

# AIDS Antibodies Screening Test in High-Risk Population of Southern Thailand: Preliminary Report

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**Abstract:** We screened the high-risk population with no clinical evidence of AIDS for HIV antibodies by ELISA during February to October 1988. Among 8,895 cases of the high-risk population in 7 provinces who volunteered for the study, 40 (0.45%) of them were initially positive by ELISA. Confirming by Western blot, 26 were positive and 14 negative. The prevalence of HIV infection in the high risk population of Southern Thailand was 26 (0.29%) of 8,895 cases. (*Thai J Obstet Gynaecol* 1989;1: 7-10)

**Key words:** AIDS antibodies, high-risk population

The Acquired Immunodeficiency Syndrome (AIDS) is caused by the human immunodeficiency virus (HIV), also called the human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV). Among the people who have been infected by this virus, more than half of those with the disease have died. The actual case fatality rate approaches 100%. AIDS affects all groups and classes of people, although some are at special risk. Distribution of the disease is worldwide.<sup>(1)</sup>

HIV infection has now spread through large urban areas, mainly through sexual relationships. As far as

sexual transmission is concerned, it is heterosexual, in spite of the primary epidemic outbreak in the occidental world that focused interest toward male homosexual group, the first exposed to AIDS. At present we know that heterosexual transmission is important and bi-directional, even if transmission from female to male has seemed to be more difficult to occur, as it is common in sexually transmitted diseases (STD). Transmission risk to a heterosexual partner is between 20 and 70%. The virus is present in semen and in cervico-vaginal secretions during the entire menstruation cycle. Vertical transmission from mother

to child, through placenta or during delivery is frequent, about 50%.<sup>(2)</sup>

The Region 12 VD center, is in charge of STD prevention and control in 7 southern provinces of Thailand; Songkla, Satun, Pattani, Yala, Narathiwat, Trang and Phatthalung. There is a recognized need for a serological assay for HIV that could be used for epidemiologic studies and screening of defined populations. Ideally, such a test would be reproducible, specific, sensitive, relatively inexpensive, timely and noninvasive. After mandatory blood tests on high risk populations from February to October, 1988, we then analyzed the preliminary application by the enzyme-linked immunosorbent assay (ELISA) in our laboratory

## Materials and Methods

Serum samples were obtained from subjects; prisoners, prostitutes, drug addicts, and homosexual men. Specimens were transferred from the VD units of 7

provinces to the laboratory in the VD center. The serology screening tests for AIDS virus antibody were analyzed by the enzyme-linked immunosorbent assay (ELISA), Organon Teknika, and the positive ELISA tests were sent to Bangkok for confirmation as specific by Western blot. It also confirmed the validity of ELISA blood testing and suggested that ELISA-positive, Western blot-negative blood may not be infectious<sup>(4)</sup>.

## Results

The screening data for the voluntary high-risk population in 7 southern provinces is showed in the table below.

The total number of blood test was 8,895 cases. The prevalence of HIV positive (ELISA) was 0.45% (40 of the 8,895). The positive-screening tests were confirmed by Western blot, and the prevalence of positive Western blot was 0.29 % (26 of the 8,895 cases). Among 40 patients with HIV positive only 26 (65%) were Western blot positive.

**Table 1.** Results of ELISA for HIV antibodies

Provinces	Groups	No. tested	No. positive	Per cent positive
Songkla	prostitutes	5,027	7	0.14
	prisoners	491	3	0.61
	drug addicts	124	14	11.29
	homosexual men	4	0	-
Satun	prostitutes	127	0	-
	prisoners	198	1	0.51
Pattani	prostitutes	564	2	0.35
	prisoners	115	3	2.61
Yala	prostitutes	125	0	-
	prisoners	193	0	-
Narathiwat	prostitutes	1,279	5	0.39
	prisoners	114	2	1.75
Trang	prostitutes	273	1	0.37
	prisoners	101	2	1.98
Phatthalung	prisoners	160	0	-
Total		8,895	40	0.45



## Discussion

Weiss et al,<sup>(5)</sup> in their article on a screening test for HIV antibodies, reported a specificity of 98.6% (false positive 1.4%) and a sensitivity (true positive) of 97.3%, excluding borderline tests results. These values of specificity and sensitivity are quite impressive, but they are, in reality not practical. Borderline results can not be excluded in actual practice as they may give an erroneous impression of the performance of the test and laboratory personnel.

Because of the performance of the test and manpower, our laboratory as well as the others need a confirmatory assay to be applied to those testing seropositive. It must be printed out that the current test (Western blot) is labor intensive and technically difficult. Screening of low-risk population will probably start before a practical confirmatory test is available. In the meantime, how should the seropositive groups be handled? Should the confirmatory test, when available, be used for borderline cases to try to reclaim some of the large number of blood tests that fall into the borderline category?

The problems of interpretation common to all laboratory tests include the specificity, sensitivity, positive and negative predictive values of each test<sup>(6)</sup>. Specificity refers to the likelihood of a test being able to predict that a person is free of infection. Sensitivity refers to the likelihood of a test being able to determine that a person is definitely infected. The high specificity (true positive rate) will increase the percentage of positive

predictive value, especially in the high-risk population, but the predictive value will decrease in low-risk population. Thus, the predictive value is dependent not only on test sensitivity and test specificity, but is even more closely related to the prevalence of the disease<sup>(7)</sup>. Many authors recommend that all positive tests for HIV be confirmed by more specific methods when obtained in low-risk population.

It is believed that the greatest hope for stopping the spread of HIV infection lies in the voluntary cooperation of those at higher risk, their willingness to undergo testing and to alter their personal behavior and goals in the interests of the community<sup>(8,9)</sup>. However, voluntary testing is not enough. Voluntary identification, education, and counseling of infected persons are the most effective means of encouraging the behavioral changes that are necessary to halt the spread of AIDS<sup>(10)</sup>.

Although there is a low prevalence (0.29%) in our region, continuing spread of HIV in IV drug users, prostitutes and prisoners is expected. The use of the test remains controversial because of public perceptions about AIDS, the technical limitations of the test, and the sheer magnitude and diversity of the tests present and their projected applications. So surveillance, which involves both passive reporting and the active search for information, provides data on the prevalence, incidence and distribution of disease or infection in the population. Such data can be used to monitor the spread of a disease, to shed light on the mechanisms of transmission of infectious agent, to

help in designing public health measures to prevent the spread of a disease, to evaluate the effectiveness of interventions and to guide planning for the provision of facilities. Data of HIV infection and related diseases are critical to all aspects of coping with the epidemic<sup>(11)</sup>.

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