

**INCIDENCE OF TUBERCULOSIS AND ASSOCIATED FACTORS
AMONG HIV-INFECTED PERSONS REGISTERED FOR ISONIAZID
PREVENTIVE THERAPY IN CHIANG RAI, THAILAND**

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ABSTRACT

In Thailand, the risk of developing active Tuberculosis (TB) among HIV/ TB co-infected person reported 5 % per year. Isoniazid Preventive therapy (IPT) reduces this risk until 20 % in the short term. But the report in Northern Thailand, some HIV infected persons develop active TB during the short time after starting IPT. This might reflect the incomplete TB screening before entering IPT. Also long-term IPT efficacy and the factor related to the development of active TB among HIV infected persons registered for IPT are not clear in Thailand. To address these problems, the research proposal was written in this thesis. The objective of the proposal is to determine the incidence rate of active TB and associated factors among HIV infected persons registered for and those completed 9-month IPT. Study design is prospective cohort study. Participants will be followed up a total of 45 months and the data will be collected through interview, physical examination, laboratory and radiographic examination. The data exercise was performed to investigate the availability of data that required for prospective study, data collecting process and the characteristics of TB cases among HIV infected persons registered for IPT. Some lessons were learned through the data exercise. The important findings are that many data cannot be available on routine basis and that sputum smear test is inappropriate to detect active TB because nearly half of TB cases were sputum negative. These findings were applied for appropriate data collecting form and TB diagnostic method for prospective study.

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ACRONYMS AND ABBREVIATIONS

AIDS: Acquired immunodeficiency syndrome

AFB: Acid-fast bacilli

BCG: Bacille Camette- Guerin

CD 4: CD4+ T- lymphocyte cell counts

CBC: Complete blood cell count

BMI: Body mass index

HIV: Hman immunodeficiency virus

INH: Isonaizid

IPT: Isoniazid preventive therapy

PPD: Purified protein derivative

PTB: Pulmonary tuberculosis

TB: Tuberculosis

DEFINITIONS

1. **Acid-fast bacilli (AFB):** mycobacteria that stay stained even after they have been washed in an acid solution; may be detected under a microscope in a stained smear
2. **AIDS:** acquired immunodeficiency syndrome, a disease in which the immune system is weakened and therefore less able to fight certain infections and diseases; AIDS is caused by infection with the human immunodeficiency virus (HIV)
3. **Anergy :** the inability to react to skin test because of a weakened immune system, often, caused by HIV infection or severe illness
4. **Anergy testing:** giving skin tests using two substances other than tuberculin; done to determine whether a person is anergic. People who do not react to any of the substances, including tuberculin, after 48 to 72 hours (that is, people who have less than 3 millimeters of induration to all of the skin tests), are considered anergic
5. **Bacille Calmette-Guerin (BCG):** vaccination is given at birth to provide protection against the more severe forms of childhood tuberculosis-miliary and meningeal tuberculosis. This vaccine may cause a false-positive reaction to the tuberculin skin test.
6. **Cavity:** a hollow space within the lung, visible on a chest x-ray, that may contain many tubercle bacilli; often occurs in people with severe pulmonary TB.
7. **Co-infection:** infection with different pathogens at the same time.

8. **Day Care Activity:** Comprehensive care for HIV infected persons which hospital or health center facilitate. Comprehensive care includes modern and traditional Thai medicine, information, education, counseling, and powdered milk for their babies.
9. **Isoniazid Preventive therapy:** Make latent infection with *Mycobacterium tuberculosis* to dormant stage using isoniazid medicine before active disease develops.
10. **(Latent) TB infection:** Shown by a positive reaction to intradermal injection with purified protein derivative (tuberculosis skin test)
11. **Mantoux tuberculin skin test:** the preferred method of testing for TB infection; done by using a needle and syringe to inject 0.1 ml of 5 tuberculin units of liquid tuberculin between the layers of the skin (intradermally), usually on the forearm; the reaction to this test, usually a small swollen area (induration), is measured 48 to 72 hours after the injection and is classified as positive or negative depending on the size of the reaction and the patient's risk factors for TB
12. **Mumps skin test antigen:** (Connaught Laboratories, Swiftwater , PA) is a sterile suspension of formaldehyde-killed mumps vaccine, diluted in isotonic sodium chloride, with thimerosal (1:10,000) added as a preservative. Each milliliter of test antigen contains a standardized 40 complement-fixing units. Each dose is 0.1 ml. This antigen is used for determine whether a person is anergic or not. People who do not react to this antigen and tuberculin skin test, after 48 to 72 hours (induration is less than 3 mm to both skin test) are considered anergic.

13. **Tuberculin Purified Protein Derivative (PPD-tuberculin):** Tubersol (Connaught Laboratories, Swiftwater, PA) is obtained from a human strain of *Mycobacterium tuberculosis* grown on a protein-free synthetic medium. Tubersol is a sterile isotonic solution of Tuberculin in Phosphate buffered saline containing Tween 80 (0.0005%) as a preservative. This material will be used in the 5 US units (TU) per 0.1 ml dose via the intradermal (Mantoux) method