

CHAPTER II

ESSAY

Participatory Learning: A Strategy to Improve Knowledge, Attitude and Practice in Tuberculosis Prevention and Care Among HIV Self-Help Group in Bangkok.

2.1 INTRODUCTION

Tuberculosis (TB) is the leading cause of death from a single infectious agent among both sexes of young and adults including people living with Acquired Immuno-deficiency Syndrome (AIDS) worldwide. Approximately one third of the world's population is infected with *Mycobacterium tuberculosis*. In 1996, 3.8 million new cases of TB were reported to the World Health Organization (WHO), but it is estimated that nearly eight million cases might have occurred worldwide (WHO, 1998, p. 7). TB is now the most important, life-threatening opportunistic infection associated with human immuno-deficiency virus (HIV) (WHO, n.d., p. 7). Everyday approximately 2,000 people die of TB in the South-East Asia Region (WHO, n.d., p.4). This serious situation of HIV infection can affect tuberculosis control effort. The deadly duo of HIV and TB

may thus mean an additional drain on meager health resources. The regions worst affected by TB are South and East Asia and Sub-Saharan Africa; estimates by Global TB programme suggests that there are more than 1 million deaths in South and East Asia and three-quarters of a million deaths in Africa each year from the disease. However, no region is free of TB (Nunn, & Linkins, 1998, p. 5).

In 1995, more people died of TB than in any other year in history. At least thirty million people will die from tuberculosis in the next ten years if currents continue. Today, 40 years after the introduction of chemotherapy for tuberculosis, there are more new cases (8 million per year) than ever (WHO, 1996, p. 1).

Everyday 11,000 new people are getting infected with HIV (WHO, 1999, p. 2). HIV appears to be a potent facilitator of tuberculosis. With the spread of HIV infection, the number of tuberculosis cases has increased significantly in many African countries and in certain populations in Asia, Europe, and North and South American (WHO, 1993, p. 1).

HIV, the virus though to be the cause of AIDS, was first recognized by American and French virologists in 1981. AIDS is a viral pandemic that is causing immune system failure and ultimately death, among citizens of all countries of the world. HIV is a retrovirus that requires replication within a host cell, in this case a T4 lymphocyte. As HIV replicates, it destroys the T4 helper cells which in turn, reduces the immune system's ability to produce B cells and fight off antigens or pathogens. When the immune system shuts down, or slows down, a myriad of opportunistic

diseases are able to get by the immune system and infect the body (Stoller, 1996, p.175). Any infection that can occur with early immunosuppression can also occur with late immunosuppression (Harries & Mahe,1996, p.p. 23-27). Usually, these organisms will not cause disease in healthy people. The terminal stage of HIV infection when patients suffer from opportunistic infections (OIs), is called AIDS(Rojanapithayakorn & Narain,1999, p. 8).

The immune system of People living with HIV/AIDS (PLHA) becomes dysfunctional and vulnerable to attack from OIs . The OIs occur after a disease-causing virus or microorganism gets the chance to multiply and invade host tissue because the immune system has been compromised. About 88% of deaths related to HIV infection and AIDS are cause by OIs, compared with 7% and 5% due to cancer and other causes respectively. The OIs may depend on life style and where the HIV/AIDS patient lives or has lived (Stine,1996, p. 45). The medical management of people with AIDS is a balance between acute treatment and control symptoms. Early and accurate diagnosis of OIs is important any stage of HIV disease. Wherever possible, the person with HIV should decide about their treatment and to be informed of the options; educating the patient is an essential tenet of palliative care. They should be helped to understand the limit of any treatment, and its outcome (UNAIDS, 2000, p. 4).

Since TB is widespread and contagious, everyone is at risk. A potentially fatal infectious disease in one person is a threat to everyone's survival. When a person is sick with TB-and not properly treated-that person will likely infect ten to fifteen people in a year. It is easy to understand why the TB epidemic is growing (WHO,1996, p. 7).

Because the principle risk factor for TB is breathing the air, TB has great public health significance and as such, TB has traditionally assumed a great role than any other infectious disease control programs (Rom & Garay,1996, p. 945). TB is a higher morbidity and mortality, partly due to other, curable, HIV-related infections. The risk of tuberculosis recurrence is higher. The essential activities of tuberculosis control are the same even in populations where HIV infection is common. The objectives of a the disease control programme are to decrease morbidity, mortality and transmission of tuberculosis, while avoiding the emergence of drug resistance. To cure 85% of new detected cases of sputum smear-positive pulmonary tuberculosis (PTB). To detect 70% of existing cases of sputum smear-positive PTB. The HIV epidemic heightens the need to focus on the identification and cure of infectious tuberculosis patients. (Harries & Maher,1996, p. 34) The major limitation of current efforts to control TB is an ineffective education (CDC,1995, p. 129). PHA face a very specific set of psychosocial problems. Many patients have to live with stigmatization and discrimination. People are reluctant to be open about their HIV status (UNAIDS, 2000, p. 3). In HIV/AIDS high endemic situation, increased awareness and stigmatization of AIDS and inadequate knowledge of TB can result in delay in seeking TB care and in treatment non-adherence (Ngamvithayapong, Winkvist, & Diwan, 2000, p.p.1413–1419). HIV patients have 6 times higher than normal people to catch tuberculosis (Prichchyanon & Nuchprayoon,1993, p. 1). They are at risk of developing TB. Even TB is a chronic communicable disease because of its duration and the length of therapy it is curable. Hence, they should be given health education an encouraged to seek early diagnosis and treatment of cough and other symptoms suggestive of TB (Godfrey,1998, p. 4).

Health education is communication activity. One activity of health promotion, which is the process of enabling people to take increased responsibility for more control over and improve their own, family's and community's health and well-being (Simnett, 1995, p. 195). through influencing the beliefs, attitudes, and behavior of those with power and of the community at large (Smith's 1979 in Downie, Tannahill, & Tannahill, 1996, p.p. 27-28). Participatory learning is one kind of health education, aims to enhance communication with PHA about TB (eg., its causes, transmission, prevention, symptoms, and treatment) and to encourage them to seek for prevention and treatment services including self-care behavior. Participatory methods are designed to build self-esteem and a sense of responsibility for one's decisions. They are based on principle of adult education and have been field-testing extensively (Wood, Sawyer, & Simpson-Hebert, 1998, p. 5). Once people have confident and self-esteem necessary to analyze problems and work out solutions.

As we have seen health education is about developing the potential of people to take increased responsibility for their own, and others', health. This means starting with developing the health potential of self-help group. Getting them involved in health development means changing their behavior, from being passive to actively participating in efforts to improve their own, and others' health (Simnett, 1995, p. 193). An important component of conducting HIV/TB education is informed consent, particularly with regard to HIV status confidentiality.

2.2 HIV/AIDS and Tuberculosis (TB) Situation

2.2.1 HIV/AIDS situation in global and South East Asia

As of the end of 1998, WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) estimated that over 33 million people were infected with HIV, and that 12 million people around the world had already lost their lives to AIDS. It is also estimated that currently 16,000 people get infected every day. During 1998 alone, six million new HIV infections and 2.5 million deaths are estimated to have occurred. Six million adults and children are currently living with HIV/AIDS in South and South-East Asia. The highest numbers of infected persons are in India (four million); Thailand (800,000); Myanmar (440,000), and Vietnam (88,000) (Rojanapithayakorn & Narain, 1999, p. 12).

Global estimates of the HIV/AIDS epidemic as of end 1999, there were an estimated number of adult and children living with HIV/AIDS worldwide had grown to 34.3 million and there had been some 18.8 million deaths. Sub-Saharan Africa still remains the center of the epidemic, with nearly 25 million men, women and children infected with HIV/AIDS. In Asia, an estimated 7 million people are infected (UNAIDS, 2000, p. 6). In adults, there is a long, variable, latent period from HIV infection to the onset of HIV-related disease and AIDS. A person infected with HIV may be asymptomatic for up to 10 years or more (Harries & Maher, 1996, p. 25).

2.2.2 HIV/AIDS situation in Thailand and Bangkok

Thailand is one of the countries most severely affected both infections of TB and HIV. The first patient with AIDS was diagnosed in Thailand in 1984 (WHO, 1999, p. 3). It is estimated 2-4 million cumulative HIV-infected persons and 350,000-650,000 cumulative cases of AIDS in Thailand by the end of this century (MoPH Thailand, 1993, p. 19). The prevalence of HIV/AIDS in Bangkok is increasing dramatically (Bangkok Metropolitan Administration, 1997, p. 44). (See table 2.1)

Table 2.1 AIDS in Bangkok from 1984 to January 1997.

Table 1: Level	AIDS			Symptomatic HIV infection			HIV infection (Projection)
	Total	Death	Alive	Total	Death	Alive	
Bangkok	5,374	1,354	4,020	2,524	153	2,371	120,000
Thailand	55,443	15,011	40,432	23,163	2,455	20,708	800,000

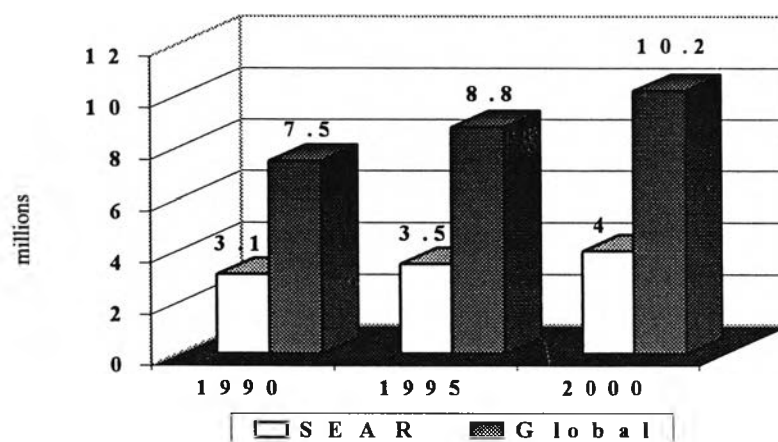
Source: Bangkok Metropolitan Administration, 1997, p. 44.

2.2.3 TB situation in Global and South East Asia

TB infects one third of the world's population. Worldwide in 1995 there were about 9 million new cases of TB (see figure 2.1) with 3 million deaths. These deaths comprise 25% of all avoidable deaths in developing countries. 95% of TB cases and 98% of TB deaths are in developing countries. 75% of TB cases in developing

countries are in the economically productive age group (15-50 years) (Harries & Maher, 1996, p. 20).

Figure 2.1 Estimated TB cases

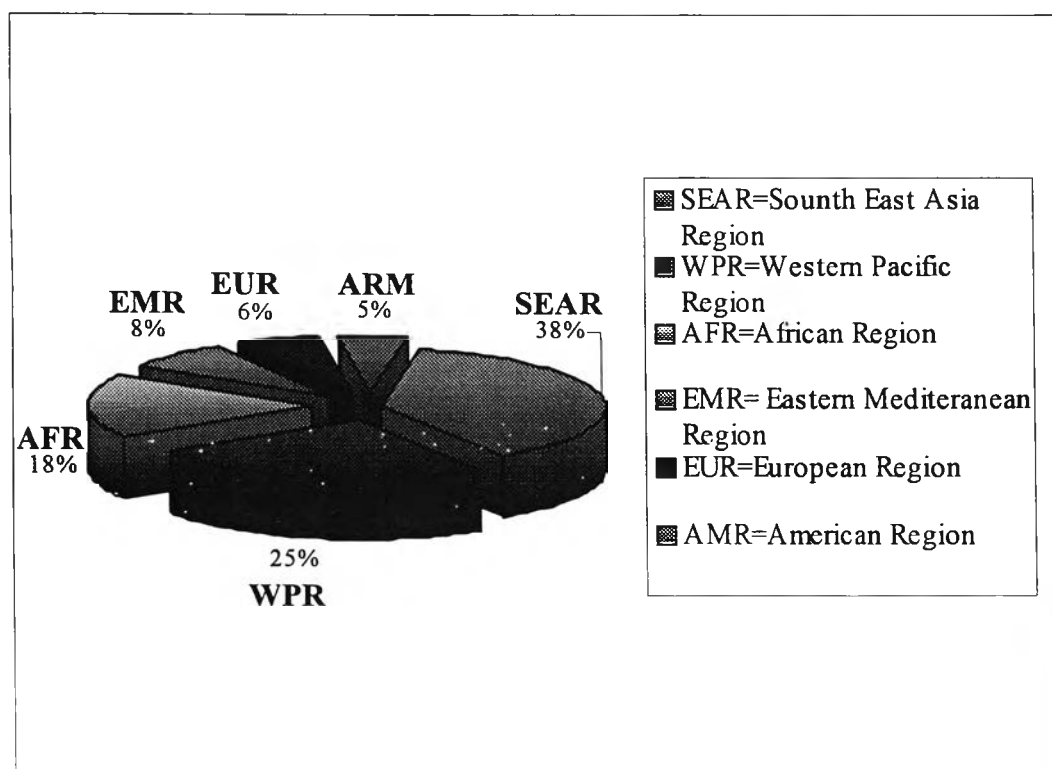


Source: WHO, n.d., p. 2.

Every four out of ten TB cases worldwide live in the South-East Asia Region of WHO. Each year, nearly three million cases and one million deaths are estimated to occur in this Region. Five countries (Bangladesh, India, Indonesia, Myanmar and Thailand) contribute more than 95% of the regional cases. Everyday, more than 1,500 people die of tuberculosis in this Region (Rojanapithayakorn & Narain, 1999, p.p. 9-10). TB is the leading infectious cause of death among people more than 5 years of age in South-East Asia.

The SEA Region has 25% of the world's population but accounts for nearly 40% of all TB cases - two out of five- cases of TB in the world. (figure2.2) Within SEA, more than 95% of cases are found in India, Indonesia, Bangladesh, Thailand, and Myanmar (WHO,n.d., p. 4). The situation is getting worse due to HIV epidemic, since HIV infection is the single strongest known risk factor for the progression of TB from primary as well as latent to active disease(Raviglione,1995, p. 220-226). HIV-related tuberculosis (TB / HIV) is common in various populations, especially in sub-Saharan Africa and, increasingly, in Asia and South America (Harries & Maher,1996, p. 11).

Figure2.2 South East Asia accounts for nearly 40% of all TB cases



Source: WHO, n.d., p. 4

2.2.4 TB situation in Thailand and Bangkok

The kingdom of Thailand is located on the Indochinese and Malayan peninsulas in the center of South East Asia, with the Union of Myanmar on West and on North together with the Democratic People's Republic of Laos, the Democratic Kampuchea and the Democratic People's Republic of Laos on East, and Malaysia on South. The whole area is divided into four geographical regions : Northern, North Eastern, Central and Southern regions (Payanadana, Kladphuang, Talkitkul, & Tornee, 1995, p.p. 1-2). Ethnic groups comprise of Thai 75% Chinese 14% and others 11% . They are Buddhists 95% Moslems 4% and other 1% (CDC & WHO, 1999, p. 8).

The TB bacillus infects one-third of the world's and Thai's population (WHO, 1998, p. 11. and Walaisathien, 1999, p. 40). Nationwide about 40% of the PHA suffer from TB either as the result of reactivation of previously latent TB infections or as a fast progressing disease after a new infection (GTP & WHO, 1998, p. 61). There is estimated that Thailand has 100,000 people develop TB annually –the 13th infection rate of the world and there are 42,000 sputum smear positive. However, the prevalence of infection, different from place to place, depends on HIV infection rate and migration. The infection rate of HIV-positive persons with TB is 15% overall of country, particular in the upper north of Thailand is high to 40%. Within this condition and the treatment system in the past is not effective which cause 1 case of Multi Drug Resistance- TB (MDR-TB) in every 40 cases (Walaisathien, 1999, p.p. 41-42).

Bangkok, the capital of Thailand located in the central region which is a low plain and 2.31 metres above sea level. It is divided into 38 districts and 154 sub-districts with 1,568,737 square kilometers. Average temperature is 28.5C (Bangkok Metropolitan Administration, 1997, p 36). Bangkok has its own administration system, thus it can operate its own projects under the approval from the metropolitan council and the Ministry of Interior in some issues (GTP & WHO, 1998, p. 61). The Bangkok Metropolitan Administration (BMA) is in charge of the department of health which is in charge of the executing TB control in Bangkok. Services are provided to TB patients through a network of health centers under the Department of Health of the BMA. The Department of Health is in charge of a network of sixty health centers and eighty-one sub-health centers distributed over six zones into which the Bangkok Metropolitan area is divided (Bangkok Metropolitan Administration, 1997, p. 2). Aside the treatment for TB patient is available at BMA health care facilities, it is still available at government hospitals and university hospitals, as well as in private hospitals and clinics. Outside the BMA system, TB patients are regularly charged fees for both diagnosis and treatment. However, many hospitals charge fees depending on the patient's socio-economic status. The TB division currently supplies drugs to the BMA for free distribution, but not to the large hospitals (CDC & WHO, 1999, p.p. 9-10).

About one-sixth of the population in Thailand lives within the Bangkok metropolis area (estimated around 10 million). About twenty percent of people in Thailand with TB live in the capital city. It is estimated that about 15,000 people develop TB annually in Bangkok (Walaisathien, 1999, p. 41 and CDC & WHO, 1999, p. 4).

In 1995, under the surveillance in Bangkok found that the TB is one of the ten leading causes of disease. In 1996, the respiratory disease is the first of the ten leading causes of illness of out patient for all BMA medical services department hospital, 126,843 patients or 13.02% (Bangkok Metropolitan Administration, 1997, p.p. 40,42). The TB bacillus infects is one of the most significant communicable diseases threatening the health of the people in Bangkok.

TB control in Bangkok faces many problems such as migration, diversity of health care providers and a high burden of HIV and MDR-TB. There are government, university hospitals, the TB Division, the Central Chest hospital, non-governmental organization (NGOs) and the private health sector also plays a major role in healthcare in Bangkok. There are about 200 private hospitals and 4000 private clinics are currently in Bangkok. The Anti-tuberculosis Association of Thailand (ATAT) in Bangkok also has a TB clinic and hospital. Among these various facilities, there is no consensus on a method for TB control (Walaisathien, 1999, p. 41-42). 90% of TB cases in Bangkok are currently diagnosed and treated outside the BMA system. Treatment outcome at these hospitals are unsatisfactory with high default rates (30-50%), since the hospitals do not have the facilities to ensure direct patient observation during treatment (CDC & WHO, 1999, p. 4).

2.3 Major public health problem

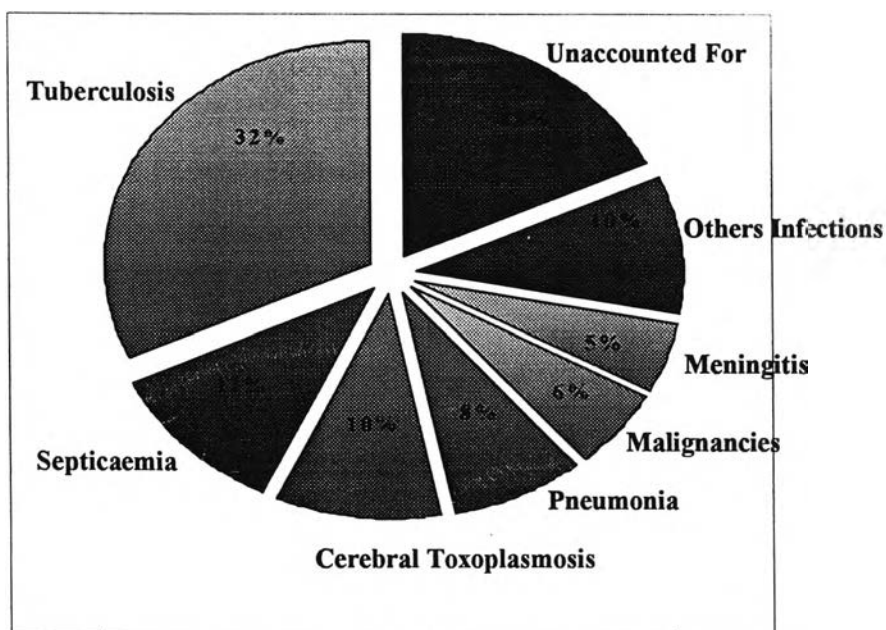
TB is an ancient disease which continues to be a challenge as well as a major public health problem (WHO, 1994, p. 11). After years of decline in many parts of the world, TB has returned as a major public health problem in the United States and other developed countries, while remaining highly prevalent in many developing countries (Rigsby & Friedland in Devita, Hellman, & Rosenberg, 1997, p. 245). TB has declined in industrialized countries during the past decades, but it still represents a major health problem in developing countries (Graf, Petra in Davies, 1994, p. 325). Nationwide, about 40% of PHA suffer from TB either as the result of reactivation of previously latent TB infections or as a fast progression disease after a new infection. In Bangkok this percentage is as high as 61% (GTP & WHO, 1998, p. 64).

The reemerge of TB as a public threat in the late 1980s. The challenge arose in the context of the AIDS epidemic, which, in the decade of the 1980s (Rom & Garay, 1996, p. 965). TB is the only major opportunistic infection which can spread through the air to HIV-negative people. More HIV-infected individuals die from TB than from any other cause (see figure 2.3) (WHO, 1996, p. 11). In addition, the emergence of MDR strains have increased the morbidity and mortality associated with TB (Rigsby & Friedland in Devita, Hellman, & Steven, 1997, p. 245). Treatment of MDR TB is expensive, toxic, and few patients are cured (CDC & WHO, 1999, p. 3). Emergence of MDR-TB is a serious concern and an obstacle to successful treatment of TB because commonly used medicines are no longer effective, medicines used for the treatment of patients with MDR-TB may have severe adverse reactions and these medicines cost at

least 100 times as much as a normal course of routine treatment; this cost cannot be supported by most TB control programmes (WHO, n.d., p. 10). The resurgence of TB in the past decade is closely linked to the AIDS pandemic. The high susceptibility of patients infected with the HIV to TB is unique, creating for the clinician many diagnostic and therapeutic challenges. The largest increases in TB rates have been observed in the 25-to44-year-old age group, which is also the group in which most HIV infections occur (Rigsby, & Friedland in Devita, Hellman, & Steven, 1997, p. 245).

In parts of Thailand, up to 50% of hospital beds are already occupied by AIDS patients. The HIV associated TB will put an extra burden on hospital services in the future. The demand for care and treatment will soon place extra pressure on health services (WHO, 1999, p. 8). The greatest burden of the morbidity and mortality is borne by the most productive age-group (15-60 years) causing a serious impact on socioeconomic development. TB imposes on the economy current and future costs due to premature death and ill health (WHO, n.d., p. 17). This trend will have a serious impact on TB control, health care services, and the economy.

Figure 2.3 TB is the leading killer of HIV-Positive People



Source: Study of prime causes of death in HIV-positive patients, Abidjan, 1991 in WHO, 1996, p. 11.

2.4 Mycobacterium tuberculosis

2.4.1 What tuberculosis is

TB is one of the oldest disease known to mankind (Armstrong, 1996, p. 3). Tuberculosis is caused by three related organisms, *Mycobacterium tuberculosis*, *Mycobacterium africanum*, and *Mycobacterium bovis* of which by far the most frequent organism involved in human disease is *Mycobacterium tuberculosis*. *Mycobacterium africanum* is rarely found out side of northwestern Africa, and disease due to *Mycobacterium bovis* is usually transmitted via the digestive tract through contaminated milk from cows suffering from bovine tuberculosis. *Mycobacterium*

bovis is limited in developing countries by widespread pasteurization of milk and in the developing world by the low consumption of milk along with the practice of boiling much that is consumed (Comstock in Reichman & Hershfield, 2000, p. 130 and Raviglione & Nunn in Zumla, Johnson, & Miller, 1997, p. 8).

These organisms are also known as tubercle bacilli (because they cause lesions called tubercles) or as acid-fast bacilli (AFB). When examining sputum containing tubercle bacilli stained with certain dyes under the microscope, the bacilli stained red. This is because they are acid-fast (they have kept the dye even after washing with acid and alcohol). Tubercle bacilli can remain dormant in tissues and can persist for many years (Harries & Maher, 1996, p. 19).

Direct sunlight quickly kills tubercle bacilli, but they can survive in the dark for several hours. Studies show that TB germs remain alive for up three years in closed environments (WHO, 1996, p. 19).

2.4.2 Site of disease (Type of TB)

Mycobacterium tuberculosis can attack any part of the body, but usually attacks the lungs (MoPH, 1994, p. 2). TB in the lung or throat can be infectious and can be spread to other people. TB in other parts of body, such as the kidney or brain, is usually not infectious (Rojanapithayakorn & Narain, 1999, p. 6). Tuberculosis cases are classified as either pulmonary or extra-pulmonary (WHO, 1993, p. 3 and Harries & Maher, 1996, p. 80).

Pulmonary tuberculosis (PTB):

Patients with pulmonary tuberculosis are further sub-divided into smear-positive and smear-negative cases.

- *Smear-positive patient:*
 - a) a patient with at least two sputum specimens positive for acid-fast bacilli by microscopy (AFB+ve)
 - b) a patient with at least one AFB+ve and chest x-ray suggestive of active PTB
 - c) a patient with at least one AFB+ve , which is culture-positive for *M.tuberculosis*
- *Smear- negative patient:*
 - a) a patient with two AFB-ve , chest x-ray suggestive of PTB, and decision by a physician to treat with a full curative course of antituberculosis chemotherapy
 - b) a patient with AFB-ve and culture –positive for *M. tuberculosis*.

Extra pulmonary TB

TB of organs other than lungs.

- a) a patient with AFB+ve culter in one examination from extrapulmonary specimens

- b) a patient with microbiological and clinical evidence of active TB and decision to give full treatment has been made by physician

2.4.3 TB transmission

TB can spread by respiratory tract, skin, gastro-intestinal tract but respiratory tract is the most common way of infection (Colice, 1995, p. 35).

2.4.3.1 How TB is spread

TB is spread as airborne particles in the form of tiny infectious droplets or droplet nuclei from infected patient by coughing, sneezing, laughing and speaking (Colice, 1995, p. 36). One cough can produce 3,000 droplet nuclei. (Harries & Maher, 1996, p. 19 and MoPH, 1994, p. 2-3). Approximately 1-10 μ m particles spread and inhaled by people nearby. If clinical TB patient cough 10 times/hour, in each time of coughing contains 500 particles and 2% of those particles contain TB. 1 particle contains TB will in 10x10 feet³/hour, normal people will breath 10 feet³ of air/45minutes, so every 45 minutes people will have chance to breath particle contains TB (Earnest & Sbarbaro, 1995, p.p. 297-500). These small particles can pass through alveoli and lead to inflammation and infection (Colice, 1995, p. 36). Within 2-10 weeks after infection, Cell Mediated Immune (CMI) of the host reacts against TB. Most of TB is destroyed by CMI except the virulent strain which can reactivated again when the host immune is impaired (MoPH, 1994, p. 5).

2.4.3.2 The dynamic of transmission

Tuberculosis involves a dynamic process. Understanding this process is essential to intervention for its control, transmission of the causative microorganism from one person to another is the key component. The microorganism enters the environment as an aerosol, a susceptible individual is exposed, becomes infected, and may subsequently develop disease, which may be contagious, thus passing the organism to others. The individual remains contagious for a limited period of time, during this period transmission may occur. This period is limited either by the death of individual or the suppression of growth of the microorganism in the body (as when the patient is cured). The key transitions in maintaining the cycle are (1) from exposure to infection, (2) from infection to disease, (3) from disease to exposure (Enarson in Reichman & Hershfield, 2000, p. 56). (see figure 2.4)

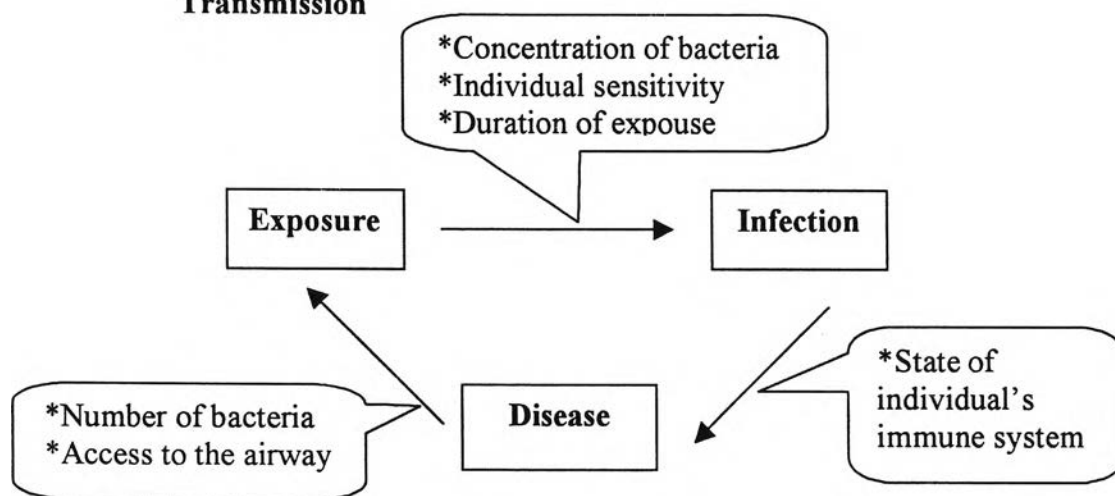
2.4.3.3 Key determinants or risk factors

Key determinants in the transition from exposure to infection are the concentration of droplet nuclei in the contaminated air (environment), the degree of susceptibility of the exposed, and the duration of exposure to droplet nuclei (Enarson in Reichman & Hershfield, 2000, p. 56). The risk of infection of a susceptible individual is therefore high with closeness, prolonged exposure to a person with sputum smear-positive PTB and the length of time he breathes that air. Transmission generally occurs indoors, where droplet nuclei can retain in the air for a long time (Harries & Maher, 1996, p. 19).

The key determinant in the transition from infection to disease is the state of immune system of infected individual. Key determinants in the transition from

disease to being contagious are the number of bacteria in the lung and their access to the airways. The stages in the transmission cycle increase its inefficiency (Enarson in Reichman & Hershfield, 2000, p.p. 55-57). (see figure 2.4)

Figure 2.4 Diagrammatic presentation of dynamic and key determinants of TB Transmission



Source: Adapted from statement of Enarson in Reichman & Hershfield, 2000, p.p. 55-57.

An understanding of the “base” probabilities (the probabilities of transition in the absence of the intervention) is essential to evaluate the impact of any intervention (Enarson in Reichman & Hershfield, 2000, p. 55). The probability of transition from exposure to infection varies, on average, from slightly more than 25% in a person living in the same household as a case with sputum smear positive tuberculosis to about 12% for friends or colleagues of such case. The probability of transition of infection to disease in this setting is less than 15%. Finally, the probability of a case of tuberculosis being highly contagious, in an adult, the probability is approximately 50%. Thus, the combined probability (if a susceptible person lives in the same household with a highly contagious case of tuberculosis) is 0.25 times, 0.12 times and 0.50 times, which is 1.5%. This is clearly an inefficient cycle of transmission, which makes it theoretically

possible to consider elimination a reasonable objective (Grzybowski, Barnett, & Styblo, 1975, p. 9 and Ennarson in Reichman & Hershfield, 2000, p. 57).

2.4.4 TB infection versus TB disease

An understanding of the differences between TB infection and TB disease is very important for health education and prevention of disease transmission (Rojanapithayakorn & Narain, 1999, p. 13). Once infected with *M. tuberculosis*, a person remains infected for many years, probably for life. The vast majority (90%) of people without HIV infection who are infected with *M. tuberculosis* do not develop tuberculosis disease. In these healthy, asymptomatic, infected individuals, the only evidence of infection may be a positive tuberculin skin test, (Harries & Maher, 1996, p.20), but is usually not able to eliminate the infection without taking an antituberculosis drug. This condition referred as “latent tuberculosis infection”. Persons with latent tuberculosis infection are asymptomatic and do not spread TB to others. About 10% of healthy persons who have latent tuberculosis infection will be come ill with active TB at some time during their lives, when their body defense systems become weak and they do not receive preventive therapy (Stine, 1996, p. 97). 10% of TB infected patients develop clinical TB (TB disease), 5% develop clinical TB within 2 years and 5% develop clinical TB many years after infection. Patients who have complete treatment will not develop clinical TB, 5-10% of patients who are not receive treatment will develop clinical TB in the rest of their life (Chavalitthumrourng, 1984, p.p. 21-30 and MoPH, 1994, p. 6). The rate of progression to clinical TB or TB disease is 10 to 30 times higher among individuals infected by both TB and HIV than among those infected only with TB (Rojanapithayakorn & Narain, 1999, p. 11).

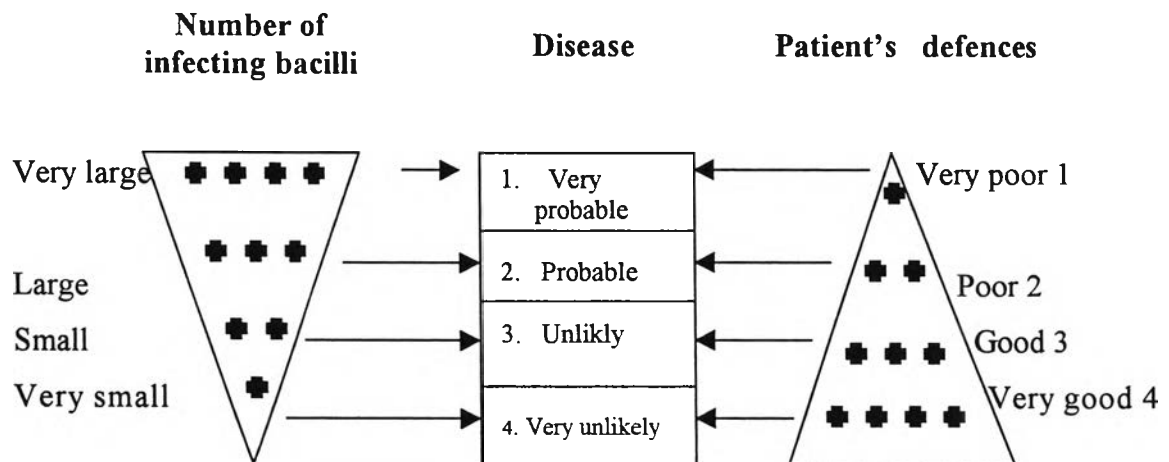
Babies, young children and old people often have weak immune systems as well as HIV infected persons. People with any of the following conditions are at risk of developing tuberculosis:

- substance abuse alcoholics and intravenous drug users (IVDUs)
- people with medical conditions (i.e. diabetes mellitus, silicosis, cancer, leukaemia, severe kidney disease, malnutrition, leukemia)
- illness requiring intake of certain medical treatments such as steroids (Rojanapithayakorn & Narain, 1999, p. 4).

Whether infection goes on to disease depends on (see figure 2.4) (Crofton, Horne, & Miller, 1999, p. 8).

- The size of the infecting dose, ie. How many TB are inhaled;
- The defences systems of the person infected (host resistance) see Figure 2.5

Figure 2.5 Probability of developing tuberculosis disease. The influence of the numbers of infecting bacilli and the strength of the patient's defences



Source: Crofton, Horne, & Miller, 1999, p. 8

Primary TB is an initial lesion (in lung, pharynx or gut) while specific host immune response does not well developed. People can be infected with TB without developing the TB disease. 95% of infected patients have no clinical illness, only 5% of infected patients develop clinical TB. Primary TB in HIV infected patient can be more dangerous because the impairment of the immune response. Post primary TB is a reactivation of TB from primary TB. There are 2 mechanisms of post primary TB (Chavalitthumrong, 1984, p.p. 21-30).

Endogenous reactivation is reactivation of TB from primary TB, which is promoted by some factors such as impairment of host immune response.

Exogenous superinfection is clinical TB cause by new strain of TB in previously TB-infected patients.

2.4.5 Symptoms

TB is gradually onset and develops non-specific signs of infection such as flu-like symptom, low grade fever, remittent fever. Most common symptoms when TB patients come to see doctor are chronic cough for more than two weeks and/or chest pain when coughing with or without haemoptysis (haemoptysis shows in three forms; blood splitting, blood streaked sputum or massive haemoptysis), weight loss ,fatigue, malaise, loss of appetite, pale skin, fever and or night sweats . Symptoms of TB disease may last for several weeks if not treated, TB can progress to a severe disease and may cause death. Symptoms for expulmonary TB disease is vary according to the part of the body affected (Davies, 1994, p. 163).

2.4.6 BCG vaccination

BCG (Bacilli Calmette-Guerin) is a live attenuated vaccine derived originally from *M.bovis* (Harries & Maher,1996, p. 125). This vaccine is capable only limiting the dissemination of the microorganism within the body after infection (Sutherland, 1997, p.p. 225-231). The benefit of BCG is in protecting young children against disseminated and severe TB(Harries & Maher, 1996, p. 125). BCG cannot protect against the exogenous re-infection of TB in adults. In the countries with tuberculosis prevalence, WHO and UNICEF recommend that BCG should be given as a routine to all infants (but with a few exceptions, such as active AIDS) as a protection in childhood (Rojanapithayakorn, & Narain,1999, p. 42).

2.4.7 Prevention

The aim of preventive therapy is the use of one or more anti-tuberculosis drugs given to prevent the progression of individuals with latent infection with *Mycobacterium tuberculosis* to develop to active disease (Godfrey, 1998, p. 3), although the efficacy is not 100% (range from 60%-90%). However, it is still not clear how long preventive therapy must be given (Rojanapithayakorn, & Narain, 1999, p. 39).

2.4.8 Anti-TB treatment in HIV-infected TB patients

The same criteria to determine treatment categories for TB patients irrespective of HIV status. Generally, anti-TB chemotherapy is the same for HIV-infected and non-HIV-infected TB patients, with the exception of the use of thioacetazone (WHO, 1997, p. 38). Short course regimens (up to 6 months duration) have been used in Thailand's TB program since 1986 for all categories of patients. Treatment is concentrate in zonal TB Centers and district hospitals. The treatment is largely unsupervised and fixed drug combinations are not used (GTP & WHO, 1998, p. 61). Adverse reactions are generally more common in HIV-positive than in HIV-negative TB patients. Most reactions occur in the first two months of treatment (Rojanapithayakorn & Narain, 1999, p. 25). Thioacetazone is associated with a high risk of severe, and sometimes fatal, skin reaction in HIV-infected individuals. Ethambutol should therefore be used instead of thioacetazone in patients with known or suspected HIV infection. Where it is not possible to avoid the use of thioacetazone, it is essential to warn patients about the risk

of severe skin reactions. It is essential to warn to stop thioacetazone at once and report to a health unit if itching or a skin reaction occurs(WHO ,1997, p. 46).

If a patient has to be treated for HIV and TB at the same time, if possible, treatment for TB should be completed before starting protease inhibitors. This because some protease inhibitors decrease the metabolism of rifampicin and increase the rifampicin blood level, thereby, resulting in increased frequency of side-effects (Rojanapithayakorn & Narain, 1999, p.p. 25-26).

Without treatment, after 5 years, 50% of pulmonary TB patients will be dead, 25% will be healthy (self-cured by strong immune defence) and 25% will remain ill with chronic, infectious TB (Harries & Maher, 1996, p. 20).

2.4.9 Drug-Resistant Tuberculosis

HIV associated TB has a high risk of resistance to two main drugs (rifampicin and isoniazid) as observed in New York city in 1992. It is estimated that in the USA nearly 80 % of patients infected with MDR bacilli have died (WHO,1994, p. 13). A case of drug-resistant tuberculosis (usually pulmonary) excretes bacilli resistant to one or more antituberculosis drugs.

There are two important types of drug-resistance:(Crofton, Chaulet, & Maher, 1997, p. 7)

1. Primary resistance, occurs in patients who have not had prior treatment with antituberculosis drugs. This resistance is common in those who have spent time with someone with drug-resistant TB disease.
2. Acquired resistance, occurs in patients with some record of previous treatment. This is mostly because of incorrect chemotherapy (ineffective treatment regimen) and inconsistency to take medicine regularly

Treatment of MDR-TB is expensive, toxic, and few patients are cured, as these drug-resistant strains spread, TB threatens to become an incurable disease for future generation. Nearly 20% of people with TB live in Bangkok. HIV and MDR-TB are contribute to a high mortality from TB. According to improper use of anti TB drugs in the past, one in 50 new TB patients already has MDR TB. MDR-TB can usually be prevented by initially treating TB with four drugs, administering TB medications under Directly Observed Treatment Short Course (DOTS), and assuring an adequate supply of high quality drugs. Thailand average of MDR prevalence in previously untreated patients was 2.07%. However, regional difference exist, with areas affected by HIV reporting particularly high MDR levels (Chiang Rai 6.6%). The drug-resistance situation also appears to be worse in Bangkok, where the Central Chest Hospital (CCH) reported initial MDR levels of 4.4% in 1996. Total MDR levels (including acquired resistance) were in excess of 20 % at CCH during recent years. Similar levels are also reported from Bamrasnaradul Hospital, which specializes in the care of HIV-infected patients. This highlights the role of HIV for the spread of MDR strains in Thailand (CDC & WHO, 1999, p.p. 3-12).

2.5 The association between TB and HIV and its impact.

In 1995, about one third of the 17 million HIV-infected people worldwide were also co-infected with *M. tuberculosis*. 70% of co-infected people live in sub-Saharan Africa, 20% in Asia and 8% in Latin America and the Caribbean (Harries, & Maher, 1996, p. 29). An estimated 34.3 million people are infected with HIV worldwide (UNAIDS, 2000, p. 6), of which about half are co-infected with *M. tuberculosis*. The impact of HIV on the global TB epidemic has become increasingly clear in recent years. HIV increases a person's susceptibility to infection with *M. tuberculosis*. In a person infected with *M. tuberculosis*, HIV is a potent cause of progression of tuberculosis infection to disease.

Several prospective studies reported 6-26 times higher annual risk of developing clinical tuberculosis in HIV-seropositive individuals compared with the HIV seronegative individuals in the same population (Selwyn, 1989, p. 320 and Braun, 1991, p.p. 501-504). Moreover, HIV multiplies the problems of tuberculosis for individuals and entire communities; in turn tuberculosis complicates the management and course of HIV infection (Xavier, 1992, p.p. 148-150). The parallel epidemic of TB is likely to lead to further spread of TB among the general, non-HIV infected population. Of serious concern is the emergence of drug-resistant tuberculosis (WHO, 1999, p. 7).

Consider an individual infected with *M. tuberculosis*. The table 2.2 shows the effect of HIV infection on his lifetime risk of developing TB. Compared to an individual who is not infected with HIV, an individual infected with HIV has a 10 times

increased risk of developing TB (Harries & Maher, 1996, p. 29). Not all HIV-infected persons get TB. However, TB has been found to be the most common opportunistic infection in almost all parts of the world. In Asia and Africa, about 60% and 40% of AIDS patients had tuberculosis respectively. This clearly indicates that TB is the most important life-threatening opportunistic infection associated with HIV (Harries & Maher, 1996, p. 13).

Table 2.2 The effect of HIV status and lifetime risk of developing TB

HIV status	Lifetime Risk of Developing TB
Negative	5-10%
Positive	50%

Source: Harries & Maher, 1996, p. 29

2.5.1 Impact of HIV- Associated Tuberculosis

HIV may alter the epidemiology of TB in three ways: (Sutherland in Davies, 1994, p. 229)

- Endogenous reactivation of pre-existing infection with *M.tuberculosis* in persons who become infected with HIV.
- Progression from infection with *M.tuberculosis* to tuberculosis in persons with pre-existing HIV infection.
- Transmission of tubercle bacilli to the general population from tuberculosis patients who developed tuberculosis because of HIV infection.

2.5.2 Impact of HIV on TB control :

The consequences include the following: (Harries & Maher, 1996, p. 30)

- Over-diagnosis of sputum smear-negative PTB
- Under-diagnosis of sputum smear-positive PTB
- Inadequate supervision of anti-TB chemotherapy
- Low cure rates
- High mortality rates during treatment
- High default rates because of adverse drug reactions
- High rates of TB recurrence
- Increased emergence of drug resistance

2.6 The principle of TB control

In 1964 WHO recommendation for developing countries to implement a National Tuberculosis Programme(NTP), the MoPH implemented the NTP in Thailand in 1967 (Payanandana, Kladphuang, Somsong, & Jittimane , 1999, p. 36).

2.6.1 Overall objectives of TB control are

1. To reduce mortality, morbidity and disease transmission by ensuring that all patients with active TB are diagnosed promptly and are placed on a

complete, adequate, and appropriate course of chemotherapy (WHO,1997, p. 16).

2. To prevent the development of drug resistance (WHO ,1997, p. 16).
3. To prevent TB disease transmission to others in the community (Etkind, in Rom & Garay, 1996, p. 945).
4. To identify persons who are infected with TB who are high risk of developing TB disease and provide preventive therapy when appropriate (Etkind in Rom & Garay, 1996, p. 945).

2.6.2 The principles of prevention and control of tuberculosis

In principle there are five methods for prevention of tuberculosis:

1. Case-finding and treatment (Graf in Davies, 1994, p. 327).
2. Chemoprophylaxis. Chemoprophylaxis is expected to protect the individual, but not to have an immediate impact on transmission (Graf in Davies, 1994, p. 327).
3. BCG Vaccination (Graf in Davies, 1994, 327).
4. Environmental control of TB is expected to prevent the spread of infection by patients isolation, staff prevention, decrease the concentrate of infectious droplet nuclei, and engineering control by using high efficiency particle air (HEPA) filter, ultraviolet germicidal irradiation (UGI) and general ventilation. (Ungsethapan & Ruxrungham, 1998, p.p. 72-76).

5. Improvement of socio-economic conditions. Improvement of socio-economic conditions is the measure that has the most profound effect on reducing the disease load, as tuberculosis is intimately associated with poverty and deprivation (Graf, in Davies, 1994, p. 327).

Tuberculosis programme in Thailand is concentrated on Case-finding, treatment and prevention. Case-finding and treatment will play by district or community hospitals, provincial hospitals, while health centers are assigned to play only auxillary role with support from TB Division and Zonal TB centers in term of technical supervision and training and logistic support of TB drugs, laboratory equipments and health education media. In the area of TB prevention BCG vaccination programme had been decentralized by intergration with the general health infrastructure(Payanandana, Kladphuang, Somsong, & Jittimanee, 1999, p.p. 37-38).

2.7 Health system of Thailand

In the health sector, health services in Thailand are provided under a government and non-government system. The the Ministry of Public Health (MoPH) is responsible for the organization, management, and administration of public health services and most of the medical services of the government, especially in the rural areas. The MoPH exclusively provides the NTP budget. The MoPH is organized into seven main compartments plus two additional institutions. All department provide technical support to the provincial health office in their respective fields. Tuberculosis

division is under the Department of Communicable Disease Control (CDC), but the 13 Zonal TB Centers (ZTCs), previously belonged to Tuberculosis Division have been shifted to be under the Regional Offices for CDC. Hospitals in provincial and district levels, provincial and district health Offices, and health centers are supported by the Rural Hospital Division and the Rural Health Division of the ministry of Public Health.

Other medical and health service organizations contribute in TB control are :

- The Bureau of University Affairs (University hospitals and institutes)
- The Ministry of defence (Military hospitals and institutes)
- The Bangkok Metropolitan Administration (Department of Health, Division of Division Control, and health centers, Department of Medical Service, and BMA hospitals in Bangkok.
- The Thai Red Cross (General hospital, health center and Tuberculin and BCG Laboratory)
- The Ministry of Interior (Provincial municipal medical medical centers and health centers or sections)
- The Anti-Tuberculosis Association of Thailand in Bangkok with one TB hospital and Chiang Mai Anti-Tuberculosis Association
- The other non-government organizations (NGOs) and private sectors (Payanandana, Kladphuang, Somsong, & Jittimane, 1999, p.p. 9-10).

The contribution of the NGOs and private sector in TB control cannot be quantified because most of them do not report their activities to the government. There are many existing and potential partners working in TB control. It might need coordination- keeping each other informed-is important to avoid duplication of effect.

Collaboration- working together-is an effective way of strengthening partnerships, reducing costs, sharing resources and skills, and maximizing the value of the contributions of different agencies. Collaboration in advocacy, education and research initiatives is of particular value. Organizations involved in HIV/AIDS prevention and care can develop educational approaches to help increase awareness of the link between HIV and TB (WHO,1999, p.p. 12-14).

2.8 Stigma of TB and HIV/AIDS

Cultural factors may affect the use of services and the outcome of treatment. For many cultures, there is a stigma associated with tuberculosis that lead to ostracism of the patient by others in the community. Interviews and focus groups in a Honduras study found that attitudes about tuberculosis among patients and the community interfered with help seeking and adherence. Patient education is needed to dispel myths associated with the stigma and to contradict basic misconceptions such as the belief that patients are infectious while on treatment (Mata, 1998, p.p. 57-64). The community have less stigmatization to TB than the former time. However, if TB occur in the young age group, then the community will label those young cases are AIDS. TB is stigmatized because TB is the communicable disease. The community will stigmatize TB as long as TB related symptoms exist (Wongkhomthong & Ngamvithayapong, in Ishikawa, 1995, p.p. 222-223).

2.9 Health Seeking Behavior

2.9.1 Self care

Sangchart (1998, p.p. 86-92). had reviewed “Health seeking behaviors and coping process of people of people with AIDS” which is one of six areas of the study reviews the social science research on HIV/AIDS in Thailand that were published between 1986 and 1998. There are few studies on experienced PHA on self-care behavior in Thailand and other countries also a finding on the studies results in different activities that are parts of self-care. Most self-cares found in PHA are to use several herbal remedies without being scientifically monitored. Some use herbal medicine as alternative therapeutic. Other activities are informed and suggested and become common practices among PHA group via newsletter from other PHA groups. In many instances PHA are not effective on herbs treatment but they are effective in gathering HIV/AIDS patients and their families.

2.9.2 Related study on health seeking behavior

PHA have a variety of needs and problems that relate to their status. These may be specific to a particular disease process and need to be addressed in some way by the formal or informal health sector, or they may be legal, related to work, educational, spiritual, emotional, nutritional or social (Gilks et al., 1998, p. 51). PHA with a severe syndrome are seeking health care services from various sources related to HIV/AIDS

perception and a meaning. These seeking behaviors have an impact on PHA health as they hope to maintain their health or live longer.

PHA are carefully making a decision on health care services due to they terrorize to declare their status of being infected. They prefer to go to a hospital that there is no one know them, or to get the treatment in a hospital in rural areas. Even though treatment is not efficiency, they need to get conventional medicine from the doctors. PHA can be assured of the treatment on opportunistic infection or complication. If the PHA have serious illness, they tend to go to the hospital. They go to consult the health center worker or buy medicine from the pharmacy in case of less serious illness. Seeking for alternative therapeutic is common practice that uses along with the conventional treatment. Alternative therapeutic includes herbal medicine and traditional rite of local healers.

Raising illness awareness (disease perception) has an influence on seeking health care services. The main purpose is to maintain health and to prolong life; therefore, PHA seek for both conventional and alternative treatments or therapeutic. The conventional treatment can access through public and private hospitals, clinics, and pharmacies. While alternative therapeutic or folk healer includes herbal medicine and traditional ceremonies that would relief pain and for merit fulfillment or prosperity. (Sangchart, 1998, p.p. 97-98).

The determinants of health care services seeking model and health service demand rely on the determinant perception in quality of services, sickness severity,

distance, and affordability in buying services. These can be found in two models, fish bone model and straight-line model. Fish bone model is the model that PHA seek for health services from low to high quality of services. They cannot find the services that cure their illness, so they keep on seeking for effective treatment. Oppositely, the straight-line model is when PHA stop seeking for any services, but stick with only one hospital that they selected from their own judgement. They believe that the hospital can give them a well treatment after comparing to other health services. Seeking behavior on health care services depends on HIV/AIDS perception and a meaning result in an impact on self-care behavior and differences in seeking on health care services (Sangchart, 1998, p.p. 99-101).

2.10 Determinants Factors effecting behavior change in self-care

The factors influencing behavior change in PHA are numerous. These are in accordance with the studies of (Sangchart,1998, p.p. 93-96). These factors are following;

A. Personnel factors

1. **Disease perception** include perceive in characteristic, risk, vulnerability, transmission, treatment and severity of the disease will relate with self care and choose the options of health care. Misconception will lead their life becomes full of sorrow, pain, grief and despair.
2. **Symptoms of disease** relate with self care efficacy and the desire for living.

3. **Educational level** will relate with coping process and result in self health promotion Persons with a high educational level have the skills for searching knowledge, questions, understanding the treatment and applying this knowledge appropriately.
4. **Career and income** (economic status) will be the enabling factors lead to self- care.
5. **Length of time** to perceive infection.
6. **Role and function** in family and society
7. **Knowledge and Experience** in illness and practice.
8. **Mental strength** involves a lifestyle change and its impact on personal behavior.

B. Environment factors are the external factors including 4 dimensions.

1. Social support is the important factor which influencing self-care.
2. Surrounding situation that happen after infection.
3. Information and media are received regularly.
4. Health care system and resource .

2.11 CONCEPTUAL FRAMEWORK AND THEORY

2.11.1 What is PRECEDE –PROCEED Model?

The ultimate expected outcome of health education is healthy behavior on the part of client. For healthy behavior to occur, however, certain precursor condition must

be present. These precursors fall into three categories; predisposing factors, reinforcing factors, and enabling factors (Clark,1992, p. 128). These factors are component of the **PRECEDE model**.

The Precede-Proceed Model is a planning model designed by Dr. Lawrence Green and Marshall Kreuter for health education and health promotion programmes. The goals of the PRECEDE -PROCEED model are to explain health-related behaviours and to design and evaluate the interventions designed to influence both the behaviours and the living conditions that influence them and their sequelae. Its overriding principle is that most enduring health behavior change is voluntary in nature. This principle is reflected in a systematic planning process which seeks to empower individuals with understanding, motivation, and skills and active engagement in community affairs to improve their quality of life. The Precede-Proceed framework for planning is founded on the disciplines of epidemiology; the social, behavioural, and educational sciences; and health administration. (The PRECEDE/PROCEED model is in <http://www.ihpr.ubc.ca/precede.html>)

This health education model uses a problem-solving approach to help groups change behaviors. It proposes that health and health behaviors are caused by multiple factors and health education designed to influence behavior must be multidimensional. The model has seven phases and is similar to the nursing process (Allender, 1998, p.94). The identification of priorities and the setting of objectives in the PRECEDE phases provide the objects and criteria for policy, implementation, and evaluation in the PROCEED phases.

PRECEDE stands for **P**redisposing, **R**einforcing, and **E**nabling Constructs in Educational **D**iagnosis and **E**valuation. This segment takes into account the **multiple factors** that shape health status and help the planner arrive at a highly focused subset of factors as targets for intervention. It also generates specific objectives and criteria for evaluation.

The second segment, **PROCEED** stands for "**P**olicy, **R**egulation and **O**rganizational Constructs in **E**ducation and **E**nvironmental **D**evelopment." The policy, regulatory and organizational components of this segment take the provider beyond education to the political, managerial and economic actions necessary to make social systems and environments more conducive to healthful lifestyles.

Description of the model

PRECEDE - the first 5 phases. Start at the desired final outcome and determine what causes it - that is what must precede that outcome.

Phase 1 Social Diagnosis "The process of determining people's perceptions of their own needs or quality of life, and their aspirations for the common good, through broad participation and application of multiple information-gathering activities designed to expand understanding of the community (Green & Kreuter, 1991, p. 45)."

Phase 2 Epidemiological Diagnosis: "The deliniation of the extent, distribution, and causes of a health problem in a defined population (Green & Kreuter, 1991, p. 431)."

From phase 1 and 2 program objectives are created - that is the goal or goals you hope to achieve as a result of implementing this program

Phase 3 Behavioral Diagnosis: Behavioral Diagnosis is the analysis of behavioral links to the goals or problems that are identified in the epidemiological or social diagnosis (Green & Kreuter, 1991, p. 429) .

Phase 4 Educational & Organizational Diagnosis Three kinds of causes of health behavior are identified - predisposing factors, enabling factors, and reinforcing factors (Green & Kreuter, 1991, p. 151).

- **Predisposing Factors-** any characteristics of a person or population that motivates behavior prior to the occurrence of that behavior (Green & Kreuter, 1991, p. 434).
- **Enablers** - characteristic of the environment that facilitate action and any skill or resource requires to attain specific behavior (Green & Kreuter, 1991, p. 431).
- **Reinforces** - rewards or incentive or punishments following or anticipated as a consequence of a behavior. They serve to strengthen the motivation for behavior,(Green & Kreuter, 1991, p. 434) and contribute to its persistence and repetition, Social support, peer influences, feedback.

Phase 5 Administrative and Policy Diagnosis

PROCEED - the second 4 phases

Phase 6 - Implementation of the program.

Phase 7 - Process Evaluation.

Phase 8 - Impact Evaluation

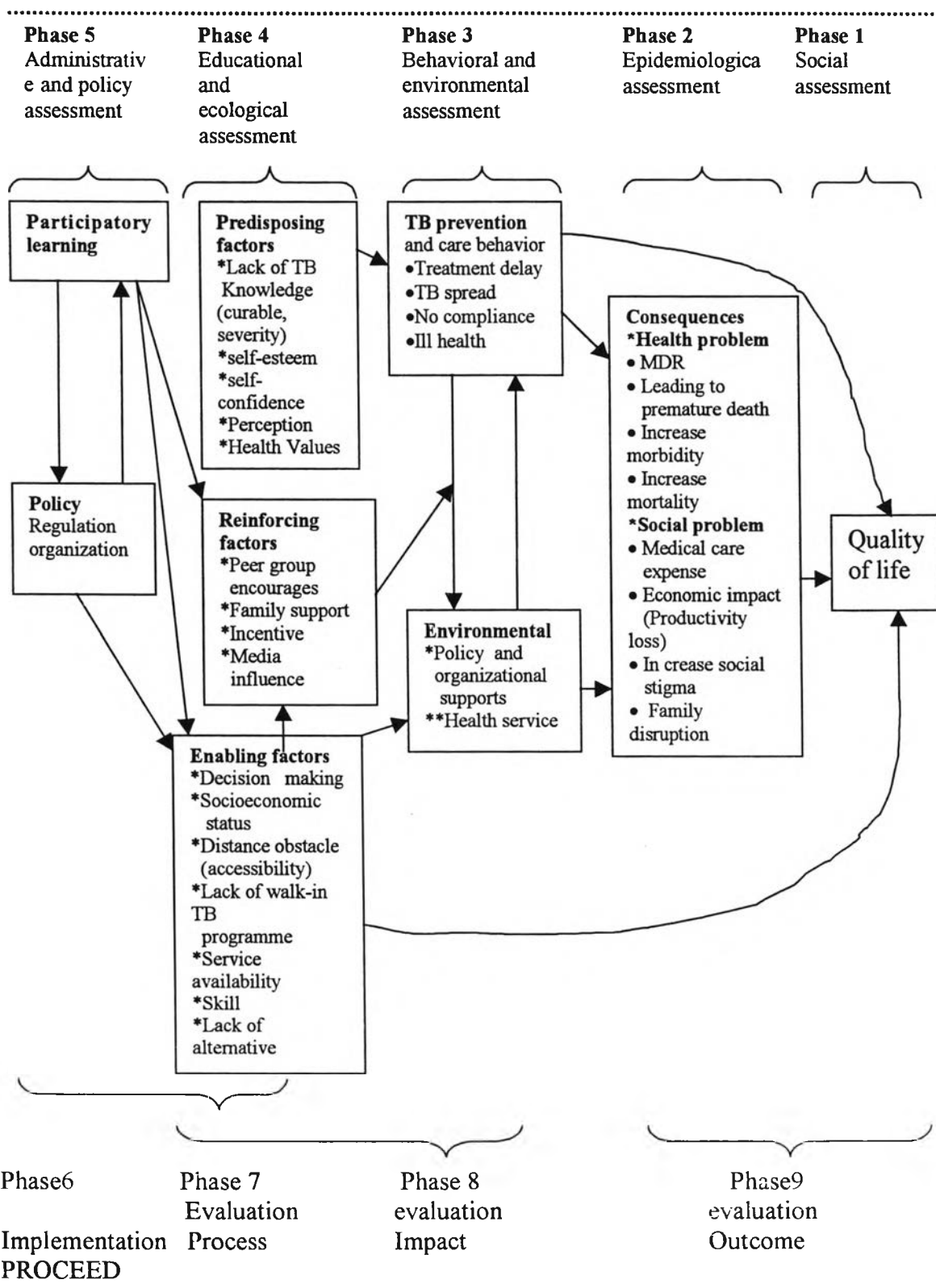
Phase 9 - Outcome Evaluation

2.11.2 Conceptual framework

Healthful life-style behavior forms a cornerstone of disease prevention and health promotion (Green&Ottonson, 1994, p. 211). As a condition of chronic disease, the health status of PHA are related their earlier personal health practices. Many interrelated factors influence TB prevention and care behavior. The figure 2.6 shows causes and consequences of the problem which analyzed using PRECEDE-PROCEEDE model.

Figure 2.6 Conceptual framework

PRECEDE



Source: Adapted from Green & Ottoson, 1994, p. 375

2.12 Health Education: Intervention to improving Knowledge, Attitude and Practice.

2.12.1 Value in health education for TB/HIV prevention and care

Health education is an essential facet of health promotion, (Wass, 1994, p. 187), which aims to ensure that people are well informed about health issues, have the ability to **make choices about their health and lifestyles**, and have **the skills to carry out actions and behaviors** to pursue those choices. It also to raise awareness of the need for policy changes within organizations, including governments, and for environmental changes conducive to health (Simnett, 1995, p. 16). Health education relates not just to the health of individuals, but also to the health of groups and communities and the world (Wass, 1994, p. 390).

Health education, information and communication is **an important strategy in TB control**. Many people with TB lack awareness of the basic symptoms of TB.. Even if they do know about the symptoms, they often do not know that diagnosis and treatment is freely available through government or Non Governmental Organization (NGO) health services or that TB can be cure (WHO,1999, p. 21).

Smith's (1979 in Downie ,Tannahill & Tannahill,1996, p.p. 27-28) stated *health education is communication activities aimed at enhancing positive health and preventing or diminishing ill-health in individuals and groups, through influencing the beliefs, attitudes, and behavior of those with power and of the community at large.*

Health education create health by helping the individual or communities to make decision and have control over circumstances that affect health by changing behaviour and care themselves.

A typical definition of health education is: *'any combination of learning experiences designed to facilitate voluntary actions conducive to health'* (Green & Kreuter, 1991 in Wass,1994, p. 188).

The scope of education is therefore quite broad, as it reflected in Ewles and Simnett's seven dimensions of health education (1985, p. 28 in Wass, 1994, p. 189).

1. Health, and therefore health education, is concerned with the whole person, and encompasses physical, mental, emotional, spiritual, and societal aspects.
2. Health education is a life-long process from birth to death, helping people to change and adapt at all stages.
3. Health education is concerned with people at all point of health and illness, from the completely healthy to the chronically sick and handicapped, to maximize each people's potential for healthy living.
4. Health education is directed toward individuals, families, groups, and whole communities.
5. Health education is concerned with helping people to help themselves, and with helping people to work towards creating healthier conditions for everybody, making healthy choices easier choices.

6. Health education involves formal and informal teaching and learning using a range of methods.
7. Health education is concerned a ranges of goals, including giving information, attitude change, behavior change and social change.

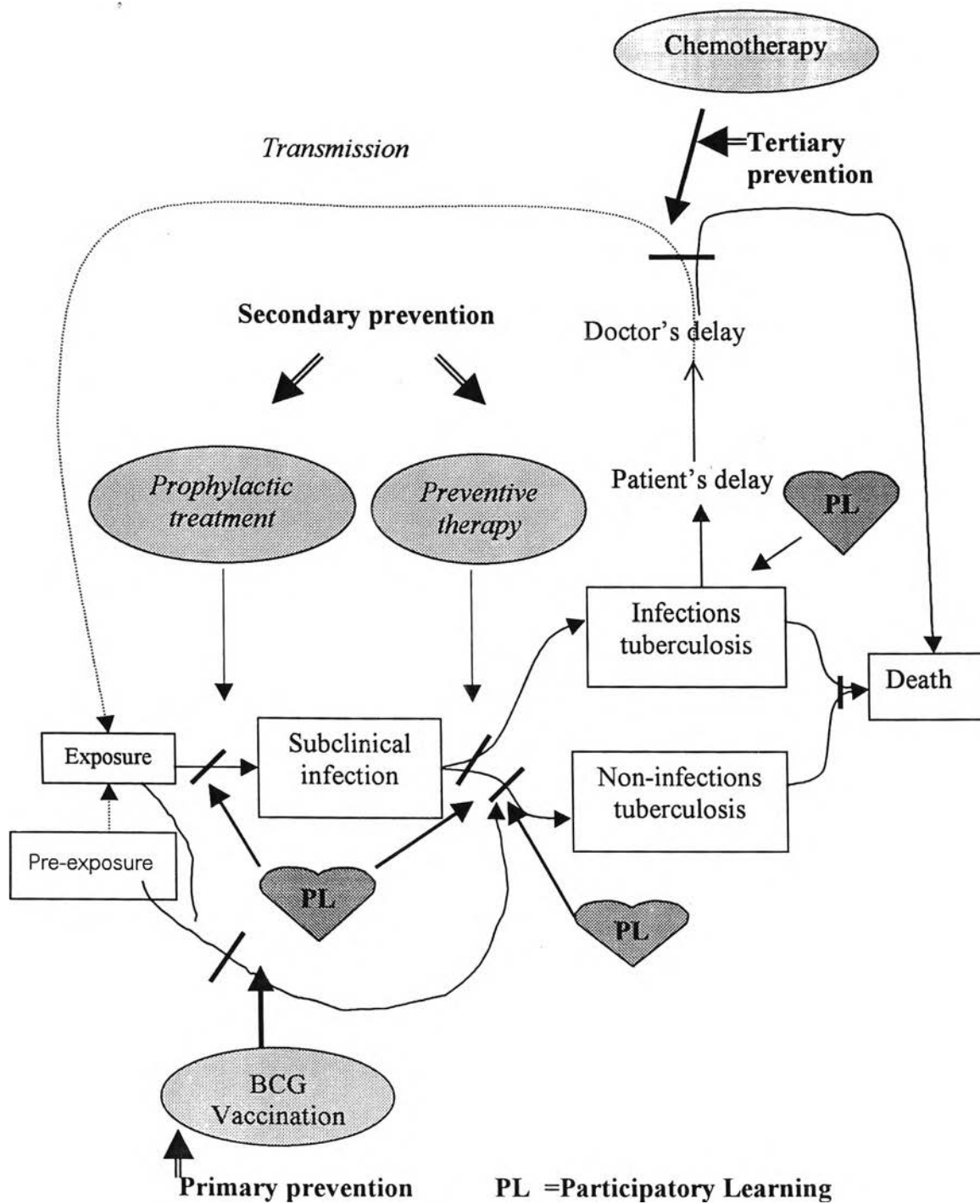
2.12.2 Health education as intervention for TB /HIV prevention and care.

Ill health does not happen by chance or through bad luck but there are factors which affect health. These factors include both uncontrollable like genetic and biological factors and controllable like lifestyle, environmental and social factors. Health education has been aimed at disease prevention and intervention are designed to prevent ill health. Health education is often categorized as concerned with: (Naidoo & Wills, 1996, p.p. 83-84,67-68. and Abelin, Brzezinski, & Carstairs, n.d., p. 18)

1. **Primary prevention** seeks to avoid the onset of ill health by the detection of high-risk groups and the provision of advice and counseling e.g., improving nutritional status, physical fitness, and immunizing against infectious disease.
2. **Secondary prevention** seeks to shorten episodes of illness and prevent the progression of ill health through early diagnosis and treatment.
3. **Tertiary prevention** seeks to limit impairments and disabilities or complications arising from an irreversible condition. This extends the concept of prevention into the field of rehabilitation

Participatory learning /education is a process of health education which will be result in self-care, care seeking, getting the patients into the treatment system and adherence in TB/HIV. This intervention can play a central role in any stage of TB control activities.(see figure 2.7) However, it is almost impossible to discuss the general principle of participation without relying on the concept of health and disease (Abelin, Brzezinski, & Carstairs, n.d., p. 63).

Figure 2.7 Diagrammatic presentation of the pathogenesis of tuberculosis and points of intervention.



Source Adapted from Davies, 1994, p. 231

2.12.3 Rational and feasibility of self-help group education

Health education is one important strategy to prevent and control TB and an essential tool to improve compliance (Davies, 1994, p.p. 325-338 and Reichman & Hershfield, 2000, p. 706). The education about TB prevention and care which targets those who are already infected chronic disease and incurable like HIV/AIDS is more complicated due to dynamics and complexity of both diseases.

Simnett stated that getting people involved in health development means changing their behavior, from being passive recipients of services to actively participating in efforts to improve their own, and others' health (Simnett, 1995, p.p.193-195). As we have seen health education is about developing the potential of people to take increased responsibility for their own, and others', health. This means starting with developing the health potential of self-help groups who bring their own perspective and their own expertise to issues (Wass, 1995, p. 43).

People living with HIV are at risk of developing TB. They should be given health education and encouraged to seek early diagnosis and treatment of cough and other symptoms suggestive of TB (Godfrey, 1998, p. 4). They can provide important insights into how to address problems, how to strive for positive living and how people can be empowered through the trauma and tragedy of epidemic (UNAIDS, 2000, p. 4). They also have a key role to play in education and prevention.

The principle of involving PHA has been a part of the response to HIV since the early years of the epidemic. It was articulated in the Denver Declaration of 1983, and endorsed at the Paris AIDS summit in December 1994 as the “Greater involvement of people with HIV/AIDS”(UNAIDS,1999, p. 12).

Self- help groups are the entry points for HIV/AIDS care and a partial component in concept of comprehensive care across the HIV/AIDS continuum of care (Gilks et al,1998, p. 56). Lack of self-help group participation has resulted in abandoning TB prevention and care and leading to poor quality of life of PHA including TB spread to the community and society. It is better to enhance the involvement of the PHA who is one importance target group in TB control to develop self-reliance and decision about activities that affect their daily lives.

2.13 PROPOSE INTERVENTION : Participatory learning

2.13.1 Rational of using approach

The lessons of the past suggest that technology alone is insufficient. The fact that TB is still with us despite the availability of very effective antimicrobial therapies should also be a sobering warning to those who believe that better drugs alone can win the war against AIDS. In order to advance the battle against TB, new tools are needed (Rigsby & Friedland in Devita, Hellman, & Rosenberg, 1997, p.p. 245-256). Community participation in health has been a major policy theme since the 1970s and

was a fundamental principle of the Alma Ata Declaration of 1978. Twenty years later, it is still considered an essential part of health development (Whyte, 2000, p. 1).

From the public health point of view, the best way to prevent TB is to provide effective treatment to the infectious TB cases. Therefore to interrupt the chain of transmission. Good treatment programmes are the best prevention programmes. HIV-infected individuals are particularly susceptible to infection with *M. tuberculosis* and the development of TB (Harries, 1996, p. 123). The participatory education is an essential tool in that process because PHA do not miss opportunities for appropriate prevention, diagnosis, and treatment. Education is about learning that an informed person will behave rationally to promote his or her health. It is about the ability to combine knowledge, attitudes, and skills and that strength to shape one's life and contribute to the lives of others. As noted in WHO's Constitution and restated in the Ottawa Charter on Health Promotion (1986), education is a prerequisite for health (WHO, 1996, p.p. 1-11).

Health is not the responsibility of the health sector alone, but is also affected by development activities in other sectors such as education. Hence the development of self-reliance and social awareness through continuing community participation is a key factor in improving health (Rifkin, 1990, p.p. 1-3). WHO and UNICEF documentation and materials from non-governmental groups stated that there is increasing evidence that medical technology is less effective in improving health in large communities than what people can do for themselves (Rifkin, 1990, p. 10).

People have both the right and the duty to be involved in decisions about activities that affect their daily lives. Such involvement provides a basis for increasing self-confidence and self-reliance, which are sorely lacking among the poor and underprivileged (Rifkin, 1990, p. 11). Participation can empower people to act on their own behalf. To the extent that community involvement helps people to have the channel to articulate their problems, to learn, to acquire and practice new skills, to make allies- they are better able to be active and responsible. This does not mean that communities should be expected to solve their own health problems. But it is recognize that they are not simply passive recipients of health services, and entirely dependent on the knowledge of experts but also of supporting them in **creating and taking opportunities for improving health** (Whyte, 2000, p.p. 14-15).

2.13.2 Participatory learning component and functioning

Participation learning or education originated known as “popular education” in the 1950 with the efforts of Brazilian educator, Paulo Freire, and his colleges to teach the oppressed peasant population basic literacy skills Participation education **breaks down “teacher-student”** polarity, **avoids manipulation** by experts and emphasizes the collective nature of learning (Pan American Health Organization, 1996, p.p. 142-143). It is designed for participant-center learning. In participatory education, the process of the project is as important as the outcome of the project. A decentralised planning system which would encourage the people themselves to formulate plans for their development.

The purpose of participatory learning is to promote the presence of precursors to health behavior and to assist participants in making appropriate health related decisions. Participants can make three types of decisions; decisions about personal health behaviors, decisions about use of available health resources, and decisions about societal health issues (Clark, 1992, p. 129). This purpose can be performed through awareness raising –to increase members’ interest in, and awareness of, health issues **through group discussion**, mutual support- to help each other to cope with **shared** problems and **their own experiences**, or to change a health-damaging behavior, education-to impart skills, offer information and prepare members for life style behavior changing (Ewles & Simneet, 1996, p. 162).

Participation learning uses a **flexible approach** and a variety of methods that fit with the community include using existing resources in the community. The purpose of the education is to facilitate **empowerment** of individuals, groups or the community through educational and skill-building process in order to decisions or actions. This approach helps people to identify their own concerns and gain the skills and confidence to act upon them. It is unique in being based on a “bottom-up” strategy (Naidoo & Wills, 1996, p. 89). It is a process of experience and perception of an individual’s health. The strength of this style is that participants learn to trust their own judgments and at the same time appreciate other people’s rights and opinions (Ewles & Simnett, 1996, p. 163). Then they will accept the problem and seek a ways to solve the problem.

The principles of participatory learning are:

1. **Delegating decision-making powers** to the participants. What is enough and what is the correct balance depend on circumstances and tradition (Abelin, Brzezinski, & Carstairs, n.d., p. 63).
2. Health educators should shift their role from instructors to facilitators who acts as a catalyst to help participants to identify their health concerns and areas for change, getting things going, and need to show warmth and empathy, encourage group members to express their feelings, and provide counsel withdraw from the situation (Pensirinapa in Anulux et al., 2000, p.p. 76-77). To help participants to think critically or clarify about their values and attitudes which is the process of self-empowering people by modifying the way people feel about themselves through improving their self-awareness and self-esteem (Ewles & Simnett, 1996, p. 183).
3. Base on **adult learning and learner-centred** approach. Adults learn well from their peers. To keep the whole population continuously involved (Naidoo & Wills, 1996, p. 89).
4. **No lecture**. Encourages everyone to learn and everyone to teach. Each participant learns from the other experiences.
5. Principle of **two-way communication** (Downie, Tannahill, & Tannahill, 1996, p. 37).
6. **No interruption, and no domination or leading**, but listening and learning. The facilitator has to stay neutral while asking the questions and does not lead the respondent..

7. **Use varies activities.** Using a variety of methods to energise participants and encourage them to get involved.
8. Working in **small group** is advantage (Downie, Tannahill, & Tannahill, 1996, p. 44).

Advantages of the small group method: (Cooper ,1995, p. 151)

1. Enhances participant motivation and fosters positive attitudes toward the subject matter, participants enjoy working together in small groups.
2. Develops participants' problem-solving and decision-making skills
3. Enables participants to share their ideas with others participants for critiquing and comparison.

A cycle of Participation learning stages as follow: (Hinzen, 1993, p. 51)

1. Begins with people own's experience
2. Moves from experience to analysis
3. Moves from analysis to encouraging collective action to change oppressive systems
4. Reflects and evaluates its own process

2.13.3 Potential constraint and some ethical concerns

Education had a modest but transient effect on compliance (Davies, 1994, p.286). An a single dissemination workshop is not sufficient, Hinman stated that chronic disease cannot be dealt with by one short approaches but require repetitive

contacts by provider who are trusted and respected by the individual (CDC, 1995, p.p.25-26). Education is a major but not the only possible solution. Evidence has shown that morbidity is not a direct function of stress, but the social support act as a mediating structure to filter effects of stress. Lack of social support has show in higher incidence rates in tuberculosis (Abelin, Brzezinski, & Carstairs, n.d., p. 285).

There are various disadvantages of participatory method as follow:

1. This approach requires an active, well trained to be facilitator. The facilitator must have **different skills and ability** to confront and facilitate difficult issues and resolve conflict using a problem-solving approach. He or she might need to tolerant of different viewpoints, showing fairness and impartiality (Ewels & Simnett, 1996, p. 163).
2. The participants need an **understanding** of small group **communication process**.
3. **Time consuming**. The training or workshop can take a long time when the starting level is low and the traditions unfavourable (Abelin, Brzezinski, & Carstairs, n.d, p. 65).
4. **The measurement** in the context of the participatory model is more difficult to conceptualize than in the context of the medical model as a consequence and because the participatory model is of recent origin-there is a shortage of facts and knowledge. Information alone is insufficient to change behavior. The parameters such as knowledge, attitudes, motivation and behaviour, and even the more complex parameters of community dynamics are measured in the participatory model. (Abelin, Brzezinski, & Carstairs, n.d., p. 64).

Health promotion activities aim to affect people's lives in a health-enhancing manner. In so doing they may cause inconvenience, discomfort, fear, or pain (Whyte, 2000, p. 87). Addition due to the discrimination against and stigmatization of HIV/AIDS might effect confidentiality. To ensure the ethical (such a **consent inform**) and social science quality of proposed research, its acceptance by the affected **self-help** group, self-help group representative should be **involved** in an early and sustained manner in the design, development, implementation, and distribution of results of research. Strongly social support for health action needs to be initiated and maintained.

2.14 SELF -HELP GROUP

2.14.1 Who is self help group?

Self-help group is a community, in this sense is not localised, may or may not be organized as a group (Formal or non-formal self-help group), who share a common interests, activities, problems, often a sense of solidarity, (Whyte, 2000, p. 2) have the feeling that, at least in some respects, they belong together form a network of relationships. Self-help group are established by members of groups who are the patients or by private or governmental organizations who are health personnel in order to promote health and help members of the group to solve the problems which effect their way of life.

A community becomes mobilized when a particular group of people becomes aware of shared concern or common need, and decides together to take action in order to create shared benefits(UNAIDS, 1999, p. 79).

2.14.2 What is impact of self-help group?

Research findings indicate that self-help groups can have a substantial and beneficial impact on people with chronic disease. They provide an important source of social and emotional support to those who belong. They help to raise members' sense of identity and to overcome loneliness and isolation through shared social activities. Self-help groups provide patients an opportunity to meet and learn from one another over time. But self –help groups do not function without problems and it would be inappropriate to place too high expectations upon them. Some groups were found to have a negative impact on members, either because they isolate members from non-members or indeed the wider community, create a high level of expectation which cannot always be fulfilled and promote discussions that are not always realistic (Kaplun, n.d., p.p. 363-366).

2.14.3 Background of self-help group in Thailand

From the survey which was conducted by AIDS Division Communicable Disease Control Department in 304 PHA groups during August 1999-January 2000, self administered questionnaire were used for data collection, it was found that most PHA groups were established in 1996-1999 and operating in rural areas (99%). Most of

them have collaborated and being supported by governmental organizations, non-governmental organizations and community base organizations. Although 45% of PHA groups were established and located in hospital, hospitals staff have no time for working with them due to their routine job. Half of them had 1-3 staff (55%), mostly no volunteer (49%) and 1-2 consultants (38%). Most groups were small (6-20 persons) to medium size (21-50 persons). AIDS activities focus on providing counseling service (21%). The major target group of activities were people living with HIV/AIDS (43%), Families effected by HIV/AIDS (19%), and orphans (15%) (CDC, 2000, p.p. 1-17).

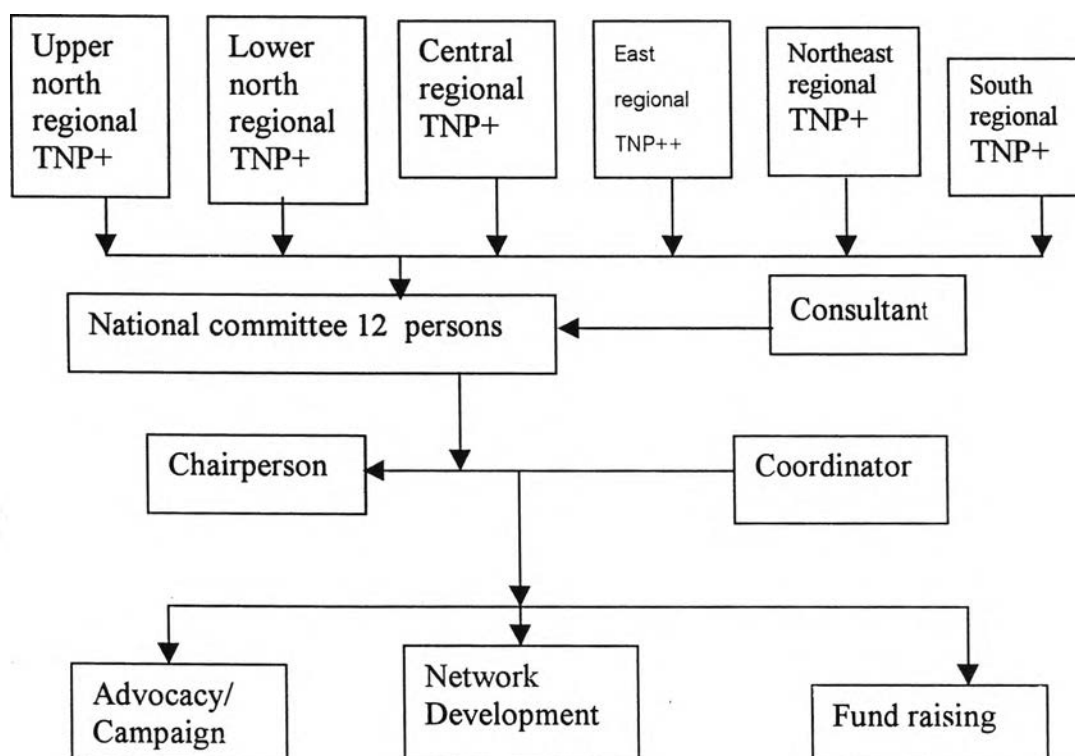
In Bangkok, there are 7 groups of self- help groups member as following:
(Directory of TNP+, 2000)

1. Chom-rom Gum-lung-jai-ying (Spirit of women club)
2. Chom-rom Chiwit –lae-kwamwang (Life and hope club)
3. Chom-rom Tang-sai-mai (New ways club)
4. Chom-rom Puen-wan-put (Wednesday friend club)
5. Smo-sorn-pirap-khaw (White pigeon club)
6. Bann-nok-weed (whistle house)
7. Alden house.

These groups are the member of Thai Network of People living with AIDS (TNP+), which are members of central region that is one networking of TNP+ national level. TNP+ national level was established in 1997 according the consensus of PHA groups representative in annual assembly Thai PHA meeting at Royal hotel (Rattagosin hotel-Bangkok). There are 12 committees who work on national level

comprises of 2 representative from each regional networks that are upper north, central, east, south and northeast. The secretarial office of TNP+ is, same as central network, located in Bangkok. (See figure2.8) TNP+ and central TNP+ regional are 2 networks which also located in Bangkok. TPN+ has member countrywide more than 300 groups (Directory of TNP+,2000).

Figure 2.8 Structure of Thai Network of People living with AIDS (TNP+)



Source: Directory of TNP+, 2000

2.15 Conclusion

Tuberculosis poses a major threat to the health of people living in South East Asia. At least 1 in 3 people living in this region are infected with TB. If you lined up every person with active TB in the world- all 8 million people- every third person would be from South East Asia. Every year one million people die from TB in this region. It is the most important cause of death in the economically active population. If you laid these people end to end, the line of bodies would stretch from Kathmandu to Bangkok. TB is caused by a tiny germ called *Mycobacterium tuberculosis* which spreads through the air every second, someone, somewhere, is infected with TB in South East Asia. Whoever have lived in South East Asia for most of their life, they have probably been infected with TB. There are four main reasons that why TB is still a huge problem in developing countries. First, **TB control programmes** have been poorly organized. Many patients start treatment but never finish it and develop a rising incidence of Multi-drug resistant TB (MDR-TB). MDR-TB caused by the extensive use and misuse of anti-tuberculosis drugs. Non compliance in patient medication is the biggest problem in TB control, and is a complex issue. The second reason is the global **HIV** epidemic. A person who has both HIV and TB infections has a risk of developing TB of about 10% every year- compared with 10% per lifetime for some one infected with TB but not HIV. People who are infected with both TB and HIV have a very high risk of developing active TB disease, approximately 10% a year. In many countries of South East Asia, over 50% of people with AIDS develop active TB. Thirdly, because **populations** are still **growing** and **poor**. And even if we could break the chain of the transmission right now, people will develop TB for many more years to come because they were infected in the past. About half of the people who get active TB disease

following infection do so within a couple of years, but there are some who develop the disease much later; after 10, 20, 30, even 50 years or more. That's why TB control requires a long-term commitment. It's not just the poor-anyone can get TB, and it's a very common disease. Treating people with TB and HIV prolongs their life, reduce suffering, and prevent to spread of TB to other people. If HIV increases, when the number of people with TB also rises, so preventing the spread of HIV helps to stop TB. There are four main strategies for tuberculosis prevention and control program which mostly are relying on medical approach. These strategies are case-finding and treatment of clinical tuberculosis cases, preventive therapy for TB risk group, BCG vaccination and environmental TB control. TB case finding has two main objectives- cure 85% and detect 70% of people who develop infectious TB (WHO,1999, p.p. 3-12). WHO recommend to use DOTS as a strategy of TB control which is based on active case holding with supervision of the intensive phase and efficient monitoring of the outcome of treatment (Godfrey, 1998, p. 7).

TB is not only the problem of the individual but also the community's. TB is curable but can have permanent damage on the body and even lead to death if not properly treated. **Health education**, information and communication is an important strategy in TB control because it encourage an individual to have **better health behavior** that has an influence on group and society change as well particularly this target approach is focus on PHA this means the programme can reach high-risk /vulnerable groups. Many people with TB lack awareness of the basic symptoms of TB. Even if they do know about the symptoms, they often do not know that diagnosis and treatment is freely available through government or NGO health services or that TB can

be cure (WHO,1999, p. 21). And even that DOTS strategy is well applied, ongoing transmission of infection occurs before patients present to the diagnosis centers (Godfrey, 1998, p. 7).

Therefore, PHA include family and community should be educated about early recognition of TB symptoms to help increase awareness of the links between HIV and TB and knowing how to take care of themselves It is important that such education approaches do not use fear to influence people. Creating fear may have a limited effect in the short term, but in the long term can create stigma and make life even harder of people with HIV and TB (WHO.1999, p. 13). The dissemination of TB knowledge to the community should be done suitably in a positive approach, in term of stimulating and encouraging TB suspected cases to seek care, not to conceal him or herself, otherwise the exceeding scare of TB will occur similar to AIDS which may result in the worse TB control situation. (Wongkhomthong & Ngamvithayapong in Ishikawa ,1995, p.p. 223-224) .

However, education of the community about TB treatment may have a negative impact if treatment services are not widely available or are of poor quality.(WHO,1999, p 21) Besides the government health service, TB education should be done with the collaborations of other community organizations (Wongkhomthong & Ngamvithayapong in Ishikawa, 1995, p. 224). Increase capacity for TB counseling. Information about tuberculosis including preventive therapy should be made available and part of a package of care for people living with HIV/AIDS (Godfrey,1998, p.p.3-7). In additional, the community have a role to support the patients to complete the

treatment including other social service assistance and incentives such as transportation should be available to TB patients in the completion of therapy.(Etkind, in Rom & Garay, 1996, p. 947).

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