

*Report of the 2003 Survey*

**HIV SENTINEL  
SURVEILLANCE SURVEY  
IN SRI LANKA**

**National STD/AIDS Control Programme**  
Department of Health Services  
Colombo  
Sri Lanka

Report of the 2003 survey

## **HIV Sentinel Surveillance Survey in Sri Lanka**

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Colombo 10,  
Sri Lanka.**

January 2004

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## Abbreviations used in this report

<b>AIDS</b>	Acquired immunodeficiency syndrome
<b>CP</b>	Central province
<b>DTCO</b>	District tuberculosis control officer
<b>ELISA</b>	Enzyme-linked immunosorbent assay
<b>FSW</b>	Female sex worker
<b>HIV</b>	Human immunodeficiency virus
<b>MOH</b>	Medical officer of health
<b>N &amp; E P</b>	North and East provinces
<b>NCP</b>	North Central province
<b>NSACP</b>	National STD/AIDS control programme
<b>NWP</b>	North Western province
<b>Sab P</b>	Sabaragamuwa province
<b>SP</b>	Southern province
<b>STD</b>	Sexually transmitted diseases, Sexually transmitted disease clinic attendee
<b>TB</b>	Tuberculosis patient
<b>TW</b>	Transport worker
<b>UP</b>	Uva province
<b>WP</b>	Western province

## **Introduction**

HIV/AIDS surveillance is one of the key elements of any HIV/AIDS control programme. Methods of HIV surveillance are evolving over the time based on the experience from various regions of the world. Previous surveillance guidelines mainly focussed on the sentinel HIV sero-surveillance and the HIV/AIDS case reporting. However, during recent years the importance of collecting complementary socio-demographic and behavioural data has become increasingly apparent. Therefore, to identify potential behavioural determinants of HIV spread in a society and to monitor the effectiveness of preventive programmes, systematic collection of relevant behaviour indicators has been recommended in the new version of HIV surveillance guidelines named 'second generation HIV surveillance'. For countries with low-level HIV epidemics, sentinel HIV sero-surveillance among vulnerable or high-risk population groups is recommended as part of the second generation surveillance.

The main objective of the sentinel HIV sero-surveillance is to provide repeated measures of HIV prevalence in selected population groups in selected geographical sites in order to monitor levels and trends over the time. Data generated by the sentinel sero-surveillance is used for HIV estimates, programme planning and advocacy purposes.

This report summarizes the methods and results of the Sri Lankan HIV sentinel sero-surveillance survey conducted in the year 2003. The National STD/AIDS Control Programme (NSACP) of the Ministry of Health, Nutrition and Welfare has conducted this survey annually since 1993 by of Sri Lanka with financial support from the World Health Organization. A summary of the results obtained from these surveys has been included in the annexes of this report.

## **Method**

### **Duration of the survey**

The 2003 survey was planned to be conducted over a period of three months period from 1<sup>st</sup> July 2003 to 30<sup>th</sup> September 2003. However, the sample collection was extended until 30<sup>th</sup> of October due to the disruption of services by the trade union action of some health care workers.

### **Sentinel sites and groups**

All nine provinces in the island were included in the survey (Annex iv). Two new sample-collecting centers were added in year 2003. They were Dambulla in Central province and Jaffna in northern province. However, Jaffna did not participate in the survey. For the purpose of this survey, North province and the East province were considered as one sentinel site (North & East provinces).

Sentinel Sites	Sample-collecting centers
1. Western Province (WP)	Colombo, Colombo South & Colombo North
2. Central Province (CP)	Katugastota, Maltale, Dambulla, Nuwara Eliya
3. Southern Province (SP)	Karapitiya, Matara, Balapitiya
4. Sabaragamuwa Province (Sab.P)	Ratnapura, Kegalle
5. North Western Province (NWP)	Kurunegala, Chilaw
6. North Central Province (NCP)	Anuradhapura, Polonnaruwa
7. Uva Province (UP)	Badulla, Mahiyangana, Kataragama
8. North-Eastern Province (N&E P)	Trincomalee, Batticaloa, Vavuniya, Jaffna

Two new sentinel groups were added in the 2003 survey. They were army service personnel and transport workers. Female sex workers (FSW), STD clinic attendees and patients diagnosed with tuberculosis were other sentinel groups. It was decided to enroll persons between 15 to 49 year age group from all sentinel groups.

The following working definitions were used for survey.

1. **Female Sex Workers (FSW)** - Women who were currently engaged in commercial sex work. They were enrolled by field visits only. A specially designed card (pink in colour) containing necessary information was given to FSW to prevent double counting.
2. **STD clinic attendees (STD)**- Persons who attend a STD Clinic for seeking care at selected sentinel sites during the survey period. Both males and females were included. Those who came for routine pre-employment or antenatal screening were excluded. Patients with previously diagnosed HIV infection were excluded. Both newly registered patients and those who came for follow up visits were included. Female sex workers who sought care at STD clinics were categorised as STD clinic attendees.
3. **TB patients (TB)** - Both new and old TB patients who were registered in the TB register maintained by the District Tuberculosis Control Officer (DTCO) during the survey period were enrolled. Both pulmonary and extra-pulmonary TB cases were included.
4. **Service personnel (Service)** - Currently serving army personnel in combat in selected army camps in each sentinel site were enrolled. Female officers and those who were engaged in full time office work were excluded. To prevent double counting a beige colour card with relevant information was given to those enrolled.
4. **Transport workers (TW)** - Lorry drivers and lorry cleaners who came to the Dambulla Economic Centre for business purposes on sample collection days were enrolled as transport workers.

## **Method of HIV testing**

All HIV tested were done on an unlinked anonymous basis. Routinely collected blood was used only in STD clinic attendees. In all other sentinel groups blood samples were collected for the VDRL test on obtaining consent. Once the VDRL tests were carried out, left over blood were used for HIV testing after removing individual identifying labels.

## **Sample size**

Sample sizes were mainly based on WHO recommendations for HIV sero-surveillance surveys. Unlike in previous years, sample collection was discontinued once the stipulated sample sizes were completed. These predetermined sample sizes are given below.

<b>Sentinel Group</b>	<b>WP</b>	<b>CP</b>	<b>SP</b>	<b>Sab.P</b>	<b>NWP</b>	<b>NCP</b>	<b>UP</b>	<b>NEP</b>
1. FSW	400	250	250	250	250	250	250	250
2. STD	500	250	250	250	250	250	250	250
3. TB	250	250	250	250	250	250	250	250
4. Service personnel	400	400	400	400	400	400	400	400
5. Transport workers*	-	600	-	-	-	-	-	-

\* Enrolled only at Dambulla in Central province.

## **Laboratory testing strategy for HIV antibodies**

HIV antibody status was determined based on the results of two screening assays i.e. ELISA and Particle agglutination assay. All samples tested positive with one test were tested with the other type of screening test. If both tests were positive the sample was considered as positive. If the 2nd test was negative, then both screening tests were repeated (1st and 2nd test) and if both were positive it was considered as positive. If one test was positive and the other test was negative it was considered as indeterminate. Further testing with the Western Blot was not done based on WHO recommendations.

## **Staff training, Monitoring and supervision**

Staff training, monitoring and supervision were carried out to ensure uniformity at all sentinel sites. The existing survey protocol was modified to suite changes in the 2003 survey. A training workshop was held in Colombo prior to the commencement of survey to familiarize health-care personnel and other relevant persons on this protocol.

A special workshop was held at Dambulla to initiate the survey among transport workers of the Dambulla Economic Center. Officers of National STD/AIDS Control programme, Local health care workers, health administrators and representatives from the Economic Center participated in this workshop.

Supervisory visits were carried out to sample collecting centers during the survey period. Traditionally all these visits had been carried out by officers from Colombo. However, during the 2003 survey, provincial centers with experienced staff were given the responsibility of monitoring their own site as well as monitoring other sample collecting centers in their provinces. Visits from Colombo were limited to inexperienced sites situated mainly in the North and East provinces. However, Jaffna sentinel site could not be monitored due to logistic problems. Jaffna STD clinic did not contribute to the survey although the staff were trained in the procedure.

## Results

A total of 9765 samples were tested and 10 HIV antibody positive samples were detected in the 2003 sero-survey. Of these, 8 were from STD patients and other two belonged to a FSW and TB patient respectively. There were no HIV positives among service personnel and transport workers.

In addition to the 10 HIV antibody positive samples, 'indeterminate' results were seen in 7 blood samples. These belonged to 3 FSW, 3 service personnel and to a transport worker. As stated earlier, a test result was considered 'indeterminate' when a sample tested positive on one test and negative on the second test on two occasions.

Table 1. HIV test results by sentinel sites and sentinel groups

Sentinel Sites	Sentinel groups									
	STD		FSW		TB		Service		TW	
	No. tests	No. +ve	No. tests	No. +ve	No. tests	No. +ve	No. tests	No. +ve	No. tests	No. +ve
WP	606	2 (0.3%)	405	1 (0.2%)	282	1 (0.3%)	521	0	-	-
CP	445	0	88	0	282	0	389	0	603	0
S.P	410	2 (0.5%)	245	0	143	0	412	0	-	-
Sab.P	275	0	188	0	254	0	400	0	-	-
NWP	296	3 (1.0%)	277	0	167	0	396	0	-	-
NCP	407	0	170	0	220	0	399	0	-	-
UP	250	1 (0.4%)	84	0	152	0	381	0	-	-
N & E P	134	0	13	0	66	0	401	0	-	-

Table 1 describes the number of HIV antibody tests, number of HIV positive samples and sero-positivity rates amongst different sentinel groups at various sites. All sites except the North & East provinces were able to enroll more than the stipulated sample size for STD clinic attendees. Of the 10 HIV positive samples, 8 were in STD clinic attendees whose sero-prevalence rates ranged from 0.3% to 1%.

Only three sites were able to enroll adequate number of FSW for the survey. North & East provinces could enrol only 5% of the required sample size. There was only one HIV positive sample amongst the FSW category giving a sero-prevalence rate of 0.2% in Western province.

Among TB patients, satisfactory numbers were enrolled only in 4 sentinel sites. The only positive sample was from the Western province (sero-prevalence rate 0.3%).

Adequate numbers have been enrolled for the two new sentinel groups i.e. Service personnel and Transport workers. Neither group tested positive for HIV antibodies.

**Figure 1. Age distribution of STD clinic attendees by sentinel sites**

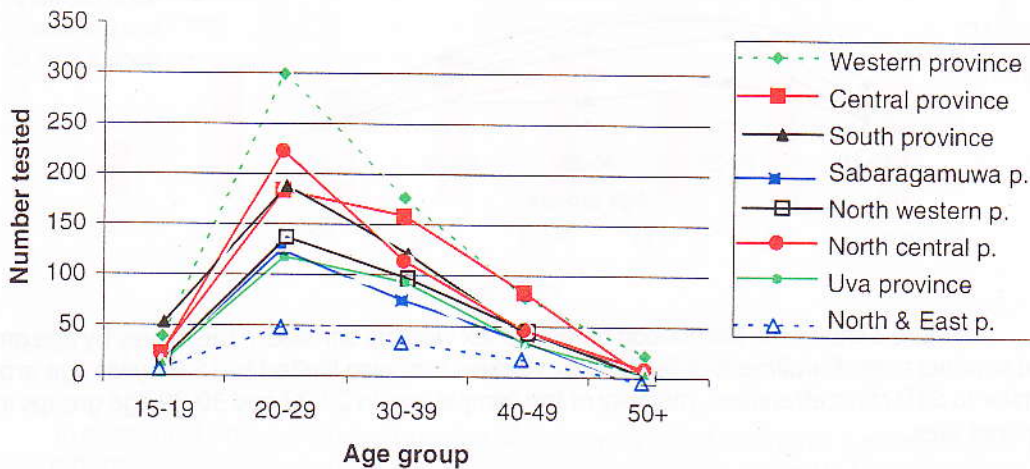
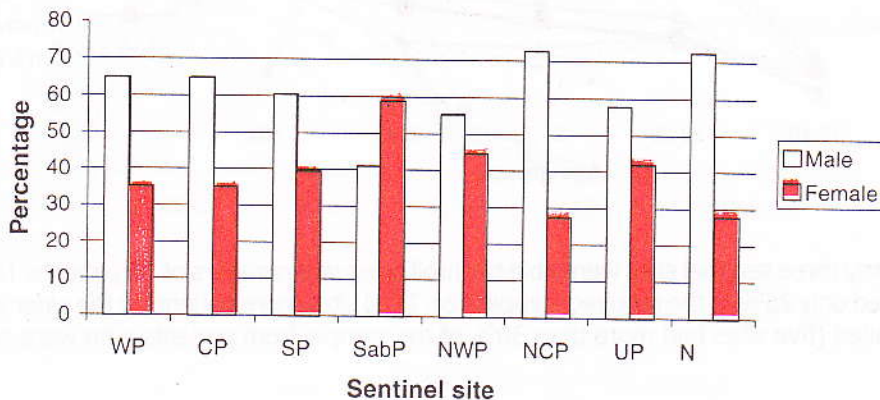


Figure 1 shows the distribution of STD clinic attendees enrolled in various sentinel sites by age group and sentinel sites. Enrolment of STD clinic attendees was limited to 15-49 year age group. Majority of the sample was in 20-29 and 30-39 age groups in all sentinel sites.

A total of 2823 STD clinic attendees were tested and 8 (4 males and 4 females) were found to be positive for HIV antibodies. Of these, four persons were in 20-29 year age group.

**Figure 2. STD Clinic attendees by sentinel sites and sex**





In all sentinel sites, except Sabaragamuwa, a higher percentage of male STD clinic attendees were enrolled for the survey (Figure 2).

**Figure 3. Female sex workers by age group and sentinel sites**

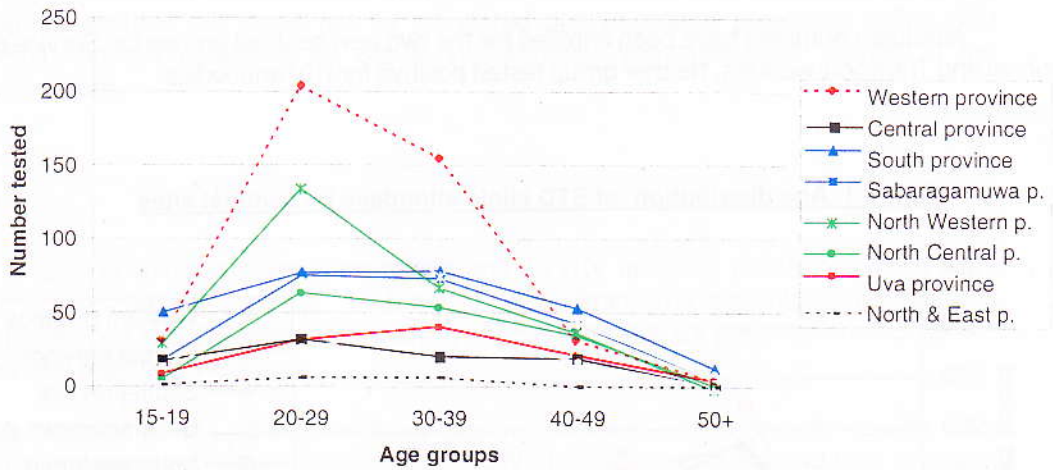
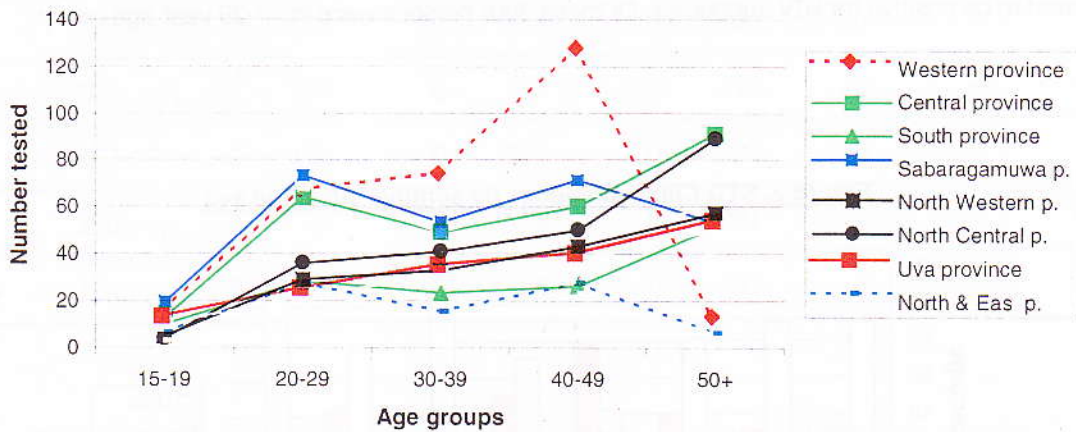


Figure 3 shows the distribution of female sex workers enrolled in the survey by age group and sentinel sites. Enrollment of female sex workers was also limited to 15-49 year age group. Similar to STD clinic attendees, majority of the sample was in 20-29 and 30-39 age groups in all sentinel sites.

Of the total 1470 FSW tested in 2003 survey, only one sample from the Western province became positive for HIV antibodies (seroprevalence rate of 0.2%).

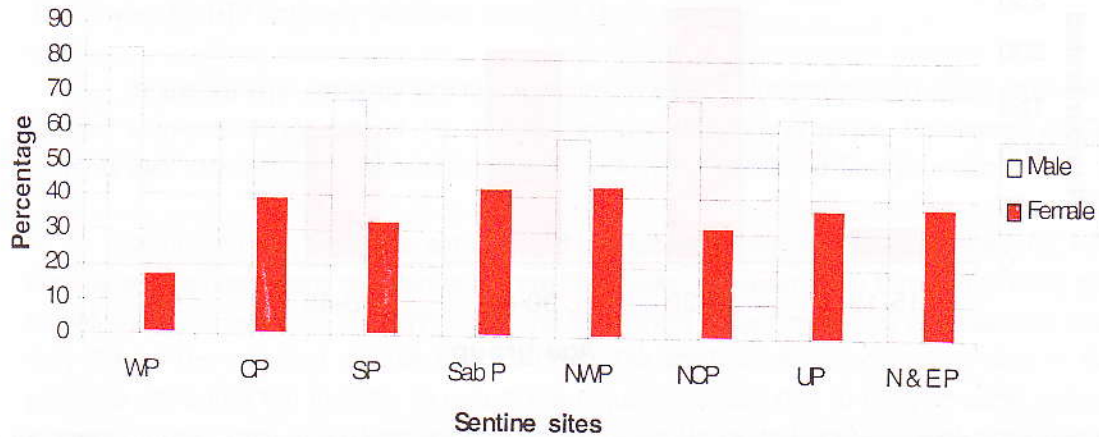
**Figure 4. TB patients by age group and sentinel sites**



Only three sentinel sites were able to enroll adequate numbers of TB patients. North-East had enrolled only 25% of the required sample size. In all sites more patients in the older age group were enrolled (five sites had more than 30% of the sample from patients who were >50 years old).

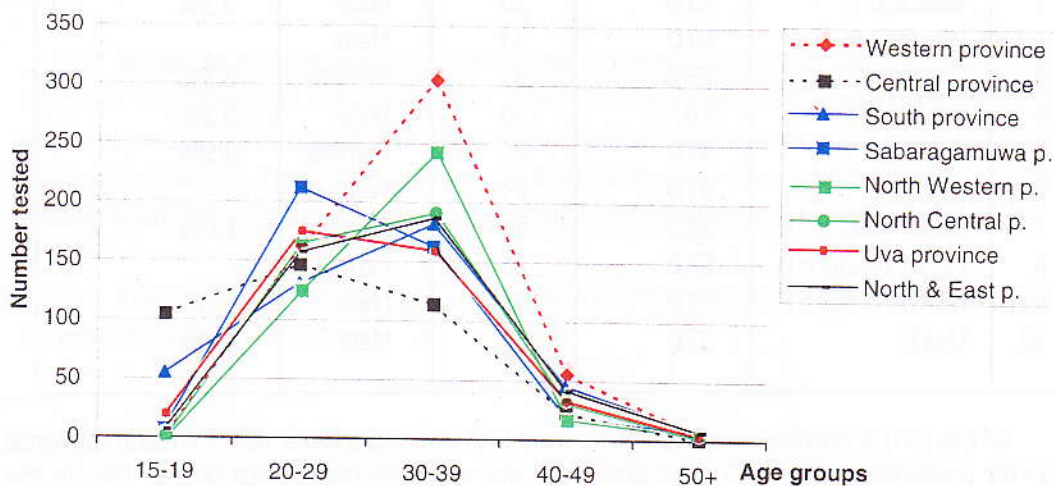
A total of 1566 TB patients were tested during the survey. Of the 282 patients from the Western province, one tested positive for HIV (giving a sero-prevalence of 0.3%). This sample belonged to a 39 year-old male.

**Figure 5. TB patients by sentinel sites and sex**



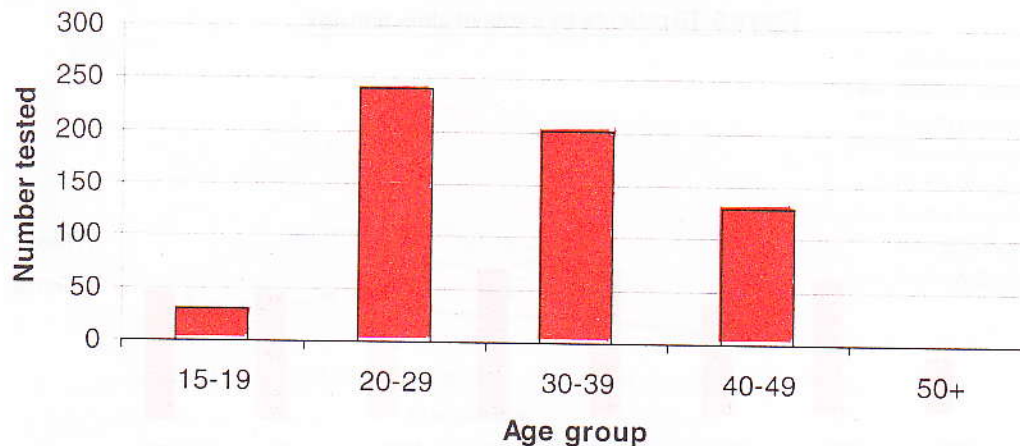
In all sentinel sites, a higher proportion of males was noted among TB patients (figure 5). This sex difference was most marked in the western province (83% males Vs 17% females).

**Figure 6. Service personnel by age group and sentinel sites**



Only male army service personnel were enrolled in the survey. Numbers of samples collected in all sites were satisfactory. More persons enrolled were in the 30-39 and 20-29 year age groups (figure 6). Of the 3298 samples tested, there were no HIV antibody positive samples. Three samples were indeterminate for HIV antibodies.

**Figure 7. Age distribution of transport workers**



Transport workers were enrolled only from one sentinel site. Total number tested was 603. All were males and the majority (73.4%) was in 20-29 and 30-39 year age groups respectively (figure 7). Except one indeterminate sample, all other samples were negative for HIV antibodies.

## SUMMARY

Table 2. Summary of HIV positive cases found in HIV sentinel sero-survey 2003.

No.	Sentinel site	Sentinel group	Age	Sex	Sero-positivity rate
1	Western P.	STD	29	Male	0.3%
2	Western P.	STD	33	Male	
3	Western P.	FSW	35	Female	0.3%
4	Western P.	TB	39	Male	0.3%
5	South P.	STD	29	Female	0.5%
6	South P.	STD	24	Female	
7	North Western P.	STD	41	Female	1.0%
8	North Western P.	STD	26	Female	
9	North Western P.	STD	43	Male	
10	Uva P.	STD	30	Male	0.4%

Of the 10 HIV positive samples, 8 were from STD clinic attendees. North Western province had 3 HIV positives among STD clinic attendees giving a sero-prevalence rate of 1%. In the Western province, the HIV seroprevalence rates among STD clinic attendees and female sex workers were 0.3% respectively. The only HIV positive among TB patients was detected also in the western province (seropositivity rate 0.3%). In the Southern province 2 STD clinic attendees tested positive giving a HIV seroprevalence rate of 0.5%. In the Uva province one STD clinic attendee was found to be HIV positive (seroprevalence rate 0.4%).

## Discussion

A total of 9765 blood samples were tested in the HIV sentinel sero-survey in 2003. Two new sentinel groups (service personnel and transport workers) were included in this survey. These two population groups could be considered as representing clients of sex workers. The economic center at Dambulla was selected as a large number of lorries arrive at this center everyday and there was very good response from the traders association. Encouragingly, satisfactory numbers were enrolled for both these groups in all sentinel sites. There were no HIV antibody positives amongst these samples.

Of the 10 HIV antibody positive samples, 8 were belonged to STD clinic attendees. Highest sero-prevalence rate of 1% was observed in Western province. Enrollment of STD patients was satisfactory in all sentinel sites except in the North and East province.

Amongst FSW, only one sample in the Western province became positive for HIV. Female sex workers were enrolled only from field visits. However, only three sites were able to get adequate numbers (i.e. WP, NWP and SP). North & East provinces were able to enrol only 5% of the required sample size for FSW. The staff of sample collection sites in this province attributed the inability to collect the required sample due to the prevailing political situation in the area. It is disappointing to note that North and East sentinel site failed to enrol adequate numbers for all sentinel groups except service personnel. Among service personnel, blood drawing was carried out at a transit camp situated in the Western province.

To compound the problem, sample collection center at Jaffna failed to participate in the 2003 survey. Assessment of the HIV epidemic situation is invaluable in this area which has been affected by a civil war going on for more than two decades. Also, this area is situated geographically close to the high HIV prevalent areas of South India.

Enrolment of patients with TB infection was satisfactory only in 4 sites. They were WP, CP, Sab P and NCP. Only one male TB patient from Western province tested positive for HIV antibodies.

Similar to the previous HIV sentinel sero-surveys, results of this survey also indicate that HIV infection has not widespread even amongst high-risk populations in Sri Lanka. However, it should be noted that HIV sero-surveillance is less sensitive for a low-level HIV epidemic situation. Therefore, National STD/AIDS Control Programme is in the process of making arrangements to conduct regular behavioural surveillance system in Sri Lanka.

The summary results of the sero-surveillance surveys conducted since 1993 are annexed for easy reference.

## **Acknowledgement**

The National STD/AIDS Control Programme (NSACP) wishes to thank the World Health Organization for funding the survey.

The staff of the STD clinics and Chest clinics who participated in the sentinel surveillance are acknowledged for their co-operation for carrying out the survey.

The NSACP appreciates the support given by Medical Service Unit of the Sri Lanka Army.

The NSACP greatly appreciates the assistance given by the Association of Traders of the Dambulla Economic Centre, the staff of MOH office and District hospital Dambulla who helped the staff of Katugasthota STD clinic to collect samples from transport workers.

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January 2004

## Annex 1

**Results of HIV Sentinel survey 1993-2003 for Female sex workers**  
Number tested and number positive (rate)

	1993	1994	1995*	1996	1997	1998	1999	2000	2001	2002	2003
Colombo (WP)	1/200 (0.5%)	0/200	0	0/100	0/110	0/407	0/654	0/286	0/243	0/424	1/405 (0.2%)
Kandy (CP)	0/100 0/100	0/100	0	0/41	0/82	0/86	0/105	0/70	0/55	1/147 (0.7%)	0/88
Galle (SP)	0/23 0/8	0/26	0	0/95	0/100	0/191	0/291	0/279	0/211	0/242	0/245
Rathnapura (Sab.P)	0/7 0/46	0/27	0	0/57	0/47	0/174	0/245	0/341	1/213 (0.5%)	0/118	0/188
Anuradhapura (NCP)	-	0/100	0	0/100	0/100	0/250	0/290	0/342	0/250	0/192	0/170
Kurunegala (NWP)	-	0/30	(0.5%)	1/100 (1%)	0/67	0/41	0/40	0/593	1/187 (0.5%)	1/320 (0.3%)	0/277
Badulla (UP)	-	-	-	0/17	0/43	-	-	0/251	0/250	0/105	0/84
N&E P	-	-	-	-	-	-	-	-	-	-	0/13

\* Number tested not available,

- Not included in the survey

## Annex II

**Results of HIV Sentinel survey 1993-2003 for STD Clinic Attendees**  
**Number tested and number positive (rate)**

	1993	1994	1995*	1996	1997	1998	1999	2000	2001	2002	2003
Colombo (WP)	0/205 0/200	0/376	0	0/200	1/400 (0.25%)	1/1385 (0.07%)	0/1849	2/1448 (0.1%)	1/1702 (0.05%)	3/1577 (0.2%)	2/602 (0.3%)
Kandy (CP)	0/100 0/100	0/200	0	0/100	0/200	0/250	0/556	2/749 (0.3%)	0/700	0/775	0/445
Galle (SP)	0/198 0/133	0/98	0	0/100	0/200	0/449	0/494	0/595	0/801	0/668	2/410 (0.5%)
Rathnapura (Sab.P)	0/50 0/79	0/43	0	0/100	0/185	0/250	0/286	2/375 (0.5%)	0/412	0/372	0/275
Anuradhapura (NCP)	-	0/96	0	0/100	0/100	0/275	0/313	0/349	1/268 (0.4%)	0/488	0/407
Kurunegala (NWP)	-	0/79	(0.4%)	1/113 (0.9%)	0/100	0/250	2/251 (0.8%)	0/668	1/680 (0.2%)	1/951 (0.1%)	3/296 (1%)
Badulla (UP)	-	-	-	0/34	0/62	-	-	0/276	1/374 (0.3%)	1/326 (0.3%)	1/250 (0.4%)
N&E P	-	-	-	-	-	-	-	-	-	0/79	0/134

\* Number tested not available,

- Not included in the survey

## Annex III

**Results of HIV Sentinel survey 1993-2003 for TB patients**  
**Number tested and number positive (rate)**

	1993	1994	1995*	1996	1997	1998	1999	2000	2001	2002	2003
Colombo (WP)	1/303	0/200	0	0/200	0/100	0/250	0/413	0/223	0/276	0/287	1/282 (0.3%)
Kandy (CP)	1/100 (1%)	0/49	0	0/93	0/100	0/250	0/242	0/269	1/363 (0.3%)	0/324	0/282
Galle (SP)	0/166	0/29	0	0/52	0/100	-	0/177	0/174	0/250	0/289	0/143
Rathnapura (Sab.P)	0/65	0/31	0	0/88	0/100	-	-	0/94	-	0/242	0/254
Anuradhapura (NCP)	-	0/76	0	0/26	0/100	-	-	0/165	-	0/194	0/220
Kurunegala (NWP)	-	0/35	0	0/47	0/61	-	-	0/75	-	0/199	0/167
Badulla (UP)	-	-	0	0/39	0/67	-	-	0/111	-	0/187	0/152
N&E P	-	-	-	-	-	-	-	-	-	0/2	0/66

\* Number tested not available,

- Not included in the survey



### Sentinel Sites and Sample Collection Centres for the Sentinel Survey 2003

