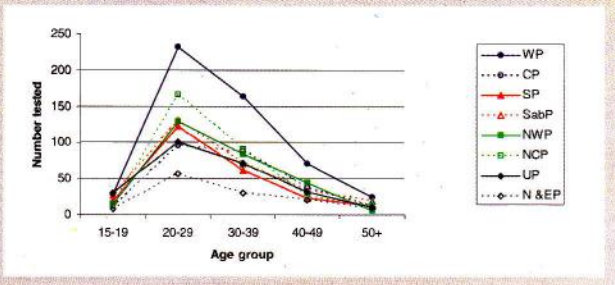
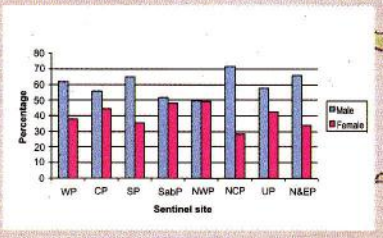
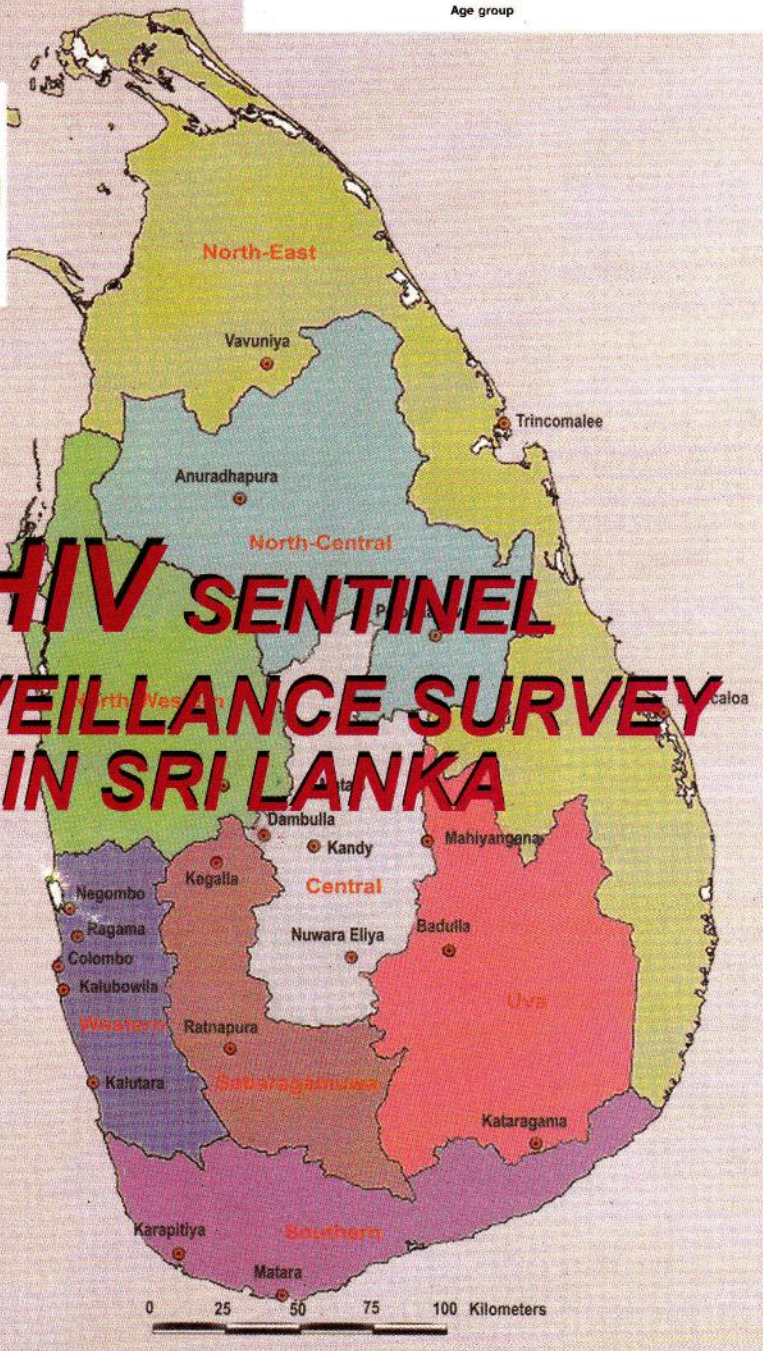
Report of the 2005 Survey







HIV SENTINEL SURVEILLANCE SURVEY IN SRI LANKA

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

Report of the 2005 survey

HIV Sentinel Sero-Surveillance Survey in Sri Lanka

National STD/AIDS Control Programme,

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FOREWORD

The spread of Human Immunodeficiency Virus (HIV) infection has posed a serious worldwide challenge. In the affected countries it has created an urgent need to design, implement, monitor public health programmes for the prevention and control of this disease. For this purpose, reliable information is needed on the prevalence and distribution of the infection in various groups and geographical areas, as well as the trends of infection over time. The acquisition of such information is best accomplished through a well organised surveillance programme which collects, analyses and disseminates information.

Surveillance is primarily "information for action". Surveillance data with sufficient accuracy will enable policy makers and programme managers to plan realistically.

HIV sero surveillance at sentinel sites according to WHO guidelines has been ongoing since 1993. Dissemination of surveillance data to the relevant stake holders is as important as carrying out this activity.

I wish to thank all the staff who have given their unstinted support throughout the years to this exercise and hope that this support would be further strengthened to in the years to come.

Dr. Nimal Edirisinghe
Director
National STD/AIDS Control Programme
June 2006

Contents

Abbreviations used in this report

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

Data compilation and the report by

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May 2006

1. Introduction

Good Surveillance does not necessarily ensure the making of right decisions, but it reduces the chances of making the wrong ones.

Alexander D. Langmuir (Langmuir 1963)

Surveillance, the eyes and ears of public health, provides information through which public health programs can act effectively and efficiently. Controlling and preventing diseases based on information collected through surveillance requires action.

The surveillance of Human Immunodeficiency Virus (HIV) infection is of great value in designing, implementing and monitoring of public health programmes for the prevention and control of HIV infection and the Acquired Immunodeficiency Syndrome (AIDS). There are a number of different methods available for HIV surveillance. Of these behavioural surveillance, biological or sero-surveillance, HIV and AIDS case surveillance and use of other supplementary data such as Sexually Transmitted Infections (STI) and Tuberculosis surveillance have been identified by WHO/UNAIDS in 2000.

High quality sentinel surveillance systems have frequent and timely data collection, conduct surveillance in appropriate populations, are consistent in the sites and groups that are measured over time and provide estimates that are representative of the population.

The National STD/AIDS Control Programme (NSACP) of Sri Lanka has been annually conducting HIV Sentinel sero-surveillance since 1993. This survey was initially designed on the guidelines prepared by World Health Organization (WHO) in 1989. The purpose of HIV sentinel survey is to track HIV infection levels through 'watch post' institutions. These sentinel institutions routinely draw blood for other purposes. The usual method of HIV testing for sentinel survey is known as Unlinked Anonymous Testing. This method involves the use of blood already collected for another purpose. Having performed the stipulated test the labels of tubes are removed to delink from any identity and the HIV test is carried out. The purpose of unlinked anonymous testing is not to detect infected individuals or case finding. The objective is public health surveillance of HIV infection. The strengths and weaknesses of HIV sentinel surveys have been clearly described in 'the guidelines for Second Generation HIV Surveillance' published by UNAIDS/WHO.

The HIV sero-surveillance in Sri Lanka has been regularly reviewed and necessary modifications done based on the new evidence about the local HIV epidemic. Certain Sentinel groups were discontinued while others were newly added depending on the new evidence of the local epidemic. Enrolment of some sentinel groups was done in the field level rather than from clinic settings *(sex workers, transport workers)*.

In Sri Lanka, establishment of a behavioural surveillance system is being planned and the first round of behavioural survey is due to commence in year 2005. This will yield more useful information to supplement the sero surveillance data as Sri Lanka is a low prevalence country for HIV infection.

All surveillance methods have their limitations. The HIV sentinel surveillance is no exception. However, the information generated by sero-survey complements to other data on the HIV epidemic and will be useful to improve the understanding of the HIV epidemic in Sri Lanka.

2. Methodology

Six populations were included in the survey. These were female sex workers, STD clinic attendees, patients with tuberculosis, military service personnel, transport workers and pre-employment category. Female sex workers were included in the survey from the beginning due to their high risk behaviour patterns. STD clinic attendees represent clients of sex workers and their partners. The patients with tuberculosis do not represent a behaviour category. However, they are a good sentinel group to monitor HIV infections in a low prevalence situation due to the synergistic relationship between HIV and TB infections. Military *(service)* personnel and transport workers are included in the survey since 2003 due to their reported high risk behaviours. Pre-employment category was newly included since 2004 for North and East provinces only. The main reason for this was its inability to get adequate sample sizes for most of the sentinel groups. This group consisted of people who came for pre-employment screening with VDRL. However, in terms of behavioural risk this new sentinel group represents the general population.

Duration of the survey

The survey of 2005 was planned to be conducted over a period of 3 months from 15th August 2005. However, some sentinel sites extended the survey by two more weeks to get more blood samples.

Sentinel sites

All sentinel sites that took part in the 2004 survey were also included in the 2005 survey. However, Jaffna in the Northern province did not participate in this year's survey. All nine provinces were included. *(Annex IV)*. For a given sentinel site there were more than one sample collecting centres *(Table 1)*. For the purpose of this survey, Northern province and the Eastern province were combined as one sentinel site (Northern & Eastern provinces).

Table 1. Sentinel sites and sample collecting centers for 2005 survey

Sentinel Sites	Sample-collecting centers
1. Western Province (WP)	Colombo, Colombo South & Colombo North, Negombo, Kalutara
2. Central Province (CP)	Katugastota, Matale, Dambulla, Nuwara Eliya
3. Southern Province (SP)	Mahamodara, Matara,
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,

Sampling method

Female sex workers were enrolled mainly from the field visits to brothels and other places where sex work take place. Blood samples were collected from all the sex workers present on the day of visit after obtaining consent. Some sex workers were enrolled from the STD clinics. Specially designed card *(pink in colour)* containing necessary information was given to FSW to prevent double counting.

STD clinic attendees and pre-employment category were consecutively enrolled from STD clinics till the stipulated sample size was obtained. Similarly patients with TB were enrolled consecutively from chest clinics and wards.

Collection of the samples from military service personnel was carried out by the Sri Lanka Army Medical Services from selected camps situated in all provinces.

Transport workers were enrolled from Dambulla Economic Centre based on convenient sampling method. All transport workers present on the day of visit were enrolled.

Sample size

Sample sizes were mainly based on WHO recommendations for HIV sero-surveillance surveys. The sample collection was discontinued once the stipulated sample sizes were completed. These predetermined sample sizes are given in table 2.

Table 2. Stipulated sample sizes for each sentinel group and site

Sentinel Group	WP	CP	SP	Sab.P	NWP	NCP	UP	NEP
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	-	-	-	-	-	-
6. Pre-employment#	-	-	-	-	-	-	-	1000

* Enrolled only at Dambulla in Central province,

Enrolled only at sample collecting centers in North East province

The following **working definitions** were used for survey.

1. **Female Sex Workers (FSW)** - Women who have practised commercial sex work during past one year. They were enrolled mainly by field visits. However, when this option was limited, sex workers who were seeking care at STD clinics were also enrolled for the survey. Both indirect and direct female sex workers were included in the survey irrespective of their age.

2. **STD clinic attendees (STD)**- Persons who attend a STD clinic seeking care at selected sentinel sites during the survey period. Both males and females were included. Both newly registered patients and those who came for follow up visits were included. All age groups over 18 months were included in the survey if they had attended for a STD related complaint. Those who came for routine pre-employment, or antenatal screening, were excluded from the STD clinic attendee

category. Patients with previously diagnosed HIV infection were excluded from the survey unless they have come for a STD related complaint. This was to prevent artificially high HIV prevalence rates in the HIV care providing STD clinic settings.

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. However, children less than 15 years were not excluded in the 2005 survey as decided in the sentinel survey workshop held prior to this survey. Over 49 age category was allowed if sample size could not be achieved during the survey period

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. Age was limited to 18 to 49 years. To prevent double counting a beige colour card with relevant information was given to those enrolled.

5. **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. Age was limited to 15-49 years.

6. **Pre-employment (PE)**– Both males and females who attend STD clinics for pre-employment medical screening for syphilis during the survey period. The age was limited to 18 to 49 years.

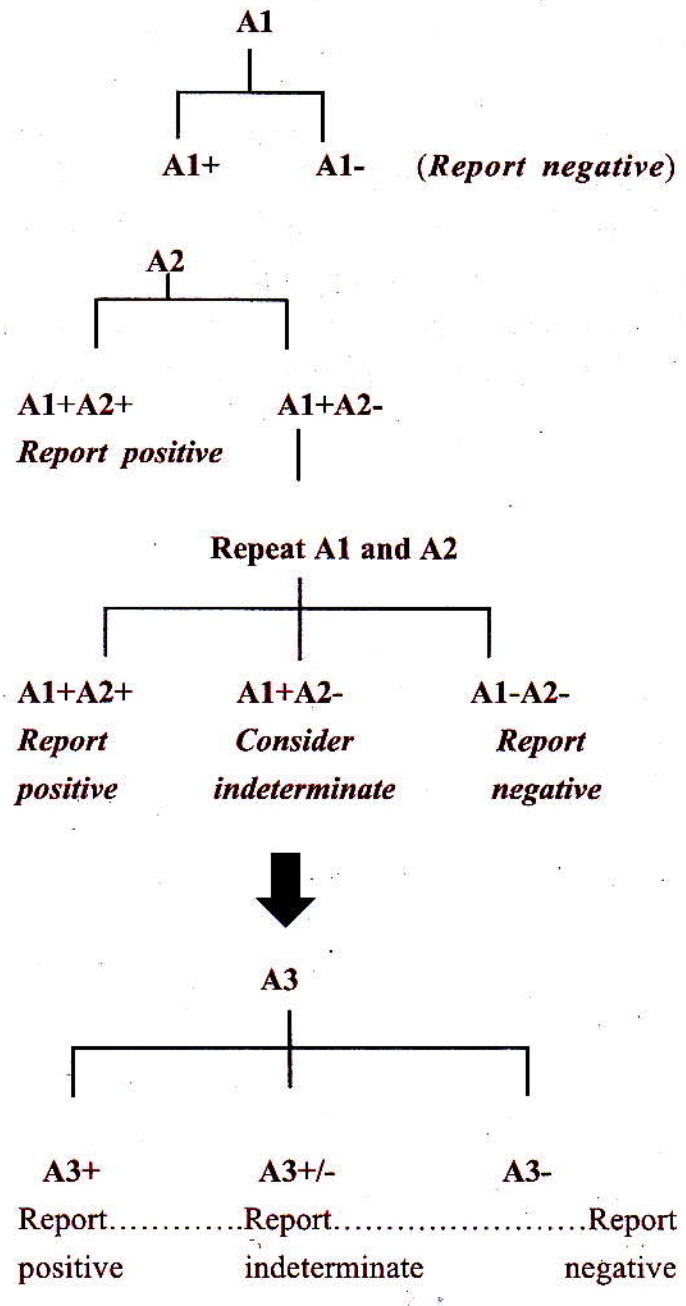
Method of HIV testing

All HIV tests 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.

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 the first test were tested with the second 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.

Since the prevalence of HIV is low in Sri Lanka, it was decided that indeterminate samples from screening tests should be tested again with a confirmatory test. The same methodology was used in the 2004 survey as well. Algorithm used for the 2005 survey is given below.



Assay A1, A2 represents 2 different screening assays *(ELISA and Particle agglutination tests)*. A3 represent a confirmatory test *(Line Blot assay)*

Staff training, Monitoring and supervision

The survey protocol was modified to suit changes in the 2005 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. Monitoring and supervision were carried out to ensure uniformity at all sentinel sites.

Supervisory visits were carried out to sample collecting centers during the survey period. Officers from Colombo as well as experienced officers from the provincial STD clinics conducted these visits. A standardized structured checklist was used to collect relevant information. Many supervisory visits to sentinel sites in North and East provinces were not possible due to logistical problems. Due to non availability of MO/STD, Jaffna, the main sample collection center in the northern province did not participate in the 2005 survey.

3. Results

A total of 9532 samples were tested and 4 HIV antibody positive samples were detected in 2005 HIV sentinel sero-survey. Of these, 2 were from TB patients and 1 was from STD patients. Remaining HIV antibody positive person belonged to pre- employment category. There were no HIV positives among other sentinel groups.

Table 3. HIV test results by sentinel sites and sentinel groups

Sentinel Sites	Sentinel groups											
	STD		FSW		TB		Service		TW		PE	
	No. tests	No. +ve	No. tests	No. +ve	No. tests	No. +ve	No. tests	No. +ve	No. tests	No. +ve	No. tests	No. +ve
WP	531	0	325	0	259	1 [0.4%]	400	0	-	-	-	-
CP	248	0	66	0	258	0	400	0	321	0	-	-
S.P	249	0	116	0	109	1 [0.9%]	400	0	-	-	-	-
Sab.P	284	0	225	0	196	0	400	0	-	-	-	-
NWP	278	0	182	0	234	0	400	0	-	-	-	-
NCP	308	0	133	0	256	0	400	0	-	-	-	-
UP	248	0	89	0	152	0	400	0	-	-	-	-
N & E P	126	1 (0.9%)	0	0	64	0	400	0	-	-	1036	1[0.09]
Total	2272	1	1136	0	1528	2	3200	0	321	0	1036	1

Table 3 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 were able to enroll adequate sample sizes for STD clinic attendees except for N&E Province. Most of sites had enrolled more than the stipulated sample size for the given site. Of the 4 HIV positive samples, 2 were from TB patients whose sero-prevalence rates ranged from 0.4% to 0.9%.

Only Western province was able to enroll adequate number of FSW for the survey. Northern & Eastern provinces could not enroll a single FSW. CP and UP enrolled fewer than 100 FSWs. Surprisingly there were no HIV positive samples amongst the FSW category.

Among TB patients, satisfactory numbers were enrolled only in 3 sentinel sites. There were 2 HIV antibody positive sample amongst TB patients one each from SP and WP. The sero- prevalence rate ranged from 04% to 0.9%.

Adequate numbers have been enrolled for Service personnel. The numbers enrolled for transport workers were not satisfactory. The enrollment of pre-employment group was satisfactory. However, one person from this group was HIV positive and the sero-prevalence rate was 0.09%.

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

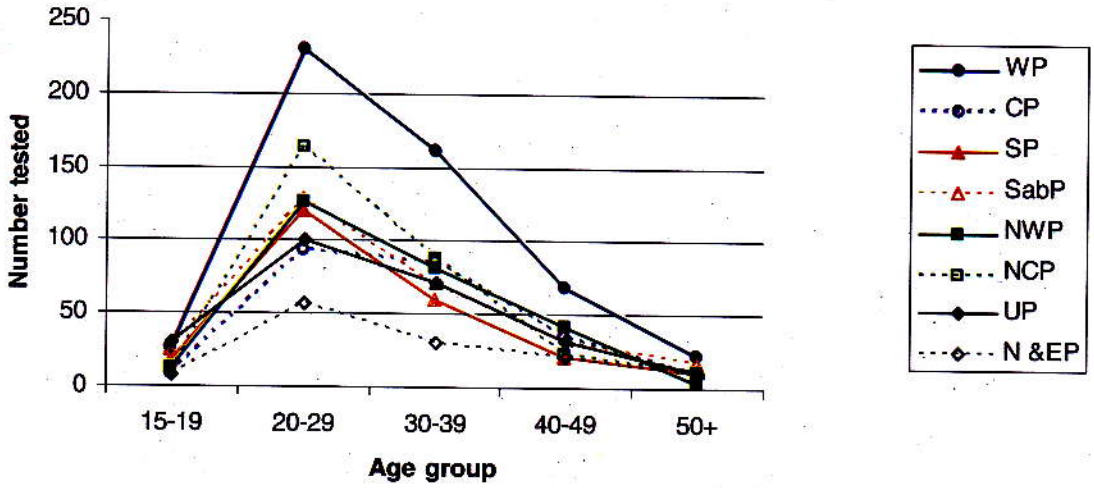
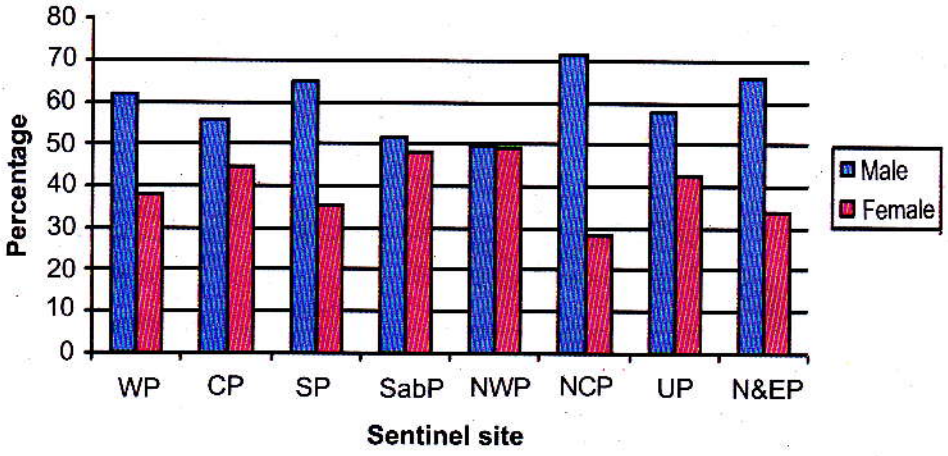


Figure 1 shows the distribution of STD clinic attendees enrolled in various sentinel sites by age group and sentinel sites. Majority of the sample was in 20-29 and 30-39 age groups in all sentinel sites.

A total of 2,272 STD clinic attendees were tested and 1 *(36 years old female from North & East sentinel site)* was found to be positive for HIV antibodies.

Figure 2. STD Clinic attendees by sentinel sites and sex



In all sentinel sites, a higher percentage of male STD clinic attendees were enrolled for the survey. This was marked in north central province *(male 71.4 % vs. female 28.6%) (Figure 2).*

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

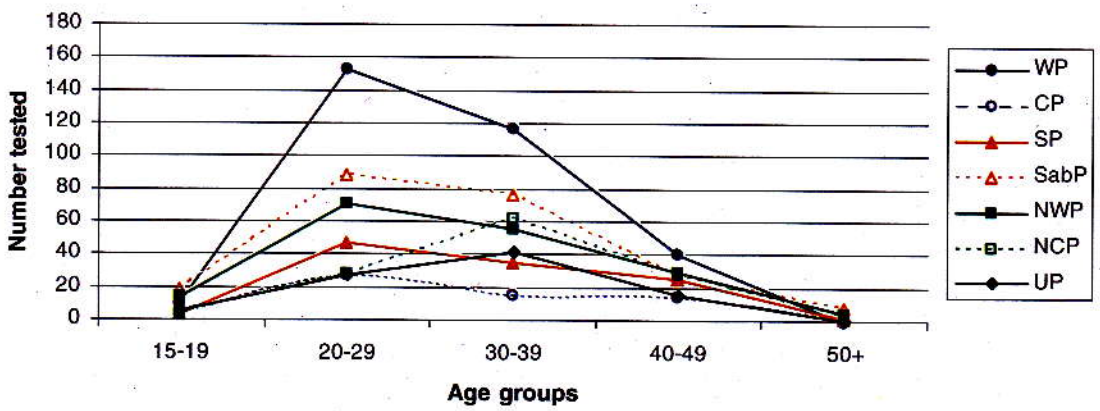
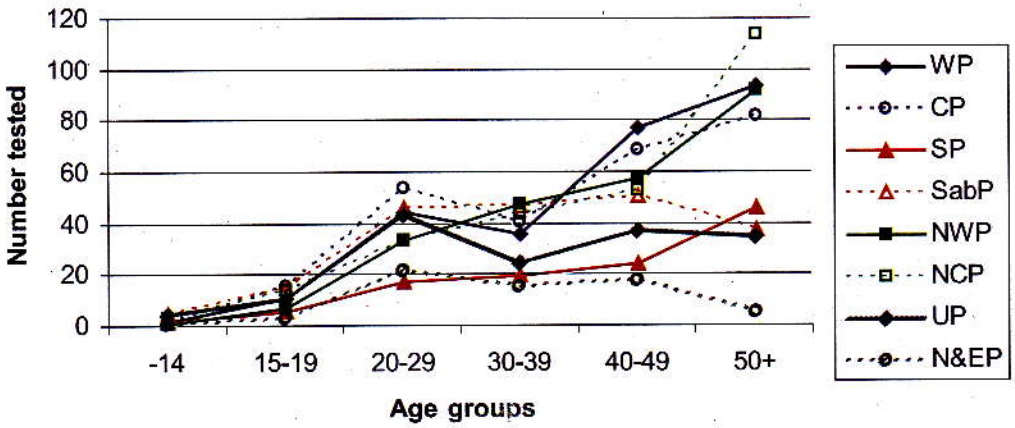


Figure 3 shows the distribution of female sex workers enrolled in the survey by age group and sentinel sites. Similar to the STD clinic attendees, majority of the sample was in 20-29 and 30-39 age groups in all most all sentinel sites. Mean age for the female sex worker sample was 31.3 years. Of the total 1136 FSW tested in 2005 survey, none of the samples became positive for HIV antibodies.

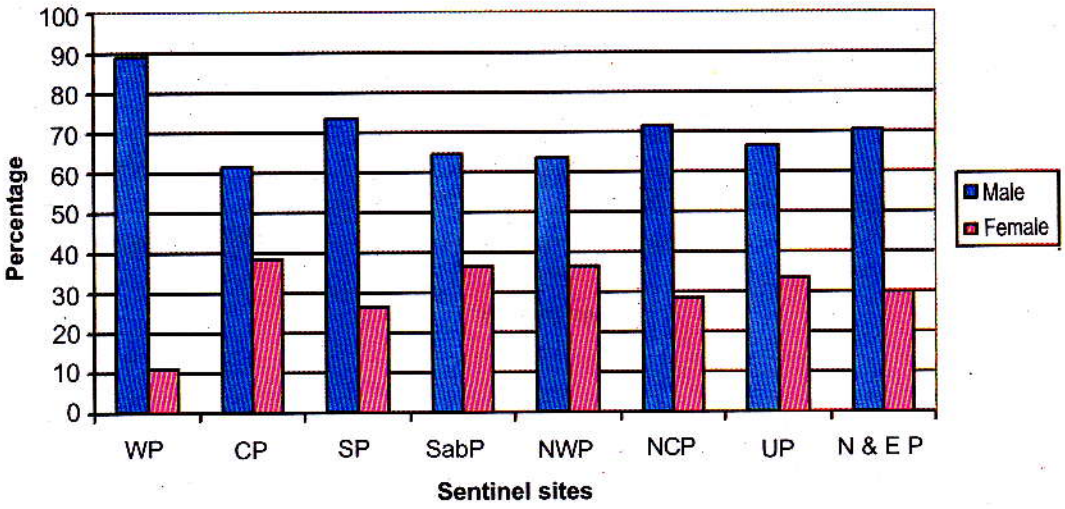
Figure 4. TB patients by age group and sentinel sites



Only three sentinel sites were able to enroll adequate numbers of TB patients. In all sites more patients in the older age group were enrolled. Mean age for the sample was 41.5 years. Only 17 cases were below 15 years.

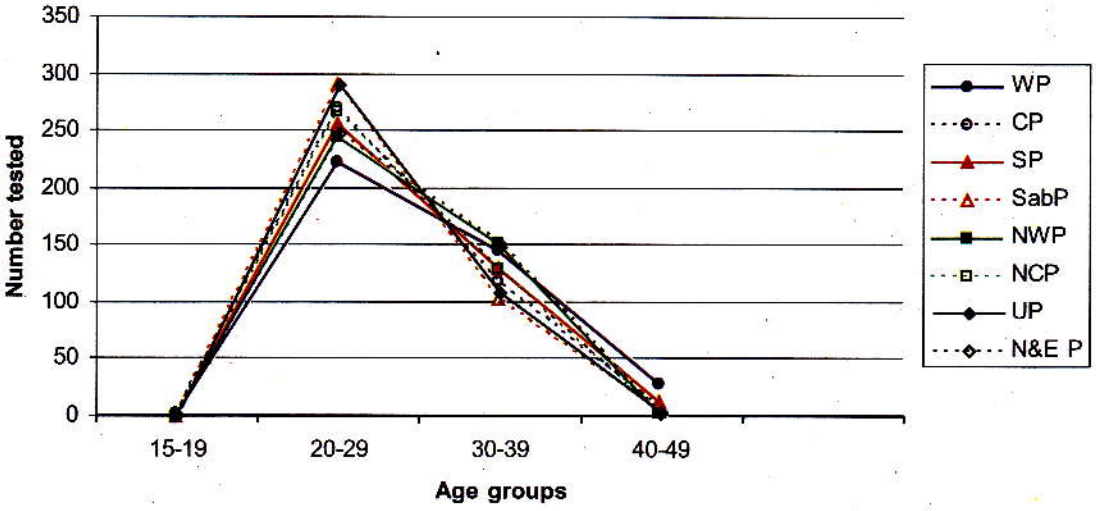
A total of 1528 TB patients were tested during the survey. There were two HIV positive samples *(38 and37 year old males)* amongst TB patients.

Figure 5. TB patients by sentinel sites and sex



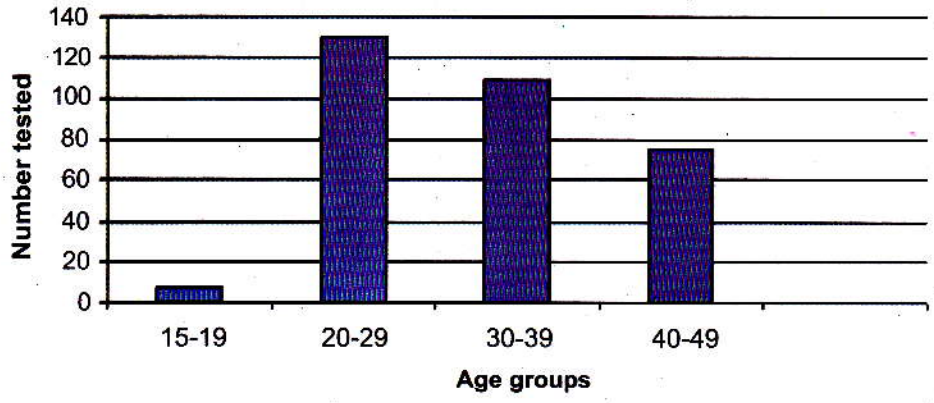
In all sentinel sites, a higher proportion of males was noted among TB patients *(figure 5)*. Similar to the results of last year, this sex difference was most marked in the western province *(89% males Vs 11% females).*

Figure 6. Service personel by age group and sentinel sites



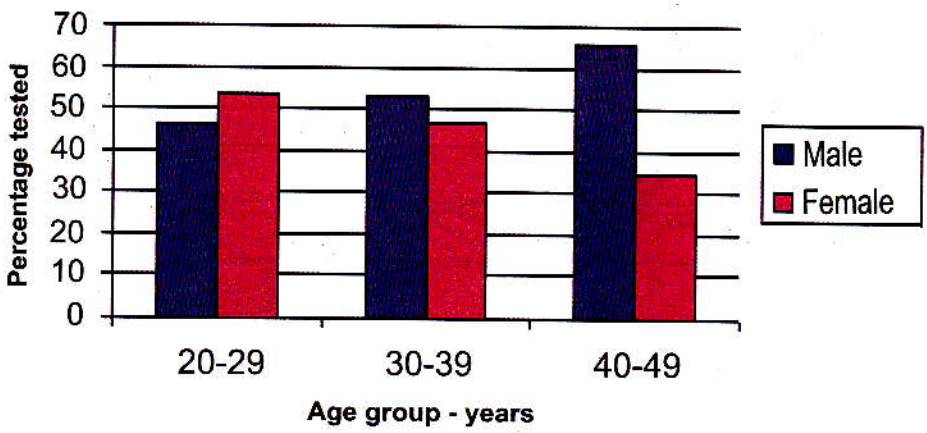
Only male army service personnel in combat duties were enrolled in the survey. Stipulated sample sizes were enrolled in all sites. More persons were in the 30-39 and 20-29 year age groups *(figure 6)*. Mean age of the sample was 27.1 years *(SD 5.1)*. Of the 3200 samples tested, there were no HIV antibody positive samples.

Figure 7. Transport workers by age groups



Transport workers were enrolled only from one sentinel site. Total number tested was 354. All were males and the majority was in 20-29 and 30-39 year age groups respectively *(figure 7)*. All samples were negative for HIV antibodies.

Figure 8. Pre-employment category by age and sex



The enrolment of the pre-employment category was commenced only since year 2004. Samples were collected only from bleeding sites situated in north & east provinces. Inability to enroll adequate sample sizes for other sentinel groups in the North-East sentinel site was the main reason to initiate this new sentinel group. Pre-employment category consists of males and females who come for VDRL screening as part of their pre-employment medical screening before they are confirmed in a government employment. Therefore this group may represent the general population. A total of 1036 samples were collected. Fifty one percent of the sample consisted of males. More males were found in 40-49 age group. There was one HIV antibody positive sample *(43 year old female)* in this category.

Summary

Table 4. Summary of HIV positive cases found in HIV sentinel sero-survey 2005.

No.	Sentinel site	Bleeding site	Sentinel group	Age	Sex	Sero-nce prevale rate
1	Western P.	Colombo	TB	38	Male	0.4%
3	Southern P	Mahamodara	TB	37	Male	0.9%
6	North & East P	Vauniya	STD	36	Female	0.8%
7	North & East P	Vavunia	PE	43	Female	0.09%

Of the four HIV antibody positive samples , 2 were from TB patients. Sero-prevalence ranged from 0.9% in Southern province to 0.4% in the Western province. The balance 2 HIV positive samples belonged to one female STD patient and one pre-employment category in the North & East province.

4. Discussion

The number of blood samples tested in 2005 HIV sentinel sero-survey was 9532. Of these, 4 samples gave positive HIV antibody test results. Similar to previous year, inclusion of the Pre-employment category, i.e. people whose VDRL test was done as a requirement for pre-employment screening, was continued this year too. This group was added only to sample collecting centres situated in the North and East provinces. The main reason for adding this new group to N & E provinces was its inability to enrol adequate sample sizes for most of the sentinel groups. It was thought that in terms of risk behaviours this new category may represent general population and may not be appropriate for sero-surveillance for a low HIV prevalent country. But in this survey round, one female found to be positive, emphasising the importance of vigilance in the North and East province.

There were no changes in the sentinel sites from the previous survey. However it should be noted that Jaffna STD clinic did not participate in this year's survey due to lack of staff. In terms of HIV spread, this area is generally considered to be high risk due to its proximity to South Indian states where HIV prevalence is high. Volatile political environment and presence of military in the area may further worsen the situation. A notable finding in the current survey is, out of four HIV positives two were from N& E Province.

Similar to the testing protocol for the 2004, confirmatory HIV testing was planned to be carried out for indeterminate samples from the screening tests. However, there were no such indeterminate samples in 2005 survey.

The enrolment of STD clinic attendees was satisfactory in all sentinel sites. Both male and female patients who attended public STD clinics during the survey period were taken as STD clinic attendees. Male STD clinic attendees are thought to be representing clients of sex workers. Only one STD clinic patient found to be HIV positive and the sero-prevalence rate was 0.9% in the North and East province.

Female sex worker are an important risk group for HIV epidemic. It is well known that liaisons between males and sex workers are the main driving force of HIV epidemic in Asian countries. Both direct and indirect female sex workers were enrolled mainly from the community for HIV sero-survey. None of the sex workers became HIV positive in the current survey. Enrolment of adequate sample sizes for female sex workers was a recurrent problem for many sentinel sites. Only the Western province was able to enrol adequate sample for 2005 survey.

Patients with tuberculosis were traditionally included in sero-surveys due to its synergistic nature with HIV infection. One TB patient from Southern Province found to be HIV positive. Only three sentinel sites were able to get adequate sample sizes for TB patients.

The enrolment of Service personnel and Transport workers were satisfactory. There were no HIV positive samples in these groups.

HIV sentinel survey conducted in 2005 did not show a marked change in HIV sero-prevalence among the sentinel groups surveyed except for the female sex worker category. Female sex workers found to be with a prevalence ranging from 1% to 0.2% in the last survey. However surprisingly there were no HIV positives among the female sex workers sampled in this survey. These results are compatible with a low level HIV prevalence in the country. A properly conducted behavioural surveillance system would be more sensitive to issues related to HIV epidemic in this situation. The first round of behavioural survey is being commenced currently. The results of this survey will be useful to modify sero-prevalence surveys to capture true sero –prevalence in the sentinel groups.

Acknowledgement

The National STD/AIDS Control Programme wishes to thank the World Health Organization and World Bank 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 and valuable advice given by Dr. A. V. K. V. de Silva, emeritus Epidemiologist of the Ministry of Health.

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Annex 1

Results of HIV Sentinel survey 1993-2005 for Female sex workers

Number tested and number positive (rate)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Colombo (WP)	1/200 (0.5%)	0/200	0/200	0/100	0/110	0/407	0/654	0/286	0/243	0/424	1/405 (0.2%)	1/439 (0.2%)	0/325
Kandy (CP)	0/100 0/100	0/100	0/80	0/41	0/82	0/86	0/105	0/70	0/55	1/147 (0.7%)	0/88	1/97 (1%)	0/66
Galle (SP)	0/23 0/8	0/26	0/79	0/95	0/100	0/191	0/291	0/279	0/211	0/242	0/245	0/209	0/116
Rathnapura (Sab. P)	0/7 0/46	0/27	0/101	0/57	0/47	0/174	0/245	0/341	1/213 (0.5%)	0/118	0/188	0/212	0/225
Anuradhapura (NCP)	-	0/100	0/100	0/100	0/100	0/250	0/290	0/342	0/250	0/192	0/170	0/216	0/182
Kurunegala (NWP)	-	0/30	1/187 (0.5%)	1/100 (1%)	0/67	0/41	0/40	0/593	1/187 (0.5%)	1/320 (0.3%)	0/277	1/219 (0.5%)	0/133
Badulla (UP)	-	-	-	0/17	0/43	-	-	0/251	0/250	0/105	0/84	0/86	0/89
N&E P	-	-	-	-	-	-	-	-	-	-	0/13	0/19	0

- Not included in the survey

Annex II

Results of HIV Sentinel survey 1993-2005 for STD Clinic Attendees

Number tested and number positive (rate)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Colombo (WP)	0/205 0/200	0/376	0/400	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%)	1/621 (0.2%)	0/531
Kandy (CP)	0/100 0/100	0/200	0/200	0/100	0/200	0/250	0/556	2/749 (0.3%)	0/700	0/775	0/445	0/302	0/248
Galle (SP)	0/198 0/133	0/98	0/200	0/100	0/200	0/449	0/494	0/595	0/801	0/668	2/410 (0.5%)	0/250	0/249
Rathnapura (Sab. P)	0/50 0/79	0/43	0/103	0/100	0/185	0/250	0/286	2/375 (0.5%)	0/412	0/372	0/275	0/250	0/284
Anuradhapura (NCP)	-	0/96	0/174	0/100	0/100	0/275	0/313	0/349	1/268 (0.4%)	0/488	0/407	1/357 (0.3%)	0/278
Kurunegala (NWP)	-	0/79	1/234 (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%)	0/328	0/308
Badulla (UP)	-	-	-	0/34	0/62	-	-	0/276	1/374 (0.3%)	1/326 (0.3%)	1/250 (0.4%)	0/250	0/248
N&E P	-	-	-	-	-	-	-	-	-	0/79	0/134	0/244	1/126 (0.9%)

- Not included in the survey

Annex III

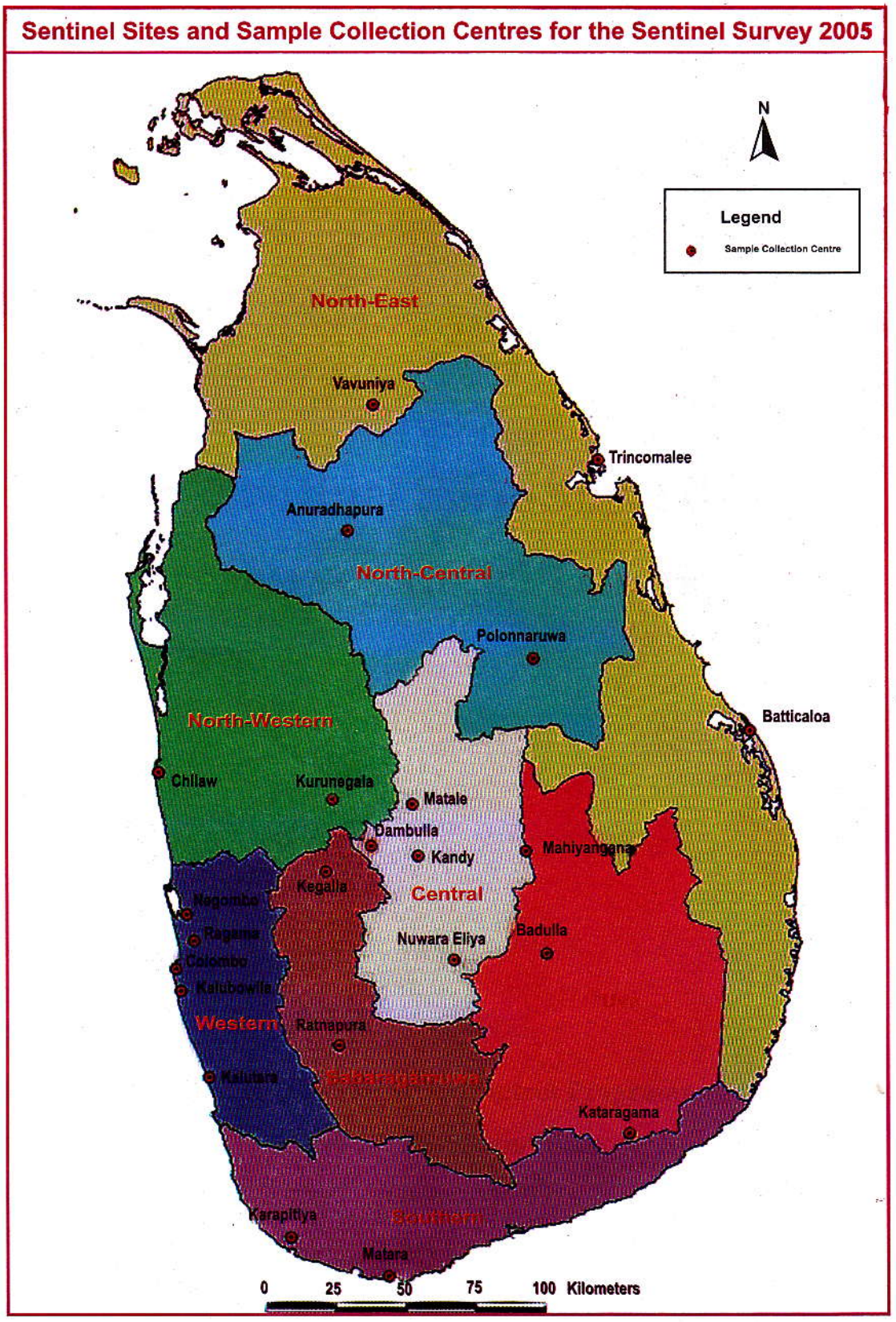
Results of HIV Sentinel survey 1993-2005 for TB patients

Number tested and number positive (rate)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Colombo (WP)	1/303	0/200	0/155	0/200	0/100	0/250	0/413	0/223	0/276	0/287	1/282 (0.3%)	0/256	1/259 (0.4%)
Kandy (CP)	1/100 (1%)	0/49	0/54	0/93	0/100	0/250	0/242	0/269	1/363 (0.3%)	0/324	0/282	0/304	0/258
Galle (SP)	0/166	0/29	0/63	0/52	0/100	-	0/177	0/174	0/250	0/289	0/143	0/152	1/109 (0.9%)
Rathnapura (Sab. P)	0/65	0/31	0/57	0/88	0/100	-	-	0/94	-	0/242	0/254	0/212	0/196
Anuradhapura (NCP)	-	0/76	0/74	0/26	0/100	-	-	0/165	-	0/194	0/220	0/275	0/234
Kurunegala (NWP)	-	0/35	1/134	0/47	0/61	-	-	0/75	-	0/199	0/167	0/216	0/256
Badulla (UP)	-	-	-	0/39	0/67	-	-	0/111	-	0/187	0/152	0/77	0/152
N&E P	-	-	-	-	-	-	-	-	-	0/2	0/66	0/164	0/64

- Not included in the survey

Annex IV


Sentinel Sites and Sample Collection Centres for the Sentinel Survey 2005
N
Legend
Sample Collection Centre
North-East
Vavuniya
Trincomalee
Anuradhapura
North-Central
Polonnaruwa
North-Western
Batticaloa
Chilaw
Kurunegala
Matale
Dambulla
Kandy
Mahiyangana
Kegalla
Central
Nuwara Eliya
Badulla
Colombo
Ratnapura
Kataragama
Karapitiya
Matara
0 25 50 75 100 Kilometers