Report on HIV Sentinel Surveillance – 1998

HIV sentinel surveillance is carried out annually by the National STD/AIDS Control Programme in order to monitor the magnitude and trends of HIV epidemic in Sri Lanka. The first HIV Sentinel survey was conducted in 1990. But more systematic and uniform sentinel surveys based on WHO guidelines have been conducted since 1993.

Sentinel Sites

In 1998, the survey was conducted in 6 sentinel sites. It was decided to exclude Badulla from the 1998 survey as it repeatedly failed to collect adequate number of blood samples in almost all sentinel groups. Therefore in 1998, the survey was conducted only in six sites i.e. Colombo, Galle, Kandy, Ratnapura, Kurunegala and Anuradhapura.

Duration

The sentinel survey was carried out for a period of 6 months from 1st of June to 30th November 1998.

Sentinel Population Groups

The following population groups were surveyed.

1. Female Sex Workers
2. STD Clinic attendees
3. Patients newly diagnosed with Tuberculosis
4. Blood donors

Female sex workers, STD Clinic attendees and blood donors were enrolled at all sites but patients with Tuberculosis were enrolled only in Colombo and Kandy. The decision to omit TB patients from Galle, Kurunegala, Ratnapura and Anuradhaprua was taken as these sites repeatedly failed to enroll the minimum required number of patients with TB during the survey period.

Female sex workers and STD clinic attendees are representing population groups with high-risk behaviour for HIV transmission and acquisition. Blood donors are more likely to represent general population. Patients with Tuberculosis were included in the survey as there is a well established interaction between HIV and TB infection. Increased HIV prevalence in patients with TB may reflect two things i.e. increase in HIV prevalence and increase in TB due to HIV epidemic similar to 1997 survey, antenatal mothers were not included as all sentinel groups continued to show prevalence rates well below 2%.

Survey Methodology

WHO recommended methods of unlinked anonymous method was used in all sentinel groups except in blood donors, as HIV testing is mandatory in blood donors to ensure blood transfusion safety. In unlinked anonymous method, a part of blood sample that is originally collected for some other purpose will be used for HIV testing after removing its identifying labels so that HIV result cannot be liked to a particular individual. The two main advantages of this method are its ability to minimise participation bias and ethical implications related to HIV testing.

Sample Size

WHO recommends a minimum sample size of 250 for "high risk" and 400 for "lower risk" population groups. For the 1998 sentinel survey, following minimum sample sizes were given but instructions were given to continue the survey until

end of the study period (i.e. 30th November 1998). In case of blood donors, sample size was limited to 600 in all sentinel sites.

Table 1
Minimum sample size by population group and by sentinel site for sentinel survey- 1998

Population group	Colombo	Kandy	Galle	Rathnapura	Kurunegala	Anuradhapura
Female Sex Workers	400	250	250	250	250	250
STD clinic attendees	500	250	250	250	250	250
New TB Patients	250	250	-	-	-	-
Blood donors	600	600	600	600	600	600

These amendments to the WHO recommended sample sizes were done in order to enhance the probability of getting HIV positives as all previous sentinel surveys continued to show either zero or very low prevalence rates.

HIV testing strategy

In Sri Lanka HIV prevalence continues to be much less than 10% in all sentinel groups. Therefore following testing strategy was used. Serum was first tested with one ELISA or Particle Agglutination Assay. Any serum found to be positive on the first assay was re-tested with the ELISA, Particle Agglutination and rapid Sample Assay. Any serum found to be positive on the second assay was also confirmed with the Western Blot test. Serum that was non-reactive on the first assay was considered HIV antibody negative.

Monitoring visits

All sentinel sites except one were visited twice during the survey period in 1998 by a team of officers from the Central STD Clinic.

Summary of the findings of sentinel surveillance field visits in 1998

Colombo: Special monitoring visits were not necessary for Colombo as supervising officers were based in Colombo. It was decided to enrol female sex workers who attend STD clinic on sub visits too to complete required sample size. Laboratory supplies had been satisfactory. **Kandy** : Kandy was visited only once during the survey period. Kandy had a problem due to break down of the vehicle. Laboratory supplies had been adequate. **Galle** :This site was visited twice. There had been problems due to lack of a vehicle until end of August. Also the amount of gloves and disinfectants were not adequate. **Kurunegala**: This site too was visited twice during the survey. Inability to enrol adequate number of female sex workers had been highlighted. The reason being given was that brothel owners were suspicious about STD clinic staff after Police had raided their brothels. According to the MO/STD, average number of female sex workers attendance at the clinic was only one. **Ratnapura:** Lack of transport facilities was brought to notice during the field visits to Ratnapura. Supply of gloves also had been not adequate. There were no problems related to delinking of samples or other disposables. **Anuradhapura:**Anuradhapura also had given the problem of lack of transport facilities. There had been no constraints with regard to delinking or supply of disposables.

Results of HIV sentinel survey 1998

For the sentinel survey 1998 a total number of blood samples screened was 8058. This total number was enrolled from four population groups from six sentinel sites. Only one sample was found to be positive for HIV. This sample had come from a 28-year male STD clinic attendee in Colombo. All other samples were tested Negative for HIV antibodies Table (2).

TABLE 2
HIV Sentinel Survey Data –1998

Sentinel Site	Population Group	Number of HIV Tested	Number Positive	Percent Positive	Study Method
Colombo	Female sex Workers	407	0	0	ULA
	STD Clinic attendees	1385	1	0.07	ULA
	TB Patients	271	0	0	ULA
	Blood Donors	600	0	0	Mandatory
Kandy	Female sex Workers	86	0	0	ULA
	STD Clinic attendees	250	0	0	ULA
	TB Patients	179	0	0	ULA
	Blood Donors	600	0	0	Mandatory
Galle	Female sex Workers	191	0	0	ULA
	STD Clinic attendees	449	0	0	ULA
	Blood Donors	600	0	0	Mandatory
Rathnapura	Female sex Workers	174	0	0	ULA
	STD Clinic attendees	250	0	0	ULA
	Blood Donors	600	0	0	Mandatory
Kurunegala	Female sex Workers	41	0	0	ULA
	STD Clinic attendees	250	0	0	ULA
	Blood Donors	600	0	0	Mandatory
Anuradhapura	Female sex Workers	250	0	0	ULA
	STD Clinic attendees	275	0	0	ULA
	Blood Donors	600	0	0	Mandatory

ULA-Unlinked anonymous
V.C – Voluntary Confidential

1) Female Sex Workers

Enrolment of female sex workers had been completed only in Colombo and Anuradhapura. Galle had enrolled 191 sex workers while Ratnapura had enrolled 174. Though these numbers were less than the minimum sample size of 250, the performance of these sites were satisfactory compare to the number of female sex workers enrolled in Kandy and Kurunegala. Kandy had screened 86 sex workers while Kurunegala had enrolled only 41 samples. These were just 34 per cent and 16 per cent of the minimum sample sizes respectively (Table 3).

Eighty nine to 97% of all Female sex workers were in 15-44 year age group. In all sites female sex workers in 0-14 year age group were below 3 per cent while the percentage over 45 age group were below 7 per cent. (Table 3).

TABLE 3
Female Sex workers by age and by sentinel site

Age	Colombo	Kandy	Galle	Rathnapura	Kurunegala	Anuradhapura
All	407	86	191	174	41	250
0 –14	3	1	6	3	0	1
15 - 44	395	79	177	170	38	243
45 +	9	6	9	1	3	6

2) STD Clinic attendees

All sentinel sites had managed to enrol the minimum sample size during the survey of 1998. Colombo had enrolled 1385 persons which is over 5 times higher than the WHO recommended sample size of 250. Number of samples screened in Galle was 449 while Anuradhapura had screened 275 samples. Kandy, Ratnapura and Kurunegala had enrolled the minimum sample size of 250. Of this sentinel surveillance category there was one positive sample from a 28 year old male from Colombo (Table 4).

TABLE 4

STD Clinic attendees by Age, Sex and sentinel site

Sex	Age	Colombo	Kandy	Galle	Rathnapura	Kurunegala	Anuradhapura
All	All	1385	250	449	250	250	275
	0 – 14	21	0	23	5	0	2
	15 – 44	1234	228	390	218	231	254
	45 +	130	22	36	27	19	19
Male	All	971	250	336	161	126	167
	0 – 14	11	0	13	0	0	2
	15 – 44	858	228	295	138	122	152
	45 +	102	22	28	23	5	13
Female	All	414	0	113	89	123	108
	0 – 14	10	0	10	5	0	0
	15 – 44	376	0	95	80	109	102
	45 +	28	0	8	4	14	6

Percentages of STD clinic attendees who were in the 15-44 age group were ranged from 82% - 92%. Percentage of STD clinic attendees who were in over 45 group was 11 per cent in Ratnapura. In all other site this percentage was below 10%. Five per cent of STD clinic attendees were in below 14-year age group while in all other sites below 14 group consisted of less than 2%.

Fifty per cent of STD clinic attendees of Kurunegala were males while in all other sites except Kandy, percentage of males was ranged from 60-74 percent. In Kandy, all STD Clinic attendees were males (100%) and not a single female STD clinic attendee has been included in the sample.

3) Patients with Tuberculosis

Of six sentinel sites, screening of this population group was carried out only in Colombo and Kandy in the survey of 1998. Galle, Ratnapura, Kurunegala and Anuradhapura were exempted from screening patients with TB due to their persistent inability to enrol the required sample size during number of sentinel surveys. Colombo had enrolled 271 cases of newly diagnosed patients with TB while Kandy had screened only 179 patients out of the minimum sample size of 250.

Table 5

Patients newly diagnosed TB by age, Sex and sentinel site

Sex	Age	Colombo	Kandy
All	All	271	179
	0 –14	0	0
	15 - 44	141	130
	45 +	130	49
Male	All	214	130
	0 –14	0	0
	15 - 44	108	92
	45 +	106	38
Female	All	57	49
	0 –14	0	0
	15 - 44	33	38
	45 +	24	11

There were no patients with TB who were 0-14 year age group. In Colombo 52 percent were in 15-44 group while 48 per cent were in 45+ group. In Kandy 73 per cent were in 15-44 group while 27 per cent were in 45+ age group.

Majority of the patients with TB was males i.e. 72 percent in Kandy and 79 per cent in Colombo.

4) Blood donors

Sample size stipulated for blood donors was 600 from each site since the HIV testing among blood donors is mandatory. There had been no difficulty in enrolling the required sample size in any of the six sentinel sites. All samples enrolled in the survey were tested negative for HIV antibodies.

Ninety five to 98 per cent of all blood donors were in 15-44 age category. Percentage of blood donors over 45 age group was less than 5% in all sites.

In Colombo and Kurunegala all blood donors were males. Percentage of males was over 90 percent in all other sites.

TABLE 6
Blood donors by Age , Sex and sentinel site

Sex	Age	Colombo	Kandy	Galle	Rathnapura	Kurunegala	Anuradhapura
All	All	600	600	600	600	600	600
	0 – 14	0	0	0	0	0	0
	15 – 44	571	573	577	591	589	574
	45 +	29	27	23	9	11	26
Male	All	600	596	586	547	600	575
	0 – 14	0	0	0	0	0	0
	15 – 44	571	569	563	538	589	552
	45 +	29	27	23	9	11	23
Female	All	0	4	14	53	0	25
	0 – 14	0	0	0	0	0	0
	15 – 44	0	4	14	53	0	22
	45 +	0	0	0	0	0	3

Discussion

In the sentinel survey 1998, only one sample was found to be HIV positive. This sample belonged to a 28 year old male STD clinic attendee in Colombo. Thus sero-prevalence rate for STD clinic attendees in Colombo was 0.07% while all other population groups in all sites gave a sero prevalence rate of zero. Such low sero prevalence rates could be due to many reasons. More optimistic reason is due to true low prevalence of HIV infection in tested populations. Other reasons could be due to various errors that can occur during a survey. Other more acceptable and may be more realistic explanation is that, the low prevalence is due to a combination of both above factors.

No study or survey is free of errors and the goal of a survey should be to minimize errors which can occur at various stages of a survey . Two main kinds of error in research are random error and systematic error. Random error is a wrong result due to chance and this could be minimised by increasing the sample size. In 1998 survey, the sample sizes were maximised. Only a minimum number was given and instructions were given to continue enrolments till the end of the survey. This may be the maximum sample size that can be designed for the sentinel survey within the practical limitations.

Other main kind of error is systematic error that is a wrong result due to bias. (Bias is a source of variation ("error") that distorts the study results in one direction). The only way to minimise systematic error is to design the survey protocol in a way to reduce the effects of various biases and then conducting the survey adhering to the protocol.

Enrolment of the required sample size for female sex workers were completed only in Colombo and Anuradhapura. Kurunegala had screened only 41 female sex workers while Kandy had screened only 86 out of the minimum sample size of 250. These two sentinel sites are

considered to be important sites, which represents two provinces with a significant amount of population density.

Therefore these two sites should take extra efforts to enrol adequate number of female sex workers through out-reach programmes.

Enrolment of the sample size for STD clinic attendees had been successful in all sentinel sites. Colombo and Galle had been able to enrol more samples than the minimum sample size where as other sites had completed the minimum sample size (Table 2).

Patients newly diagnosed with TB were screened only in Colombo and Kandy. Though Colombo was able to enrol 271, that is more than the minimum sample size of 250, Kandy had managed to enrol only 179 individuals.

Enrolling blood donors had never been a problem, as this does not need special testing for the sentinel survey. The practice has been to get data from blood banks where the screening of blood donors is mandatory.

Though there may be some deficiencies, overall conduction of the HIV sentinel survey in 1998 was successfully completed. Every attempt should be taken in future to enrol required number of minimum sample sizes. This could be achieved if active steps are taken in collecting blood samples rather than the passive nature of conducting the survey in some sentinel sites.

A common constraint in many sentinel sites had been the lack of transport facilities. Even during the 1998 survey, Galle, Kandy, Ratnapura and Anuradhapura had complained about problems related to vehicles. But during the later half of the 1998, almost all sentinel sites were provided with a new vehicle through World Bank funding. So it is the responsibility of the individual sentinel site to make use of this vehicle in future surveys.

It is important to note that HIV sentinel surveillance is the most reliable and tested method to detect sudden changes in the HIV epidemic pattern in a given country. Therefore every effort should be taken to conduct this survey annually without losing the initial enthusiasm. Also steps should to be taken to minimise errors that can take place in the survey.

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