

THE SPECTRUM OF HIV-RELATED DISEASE IN RURAL CENTRAL THAILAND

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Abstract. To determine the spectrum of HIV-related illnesses presenting to a rural primary and secondary healthcare facility in Central Thailand, a cross-sectional study was conducted. Routinely collected data were extracted from outpatient medical notes for all adult HIV-infected new attenders of the Manorom Christian Hospital Infectious Disease Clinic. Data concerning inpatient admissions of HIV-infected individuals were collected from ward admission books and discharge summaries. Complete data were available for 229 outpatients, 70% of whom were men. The median age at presentation was 31 years for men and 30 years for women. The majority of the outpatients were married (69%) and infected heterosexually (91%). The commonest conditions requiring admission were cryptococcal meningitis (15%), bacterial pneumonia (12%), extrapulmonary tuberculosis (12%), *Pneumocystis carinii* pneumonia (7%), cerebral toxoplasmosis (4%) and pulmonary tuberculosis (3%). Of the patients presenting for the first time, 32% had AIDS-defining illnesses. Presentations with some conditions, such as tuberculosis and septicemia, were fewer than expected. The common opportunistic infections among HIV-infected adults in this rural region are treatable and preventable. Most patients present with advanced disease and earlier diagnosis, through improved access to voluntary counseling and testing, would enable them to receive appropriate preventive therapies and antiretrovirals as they becomes available. The high prevalence of cryptococcal disease suggests that prophylactic anti-fungal therapy may be of value in this area. Septicemia and tuberculosis may be under-diagnosed, highlighting the need for improved diagnostic laboratory facilities or treatment based upon validated clinical algorithms. Community care and palliative care services for HIV-infected individuals will increasingly be required in this region.

INTRODUCTION

The first case of HIV infection in Thailand was described in 1984 (Suwanagool *et al*, 1993). By October 1999 there were 128,606 documented cases of AIDS (WHO, 1999) and it is predicted that there will be 1,000,000 deaths from AIDS before 2014 (Surasiengsunk *et al*, 1998), mainly among the young male heterosexual population (WHO, 1999). There has been greater impact in the northern prov-

inces (Surasiengsunk *et al*, 1998) and among the lower socioeconomic classes (Atikij *et al*, 1996) where the elderly and poor bear the burden of care for the sick, dying and orphaned.

The Thai HIV epidemic has spread since 1984 in five recognized waves in intravenous drug users (IVDUs), female commercial sex workers, heterosexual men, their heterosexual female partners and their children (Weniger *et al*, 1991; UNAIDS, 1998; Ungchusak *et al*, 1992). This recent spread is of major public health significance as urban and rural health services must adapt to manage and support large numbers of young patients with a range of HIV-related illnesses and social problems that have arisen as a consequence of their infection.

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Most studies of HIV-related disease in Thailand, have been from urban tertiary referral centers or in specific populations such as commercial sex workers or army recruits. The spectrum of HIV-related disease in rural primary and secondary care settings, where specialist diagnostic facilities are often inaccessible, is less well described.

This study was based at the Manorom Christian Hospital (MCH) in Chainat Province, the most rural province in Central Thailand. The local industry is mainly agricultural and is heavily dependent on rice farming. Many local people are migrant laborers, taking seasonal employment in cities such as Bangkok. Chainat has a population of 353,749 with only 5.7% in municipal areas (College of Population Studies, 2001).

MCH is a private mission hospital. It has 49 inpatient beds and outpatient facilities catering for self-referring patients from several of the provinces of Central and Northern Thailand. In 1994 a ward for general infectious diseases (particularly for HIV-infected patients) was opened, and in 1997 a physician-run outpatient clinic for the management of HIV-infected patients was established, with a specialist nurse and trained counselors for outpatient, inpatient and community support of patients. At the time of this study, the use of prophylactic interventions against opportunistic infections was not routine, and use of antiretrovirals was very unusual.

The aim of this study was to describe the spectrum of disease among outpatients and the main diagnoses resulting in admission amongst HIV-infected adults presenting to MCH.

MATERIALS AND METHODS

Patient selection

HIV-infected patients generally first attend the hospital at its primary care facilities; when HIV infection is diagnosed, they are usually referred to the HIV clinic. The outpatient notes of consecutive adult patients (aged

over 14 years) who were HIV-infected and made their first attendance at MCH HIV outpatient clinic between September 2nd, 1997 and June 30th, 2000 were identified using a database, kept since 1995, of positive HIV test results and untested patients considered clinically to be HIV-infected.

HIV-infected patients may be admitted through any outpatient clinic or through the accident and emergency department. Data concerning admission diagnoses was obtained for consecutive HIV-infected inpatients from January 1999 to June 2000 by analyzing ward admission books and inpatient discharge summaries. Inpatient data prior to January 1999 was not readily accessible. As these admissions included patients diagnosed before September 1997 and some who were admitted directly without attending the HIV outpatient clinic as new patients, patients considered as admissions are not a direct subset of the series considered as new attenders of the HIV outpatient clinic.

Data collection

Routinely collected data concerning the patients' age, sex, date of HIV test, province of residence and presenting symptoms or diagnosis on first presentation to MCH were extracted onto a standardized form. Data were entered into Epi-Info version 6.0.

AIDS case definition

Classification of HIV-related illness was based on the 1993 Thai AIDS case definition (Division of Epidemiology, 1993) which is a modification of the 1993 Centers for Disease Control and Prevention classification system (Centers for Disease Control and Prevention, 1992). This classification is summarized in Appendix 1. Clinical categories were used alone because CD4 counts were not available. AIDS-defining illnesses were considered as either suspected (compatible clinical presentation but without laboratory confirmation) or confirmed (meeting the 1993 Thai AIDS definitive diagnostic criteria).

There were some exceptions to the diagnostic criteria mentioned above: cerebral toxoplasmosis was regarded as confirmed if there was a history of recent onset of focal neurological abnormality or reduced level of consciousness, a contrast-enhancing mass lesion on cerebral CT imaging and a successful response to anti-toxoplasmosis therapy, as *Toxoplasma gondii* serology was not available.

Pneumocystis carinii pneumonia was regarded as confirmed if there was a history of recent onset of dyspnoea on exertion or non-productive cough of less than three months duration, a chest radiograph with evidence of diffuse bilateral interstitial infiltrates, and no bacterial etiology detected on sputum culture. Histology, immunofluorescence testing and arterial blood gas analysis were not available.

Because of laboratory limitations, clinical diagnoses of herpes simplex infection or cytomegalovirus (CMV) infection (systemic infection or retinitis) could not be confirmed. In addition, all sputum smears positive for acid-fast bacilli were reported as *Mycobacterium tuberculosis*.

Laboratory methods

HIV serology was performed using a latex agglutination test (Capillus HIV, Cambridge Diagnostics, Ireland) as a screening test and an enzyme immunoassay test (Double EIA HIV, Organics, Israel) as a confirmatory test. Sera giving positive results on both latex agglutination and EIA were reported as positive. Patients with discordant results were considered to be HIV negative for the purposes of this study.

Statistical analysis

Statistical analysis was performed using Epi-Info version 6.0 (CDC, Atlanta, Georgia, USA). For normally distributed continuous variables, Student's *t*-test was used; the Mann Whitney U test was used if variables were not normally distributed. Categorical variables were analyzed using the chi-squared test.

Ethical approval

The study was approved by the Ethics

Committee of the London School of Hygiene and Tropical Medicine, the Assistant Hospital Director and Director of Physician Services of Manomom Christian Hospital, and the Chainat Provincial Department of Public Health.

RESULTS

Outpatient Infectious Disease Clinic attendance

Between 2nd September 1997 and 30th June 2000, a total of 235 HIV-infected patients attended the Infectious Disease Clinic as new attenders. Complete data were available for 229 patients: 163 of these (71%) were male. The median age of outpatients was 31 years [interquartile range (IQR) 28-37] with no significant difference in age between men and women (median ages 31 *versus* 30 years respectively; $p=0.27$, Mann Whitney U test).

One hundred and eighty-three (80%) of the new clinic attenders received voluntary counseling and testing at MCH, 37 (16%) had tested HIV positive elsewhere and were not retested while 9 (4%) were treated as being HIV-infected without laboratory confirmation. Of the nine not retested, six had a papular pruritic eruption, six had oral candidiasis, three had extrapulmonary tuberculosis, one had cryptococcal meningitis and one had cerebral toxoplasmosis. The most frequent provinces of residence were Nakhon Sawan (28%), Chainat (22%) and Uthai Thani (13%).

Among the 126 patients for whom data on marital status were available, 87 (69%) were married, 14 (11%) were separated and 13 (10%) were widowed. The probable route of infection was documented for 80 patients of which 73 (91%) acquired it heterosexually, while fewer acquired it by other routes [contaminated injections or intravenous drug use 5 (6%), sex between men 1 (1%), blood transfusion 1 (1%)].

The majority of patients (140/183, 76%) had an HIV test performed because of a suspicion of AIDS on clinical grounds. Nine-

teen patients out of 183 (10%) had a history of sexual contact with an HIV-infected person. Six patients (3%) were detected at pre-operative screening, 4 (2%) were detected at antenatal screening, 2 (1%) had non-sexual high risk behavior, 1 (0.5%) was tested because of another sexually transmitted disease and 1 (0.5%) was detected on screening before donating blood. For 15/183 (8%) the reason why voluntary counseling and testing was performed was not clear. Some patients had more than one reason for HIV testing.

Clinical features at presentation

Of the 207 patients with available data regarding their symptoms at first presentation, 18 (9%) were asymptomatic and 53 (25%) had persistent generalized lymphadenopathy. The symptoms and clinical features at the first clinic visit are shown in Table 1. The commonest finding was oral candidiasis in 93/207 (45%), followed by severe weight loss (31%) and papular pruritic eruption (25%). Patients often had multiple clinical features at presentation.

One hundred and thirty-two of the 207 (64%) patients attending the outpatient HIV

clinic were suspected of having an AIDS-defining illness at first attendance, which was confirmed in 66/207 (32%) patients. The commonest confirmed diagnoses (Table 2) were

Table 1
Frequency of symptoms and clinical features on first presentation for 207 new attenders of the Manorum Christian Hospital HIV clinic.

Symptom/Sign	Frequency (%) ^a
Oral candidiasis	93 (45)
Severe weight loss	64 (31)
Persistent generalized lymphadenopathy	53 (25)
Papular pruritic eruption	51 (25)
Fever >38°C for over a month	38 (18)
Persistent cough	28 (14)
Asymptomatic	18 (9)
Diarrhea for over a month	4 (2)
Seborrheic dermatitis	4 (2)
Oral hairy leukoplakia	3 (1)
Herpes zoster (>1 dermatome)	2 (1)

^aPatients could have more than one symptom and hence the total exceeds 100%.

Table 2
Frequency of suspected and confirmed AIDS-defining illnesses on first presentation for 207 new attenders of the Manorum Christian Hospital HIV clinic^a.

AIDS defining illness	Frequency suspected (%)	Frequency confirmed(%)
Cryptococcal meningitis	35 (17)	29 (14)
Tuberculosis (pulmonary and extrapulmonary)	51 (25)	11 (5)
<i>Pneumocystis carinii</i> pneumonia	22 (11)	7 (3)
Cerebral toxoplasmosis	14 (7)	8 (4)
Herpes simplex	5 (2)	0 (0)
Herpes zoster	5 (2)	0 (0)
HIV wasting syndrome	5 (2)	2 (1)
CMV retinitis	4 (2)	0 (0)
Recurrent pneumonia	4 (2)	3 (1)
Histoplasmosis	3 (1)	2 (1)
Invasive cervical carcinoma	1 (0.5)	1 (0.5)
Penicilliosis	1 (0.5)	0 (0)
Pulmonary nocardiosis	0 (0)	1 (0.5)

^aPatients could have more than one suspected initial diagnosis.

Table 3
The principle symptom or diagnosis of 225 admission episodes for HIV-infected patients admitted to Manorom Christian Hospital.

Principle diagnosis	Number of first admission episodes	Number of readmission episodes	Total
Cryptococcal meningitis	28 (15%)	19	47 (21%)
Pneumonia	22 (12%)	3	25 (11%)
Extrapulmonary TB	21 (12%)	2	23 (10%)
<i>Pneumocystis carinii</i> pneumonia	13 (7%)	3	16 (7%)
Cerebral toxoplasmosis	8 (4%)	6	14 (6%)
Pulmonary TB	5 (3%)	1	6 (3%)
Diarrhea	6 (3%)	1	7 (3%)
Urinary tract infection	6 (3%)	2	8 (4%)
Shingles	4 (2%)	2	6 (3%)
Surgical	2 (1%)	0	2 (1%)
Acute bronchitis	3 (2%)	1	4 (1%)
CMV retinitis	2 (1%)	0	2 (1%)
Fever	4 (2%)	0	4 (2%)
Histoplasmosis	1 (0.5%)	0	1 (0.5%)
HIV wasting syndrome	3 (2%)	0	3 (2%)
Herpes simplex virus	2 (1%)	1	3 (1%)
Peripheral neuropathy	2 (1%)	0	2 (1%)
Nocardiosis	1 (0.5%)	0	1 (0.5%)
Esophageal candidiasis	3 (2%)	0	3 (2%)
Septicemia	3 (2%)	0	3 (2%)
Stevens-Johnson syndrome	2 (1%)	0	2 (1%)
Stroke ^a	3 (2%)	0	3 (2%)
Soft tissue infection	6 (3%)	1	7 (3%)
Other ^b	13 (7%)	2	15 (7%)
Not known	18 (10%)	-	18 (10%)
	Total 181		Total 225

^aConfirmed on cerebral computed tomography

^bAdmissions included in this category included two admissions of a patient with a hepatoma, acute confusion and seizures; hematemesis; investigation of severe hyponatremia; a patient with leprosy co-infected with HIV; palliative care; peptic ulcer disease; a pneumothorax post *Pneumocystis carinii* pneumonia requiring a chest drain; a post lumbar puncture headache; renal colic; self-limiting abdominal pain; strongyloidiasis; gastrointestinal trichomoniasis; unexplained symptomatic hypotension and viral meningitis.

cryptococcal meningitis (29/207, 14%), pulmonary and extrapulmonary tuberculosis (11/207, 5%), *Pneumocystis carinii* pneumonia (7/207, 3%) and cerebral toxoplasmosis (8/207, 4%).

Among 194 attenders first seen more than six months before the end of the study period, 134 (69%) had not attended the clinic for over six months and were considered lost to follow-up. Of these patients, 13 (6.7%) were known to have died. The median number of weeks of follow-up was 10 (IQR 1-35). The median

number of visits to the clinic was 4 (IQR 2-9). Fifty-four (23.7%) patients made one visit to the clinic and did not return.

Inpatient admissions

Between 1st January 1999 and 30th June 2000, there were 225 admission episodes (181 initial admissions and 44 readmissions with the same diagnosis) pertaining to 111 patients known to be HIV-infected. Of the 111 patients admitted, 79 were men (71%). The median age of the admitted patients was 31 years (IQR 28-

Table 4
Frequencies of HIV-related illnesses in Thai HIV-infected hospital inpatients.

Location	Bangkok n=2,104	Bangkok n=1,553	Bangkok n=182	Bangkok n=50	Chiang Mai n=79	Phitsanulok n=52	Manorom n=111
Number of patients	1993-1996	1993-1996	1995	1987-1990	1984-1992	1994	1999-2000
Oral candidiasis	-	-	46.7%	-	-	-	-
Cryptococcosis (Extrapulmonary)	25%	38.4%	26.4%	10%	15%	44%	15%
Tuberculosis ^a	23.3%	38.4%	26.8%	-	62%	23%	14.7%
Pulmonary	-	-	13.1%	-	-	-	2.7%
Extrapulmonary	-	-	13.7%	24%	-	-	12%
HIV wasting syndrome	5.7%	8.1%	-	-	-	-	1.6%
<i>Pneumocystis carinii</i> pneumonia	3.1%	4.8%	16.1%	22%	8%	25%	7%
CMV (other than liver, spleen or nodes)	2.6%	3.7%	1.1%	-	-	-	-
Cryptosporidiosis	1.0%	2.1%	3.8%	10%	-	-	-
Cerebral toxoplasmosis	1.3%	1.8%	3.8%	-	-	-	4%
Histoplasmosis	-	1.7%	-	-	-	-	0.5%
Herpes simplex	-	1.2%	1.6%	10%	-	-	-
Kaposi's sarcoma	-	0.3%	0.5%	6%	-	-	-
Immunoblastic lymphoma	-	0.3%	-	-	-	-	-
Pneumonia	-	0.2%	4.9%	-	-	-	12%
Recurrent Salmonella septicemia	-	0.1%	2.7%	10%	-	-	-

^aBoth pulmonary and extrapulmonary tuberculosis

(-) indicates data are unavailable

(Summarized from Amornkul *et al*, 1999; Suwanagool *et al*, 1997; Swasdisevi, 1994; Tansuphasawadikul *et al*, 1999; Thongcharoen *et al*, 1992; Weniger *et al*, 1991).

39) with no significant difference in age between men and women. Of the patients admitted, 50 (22%) had had no previous contact with the hospital. For those patients requiring readmission, the median number of admissions was 3 (range 2-6).

The principal diagnoses among those patients admitted are displayed in Table 3. It was not possible to determine what proportion of these symptoms or diagnoses were confirmed as there were not enough clinical data available to apply case definitions. The commonest diagnoses were cryptococcal meningitis, pneumonia, tuberculosis, *Pneumocystis carinii* pneumonia and cerebral toxoplasmosis.

The case-fatality rate among those admitted with HIV-related illnesses was 14%.

DISCUSSION

Data on the local spectrum of disease are essential to guide the rational management of HIV-infected patients, and such data are unusual from rural populations. The commonest major opportunistic infections seen were cryptococcal meningitis, tuberculosis, cerebral toxoplasmosis and *Pneumocystis carinii* pneumonia. Table 4 compares this spectrum of disease with that found in other studies from Thailand. Some caution is required in comparing these studies, since there may be differences in patient selection methods, the degree of immunosuppression and diagnostic facilities available.

Cryptococcal meningitis was the commonest AIDS-defining illness seen in both outpa-

tient and inpatient settings. Patients often present with advanced disease (Mootsikapun *et al*, 1995) and treatment with intravenous amphotericin or oral fluconazole is often too expensive for patients in this region [869 to 3,033 Baht (\$20.60 to \$72.81) per day at Manorom in 2000] resulting in partially treated disease and frequent relapse.

The frequency of presentation with tuberculosis in this study was lower than in studies from urban Bangkok and Chiang Mai. The low prevalence of pulmonary tuberculosis seen at Manorom may be the result of referral bias because patients with pulmonary tuberculosis may choose to go to a nearby city hospital with a respiratory unit. However, it suggests that tuberculosis may be underdiagnosed at Manorom.

Pneumocystis carinii pneumonia (PCP) is not uncommon in Thailand (Weniger *et al*, 1991; Thongcharoen *et al*, 1992; Swasdisevi, 1994; Suwanagool *et al*, 1997; Amornkul *et al*, 1999; Tansuphasawadikul *et al*, 1999;). The lower rate of 7% at Manorom may be due to misdiagnosis as bacterial pneumonia resulting from lack of access to facilities necessary to make a definitive diagnosis. Basing the diagnosis on the clinical response to treatment with high-dose cotrimoxazole is nonspecific and may have resulted in misclassification.

The absence of salmonella septicemia seen in this study is surprising, given that its prevalence was as high as 10% in one study from Bangkok (Weniger *et al*, 1991). Septicemia is also common in African HIV-infected patients (Vugia *et al*, 1993; Grant *et al*, 1997) and it is likely that septicemia has been underdiagnosed in this study. The lack of malaria in the region may account for the low prevalence of chronic fever when compared with African populations (Coleblunders and Latif, 1991)

The low prevalence of other opportunistic infections seen in this study is likely to have been due to poor case detection either clinically—for example, CMV retinitis is often only detected in advanced stages of visual impairment—or due to the limited access to laboratory

tests. This explains the absence of cases of systemic CMV infection and penicilliosis. Clearly, the commoner opportunistic infections are treatable and preventable, although some of the drugs required are currently prohibitively expensive.

Limitations in access to diagnostic facilities influences the spectrum of opportunistic infections identified in this study. Speciation of mycobacteria is not possible locally and all sputa positive for acid-fast bacilli on microscopy are assumed to be *Mycobacterium tuberculosis*. In neighboring Cambodia, atypical mycobacteria form a large number of positive isolates from bronchoalveolar lavage in HIV-infected individuals with unexplained pneumonia (Mayaud and Cadranel, 2001) and it is possible that cases of atypical mycobacterial pneumonia are being misdiagnosed as tuberculosis in our study. Improving access to facilities for the detection, culture and speciation of mycobacteria would make the diagnosis of tuberculosis more accurate in the region: this would have public health benefits and implications for resource allocation to tuberculosis control.

Blood cultures taken from this population of HIV-infected patients with fever are more likely to yield clinically significant results than blood cultures taken from the general population and greater utilization of blood cultures may be helpful in diagnosing more of the presentations of chronic fever. Tansuphasawadikul *et al* (1999) found that 35% of blood cultures taken from Thai HIV-infected patients had positive results and so greater utilization is likely to result in a more accurate assessment of the prevalence of septicemia in this population.

Many patients present with AIDS-defining illnesses. This suggests that large numbers of people are unaware of being HIV-infected or do not seek medical help until they are severely ill. For most opportunistic infections, earlier diagnosis results in improved outcome. Greater availability of voluntary counseling and testing may result in earlier diagnosis of HIV infection and earlier diagnosis of oppor-

tunistic infections through continued follow-up in an outpatient clinic or through community support networks. Patient education to increase awareness of the symptoms of common opportunistic infections and access to appropriate preventive therapies may also help to reduce the morbidity from these infections. Reducing the cost of investigations and therapies, the cost of prophylactic regimens and the cost of antiretroviral drugs is likely to significantly improve access to effective treatments in this region and to improve compliance and reduce rates of relapse.

The case fatality rate among the inpatients (14%) is low when compared with those seen in Africa (De Cock *et al*, 1991). Better availability of effective treatments for the commonest HIV-related illnesses requiring admission in this region is likely to have resulted in a lower case fatality rate than in many African countries where appropriate treatments are often less readily accessible. Furthermore many HIV-infected Thai patients prefer to die in the community than in hospital as a result of cultural beliefs and inability to pay for prolonged inpatient care.

In addition to its effect on *Pneumocystis carinii*, cotrimoxazole has effects against toxoplasmosis (Carr *et al*, 1992) and isosporiasis (DeHovitz *et al*, 1986) as well as a range of bacteria (Buskin *et al*, 1999). Often patients presenting to Manrom have used or are currently using cotrimoxazole, having been prescribed it elsewhere as primary or secondary prophylaxis for PCP or having bought it for use as a general antibiotic: this will undoubtedly have affected the observed prevalence of these conditions. It has been shown in Côte d'Ivoire through randomized, placebo-controlled trials that the use of cotrimoxazole significantly reduced the incidence of severe events from opportunistic infections leading to death or hospital admission and was well tolerated (Anglaret *et al*, 1999; Wiktor *et al*, 1999); however, this was not reproducible in Senegal (Maynard *et al*, 2001). Commencing cotrimoxazole primary prophylaxis in HIV-infected individuals here at presentation may

result in substantial health benefits as it is an acceptable and affordable intervention. Surveillance for resistance to cotrimoxazole should also occur.

Although not seen in this study, penicilliosis has been described as the third most common opportunistic infection in HIV-infected individuals in Northern Thailand (Chariyalertsak *et al*, 1996). In addition to the high prevalence of cryptococcal meningitis, we have also described oral candidiasis as a common finding on first presentation to the outpatient clinic. Antifungal preventive therapies for these conditions may be of value in reducing the incidence of systemic fungal diseases, although in a recent trial of itraconazole versus placebo in Thai patients with CD4 counts below $200 \times 10^6/l$ there was no survival benefit in the group receiving itraconazole (Chariyalertsak *et al*, 2002).

The main diseases affecting HIV-infected patients in this area of rural Thailand are cryptococcal meningitis, bacterial pneumonia, tuberculosis, *Pneumocystis carinii* pneumonia and cerebral toxoplasmosis. Many patients present with advanced disease, emphasizing the need to promote voluntary counseling and testing, maintain outpatient follow-up, and develop strategies of community care and palliative care. The improved management of HIV disease requires the implementation of effective preventive therapies, the development of appropriate diagnostic facilities, and the promotion of access to antiretroviral therapy.

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Appendix 1

The 1993 Thai Ministry of Public Health Surveillance definitions of AIDS and symptomatic HIV (Division of Epidemiology, Thai Ministry of Public Health, 1993.)

A. Any one of the following conditions signifies AIDS in an HIV-infected person:

1. Candidiasis (trachea, bronchi)
2. Invasive cervical carcinoma
3. Coccidiomycosis
4. Cryptococcosis
5. Cryptosporidiosis
6. Cytomegalovirus
7. Cytomegalovirus retinitis
8. HIV encephalopathy, HIV dementia, AIDS dementia, Subacute encephalitis due to HIV
9. Herpes simplex
10. Histoplasmosis
11. Isosporiasis
12. Kaposi's sarcoma
13. Lymphoma, Burkitt's (or equivalent)
14. Lymphoma, immunoblastic (or equivalent)
15. Lymphoma, primary in brain
16. *Mycobacterium avium complex* or *Mycobacterium kansasii*
17. *Mycobacterium*, other species or unidentified species, disseminated or extrapulmonary

18. *Mycobacterium tuberculosis*, pulmonary or extrapulmonary
19. Recurrent bacterial pneumonia
20. *Pneumocystis carinii* pneumonia
21. *Penicillium marneffe*
22. Progressive multifocal leukoencephalopathy
23. Salmonella septicemia
24. Toxoplasmosis
25. HIV wasting syndrome

B. The following conditions signify symptomatic HIV infection:

1. Oral candidiasis or oral hairy leukoplakia
2. Herpes zoster in more than one dermatome
3. Central nervous system dysfunction
4. Diarrhea for more than one month
5. Fever for more than one month
6. Cachexia or more than 10% weight loss
7. Asthenia more than 1 month
8. Persistent dermatitis more than 1 month
9. Anemia, lymphopenia, thrombocytopenia
10. Persistent cough or any pneumonia more than two months (except tuberculosis)
11. Lymphadenopathy more than 1 cm affecting at least two non-inguinal sites for more than one month.