (57.4-67.0) (403)	NS**
IUD from the NEP* from Northwest A	59.6 (54.7-64.8) (416)	59.8 (54.8-64.6) (405)	NS**
UD from the NEP* from Northwest B	ND±	79.5 (73.2-84.9) (200)	NS**

*NEP= needle/syringe exchange programme
±ND = not done
§Chi-square statistic was used to compare the rounds
**NS= not significant

Figure 2: Active syphilis rates in female sex workers from brothels over the four rounds of surveillance



Comment

Bangladesh has been conducting Second-generation Surveillance for HIV for several years with both serological and behavioural surveillance data providing information on the national risk for an epidemic (6). Data generated by surveillance are used by policy makers and intervention organisations, and for mobilizing and focusing the application of funds (7).

Data from serological surveillance show that Bangladesh may be at the brink of an epidemic among IDUs. Many Asian countries are now reporting epidemics in IDU (8). In Central Bangladesh, the behavioural surveillance shows that more than 50% of IDU do not have access to interventions (5), and some IDU with access to needle/syringe exchange programmes share needles/syringes, though the rate of injection sharing is much less than among IDU who are outside the interventions (5,9). Since serological surveillance is conducted only among IDU attending needle/syringe exchange programmes, it is possible that an epidemic of HIV among IDU who are outside the intervention is already taking place. Once an HIV epidemic among IDU becomes established, it is unlikely to remain limited to IDU as has been shown in other countries (10). Behavioural surveillance data show that IDU both buy and sell sex; many are married, and they rarely use condoms (2-5). The relatively high rates of syphilis infection in IDU confirm that IDU are practicing unsafe sex.

Sex workers in Bangladesh continue to have low levels of HIV, but sex workers are very much at risk of an epidemic because they have large numbers of partners, and condoms are used infrequently (2-5). Syphilis rates are highest among female sex workers (1-5). As serological surveillance is coordinated with existing intervention programmes, changes in syphilis rates to some extent reflect the success or failure of the programmes.

Hijras are a marginalized population group with documented risky behaviours for HIV (4,5). The highest rate of active syphilis was recorded in this group during the 4th round of surveillance. Interventions focusing on hijras have recently been implemented, but are focused primarily in one city. All other population groups surveyed also have documented high risk behaviours (2-5). Networks of risk connecting each population group (2-5) will increase the level of difficulty for controlling an epidemic of HIV, should the disease become established within any of the groups.

Bangladesh has little time to avert a concentrated epidemic. Mobilisation and action at all levels requires urgent expansion. Despite being a country with a low prevalence of HIV, Bangladesh has for many years had a variety of organisations working to prevent HIV/AIDS. Given the findings of this round of surveillance, scaling up interventions is urgently required to stop the further spread of HIV among drug injectors and other vulnerable people.

References

1. Azim T, Islam MN, Bogaerts J, ***et al.*** Prevalence of HIV and syphilis among high-risk groups in Bangladesh. ***AIDS*** 2000;14(2):210-1.
2. Bangladesh. Ministry of Health and Family Welfare. AIDS and STD Control Programme. Report on the Second National Expanded HIV Surveillance, 1999-2000, Dhaka: Directorate General of Health Services, Government of Bangladesh, 2000. 86 p.
3. Bangladesh. Ministry of Health & Family Welfare. AIDS and STD Control Programme. Report on the sero-surveillance and behavioural surveillance on STD and AIDS in Bangladesh, 1998-1999. Dhaka: Directorate General of Health Services, Government of Bangladesh, 2000. 52 p.
4. Bangladesh. Ministry of Health and Family Welfare. National AIDS/STD Programme. HIV in Bangladesh: where is it going? Dhaka: Directorate General of Health Services, Government of Bangladesh, 2001. 27 p.
5. Bangladesh. Ministry of Health and Family Welfare. National AIDS/STD Programme. HIV in Bangladesh: is time running out? Dhaka: Directorate General of Health Services, Government of Bangladesh: 2003. 35 p.
6. Pisani, E, Leng HB, Azim T, Soepanto A. The sum of the parts: strong national structures are needed if second-generation surveillance is to succeed (abstract). ***In:*** Abstracts of the XIV International AIDS Conference, Barcelona, 7-12 July 2002:655.
7. Rahman M, Azim T, Baatsen P, Pisani E. Making a case: using international data to lobby for effective HIV prevention in low prevalence countries (abstract). ***In:*** Abstracts of the XIV International AIDS Conference, Barcelona, 7-12 July 2002:302.

8. Reid G, Costigan G. Revisiting "the hidden epidemic": a situation assessment of drug use in Asia in the context of HIV/AIDS. Melbourne: Centre for Harm Reduction, Burnet Institute, 2002.
9. Jenkins C, Rahman H, Saidel T, ***et al.*** Measuring the impact of needle exchange programs among injecting drug users through the National Behavioural Surveillance in Bangladesh. ***AIDS Educ Prev*** 2001;13(5):452-61.
10. Panda S, Chatterjee A, Bhattacharya SK, ***et al.*** Transmission of HIV from injecting drug users to their wives in India. ***Int J STD AIDS*** 2000;11(7):468-73.

Surveillance for *Haemophilus influenzae* type b Invasive Infections Among Hospitalized Children in Urban Bangladesh (1999-2002)

Surveillance was conducted in Dhaka during 1999-2002 to study the epidemiology and antimicrobial resistance of H. influenzae type b (Hib) infections in children hospitalised with pneumonia and meningitis. Fifty-three invasive Hib infections were identified; 35 were from CSF of children with meningitis and 18 from blood cultures of children with pneumonia. Most Hib meningitis and pneumonia cases occurred in infants aged 4-12 months. Decreased susceptibility to co-trimoxazole, ampicillin, erythromycin, and chloramphenicol was frequent. Emergence of drug-resistance to Hib will make treatment more complicated and costly, increasing the potential benefit of prevention of Hib disease through immunization in Bangladesh.

Haemophilus influenzae type b (Hib) is an important cause of meningitis, community-acquired pneumonia and septicaemia in children <5 years old in many countries where children are not vaccinated against Hib (1,2). Limited data are available on Hib disease in Asia (3). Optimal laboratory facilities are not routinely available for detecting aetiological agents of meningitis, pneumonia and septicaemia, the most important invasive diseases caused by Hib. The World Health Organization (WHO) has recommended that surveillance for Hib disease be undertaken in developing countries to determine the burden of preventable Hib diseases and to ascertain the potential utility of Hib vaccines in those regions (2,4). This report summarizes data from Hib disease surveillance among children hospitalised with pneumonia, meningitis and septicaemia in three hospitals in Dhaka city during 1999-2002.

Children were assessed for pneumonia using World Health Organization criteria: cough or difficult breathing and a respiratory rate of 50 breaths per minute or more in children aged 2-11 months or 40 breaths per minute or more in children