

THE PREVALENCE OF TB SUSPECTS AND ASSESSMENT OF HEALTH CARE NEEDS IN TB CONTROL AT A COMMUNE OF VIETNAM

**A study from Tan Thanh Dong Commune in Cu Chi District of Ho Chi Minh City-
Vietnam**

by

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Abstract

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Tuberculosis (TB) is still a big and growing health problem in most developing countries. In Vietnam, the intensity of spread of tubercle bacilli seems to increase with a higher number of TB patients detected year by year recently. Besides, the annual risk of TB infection is still rather high, especially in Ho Chi Minh City. The study was undertaken in Tan Thanh Dong commune- a suburban area of the city. The aim of the study was to determine the prevalence of TB suspects (who have coughed for more than three weeks) in one commune and assess requirements in health care services of those people for their health problem. The information from the study will add some knowledge about the efficiency of the national tuberculosis control programme.

A cross-sectional survey was adopted to seek every TB suspect in the commune. The suspects were interviewed to detect which health care services they have used to seek help for their health problem. They were also invited to be tested for bacilli in their sputum. Because few informants went to the laboratory, an in-depth interview survey was constructed for 27 conveniently selected suspects who did not go for testing as invited. Its purpose was to get information about obstacles prevented them from going to the laboratory.

This study reports that the prevalence of TB suspects in the commune is high. Proportion of people who are aware of TB is rather low. A lot of suspects ignored the symptoms or opted for self-treatment by buying medicines at pharmacies. Accordingly, they will come to governmental health services only when the disease gets worse. Very few suspects went for laboratory examination. From the in-depth interview, the main obstacle was found to be inconvenient location of the laboratory.

It is shown that TB suspects who really need medical examination did not contact the National Tuberculosis Control Programme (NTP). Although they know that TB is a dangerous disease. They considered their prolonged cough as a quite simple health problem and did not consult medical professionals. Furthermore, they complained that they faced an obstacle for their treatment. The TB control team where the laboratory is located was too far away. Therefore, they were hesitant to come there and test their sputum. The NTP did not reach sufficiently out to control most TB suspects in the community. The results of this study revealed that it is necessary to establish more user friendly strategies to get TB suspects into NTP.

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List of abbreviations

AFB	Acid Fast Bacilli
AIDS	Acquired Immuno Deficiency Syndrome
ARI	Annual Risk of TB Infection
BCG	Bacille Calmette Guerin
CXR	chest radiography
DOTS	Directly Observed Therapy Short-course
EPI	Expanded Programme on Immunisation
ESAP	Elimination of Starvation and Alleviation of Poverty Programme
HCMC	Ho Chi Minh City
HIV	Human Immunodeficiency Virus
HP	Health Post
IUATLD	International Union Against Tuberculosis and Lung Disease
NTP	National Tuberculosis Programme
OPD	Out Patient Department
PNTC	Pham Ngoc Thach Tuberculosis and Lung Disease Center
SPSS	Statistical Package for Social Science.
TB	Tuberculosis
UTC	University Training Center for Health Care Professionals of Ho Chi Minh city
VNTP	Vietnamese National TB Programme.
WHO	World Health Organisation.

This chapter presents the information about tuberculosis (TB) and the TB Control Programme in Vietnam (VNTP) in general, followed by a description of the TB

control situation in Cu Chi district and Tan Thanh Dong commune and finally the aims and the specific objectives of the study.

1.1 TB situation

High welfare countries have the advantage of many factors such as money, human and technical resources, high standard of living and widespread chemotherapy in the last 40 years so that TB has been reduced to a relatively minor problem. However, in most developing countries, TB is still a big and growing health problem. World Health Organization (WHO) has estimated that TB prevalence in the world will rise from 7.5 million in 1990 to 10.2 million in the year 2000. Total deaths will rise from 2.5 to 3.5 millions (1). More people are dying of TB today than at any other time in history (2). If TB control is not further strengthened globally, WHO gave a rough estimate of approximately one billion newly infected people, 200 million new TB patients, and 35 million of deaths from TB between 2000 and 2020 (2).

Current estimates suggest that about one third of the world's population is infected with *Mycobacterium tuberculosis*. In industrialized countries, the bulk of infected persons is found among the elderly, while in most low income countries, the large majority of infected persons is in the economically most productive and reproductive age groups. The distribution of TB is very uneven throughout the world. Of the estimated 7.5 to 8 million cases emerging globally each year, only 5 percent occur in industrialized countries (3). This makes TB the commonest cause of death also among women in the developing world, and worldwide, and surpasses all maternity related causes of death. It ranks seventh in the list of causes of loss of healthy life (3).

Besides, the Human Immuno-deficiency Virus (HIV) that causes the Acquired Immune Deficiency Syndrome (AIDS) weakens a person's immune system, and makes a TB infected person 30 times more likely to become sick than one infected with TB

who is HIV- negative. The biological interaction between HIV and TB leads to difficulties in TB diagnosis and treatment in HIV-positive patients (2). Because the immune system of HIV-infected individuals is weakened, this may result in either a flare-up of an old infection or an increased risk of a new infection. The pandemic of HIV infection and an increase in multi-drug resistant TB bacteria have profoundly worsened the public health burden of TB. The HIV pandemic is drastically worsening the TB situation in countries with a high prevalence of infection with *M. tuberculosis* among young people and a high incidence and prevalence of HIV infection.

TB control activities have been officially in place in Vietnam since 1985 by the Ministry of Health, with gradual implementation. By declaring TB a priority, the Government has shown its commitment to TB control activities. The National Institute of Tuberculosis and Respiratory Diseases is in charge of TB control activities in the whole of Vietnam. In Southern Vietnam, Pham Ngoc Thach TB and Lung Disease Centre (PNTC) is responsible for the Program implementation in southern provinces including Ho Chi Minh City (HCMC). Directly Observed Treatment Short-course (DOTS) has become the standard treatment regimen in Vietnam.

From “renovation” was launched in 1986, there has been initiated fundamental changes throughout the Vietnamese society. This process has led to more rapid economic growth. As the result, there has also been a rapidly widening gap between the rich and the poor. Urban populations have increased with homeless, less privileged, unregistered inhabitants. There were also many challenges emerging for the health care system. Pharmaceutical market and private sector collaboration are difficult to manage. There is not any legislation to control the quality and provision of antibiotics and anti-TB drugs by private pharmacies while more and more foreign pharmaceutical companies have being rushed into Vietnam’s open market.

Among 22 highest burden countries, Vietnam is one of few countries that has achieved its targets recommended by WHO regarding treatment results in recent years. There is a positive trend in treatment success through DOTS and detection rates are raising (4):

	1995	1996	1997	
Treatment success	91	91	90	(%)
Detection rate (calculated as percentage of estimated total cases)	30	59	77	(%)

However, the VNTP Report 1997(5) made an evaluation only of registered TB patients possible. Furthermore, TB patients often seek treatment late and with advanced disease or they may go to the private sector to seek help, and these fundamental issues can not be evaluated from the routine statistics.

Besides, some recent results from a tuberculin survey suggest a deteriorating TB situation, which does not fit together with the good programme performance reported (6). The intensity of spread of tubercle bacilli seems to increase with a higher number of TB patients detected year by year, especially in Ho Chi Minh City (HCMC) which has the highest Annual Risk of Infection (ARI) in the whole country. Increased coverage of the NTP and increased knowledge in the population about the programme may explain much of increasing case finding number. However, preliminary analyses of trends in ARI indicate that also the true incidence may be increasing or at least not decreasing (5). In 1990, the national TB prevalence was 71 cases per 100,000 population. In 1995, the number was 75 and the figure has continuously increased to 99 in 1996 and 101 in 1997 (7).

1.2 VNTP with DOTS

TB is an infectious disease spread through cough and sputum. Sputum examination is much more reliable than chest radiography (CXR). In low income and high TB prevalence countries, sputum smear microscopy is, and is likely to remain for the foreseeable future, the only cost-effective tool for diagnosing patients with infectious tuberculosis and to monitor their progress in treatment. Sputum smear microscopy is a simple, inexpensive, appropriate technology that is relatively easy to perform and to read. Under NTP conditions, the International Union Against Tuberculosis and Lung Disease (IUATLD) recommends collecting three sputum samples “on the SPOT- early MORNING- on the SPOT”, preferably within two days, from each person presenting at health centres with respiratory symptoms of more than 3 weeks’ duration. These samples are to be examined by smear microscopy in the nearest laboratory. Under these conditions, a case of sputum smear positive TB is usually defined as a person presenting with respiratory symptoms with at least two positive sputum smear microscopy examinations (8). If sputum is positive, TB can easily be cured if the patient takes his full treatment. Symptoms soon clear but treatment must be continued regularly for the full period recommended. Otherwise TB comes back and the treatment has to start all over again (1).

The aims of the fight against TB are (8):

- for a community: to reduce the spread of tuberculous infection, and by this means to hasten the disappearance of this disease from society.
- for individual patients: to cure their disease, to quickly restore their capacity for activities of daily living and to preserve their position in their family and community.

The first priority of TB control is to treat and cure TB patients. Chemotherapy rapidly reduces the infectious risk to other persons, usually within two weeks. This is

why good treatment of all sputum positive patients is by far the most effective method of prevention. But if treatment is not continued for the full period, the patient may relapse and again become infectious (1).

Poor or inadequate treatment is likely:

- To fail to cure the patient
- Perhaps to leave him with drug-resistant tubercle bacilli, making it difficult for anyone else to cure him
- To leave him alive (at least for some time) and infectious, perhaps with drug-resistant bacilli, so that he will spread the disease to others (1).

DOTS is the name for the comprehensive strategy which primary health services around the world are using to detect and cure TB patients. DOTS nowadays is the only TB control strategy to consistently produce 85 percent cure rate. WHO's TB control targets are to cure 85 percent of the detected new smear positive TB cases and detect 70 percent of estimated cases.

The DOTS strategy depends on five elements for its success:

Directly: Resources should first be directed toward identifying sputum smear positive cases for treatment, as these people are the sources of infection. Microscopes are needed to confirm whether or not TB bacilli are present.

Observed: Patients must be observed swallowing each dose of their medicines by a health worker or trained volunteer, at least during the first two months of treatment, or as long as Rifampicin is a part of the regimen. Observers watch the patient swallow the medicines.

Treatment: TB must be provided with a complete treatment and be monitored to ensure that the patients are being cured.

Short-course: The correct combination and dosage of anti-TB medicines- known as short-course chemotherapy- must be used for the right length of time. They include isoniazid, rifampicin, pyrazinamide, streptomycin and ethambutol, and are typically administered for 6 or 8 months in accordance with WHO's TB treatment Guidelines.

The principle behind the DOTS strategy is simple; it is the identification, treatment and cure of the infectious case.

DOTS is also one of the most cost effective health interventions, compared to those available for other diseases. As part of the DOTS strategy, health workers counsel and observe their patients swallowing each dose of a powerful combination of medicines, and the health services monitor the patients' progress until each patient is cured. Political and financial commitment and a dependable drug supply are essential parts of the DOTS strategy. With DOTS the health system is required to observe that TB patients take all of their medications, to monitor their progress, ensure that all bacilli are gone, and to document that they are cured. The package has other components in a five-point policy package:

1. Government commitment to a National Tuberculosis Programme (NTP)
2. Case detection through sputum smear microscopy examination of TB suspects attending health facilities (culture and isolation can be used if resources permit)
3. A standardized, short-course anti-TB treatment regimen of six to eight months, with direct observation of treatment for at least the initial two months
4. Regular, uninterrupted, high quality supplies of all essential anti-TB drugs
5. A monitoring and reporting system to evaluate treatment outcomes for each patient diagnosed and the performance of the TB control programme as a whole

Advantages of DOTS:

- DOTS can produce cure rates of up to 95 percent, even in the poorest countries

- The strategy can be integrated successfully within existing general health services to achieve widespread coverage
- Case detection through sputum microscopy is accurate, simple and reliable
- Trained health workers and community volunteers can administer treatment
- DOTS doesn't require hospitalization or isolation. Patient can remain with their families and return to work in a few weeks
- DOTS helps prevent drug resistance, which is often fatal and up to 100 times more expensive to treat
- The DOTS recording and monitoring system follows each patient through the entire course of treatment to ensure a cure
- As a management strategy, DOTS helps TB health officials monitor programme performance and quickly intervene to address problems
- DOTS is a sound economic investment for any government. Each healthy year of life bought by using DOTS to cure TB costs as little as US \$3-5 (2).

VNTP has also followed DOTS strategy (6).

- Targets of the VNTP:

1. Cure 85% of new smear-positive cases.
2. Detect 70% of existing smear-positive cases.

- Strategy of the VNTP:

- *Bacille Calmette Guerin vaccination (BCG) for every new born* [Expanded Programme on Immunisation programme (EPI) is responsible for this action]

- *Case-finding:*

- Passive case-finding of TB patients
 - Diagnosis is based on direct smear examination
 - Emphasis on smear (+) patients.

- Treatment (free of charge)
 - Application of the same chemotherapy regimens throughout the country.
 - Ambulatory and strictly supervised treatment at district TB units and communal health posts.
 - Monitoring of treatment results by bacteriology.
 - Evaluation of case finding and treatment results by quarterly cohort analysis.
- Integration of the NTP into general medical activities at primary level.
- Health education.

- *Case-holding:*

- Intensive phase: DOT by health worker for both 12 months and short course regimens.

Ambulatory treatment

- At Out-patient Department (OPD) of district TB units
- Intercommunal polyclinics (satellite spots)
- Good qualified communal health posts

Hospitalization is for special patients in district hospitals.

- Continuation phase:

Monthly/weekly collecting drug at

- OPD of district TB unit
- Intercommunal polyclinics
- Qualified communal health posts

Twice/monthly, weekly visiting patients at home

- Incentive: 5 US \$/smear (+) cured case: for whole staff.

1.3 TB suspects

The most common symptom of pulmonary TB is a persistent cough for 3 weeks or more, usually with expectoration. All people who have this symptom should have their sputum examined as soon as possible.

Persistent cough for 3 weeks or more is usually accompanied by one or more of the following symptoms: weight loss, tiredness, fever, night sweats, chest pain, shortness of breath, loss of appetite, coughing up blood.

Cough and sputum are very common symptoms. If they are caused by acute respiratory infections, they last only a week or two week. However, there is also much chronic cough due to chronic bronchitis. This is mostly due to tobacco smoking, or from atmospheric pollution (due to cooking or industrial pollution). Therefore the only way to secure the diagnosis of TB is to examine the sputum for acid-fast bacilli (AFB) in everyone who has had a cough for more than 3 weeks (1).

Sputum smear positive cases are the most infectious cases and patients whose detection is most relevant to the NTP. These patients are surely registered into the VNTP and receive TB treatment free of charge.

1.4 Area, demographic and health care system especially in TB control activities of Cu Chi district and Tan Thanh Dong commune

HCMC is the center of NTP in the southern provinces, which is composed of 22 districts and 303 communes. The TB control network has been established and spread from city level down to grassroots level. There is a TB control unit in each district, and its functions are to detect TB cases based on direct sputum smear examinations and to organize a TB control network at commune level (grassroots level). Case-finding and treatment initiation of new smears positive TB cases are

currently carried out at district level. New patients are required to visit district TB unit daily to take medicine during the first 2-month of intensive treatment. At commune level, detection of patients with prolonged productive cough is performed and health staff will refer them to district level for sputum smear examination. Moreover, a health staff of the commune health post (HP) is assigned to take care of the patients during their maintenance ambulatory treatments.

TB is currently a major health problem of HCMC. The most recent statistical figures show that the ARI in HCMC is 3.2% (1999) which is the highest one in the country, compared to 0.32% in Hanoi, the capital of Vietnam in the North.

Cu Chi is a rural district, which is 36 kilometers away from HCMC. It consists of 21 communes scattered on the surfaces of 428 km² with a population density of 590 persons per km². There is one district TB unit with 9 health staffs who are responsible for the whole population of 253,178 people. According to local public health officials, the total registered TB patients were 576 cases (1998) including 263 smear sputum positive. TB is still considered a major health problem of this community. The assumed reasons are: ¹ low social-economic status and insufficient nutrition status of local people, ² lack of availability, accessibility to health care, and the shortage of human resource in terms of quality and quantity in TB control.

TB control activities are mainly relied on the public health network with technical assistance from PNTC. There are three sources of TB suspects going to TB control team:

- (1) OPD or other departments of Cu Chi health centre
- (2) communal HPs of Cu Chi district
- (3) TB suspects themselves report.

TB suspects are asked to take 3 sputum specimens to be tested as follows:

- (1) a first spot specimen when the patients present themselves at the laboratory
- (2) an early morning specimen before they return to the laboratory and that specimen consists of all the sputum raised in the first 1-2 hours
- (3) a second spot specimen at the laboratory when they submit the early morning specimen.

There is only one microscope for the TB laboratory that is located at the TB control team in Cu Chi health centre. If the suspect is found to be smear positive for AFB, he will be registered and treated free of charge (for medicine). They must pay some for official procedures and for examining sputum or other medical tests. If the patients are detected at other district health centres, they all are transferred to the TB control team where they live (according to their registered inhabitant cards) in order to be registered and treated. Three places in Cu Chi are responsible for intensive period of treatment:

- (1) TB control team in Cu Chi health centre (located at Cu Chi town)
- (2) Tan Quy polyclinic
- (3) An Nhon Tay hospital.

Patients go to one of those places to be injected and to take medicine every day for the intensive phase. They may convert to a smear negative after that period and will then return to their communal HP to take medicine monthly for the continuation phase. The assistant physician who is responsible for TB activities of that commune arranges home visits to every patient at least once a month. The patients usually have their sputum tested three times within their treatment period (in 8-month regimen): at the end of the second, the fifth and the eighth months. They will receive a medical card showing that they have been treated successfully from the TB control team.

At commune level, there is only one health staff assigned to take care of approximately 11,000 people. Most of them are assistant physicians. Among 21

communes of Cu Chi, Tan Thanh Dong has the largest population of 23,403 people. Population density in Tan Thanh Dong is 864 persons per km², is much higher than in Cu Chi generally. Tan Thanh Dong is 14 km away from Cu Chi town with an area 26,74 km². It consists of thirteen hamlets. The HP is located at the centre of the commune. Many medical research teams and charity missions have come to the commune in order to examine and treat some kinds of health problems for the local inhabitants. They usually take care of people registered in the Elimination of Starvation and Alleviation of Poverty Programme (ESAP), Hero Vietnamese Mothers, and households in political programme (i.e. families of veterans, disabled and fallen soldiers)- those people also have priority health care cards or health insurance cards. There are 843 households in such political programmes. One assistant physician in the HP is responsible for many activities of the general health services usually perform the everyday TB activities (case finding and treatment). He contacts with the TB control team at the health centre to be updated about new TB patients in the commune from the team's TB register report. He visits TB patients both in intensive and continuation phase. He helps the physician from the TB control team to distribute medicine to TB patients in the commune monthly at the HP.

According to TB control statistics (1998), Tan Thanh Dong TB control team has registered totally 56 cases, with 31 cases of new smear sputum positive and relapse. That means approximately 134 new smear sputum positive and relapse cases per 100,000 population per year. As we know, for every 1 percent of new annual infections there will be 50-60 new smear positive cases of pulmonary TB per 100,000 population per year and an equal number of either smear negative or non-pulmonary cases (1). The ARI in HCMC is around 3%; therefore new smear positive of TB in Tan Thanh Dong is expected to be more than 150 cases per 100,000 population per year. For the target:

detecting at least 70% of existing smear positive cases, Tan Thanh Dong TB control team seems to achieve a good result.

1.5 Research question

We wonder whether community participation and multi-sector co-operation have contributed partly to the result. Those are two basic principles in primary health care. In order to gain good results, the NTP needs a close collaboration with the community in early TB detection as well as in ensuring treatment compliance by performing on-site observation of treatment.

Research question: Whether or not VNTP service reaches all people in one commune who might have TB?

Hypothesis: There are a large number of TB suspects who go to other health service providers instead of the NTP.

1.6 The study aim and objectives

The aim of this research is to determine the prevalence of TB suspects in one commune of HCMC and assess their health care needs regarding TB control activities. The result will contribute valuable data to VNTP and we could get more effective and productive activities.

1.6.1 General Objective:

To find out prevalence of TB suspects and assess their health care needs for TB control services in Tan Thanh Dong commune of Cu Chi district.

1.6.2 Specific Objectives:

1.6.2.1 To find the prevalence of TB suspects of Tan Thanh Dong commune

1.6.2.2 To assess the health care needs in TB control of TB suspects in Tan Thanh Dong commune through:

- treatment history of their cough
- patient's activities for curing their prolonged cough

The research methods described in this chapter have been applied in order to achieve the research objectives and thereby to answer the research question. It is a description of the following items: the study design; the population and sampling procedure; the research instruments which were used for data collection; the data collection procedures, the data analysis procedures, definitions of the main variables and finally ethical issues related to this study.

2.1 Research design

The design of the present study is a cross-sectional descriptive one.

Cross-sectional study measures the prevalence of TB suspects and is called prevalence study. In the cross-sectional study, the measurements of exposure and effect are made at the same time. Data from this cross-sectional study are helpful in assessing the health care needs of the population at community level (9).

Descriptive study is a simple description of health care needs of TB suspects, based on routinely available data and on data obtained in a survey as the first step in an epidemiological investigation. This descriptive study makes no attempt to analyse the links between exposure and effect (10). A descriptive study involves the systematic collection and presentation of data to give a clear picture of a particular situation: the prevalence of TB suspects and their health care needs in a TB control area (9).

Prevalence: The prevalence of TB suspects is the number of TB suspects in Tan Thanh Dong commune in August of 2000. Measuring prevalence basically involves the counting of TB suspects among people equal to and above 15 years old -defined as population at risk. The part of a population that is susceptible to the disease is called the population at risk. Although vaccination in childhood has little impact on pulmonary TB, this form is infrequent in childhood (8). That is why they are excluded from the population at risk.

The prevalence rate (P) for TB suspects is calculated as follow:

$$P = \frac{\text{Number of TB suspects at a specified time (08/2000)}}{\text{Number of people above 15 years old at 08/2000}} (*1\ 000)$$

2.2 The population

The study was undertaken in Tan Thanh Dong commune that is located in Cu Chi district – one suburban district of HCMC in Vietnam.

According to local statistics, the total population in this commune amounted to 23,403 inhabitants and this population is young with 35% aged less than 15 years. There are 4,768 households with an average of 4.8 persons per household. There is some demographic information that is presented in table 1.

Target population consisted of all adult residents of the commune. Inclusion criteria were residents of 15 year-old and above according to their last birthday and people who did not register in the commune but came to the commune to work and stayed there. Non-permanent residents who have a register-card in the commune but live at another place were excluded from the study.

Study population was all TB suspects in the target population.

2.2.1 The sample

The sample was collected in two steps:

(1) TB suspects who came to the HP for examination in the first two weeks after an offer for examination had been announced to the whole population (group I).

(2) TB suspects who ignored the invitation were identified by visiting all households in the next two weeks (group II).

According to some previous population studies, 1% of the population is expected to have a productive cough of more than three weeks duration (3). Experience from

IUATLD collaborative programmes shows that between 10 and 20% of all examined suspects are sputum smear positive cases (8).

Population (P) = 23,403 persons

Population at risk = 23,403 – 8,191 = 15,212 persons

TB suspects = 150 persons

TB patients = 15 persons

2.2.2 The sampling procedure

List of households were collected in every hamlet of the commune. The survey sought all people aged 15 years or more in the commune and identified who had coughed for more than 3 weeks and/or were not cured by ordinary medicine. That is the prevalence of TB suspects in the commune.

The first phase: Suspects with cough would be identified using two methods:

- (1) The commune leadership would announce to all inhabitants face by face and by the loudspeaker system a small health message that "The HP of Tan Thanh Dong commune co-operates with doctors of UTC to examine (free of charge) patients living in Tan Thanh Dong commune who (15 years or older) have prolonged cough for more than 3 weeks and/or are not cured by ordinary medicine. Patients will be introduced to have examined their sputum for TB; and if they have got bacilli (BK +), they will be treated for TB free of charge".
- (2) Interview team would visit all households and identify other suspects who did not go to the HP. As the visits took place the week after the first survey, all people coughing for at least one month would be defined as suspects. In addition, they recorded which people who were receiving TB treatment at the moment. Besides, interviewers contacted and interviewed the suspects in their houses. They would again be invited to go to the HP to be examined free of charge.

The sampling procedure can be summarised in figure 1.

The second phase: In-depth interview with some patients who did not go to the laboratory as they had been asked.

2.3 Research instruments

In order to collect data for this study, two types of interviews were conducted. The first type was a structured interview with all TB suspects. An interviewer interviewed each patient with a questionnaire 1 or 2 (appendix 1&2) either before or after they were examined. The second type was an in-depth individual interview with 27 conveniently selected informants from the sample. In addition data were collected from the laboratory. The in-depth interviews were done in order to explore the reasons patients gave for why they did not go to the laboratory for examining their sputum.

2.4 Data collection procedure

2.4.1 Preparation for the data collection

The first step was to construct the questionnaires.

The second step was to get the necessary permissions from the relevant governmental departments (VNTP, Cu Chi health center, and Tan Thanh Dong People's Committee) concerned with the topic under study. In order to facilitate getting these permissions, a clearance (student status letter) was issued from UTC that explained the study objectives and importance of the study being conducted in the commune. Permissions from PNTC were finally given.

The third step was to visit the commune, collecting general information from the municipality and the HP of the commune about general health problems and health care situation; about the population statistics, economic status of the inhabitants, and others. The first part of data in the laboratory were collected at that time. We also contacted to local governmental leaders to inform how we would proceed and what they could do to

help us announce the survey to the community. The explanation about the survey given to the leaders of the commune is presented in appendix 3.

The fourth step was to look for an interviewer team. The team had to satisfy some requirements. The team members should have experience in interviewing people and interacting with people in suburban areas. It is better if the team have worked with health problems. The researcher finally chose students in the fifth year of UTC. They are quite suitable to the position. They were in summer holiday at the time of the study so that they were available for the survey.

At the same time, the expert was chosen. He must have some experience in guiding people in interviewing technique and in TB work. Dr Nguyen The Dung, the chief of research science department of UTC has both experiences. He has supervised students in fieldwork many years in many health aspects, including TB. He guided the interviewer team how to select the informants from the patients who went to the HP, explained the meaning of each question, its purpose, and how to ask correctly in order to avoid misunderstanding or asking leading questions. He helped also to pre-test the two questionnaires.

The questionnaires were pre-tested in OPD of the health center. Confusing or unsuitable questions were revised.

The fifth step was to announce the invitation to the commune by megaphone for one week. Leaders of the local government had worked with many health teams coming to the commune and had experience in organising such meetings in the HP. Therefore, the survey could be arranged as many times before. The communication center of the local government would announce the message two times a day in the routine programme at 5:00 and 17:00 through a local communal loudspeaker system (there are 20 loudspeakers scatter in the commune). The programme lasts 30 minutes and usually

informs local inhabitants about health, agriculture and society information every day. Besides, leaders of every hamlet would help to spread the message and invite patients who they knew went to the HP in that period.

The sixth step was conducted interviews face to face in the HP and at home visit.

The HP staff was responsible for examining all patients who came there. The physicians worked routinely towards the TB suspects. They examined patients, gave a prescription (appendix 4) for three days of treatment, asked the TB suspects to go to the TB control team in order to have their sputum tested as soon as possible. The survey proceeded as a routine task of TB control activities at grass root level. The interviewing team selected suspects who were 15 years old and above to ask for permission to interview them with the questionnaire one. One hundred and eighteen TB suspects came to the HP in that period.

After two weeks working at the HP, the survey in households was implemented. The interviewer team went to every house to ask for cough and find out whether people who had the symptom had done as they had been told (confirming TB suspects in group I) or had not gone (group II). They interviewed suspects in the group II using questionnaire two. They also invited them again to go to the HP. In that period, they found 132 additional TB suspects. Besides, they looked for diagnosed TB patients treated inside and outside VNTP. They found 6 TB patients were not treated in the NTP.

The HP worked as before. There were 63 additional suspects who went to the HP after the second invitation.

The seventh step was to collect data from the laboratory about the results of sputum smears. Among the TB suspects we had interviewed, 34 suspects came to the laboratory. There was only one suspect who was positive for AFB (BK+).

The eighth step was to conduct in-depth interviews to get information from patients who did not go to the laboratory although they were invited directly. The health personnel of the HP helped to recall some patients from the record book. The researcher and the assistant physician who is responsible for the TB control activities at the HP visited those patients in their houses.

Finally we followed-up the TB patient after the two first months of treatment.

2.4.2 Types of data that have been collected

Both quantitative and qualitative data were collected through this study. Quantitative data were collected mainly from the target study population. Qualitative data were collected through the in-depth interviews about reasons and opinions of patients who did not come to the laboratory in spite of personal invitation.

Both types of data (qualitative and quantitative) are incorporated together in chapter of results because the qualitative data were collected in order to elucidate the quantitative results.

2.4.3 Data collection in the laboratory of TB control team

Data were collected from the TB control team at three times.

2.4.3.1 Routine data from the laboratory were collected: number of new TB patients among suspects giving sputum smears in 1998, 1999, and 2000 (appendix 6).

For Tan Thanh Dong commune, data about number of TB suspects who had less than 3 smears examined and new patients in 1997, 1998, 1999, and 2000 were collected. For in 1999, numbers of TB suspects examined, number of TB patients diagnosed, and number of TB patients registered for treatment by month were recorded. A complete list of registered TB patients being treated was compared with subjects registered during the survey.

2.4.3.2 After the survey the number of suspects who came there and the result of their sputum smears were collected.

2.4.3.3 After two months the results of treatment for the TB patient who was found in the survey were recorded.

2.4.4 Data collection in the HP

For all TB suspects who came to the HP after the first invitation, data were collected from the questionnaire one. Each interview took about 30 minutes. The suspects were asked for either before or after they were examined. Those who had a cough were interviewed to obtain information about their treatment for their cough and other symptoms and their awareness of TB and VNTP.

2.4.5 Data collection in visiting houses

The interview team met suspects who had not come to the HP and interviewed them in their houses. Each interview took between 30 and 60 minutes. They were asked whether they had other symptoms, where they've got treatment for their symptoms, where they preferred to go for their health problem and the reasons for that, and about awareness of TB and its treatment. Besides, they gave their opinion about what reasons other suspects may have for not going to the HP.

The team identified treated TB patients to their best ability and whether they were treated or outside the NTP.

2.4.6 Data collection through the in-depth interviews:

These interviews were conducted with 27 patients who did not go to the laboratory as asked. An interview guide was designed in order to collect data from these people. A semi-structured questionnaire was filled in during the interview. One interview took between one hour and an hour and a half.

An interview guide was formulated as follows:

The interview followed an empathic narrative path. Firstly, the interviewer expressed a concern about health problem, "how about your cough". If it still remains, "did you continue your treatment somewhere else?". Secondly, they were asked whether they knew anybody who went to the HP, whether those people also went to the laboratory to have their sputum examined. If they did not go to the laboratory, could they think of any reason why. They were then asked their opinion about the necessary of examining their sputum when having a cough. If they had been to the laboratory recently, "why did you come so late?". If they had still not gone, "why not". Those who mentioned special obstacles were asked how they planned to overcome them. Finally, they were again asked whether they intended to go to the laboratory and when they would go.

2.5 Data analysis procedures

For the main individual questionnaire all data collected were computerised into the SPSS programme (Statistical Package for Social Sciences, Windows version release 9.0). Some of data were operationalized into new variables in order to facilitate the analysis. In order to give a description of the information collected, only the frequency part of the SPSS programme was used. The prevalence of TB suspects is presented.

For the main qualitative data (in-depth interviews), the analysis procedure was based on a summary of what they talked about. The qualitative results were intergrated with the results that were collected from the quantitative part of the study.

The prevalence of TB suspects in the commune was determined as follows:

$$\text{Prevalence per 1000} = b/a \times 1000$$

where

a = people age 15 years or more

b = subjects who have coughed for more than three weeks

The health care needs of TB suspects in the commune within TB control activities was defined as their requirements for their health problem (cough) in the health care system. That was examined in some aspects as follows:

- pretreated history of their cough
- their choices for treating their prolonged cough.

In order to evaluate "awareness of TB and the NTP" among TB suspects, a score was calculated from the awareness part in the questionnaires (appendix 5). Awareness was mentioned in two perspectives: their knowledge about treatment of TB and the seriousness of the disease. In the treatment part, they were asked about fee for treatment, whether TB is curable or not, and time period for treatment. The main point in that part is "curable disease". If they believe that TB can be cured, they are willing to seek for treatment. For the seriousness of the disease, they were asked about causes of TB, risks for TB patients and people around them if they were not treated. The most important issue in this part is transmission of the disease. If the patients are treated, they prevent that the disease is transmitted to other people. The sum score (maximum 100) was categorised into 2 groups: poor knowledge (< 60 scores) and good knowledge (≥ 60 scores).

2.6 Definition of main variables

- *Literacy* was reported in these categories based on the education system in Vietnam: the first basic education stage ranges from 1 to 5 years (primary school); the second basic education stage ranges from 6 to 9 years (secondary school); the secondary stage ranges from 10 to 12 years (comprehensive school); and the higher education stage is more than 12 years (college and above). There are some people who could read and write simple contexts but they did not attend school. We called them "have ability to read and write" (approximately to the third year of primary school).

- The *economical status* for the inhabitants were defined based on their satisfaction of standard of living. That means people can afford to seek help for their health problems if they are satisfied with their economic status somehow.
- *Prehistory* refers to other experience with health care services; especially for TB.
- *Where they prefer to go for their health problem* means which health services are found convenient by people in that area.
- *Fee for treatment* means their impression about how expensive treatment of the disease is for the patient.

2.7 Ethical issues

PNTC and UTC approved the project. The process of getting these permissions is explained in detail in section 2.4.1.

For the main participants (TB suspects), the following procedures were followed to protect and keep the participants' interest in the study. They participated on a voluntary basis, and were under no obligation what so ever, and they could withdraw whenever they wanted. The patients were given freedom to accept or refuse the interview. They all received proper examination and treatment, whether they volunteered for the study or not.

The research team kept the questionnaires out of reach for others. The members of the research team were not physicians who examine patients at the HP. All data were kept strictly confidential. The informants' names were not recorded, but questionnaire forms were coded with consecutive numbers. The study was conducted for scientific purposes only that will be followed by practical activities in the community in order to improve the situation regarding to the results of the study.

An abstract of the results and conclusions of the study will be delivered to the commune in order to show the importance of this type of study in their own society.

This chapter presents the main findings from the interviews of TB suspects and the in-depth interviews. The presentation of the findings is divided into four sections:

TB suspects prevalence

History treatment of their cough-Awareness of NTP and alternative health care services that they preferred for their health problem

Statistical results

Results of the in-depth interviews.

3.1 The prevalence of TB suspects in the commune:

The prevalence of TB suspects was determined as follow:

$$\text{Prevalence per 1000} = b/a \times 1000$$

where

$$a = \text{people age 15 years or more} = 15,212$$

$$b = \text{subjects who have coughed for more than three weeks} = 250$$

$$\text{Prevalence of TB suspects} = 250 / 15,212 \times 1000 = \mathbf{16.43 \%}$$

3.2 Their cough and TB control activities:

3.2.1 General characteristics of the study population:

A total of 250 suspects aged 15 years or more were interviewed; 119 (47.6%) were males and 131 (52.4%) were females (figure 2a and 2b). Among them, almost half of the informants (46.8%) were 60 years old or more. The mean of age was 53.6 years (range 16-89). The illiteracy rate was rather high (43.6%) in the sample. There was further 32.8% of the people who was only able to read and write a simple text. Forty two per cent were farmers and 30% of informants were unemployed or elderly. Almost half of them (44.4%) were not satisfied with their economic status. More than four fifth of the suspects (81.2%) were married. One hundred and fifty five suspects (62%) lived

in small families. Eighty one married suspects (35.5%) had less than 3 children. Some detailed socio-demographic information of suspects are shown in table 2.

Among the suspects, 49 patients (19.6%) had had previous treatments for TB. Approximately one fourth (22%) of them had had experiences with health care services or with hospitalisation. Seventy six (63.9%) of males and 19.3% of females smoke every day. There were only 6 informants (2.4%) who were alcohol abusers. Almost three fourth (72.8%) revealed that their health was bad.

3.2.2 TB symptoms:

Most of suspects (88.8%) were coughing every day. One hundred and forty five suspects (58%) have coughed from 1 to 6 months. Duration of cough in relation to gender is shown in table 3.

Besides prolonged cough, 96% suspects had additional symptoms of TB. Most of them (71.2%) had 3-5 more symptoms in addition to their cough (table 4). For other symptoms the dominant duration was from 1-3 months. The most common symptoms were expectoration and chest pain (table 5). Twenty nine suspects (11.6%) had coughed blood.

3.2.3 History of previous treatment for their present cough (before presenting at the HP):

Some of them had come to many health care services for their health problem. There were 16.3% of the suspects who had no treatment for their cough; 45% had been self-medicated and the rest had consulted some health care providers. The latter included 15.9% who had consulted a private practitioner, 18.9% who had utilized the public health clinics such as the HP or rural/ suburban health centres or urban hospitals, 1.4% had consulted PNTC directly and 2.4% had had traditional treatment. In general more

than half of the suspects had self-treated their cough by buying medicine at pharmacies or ignored their health problem (table 6).

3.2.4 Awareness of TB and NTP among TB suspects:

One hundred and fifty suspects (60%) knew that TB is a transmittable disease and curable. Besides, 39 people (15.6%) were ignorant of the disease. Table 7 shows that almost three fourth of them (71.4%) have got their information from mass media (radio, television etc) or through their neighbors or friends. Sixty eight informants said that it is expensive to get treatment for TB, and 52/68 (75%) said that they had to pay mainly for medicines. When we assumed that if TB patients are treated rightly, 72% of them believed that they would be healed and 26% of informants answered that “I don’t know”. Only thirty nine percent of all informants are aware that TB is a long-term treated disease.

Although 112 persons (44.8%) did not know the reason why people can get the disease, there are many suggested reasons (transmitted by bacterium, working very hard, genetic disease, inappropriately treated common cold, drinking, smoking, inadequate nutrition, fate, pollution, body’s characteristics) from the informants -as causes for TB. Among them, 55 persons (22%) claimed that the cause of the disease is a certain bacterium. The suspects suggested some bad results when the patients are not treated seriously. The worst consequence “to die” was the opinion of 139 informants (55.6%). Generally, 193 informants (77.2%) named bad complications like exhaustion, coughing blood, and to die, if the patients ignored their disease. When we asked about the danger of TB for people living around an untreated patient, the opinion “TB patient might transmit the disease to others” was mentioned by 65% of all.

3.2.5 Their opinions about coming to the HP:

Seventy six suspects said that they did not know about the invitation. Among them, 74 said that they would have come if they've got the message. Only 36/74 people (48.6%) actually came to the HP after the second invitation.

Among 56 other suspects who had not come for various other reasons (table 8), 48.2% (27/56 persons) came to the HP when we invited them the second time. One person (1/76) thought that his cough was not serious enough to need treatment. Another one said that she was treated by a private physician, therefore she did not want to go somewhere else. Twelve suspects said that they were busy at that time. Ten people told that it was not a serious disease and they neglected it. Whereas, twelve persons indicated that people did not trust the quality of treatment at the HP (but they did not have the same opinion for themselves). Six suggested that the rich could afford treatment in the private sector so that they did not need to go to the HP to receive treatment free of charge. Some suspects thought that the invitation concerned people who had a priority card for health care or who had received an invitation sheet only. Eight persons mentioned lack of transportation as an obstacle to go to the HP.

3.2.6 Intension of treatment of their health problem, reasons:

When the suspects were asked about their intention for any certain health problem for example a cough, they gave information for the first choice as well as the alternative services if their problem could not solved (table 9).

The first choice: Most suspects would first like to self-treat their health problem. There were 70.8% who preferred self-treatment, i.e. buying medicine at pharmacies; 19.6% had chosen a private physician for help. Five per cent thought of the HP as their first choice. Two per cent mentioned traditional treatment. Two per cent had no idea what to choose for their health problem. The rest 0.8% would go to a suburban health

centre. Among the 177 people (70.8%) who opted for self-treatment, 114 mentioned the convenience of going to pharmacies (near to their houses, opened 24/24, in their way to work or market...), 41 persons said that it is cheap to go the pharmacies, 21 suspects remarked that their diseases were usually cured with simple medicines that they could buy in the pharmacies, and one supposed that it was only a simple disease which could easily be cured with medicines from any pharmacy. Some of the suspects said that they had close relationship with people who worked at the pharmacies or private practitioners (their children, relatives or friends). Persons who did not have specific intentions for how to solve their health problem, explained that they had no money for health care or that they could overcome simple diseases. The 7 suspects who chose the HP or the health centre said that they have health care insurance card at those services.

The second choice: The proportion of suspects who preferred to go to hospital was higher than in the first choice. One hundred and three informants (41.2%) chose rural, suburban hospitals/ health centres, whereas 96 persons (38.4%) would go to the private sector. Some of suspects who first chose a public health service would like to follow the transfer system from the department which they first attended to a better equipped health facility. Besides, some suspects had specific opinions based on advices from people they trusted, for example "It is said that Doctor X./ hospital Y. is very famous in treating such a disease".

The third choice: The majority of suspects (74%) would like to go to the public health services (the HP, suburban health centres, urban hospitals...). Besides, 45 persons have not thought about a third choice.

3.3 Some statistical results:

Table 10 shows some statistical results that we have collected from the survey. Figure 3 shows the number of suspects who went to the laboratory by age and gender.

One hundred and eighteen suspects (47.2%) came to the HP after the health message announced at the commune. Among them, 17 persons (14.4%) had their sputum smears tested at the laboratory and one suspect was found positive for AFB.

When the interview team sought additional suspects house by house in the whole commune, they detected a total of 132 suspects (52.8%) who did not come to the HP for examination. Eventhough the interviewers invited them again to go to the HP to be examined their health problem, only 63 persons (47.7%) finally came as invited and only 15 of 63 (23.8%) after that went to the laboratory to have their sputum tested for AFB. Two suspects came directly to the laboratory but did not come to the HP.

Besides, we collected a list of present TB patients living in the commune. There were 32 TB patients who were on treatment either at Tan Quy polyclinic, for the intensive phase, or at the HP- for the continuation phase. One patient was taking traditional medicine, two others were treated by private doctor. We met three defaulters. Two were too ill to go to Tan Quy polyclinic, one had side effects from medicines and he was frightened of the treatment.

3.4 Result of the in-depth interviews:

Among 181 TB suspects who went to the HP and asked for examination only 32 patients took their sputum to the laboratory from September to December. We were wondering why many people did not take their sputum as asked, and whether there was any obstacles preventing them from going to the laboratory.

Twenty seven conveniently selected suspects who went to the HP but did not go to the laboratory were interviewed in-depth in December. They were not interested in TB control activities because of plenty of reasons. The reasons they explained why they did not go are presented as follows:

3.4.1 Ten persons among them said that their symptoms were reduced and although they were still coughing they had no sputum.

My cough was reduced and I do not expectorate sputum any longer (male, 50 years old)

I haven't produced sputum although I am still coughing (male, 70 years old)

3.4.2 Long distance to the laboratory. The TB laboratory is located in District Health Center that is 15.5 km far from the HP. People in the commune usually hire a Honda-driver to carry them to the health centre for the price of 40-60 000 DVN (# 3-4 US dollars- 1 US dollar = 14 000 Vietnamese Dong) including returned lift. They were examined and the Honda-driver had to wait for them until they return. Some of them can ask their relatives or their neighbors to give them a lift to the laboratory. This is the explanation of ten informants.

I haven't gone to the laboratory because I could not afford to hire a Honda-driver.

My children could not carry me by bicycle because it's too far (male, 77 years old)

The laboratory is too far. I can't afford to take a bike (male, 18 years old)

I have not gone to the laboratory because no one gave me a lift, and I don't have money to hire a Honda-driver. I am too tired to walk there (female, 57 years old)

I want to go but I can't because it is too far. People could not carry an old person like me because they are afraid that I will be exhausted along the way (female, 80 years old)

The HP or Tan Quy polyclinic seem to be more convenient for the test.

If I can carry my sputum to the HP, it's quite easy for me to do it (male, 77 years old)

If I could bring sputum to the HP, I will walk to there soon (female, 60 years old)

If I could go to the HP or Tan Quy polyclinic, it's not too far (female, 68 years old)

It is convenient for me if the laboratory was at Tan Quy crossroads (3 km from the HP) (male, 73 years old)

3.4.3 "I am busy" is the reason of 5 other suspects. The crop was to be harvested at that time. Some people usually visit their field every day.

Furthermore, I am busy in the field (male, 73 years old)

I have been busy with the crop. I will go there when the crop finishes (within this month). I will ride myself; no obstacle (male, 33 years old)

I have not gone to the laboratory because I have been busy with the crop. After ten more days, I will go whenever I have free time. My children will carry me as before (female, 62 years old)

3.4.4 Four people said that they can not afford the routine procedure of entering the hospital. Many elderly have meals with their family every day. Some of them live alone and they spend their money mainly on meals. They need 5 000-10 000 Dong/day for food. They were afraid that they are asked to pay money for certain procedures or tests in the hospitals/ health centres.

Furthermore, I don't have money in my pocket. Everytime we come to the health centre, we have to pay an amount of money (at least 30-40 000 Dong). That's a rule. It is impossible that the officers ask me to pay a fee and I have no money (male, 77 years old)

They did not go to the health centre because they are afraid that they have to take X-ray of the lungs and it is expensive (20 000 Dong). I earn little money so that I am scared of the hospital because tests cost a lot of money. Working is not enough for meals, no money for medical treatment. I try to save money if I have to go there (female, 68 years old)

Some recent days, I have been invited to come to many weddings and funerals so that I have spent a lot of money. I just went to the laboratory this morning (male, 75 years old)

3.4.5 There were three suspects who mentioned the invitation sheet for examining sputum. Actually, the physicians gave them a sputum examination form and asked them

to go to the laboratory. However, they supposed that they should have a certain introduction sheet to submit to the health personnel in the laboratory.

I am still coughing. I did not get any introduction sheet. If I have one, I will go there (female, 71 years old)

How can I go without the invitation sheet? I will go when I get the invitation sheet (male, 67 years old)

3.4.6 Two suspects told that they have gone but they did not get the test paper. I came to the TB control team and looked at the laboratory register book, but I did not find their names.

I have gone there, one month ago. They told me that the result is negative but they did not give me any paper (male, 64 years old)

3.4.7 Two of them supposed that they could not get the disease. They felt that a simple cough could not be TB.

It should not be TB, because I feel good, I am still able to work. TB exhausts one very much (male, 18 years old)

I haven't got TB. I know that my disease is not bad, it could be cured with medicine from the HP (female, 76 years old)

However I know that my family is healthy. I could not get TB (female, 74 years old)

3.4.8 They are scared that if they get the treatment, they could not work to earn money to sustain their life. TB treatment takes so long while they must struggle daily to work for their life. One person said that he may not be able to attend during his working hours because he might lose his job and his family might starve.

I have to go to work all day from early morning. Because we are poor we don't care about our health. Whenever I could not work any more, I will think about my disease. I must earn money every day. There is only me working in my family. I have heard that TB patients must go to Tan Quy polyclinic every morning within 2

months to be injected. How can I go to work at that time? After that, I have to go to the health post to take medicine within 6 months, it is quite difficult for me too (male, 18 years old)

3.4.9 The service does not satisfy their needs. They complained that they have to pay too much money in the hospital .

There were many people went to the health centre to be treated, but they have to go there many times to do a lot of tests and pay a lot of money. Besides, they have to go to the pharmacy to buy medicine. They are not given drugs free of charge. Therefore, they don't want to go there any more. It is quite complicated to go there. Even though you told us that it is free of charge, what can we do if they ask us to pay for a fee (female, 76 years old)

There were 3 patients among them who went to a pharmacy to buy medicine after treated at the HP.

There were 4 patients who said that the test is for diagnosis the disease, while one who said that the test is not necessary. The rest (8 people) said that they must obey the physicians to be examined.

3.5 TB patients in the result

Bacteriologic studies

These subjects were requested to submit three sputum specimens for bacteriologic studies. Direct smears were done according to local laboratory procedures.

Among 34 patients who went to the laboratory, there were only 16 who had enough three sputum smears taken. The rest took only two smears. There were two types:

(1) Taking a sputum container from the HP to their houses and submitting to the laboratory. There were the second and the third specimens

(2) Going to the laboratory and taking the first specimen there, return home with a sputum container, but another person submit the container. There were the first and the second specimens.

There was one case with BK (+). After 2 months of intensive phase of treatment, he has gained 4 kilograms and BK specimens converted to negative.

Discussion is based on findings and general conclusions as well as recommendation to VNTP are presented in this chapter.

4.1 Discussion

This study established knowledge about the TB situation at community level in Vietnam, with regard to the prevalence of TB suspects and their interest in TB control activities of NTP.

A study of all symptomatic who may have TB addressed with questions of health seeking behavior. The study gained information that could be utilised for developing proper activities to get more TB suspects to access the NTP. In a suburban population of Ho Chi Minh City, we found that the prevalence of TB suspects is rather high. A majority of the suspects ignored the symptoms or relied on self-medication rather than seeking medical help from NTP or other health care service providers.

The target population for the study was inhabitants of fifteen-year-old or older and lived in Tan Thanh Dong commune. The study population was all TB suspects from the target population. We did not select a sample of suspects from this study population. We tried to contact all of them. Firstly, we announced a small health message through the loudspeakers as the routine is for administrative messages in the communes. However, people were not eager to react to the message as we had expected. Eventhough some of them answered that:”I did not get the message but if I got, I would come”, only 48% of these people came to the HP after the second invitation. This proportion is the same as the proportion among people who could not come to the HP from the first invitation because of other reasons. After that, we have identified the suspects in the whole commune, house by house. Interviewers came to every household and asked if any person in the family had persistant cough. In the end all the suspects were identified and constituted the real suspect population in the commune. Although

the interview team did not meet everybody in the commune in person, we believe that we were informed about all possible TB suspects at that time. Thus we can also suppose that selection bias has not affected the answers to the research questions. The reports may also be valid for other suburban population of HCMC.

Surveys of a cross-sectional nature collecting information from the past are subject to recall bias. The design was appropriate for describing the characteristics of a given population at a specific time, but we could not control the validity of duration of symptoms. Throughout the study, we have gained knowledge about which type of health care services people have chosen for treating their prolonged cough. In a cross-sectional study, the measurements of cause and effect are made at the same time. When describing the reality about TB control activities in a certain community, the selected design would be valid. A cross-sectional study is often feasible to conduct and is not too costly and time consuming (10) and descriptive studies are usually the first step in formulating hypotheses.

Interviews were the main data collection instrument that was used in the fieldwork. Interviews and questionnaires are the most commonly employed methods to gather the type of information we wanted. Interview method seeks to understand the range of behaviors in which people naturally engage (11). Two main types of interviews were included in this study. The first was a semi-structured interview by questionnaires, and the second was an in-depth interview based on an interview guide.

Semi-structured interviews were used because the method includes structured questions and then opens for more detailed open-form questions to obtain more specific information. This interview approach has the advantage of providing reasonably standard data across respondents and greater depth of understanding than can be obtained from a fully structured interview (12).

In-depth interview has conversational style rather than a question-answer format. The structure of the interview comes close to an everyday conversation, but involves a specific approach and technique of questioning (13). The data from the in-depth individual interviews give an opportunity to discover reasons why the suspects refused to come to the laboratory for sputum examination.

The study searched suspects who were fifteen years or older with prolonged cough for more than 3 weeks' duration. The prevalence was found to be 16.43%. In a previous survey in the Philippines (14), the authors measured the prevalence of TB symptoms among individuals 20 years or older defining cough of 2 weeks' duration or more, hemoptysis of any duration, chest or back pains, and fever of 1 month or more as TB symptoms. Individuals with TB symptoms comprised 18.1% of the population studied. The authors used a definition of case in the study which resulted in a ten times higher prevalence than what we found. For this study, we used the recommendation of IUATLD that "the most frequent symptom of pulmonary TB is persistent cough for 3 weeks or more; every patient presenting to a health facility with this symptom should be designated a **TB suspect**" (8). A shorter period of cough and the addition of other symptoms like chest and back pain and fever seem to have increased the number of suspects substantially.

The highest rates were found in the oldest segments of the population, even though in many low-income countries, TB notification rates currently still peak in young adults (3). The number of suspects among males was lower than among females, but similar to the gender rate in the population (48:52). Number of females in group I dominated but this was opposite to the result in group II ($p < 0.0001$). In the Philippines survey, 44.9% of representative sample of the population was males and 55.1% were females. Of these, 18.1% were considered to have TB symptoms, 21.4% among males

and 15.4% among females. The higher prevalence of TB symptoms among males was evident in all age groups, and increased with advancing age (14). In a survey in Vietnam where the authors selected a stratified random sample in HCMC of people aged 15 years or older who visited a district TB unit, 64% were males and 36% were females (15). In this study, we offered treatment free of charge in the HP. Females among the suspects who came to the HP because of the first invitation comprised 67.8%. When we visited suspects in their houses, 61.4% of them were males and 38.6% were females. We do not have data to conclude why there was a substantial difference of gender ratio between two groups. However, we could imagine two situations. According to traditional custom in Vietnam, women always think that they must sacrifice their life for their family. Especially among the poor, wives save food, money, etc for her husband and children. Therefore, they often ignore their health problems if its treatment costs much. Treatment for a disease free of charge is a good chance for them to solve their health problem. In another situation, maybe she did not have a prolonged cough, but she pretended to have to get some medicines and save them for other persons in her family who might cough some day.

Information on early TB symptoms was announced in media and people were told that if they have any of the symptoms, they must go to the nearest health facility to be examined. However, the proportion of TB suspects who were aware of TB was rather low (60%).

Regarding to health services that they did seek, some of the suspects went to several different providers. Seventy per cent of the suspects ignored their potentially severe problem or went directly to pharmacies to buy some medicine to stop the cough. Forty two per cent suspects went to a health care provider at the beginning or when they felt worse after self-medication. The reasons they gave for their choices were

convenience: money, time, and transportation or the effectiveness of the services. This is particularly important if the public clinic is distant, as in rural areas. It is more convenient for them to go to pharmacies than to public health services. In the survey from the Philippines (14), the authors reported that 43.0% of the subjects with TB symptoms took no action in response to their symptoms, 31.6% chose self-medication, and only 25.4% consulted a health care provider. The latter included 11.8%, who consulted a private medical practitioner, 7.5% who utilized the public health clinic, 4.4% who consulted a hospital, which was mostly a private institution, and 1.7% consulted a traditional healer.

When the TB suspects in Tan Thanh Dong were asked about their intention regarding health seeking for any health problem, for example a cough, they indicated their first choice as well as the next if their problem could not be solved by the first. Almost 70% of the suspects preferred self-treatment. Twenty per cent would go to a private practitioner for reasons of convenience and effectiveness. If their health problem still remained, they would seek help in public health care services (42%) or from a private physician (39%), if this had not been their first choice. Only if they were not satisfied with the results of treatment at the second provider, the majority would choose public health services (74%). This showed that they looked for a convenient way to solve what they perceived as a simple problem, and proceeded to seek help at higher levels of services only if their health problem remained. Besides, some of them had not contemplated what to do if their disease still remained.

One study (16) indicates that there is a relation between TB patients' lack of knowledge about both TB and public chest clinic services and their attitudes towards these services. Seventy seven percent said they were unaware that they might have TB or any serious disease. Fifteen per cent did not know about the public clinics, and 8%

thought it would be inconvenient to attend such a clinic. Lack of knowledge about the public clinics and about the nature of their potential disease was also reflected in the number of other health providers that the patients had contacted before they went to a public chest clinic. There were many perceived positive aspects of private TB care regarding consequences related to privacy, convenience and possibility to avoid social welfare stigma (15).

It is a common finding that TB patients usually seek professional help first from private practitioner or purchase anti-TB drugs over the counter, without a proper prescription (2,17,18). Many patients approach private doctors hoping for a shorter treatment period and/or a better treatment result. Most of private doctors prescribe regimens different from the ones recommended by the NTP. Often the drugs prescribed are too expensive for ordinary people. Patients who do not return for appointments are generally not pursued (2). The diagnosis of TB is often delayed when several providers are consulted consecutively. When TB suspects finally attended at the NTP, their symptoms were serious. The laboratory register report shows that 25% suspects in the commune who had sputum smears tested had got positive smears in 1999. Most patients fail to complete treatment, stopping treatment once they feel better. Much of the “unofficial” treatment is probably inadequate, and could play an important role in producing the drug-resistant infections and chronic cases (16). In Vietnam, the prevalence of primary multidrug resistant TB was 2.8% (15). Once drug resistance develops, TB bacilli become increasingly difficult to kill. Multi-drug resistant TB is often fatal, and about 100 times more expensive to treat (2). Inappropriate treatment regimens, self-medication with powerful anti-TB drugs, the proliferation of inferior drugs and premature interruptions of treatment all give TB bacilli the opportunity to become resistant to one or more drugs. These patients then go on to infect others, creating a vicious cycle of drug resistance. The widespread disparity in length of treatment and combinations of drugs prescribed result in failing to cure patients. For example, one survey in India found that 100 private doctors prescribed 80 different regimens, most of which were excessive and expensive (2). Another study showed that 80 percent of private practitioners surveyed in Pakistan prescribed unnecessary long-duration chemotherapy, and that 31 percent of patients were still ill more than three years later (2). In more than 80 percent of the world anti-TB drugs are available without prescription through pharmacies, making it extremely difficult to control their correct use. The ease in purchasing these drugs has led to self-medication by patients and increased black-market distribution by persons with no medical training (2).

From the in-depth interviews, we had collected some reasons given by the patients why they had not come to the laboratory for diagnosis. Some people explained that they did not produce sputum. For patients unable to cough up sputum, deep coughing may be induced by inhalation of saline. Sputum induction is an effective, low-cost, and simple technique for improving the smear-positive case detection rate in NTPs (19). Positive smears for *M. tuberculosis* suggest the diagnosis of TB. However, TB may also be

diagnosed on the basis of clinical signs and symptoms in the absence of a positive smear (20). Furthermore, the diagnosis of most sputum negative but clinically suspected cases was not resolved by CXR (21). Long distance from their houses to the laboratory is also an obstacle for them. Generally in Vietnam, many people live in their community for their whole life and have no chance to leave their place. If they need to go somewhere, it implies a major effort. If they do not have any private transport means, they have to hire a bike-driver. Therefore, if they can not afford that, they hesitate to solve their problem. Furthermore, they are afraid of fees for certain procedures in hospital. They also complained that they were busy with the crops. Maybe working hour at the laboratory could be longer in the evening. Among TB suspects who did not go to the laboratory many thought that they needed a special introduction form to come to the TB control team. This is not mandatory in the NTP. The physicians might give a sputum examination form for patient to present to the district TB unit or might just ask the patients to present themselves at the laboratory. In reality, we observed that if the physicians gave such an examination sheet to the patients and guided them carefully, the patients would pay more attention. A few TB suspects said that they had gone to the laboratory but they were not given any paper of the result.

Some people refused to believe that they could have TB. They explained that their family is very healthy. In many societies, TB has been considered as an incurable disease. Many people are not aware that TB is now curable. The stigma of TB is powerful because the public's fear of infectious disease is so strong. Spurned by their friends or communities, and often stigmatized by society, TB patients endure more than just the physical symptoms of the disease. The rejection adds emotional suffering that often prevents patients from seeking the treatment they need or completing treatment

once it is begun (2). As a result, they often seek treatment late and with more advanced disease.

People also complained that treatment would interrupt their daily work for living if they have to come to health care services. It is difficult to convince people to accept that treatment must take much time while they are working very hard every day to survive. People complained about the service in hospital. Long waiting time, lengthy examinations, and queuing to receive medicines added to this problem. It was easier for them to go to the pharmacy near their house.

Among 34 people who came to the laboratory only 16 suspects had three sputum smears examined. The rest had only two smears examined. Smear microscopy is the only means by which the diagnosis of TB can be confirmed in settings that have no access to culture. With three specimens it has been found that out of those patients who are eventually demonstrated to be positive, approximately 80% are positive in the first specimen, an additional 15% are first demonstrated to be positive in the second and an additional 5% in the third sputum smear (8). In Zambia, another study has shown that in a sample of AFB positive suspects who had three sputum smears examined sequentially, 77,1% were found positive in the first smear, a further 15% in the second and 7,9% additional cases were identified in the third smear (22). An early morning specimen is more likely to be positive than a spot specimen. On the other hand, a specimen collected under supervision of a competent health care worker is likely to yield better results than one collected without supervision. Culturing the specimens confirms the diagnosis of TB. However mycobacterial culture is not available in district TB control team and CXR is expensive for ordinary patients. Consequently to save time and effort for the TB suspects it is reasonable to routinely examine a full serie of three sputum smears instead of taking only two smears and relying on CXR or culture specimens. Sensitivity of the

method is a very important part of suspect screening. Therefore, examination of full three sputum smears is important to avoid false negative cases. In this case, should a patient be judged to require treatment, even though the three specimens are negative, a course of broad-spectrum antibiotics may be given. If the patient continues to show symptoms after completion of the antibiotics, a second series of three sputum smear examinations should be performed. If they are still negative, the Medical Officer may choose to treat the patient for TB and record the patient as a case of smear negative pulmonary TB (8). A Medical Officer should review all those thought to have TB but in whom the sputum smears are negative. If CXR is available, it may be performed. Screening patients with good criteria of TB by CXR has high diagnostic sensitivity, but screening by CXR is less effective and more costly than screening by sputum smear microscopy (23). The health centre has a routine screening CXR for patients with persistent pulmonary symptoms. However, some patients complained that it costs a lot and they could not afford it. As a consequence, they are scared of going to the health centre for examination.

Although 36 suspects took their sputum for examination, there was only one suspect that had a positive smear result. We could not calculate the rate of positive smear results for the sample because people went to the laboratory by convenience. They are not representative for the people who have coughed for more than 3 weeks in the commune. In a survey from a representative sample of the Philippines' population the authors identified bacillary disease in individuals with TB symptoms. Bacillary disease was confirmed by sputum examination in 10.4%; this included 14.3% of the symptomatic patients and 8.6% of individuals without symptoms (identified by screening CXR) who were examined. When analyzed according to the type of

symptoms reported, the prevalence of bacillary disease was 35.6/1000 in subjects with cough of 2 weeks or longer (14).

In this study we did not intend to identify associations between special symptoms and attitudes and behavior of the suspects towards NTP. The main purpose was to investigate if it is feasible to conduct such a study in larger parts of Vietnam and to get necessary information for planning it.

Based on the present findings and data from previous researches, we could see that a large proportion of TB suspects had a health-seeking behavior inappropriate for their health problem. They thought that their cough was not dangerous. Therefore they had just ignored it or went to pharmacies to buy some medicine in order to stop their cough. They did not care about sputum test even though they were asked directly. The most common reasons were long distance from their house to the laboratory and that they did not expectorate.

This study, not taking possible confounding into consideration, indicates that there is an association between convenient location of the TB control team and the proportion of suspects coming, which is in accordance with a study from India (16). The distance is obviously one big obstacle for people in the commune to go to be examined. Besides, people are scared that they are considered as TB patients by just coming to the laboratory. Furthermore, they are frightened that they can get the disease when they come to the laboratory where there are a lot of TB patients. It is easier for them to go to the HP for collecting sputum and the staffs is responsible for sending it to the laboratory.

Private practitioners examine and sell drug according to their prescription. The cooperation between NTP and private sector is a major challenge. To attract TB patients toward the NTP, diagnosis and treatment must be made easy and more convenient for

the patients than going to the private sector where drugs cost a lot and treatment is less effective.

Based on the above findings, we could see how and why TB suspects in this commune did not adhere to TB control strategies. They considered their persistent cough as a simple health problem. They lack knowledge about the role and efficiency of TB control activities. They found it more convenient to go to the private health providers.

It should further be investigated if those suspects who did not have their sputum examined or who had negative result in their first sputum smears constitute a high risk group. This could be done if a prospective study based on the result of this survey was proceeded; for example if a suspect-register was established in the commune.

4.2 General Conclusion

Based on these results, having considered their reliability and validity, and taking some possible biases into consideration, we conclude that it is important to develop a more “consumer friendly” programme aimed at detecting TB suspects for diagnostic examination. Because of the lack of CXR and bacterial culture, three-sputum-smear examination is indispensable in the diagnosis of the disease. There should be a cooperation between the laboratory and the HP. Sputum specimens can be asked to be submitted at the HP and they will be transferred to the laboratory. This would imply ambulatory staff or training HPs for collecting sputum from remote areas to the laboratory. Alternatively every TB control team at each suburban district should have an ambulatory group responsible for collecting sputum specimens from every commune at a regular basis. The HP staff should contact all people living in that commune who have prolonged cough and invite them go to the HP on indicated days to take their sputum for

testing. In areas lacking laboratory facilities, transportation of specimens is required. A prospective study may be the most attractive approach. A prevalence study of TB suspects was found feasible.

4.3 Recommendation

Given the fact that NTP in Vietnam is regarded as one of the best in the world measured by cure rate and success rate, it is a paradox that drug resistance grows rapidly and new case detection rate is increasing. To understand what is happening and be able to improve the impact of NTP, we will recommend:

4.3.1 A major prevalence study of TB suspects in Vietnam should be undertaken.

4.3.2 Wrong beliefs concerning the potential seriousness of prolonged cough must be addressed in public health education and the simplicity of the diagnostic procedure must be explained.

4.3.3 The TB control team must be made the most attractive option for people seeking help for pulmonary symptoms.

4.3.4 Access to laboratory diagnosis must improve considerably.

4.3.5 Treatment must be secured close to their homes so that they can keep at their daily work for living.

4.3.6 Indirect expenditures for procedures in hospitals when people go there for TB diagnosis must be minimalised.

4.3.7 Contacts with private health providers should be established to secure optimal diagnosis and treatment for all TB suspects.

1. J.Crofton, N.Horne, F.Miller. Clinical Tuberculosis.2nd ed. London and Basingstoke: Macmillan education ltd., 1999: 222.
2. WHO. WHO report on the Tuberculosis Epidemic 1998 (WHO/TB/98.247) and 2000 (Fact Sheet N 104:Tuberculosis).
3. H.L.Rieder. Epidemiological Basis of Tuberculosis Control. 1st ed. Paris: International Union against Tuberculosis and Lung disease, 1999: 162
4. WHO. Global tuberculosis control. WHO report 1999. WHO/CDS/CPC/TB/99.259
5. Project: Institutional strengthening- Midterm evaluation, Vietnam national Tuberculosis Program, Vietnam MCNV- KNCV mission, June 1997
6. VNTP. The new national tuberculosis control program of Vietnam. 1999
7. VNTP. TB control report in HCMC 1998. 1999
8. D.A.Enarson, H.L.Rieder, T.Arnadoltir, A.Trebucq. Management of Tuberculosis: A guide for Low Income Countries. 5th ed. Paris: International Union against Tuberculosis and Lung disease, 2000: 117.
9. C.M.Vaskevisser, I.Pathmanathan, A.Brownlee. Health systems Research Training Series, Volume 2: Designing and conducting health systems research projects, Part 1:Proposal Development and Fieldwork. IDRC, Canada, 1993:376.
10. R.Beaglehole, R.Bonita, T.Kjellström. Basic epidemiology. WHO, Geneva, 1993.
11. C.Marshall, G.B.Rossman. Designing qualitative research. 2nd ed. Sage Publications Inc. 1995: 178.
12. M.D.Gall, W.R.Borg, J.R.Gall. Educational research: An introduction. 6th ed. United States: Longman Publisher 1996: 310.
13. S.Kvale. Interviews: An introduction to qualitative Research Interviewing. 1st ed. Sage Publications, Inc. 1996: 325.

14. T.E. Tupasi, S. Radhakrishna, V. M. Co, Ma. L. A. Villa, Ma. I. D. Quelapio, N. V. Mngubat, J. N. Sarol, A. B. Rivera, Ma. L. G. Pascual, A. C. Reyes, A. Sarmiento, M. Solon, F. S. Solon, L. Burton, M. J. Mantala. Bacillary disease and health seeking behavior among Filipinos with symptoms of tuberculosis: implications for control. *International Journal Tuberculosis and Lung diseases* 4(12), 2000:1126-1132.
15. K.Lönnroth. *Public Health in Private Hands: studies on private and public tuberculosis care in Ho Chi Minh City, Vietnam*. The Department of Social Medicine, Göteborg University, and Nordic School of Public Health, Göteborg, Sweden, 2000: 111.
16. V.Pathania, J.Almeida, A.Koch.The behavior and interaction of TB patients and private For-Profit Health Care Providers in India: A Review (executive summary). WHO Tuberculosis site, 1999.
17. Workshop: TB control 1996-2000 –Midterm evaluation and process oriented planning, Vietnam National Tuberculosis Program, TB and Lung Disease Institute, Ministry of Health, Vietnam, May 1999.
18. W. G. L. Allan, D. J. Girling, P. M. Fayers and Wallace Fox. The symptoms of newly diagnosed pulmonary tuberculosis and patients' attitudes to the disease and to its treatment in Hong Kong. *Tubercle* 60,1979: 211-223.
19. L.M.Li, L.Q.Bai, H.L.Yang, C.F.Xiao, R.Y.Tang, Y.F.Chen, S.M.Chen, S.S.Liu, S.N.Zhang, Y.H.Ou, T.I.Niu. Sputum induction to improve the diagnostic yield in patients with suspected pulmonary tuberculosis. *International Journal Tuberculosis and Lung diseases* 3(12), 1999: 1137-9.
20. Core curriculum on tuberculosis: what the Clinician Should Know. 4th ed. CDC, 2000: 127.

21. T.A.Jessema. Improving Case-finding in Tuberculosis Control by Antigen Detection, Clinical Scoring and Serology. Centre for International Health and Department of Microbiology and Immunology, The Gade Institute, Faculty of Medicine, University of Bergen, Norway. 1st ed. 2001:149.
22. D.Walker, R.McNerney, M.K.Mwembo, S.Foster, V.Tihon, P.Godfrey-Faussett. An incremental cost-effectiveness analysis of the first, second and third sputum examination in the diagnosis of pulmonary tuberculosis. *International Journal Tuberculosis and Lung diseases* 4(3), 2000:246-51.
23. A.D.Harries, A.Kamenya, V.R.Subramanyam, D.Maher, S.B.Squire, J.J.Wirima, D.S.Nyangulu, P.Nunn. Screening pulmonary tuberculosis suspects in Malawi: testing different strategies. *Transactions of the Royal Society of Tropical Medicine and Hygiene (London)* 91(4), 1997:416-9.

Table 1: Some demographic information of the population (n= 23,403)

Characteristic	Percent (%)
<i>Sex</i>	
Male	48
Female	52
Children under 15 years old	35
Elderly (60+)	6.6
Illiteracy	1.7
Ability of reading and writing (equal approximately to the third year of primary school)	37.8
Farming households	80
Unemployed	2.8
<i>Economic status</i>	
Poor	6
Average	38
Good	56

Table 2: Socio-demographic information of suspects

Characteristic	Group I	Group II	Suspects interviewed n (%)
<i>Sex</i>			
Male	38 (32.2)	81 (61.4)	119 (47.6)
Female	80 (67.8)	51 (38.6)	131 (52.4)
<i>Age-group (years)</i>			
< 20	2 (1.7)	4 (3.0)	6 (2.4)
20-29	8 (6.8)	8 (6.1)	16 (6.4)
30-39	23 (19.5)	20 (15.2)	43 (17.2)
40-49	21 (17.8)	17 (12.9)	38 (15.2)
50-59	12 (10.2)	18 (13.6)	30 (12.0)
60-69	33 (28.0)	29 (20.0)	62 (24.8)
≥70	19 (16.1)	36 (27.3)	55 (22.0)
<i>Literacy level</i>			
Illiteracy	48 (40.7)	61 (46.2)	109 (43.6)
Ability of reading and writing	46 (39.0)	36 (27.3)	82 (32.8)
Primary school	18 (15.3)	22 (16.7)	40 (16.0)
Secondary school	5 (4.2)	10 (7.6)	15 (6.0)
Comprehensive school	1 (0.8)	1 (0.8)	2 (0.8)
College and above	0	2 (1.5)	2 (0.8)
<i>Occupation</i>			
Farmer	60 (50.8)	45 (34.1)	105 (42.0)
Free job (housewife, monk...)	22 (18.6)	17 (12.9)	39 (15.6)
Officer, worker, student	9 (7.6)	10 (7.6)	19 (7.6)
Small business	8 (6.8)	5 (3.8)	13 (5.2)
Unemployed	5 (4.2)	11 (8.3)	16 (6.4)
Elderly (70+) and retired	14 (11.9)	44 (33.3)	58 (23.2)
<i>Economic satisfaction</i>			
Poor	57 (48.3)	54 (40.9)	111 (44.4)
Average	58 (49.2)	71 (53.8)	129 (51.6)
Good	3 (2.5)	7 (5.3)	10 (4.0)
<i>Marriage status</i>			
Single	10 (8.5)	12 (9.1)	22 (8.8)
Married	69 (58.5)	88 (66.7)	157 (62.8)
Divorced	6 (5.1)	7 (5.3)	13 (5.2)
Widowed	33 (28.0)	25 (18.9)	58 (23.2)
<i>Number in households</i>			
1-4	70 (59.3)	85 (64.4)	155 (62.0)
5-9	47 (39.9)	45 (34.1)	92 (36.8)
> 9	1 (0.8)	2 (1.5)	3 (1.2)

<i>Number of children</i>	<i>(married =108)</i>	<i>(married =120)</i>	<i>(married =228 persons)</i>
0-2			81 (35.5)
3-4	40 (37.0)	41 (34.1)	62 (27.2)
5-9	29 (26.9)	33 (27.5)	79 (34.7)
> 9	35 (32.4)	44 (36.7)	6 (2.6)
	4 (3.7)	2 (1.7)	
Total	118	132	250

Table 3: Duration of cough:

Cough	Group I			Group II			N (%)
	<i>Male</i>	<i>Femal</i>	<i>n (%)</i>	<i>Male</i>	<i>Femal</i>	<i>n (%)</i>	
Duration							
		<i>e</i>			<i>e</i>		
3-4 weeks	15	29	44 (37.3)	1	0	1 (0.8)	45 (18.0)
1-3 months	7	25	32 (27.1)	44	29	73 (55.3)	105 (42.0)
3-6 months	7	10	17 (14.4)	12	11	23 (17.4)	40 (16.0)
½-1 year	1	10	11 (9.3)	6	5	11 (8.3)	22 (8.8)
>1 year	8	6	14 (11.9)	18	6	24 (18.2)	38 (15.2)
Total	38	80	118	81	51	132	250

Table 4: Cough companied with other symptoms:

Number of companied symptoms	Group I			Group II			N (%)
	<i>Male</i>	<i>Female</i>	<i>n (%)</i>	<i>Male</i>	<i>Female</i>	<i>n (%)</i>	
0	3	5	8 (6.8)	0	1	1 (0.8)	9 (3.6)
1	3	9	12 (10.2)	4	6	10 (7.6)	22 (8.8)
2	5	12	17 (14.4)	12	4	16 (12.1)	33 (13.2)

3	10	11	21 (17.8)	18	13	31 (23.5)	52 (20.8)
4	9	22	31 (26.3)	22	11	33 (25.0)	64 (25.6)
5	6	18	24 (0.3)	23	15	38 (28.8)	62 (24.8)
6	2	3	5 (4.2)	2	1	3 (2.3)	8 (3.2)
Total	38	80	118	81	51	132	250

Table 5: Duration of other symptoms:

Symptom	Expect-oration	Coughing	Fever	Chest	Tiredness	Weight
	n (%)	blood	n (%)	pain	n (%)	loss
Duration		n (%)	n (%)	n (%)		n (%)
Absent	35 (14.0)	221 (88.4)	107 (42.8)	78 (31.2)	99 (39.6)	100 (40.0)
< 1 week	11 (4.4)	2 (0.8)	11 (4.4)	11 (4.4)	3 (1.2)	9 (3.6)
1-4 weeks	35 (14.0)	6 (2.4)	28 (11.2)	36 (14.4)	32 (12.8)	39 (15.6)
1-3months	93 (37.2)	13 (5.2)	60 (24.0)	73 (29.2)	59 (23.6)	49 (19.6)
3-6months	27 (10.8)	3 (1.2)	21 (8.4)	22 (8.8)	27 (10.8)	24 (9.6)
½-1 year	16 (6.4)	1 (0.4)	5 (2.0)	13 (5.2)	10 (4.0)	11 (4.4)
>1 year	33 (13.2)	4 (1.6)	18 (7.2)	17 (6.8)	20 (8.0)	18 (7.2)
Total	215(86.0)	29 (11.6)	143 (57.2)	172 (68.8)	151 (60.4)	150 (60.0)

Table 6: Medical services that they have chosen for their cough:

Services	Group I		Group II		N (%)
	Male	Female	Male	Female	

No treatment	8	7	19	13	47 (16.3)
Traditional treatment	0	2	4	1	7 (2.4)
Self treatment	15	41	48	26	130 (45.0)
Private practitioners	6	21	8	11	46 (15.9)
The HP	5	4	3	4	16 (5.5)
Suburban health centres	8	17	6	1	32 (11.1)
Urban hospitals	1	4	2	0	7 (2.4)
PNTC	2	1	2	0	4 (1.4)

Table 7: Sources of information

Sources of information	Group I	Group II	n (%)
Family	12	14	26 (11.3)
Neighbors or friends	40	37	77 (33.3)
Medical workers	7	27	34 (14.7)
Media	63	30	88 (38.1)
Books, magazines	0	4	4 (1.7)
TB patients	1	1	2 (0.9)

Table 8: The reasons why people did not come to the HP as invited (group II):

The reasons	Suggested for others	Explained for themselves
	n (%)	n (%)
Did not know any reason	64 (44.1)	-
Did not know the invitation	27 (18.6)	76 (57.6)
They were busy	20 (13.8)	12 (9.1)
No priority cards	7 (4.8)	7 (5.3)
No given invitation paper	2 (1.4)	2 (1.5)

They don't care	6 (4.1)	-
Too tired or ill to go	-	5 (3.8)
No quality of treatment	12 (8.3)	-
No transport means	3 (2.1)	8 (6.1)
It's not serious disease	4 (2.8)	10 (7.5)
Incurable disease anyway	-	4 (3.0)
Other reasons	-	8 (6.1)
Total ideas	145	132

Table 9: Alternative health services for their health problem:

Services	The first choice	The second choice	The third choice
	n (%)	n (%)	n (%)
No treatment	5 (2.0)	-	-
No thought	-	12 (4.8)	45 (18.0)
Traditional healers	5 (2.0)	4 (1.6)	5 (2.0)
Self treatment	177 (70.8)	-	-
Private practitioners	49 (19.6)	96 (38.4)	12 (4.8)
Transferred	-	12 (4.8)	3 (1.2)
Advised	-	1 (0.4)	-
The HP	12 (4.8)	14 (5.6)	51 (20.4)
Suburban health centres	2 (0.8)	103 (41.2)	62 (24.8)
Urban hospitals	-	8 (3.2)	72 (28.8)
Total	250	250	250

Table 10: Statistical results

Suspects	Total	Go to the HP	Go to the Lab	Patients diagnosed	Patients in NTP	Patients outside NTP
Group I	118* (38/80)	118	17 (8/9)	1		
Group II	132 (81/51)	63 (15/48)	17 (11/6)	0	32	6
Total	250 (119/131)		34 (19/15)	1	32	6

*= Total (male/female)

Figure 1: The way by which the study sample has been selected

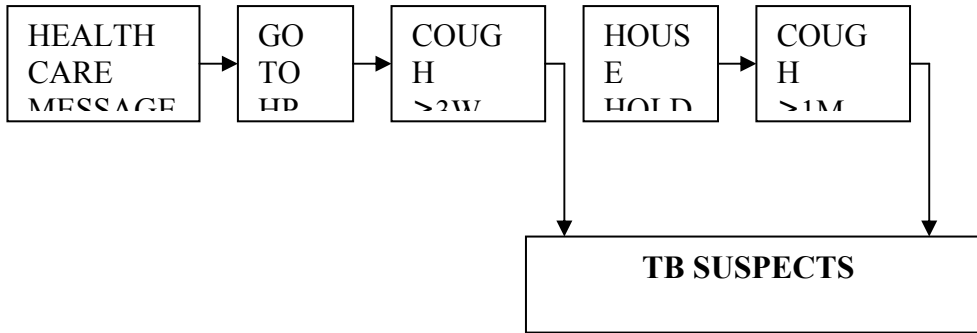


Figure 2a: Suspects by age and gender (group I)

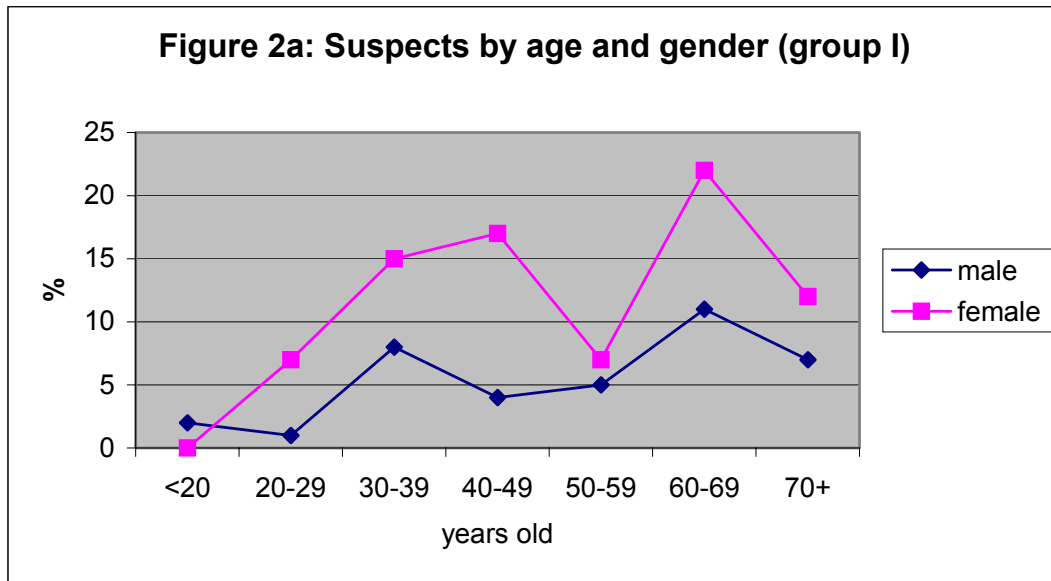


Figure 2b: Suspects by age and gender (group II)

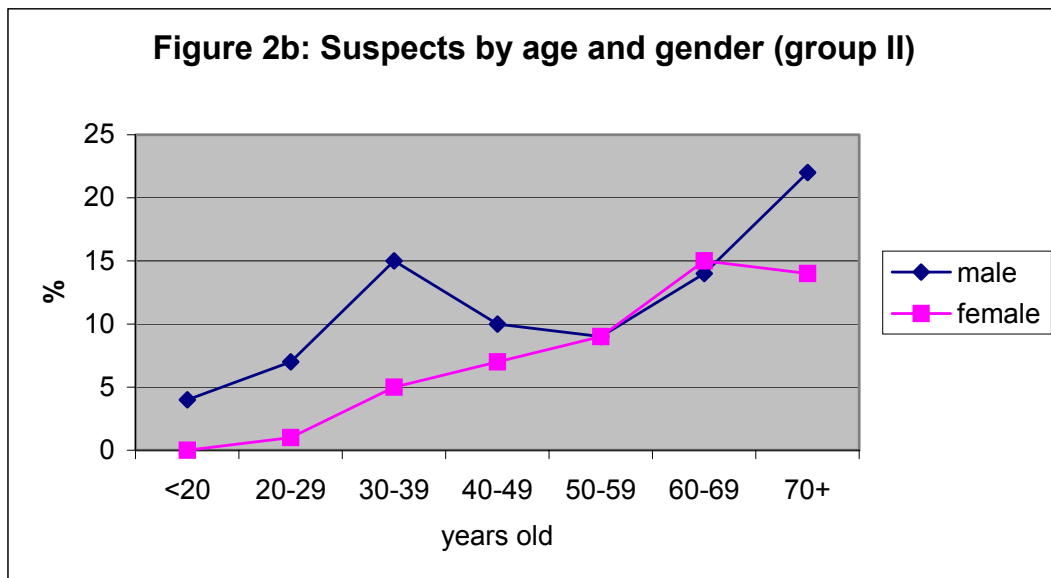
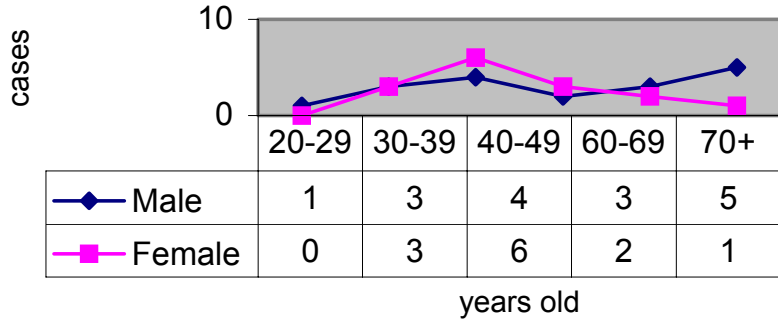


Figure 3: Suspects went to the Lab by age and gender



Appendice 1: Questionnaire one

QUESTIONNAIRE 1

(Suspects presenting after the first invitation)

1. Personal demographic information:

1.1 Age: years old.

1.2 Gender: male female

1.3 Literacy: College and above Comprehensive school

Secondary school Primary school Reading & Writing

Illiteracy

1.4 Occupation:

1.5 Marriage status

1.5.1 Single

1.5.2 Married : Divorced Widowed

Number of children:

1.6 Number of people in household:

1.7 In difficult economical status of society, your standard of living is:

Good Average Poor

2. Symptoms

Cough Onset/Duration: 3-4 weeks 1-6 months ½-1 year >1 year

Frequency: Everyday Sometimes

Pre-treated:.....times, When, Where, How long, Result?

Do you have any symptom as follow:

	No	Yes	<1 week	1-4 ws	1-6 ms	½-1 y	>1 year
Expectoration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coughing blood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fever	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chest pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tiredness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weight loss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. General information:

3.1 Current habits:

- Smoking: Yes Everyday Sometimes
No

- **Drinking:** Yes **Everyday** **Sometimes**

No

3.2 Prehistory:

- Pre-treated lung diseases: Yes No

- **Other diseases (lasting for more than 2 weeks or hospitalisation)**

3.3 In general, how do you think about your health within 2-3 current months?

Excellent Good Fair Poor

4.1 Where do you prefer to go for your health problem, for example when you have had a cough and fever persisting for 3-5 days:

The HP Suburban/rural health centre Urban hospital

Private practitioner Pharmacy Traditional healer

Others

4.2 Why do you choose that place?

4.3 and if it is not cured, where do you continue to seek for help? (2 priority orders)

1)

2)

5 Knowledge of tuberculosis:

5.1 Have you heard/ known something about pulmonary TB? For example: TB causes exhaustion...

Yes No (if No: stop here)

5.2 Where has the information come from?

Family Neighbours /Friends Health workers Media Books

Others

5.3 Do you think TB treatment fee is expensive, like fee for common disease or free of charge?

Expensive Casual Free I don't know

Fee for what items? _____

5.4 If TB patient is treated rightly, is it healed?

Yes No I don't know

5.5 How long does TB treatment period take? (day/week/month/year)

5.6 Why do people get the disease?

Transmission Hereditary Malnutrition Smoking & drinking

Hard work Others

5.7 Do you know any danger if a TB patient is not treated? (for patient and others)

No Yes

If yes, what is it?

For patient:

For people around:

Appendice 2: Questionnaire two

QUESTIONNAIRE 2

(Suspects were visited at their houses)

1. Personal demographic information:

1.1 Age: years old.

1.2 Gender: male female

1.3 Literacy: College and above Comprehensive school

Secondary school Primary school Reading & Writing

Illiteracy

1.4 Occupation:

1.5 Marriage status

1.5.1 Single

1.5.2 Married : Divorced Widowed

Number of children:

1.6 Number of people in household:

1.7 In difficult economical status of society, your standard of living is:

Good Average Poor

2. Symptoms

Cough Onset/Duration: 3-4 weeks 1-6 months ½-1 year >1 year

Frequency: Everyday Sometimes

Pre-treated:.....times, When, Where, How long, Result?

Do you have any symptom as follow:

	No	Yes	<1 week	1-4 ws	1-6 ms	½-1 y	>1 year
Expectoration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coughing blood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fever	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chest pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tiredness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weight loss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. General information:

3.1 Current habits:

- Smoking: Yes Everyday Sometimes
No

- **Drinking:** Yes **Everyday** **Sometimes**

No

3.2 Prehistory:

- Pre-treated lung diseases: Yes No

- **Other diseases (lasting for more than 2 weeks or hospitalisation)**

4. Two weeks ago, there was an announcement in the commune that all people who has coughed for more than 3 weeks should go and be treated for their cough at the

HP. According to your opinion, why did some people not come to the HP as being invited?

5. In general, how do you think about your health within 2-3 current months?

Excellent Good Fair Poor

6.1 Where do you prefer to go to for your cough if you did not go to the HP:

Suburban health centre Urban hospital

Private practitioner Pharmacy Traditional healer

Others

Why do you choose that place?

6.2 and if it is not cured, where do you continue to seek for help? (2 priority orders)

1)

2)

7. Why did you not go to the HP after the invitation?

Did not get the invitation Others:

If you knew the information, did you come to the HP?

Yes

No Why?

The HP is too far

I am absent/ busy at that time

It is not a serious health problem

It is incurable, it is not healed everywhere

I am treated somewhere else

Where:

Others

Know , but: The HP is too far

I am absent/ busy at that time

It is not a serious health problem

It is incurable, it is not healed everywhere

I am treated somewhere else

Where:

Others

8. Knowledge of TB:

8.1 Have you heard/ known something about pulmonary TB? For example: TB causes exhaustion...

Yes No (if No: stop here)

8.2 Where has the information come from?

Family Neighbours /Friends Health workers Media Books

Others

8.3 Do you think TB treatment fee is expensive, like fee for common disease or free of charge?

Expensive Casual Free I don't know

Fee for what items? _____

8.4 If TB patient is treated rightly, is it healed?

Yes No I don't know

8.5 How long does TB treatment period take? (day/week/month/year)

.....

8.6 Why do people get the disease?

Transmission Hereditary Malnutrition Smoking & drinking

Hard work Others

8.7 Do you know any danger if a TB patient is not treated? (for patient and others)

No Yes

If yes, what is it?

For patient:

For people around:

8. Could you please go to the HP this week or next to examine your health problem free of charge? This is the invitation sheet, you give it to the staff of the HP and you will be treated free of charge. Thank you very much.

Appendice 3 : Information sheet for the leaders of the commune

INFORMATION SHEET

(Informed to community leaders)

The HP of Tan Thanh Dong commune co-operates with doctors of UTC to examine (free of charge) patients living in Tan Thanh Dong commune who (15 years old and more) have prolonged cough for more than 3 weeks and/or not cured by ordinary medicine.

Patients will be introduced to be examined sputum for TB; and if they have got BK (+), they will be treated TB free of charge. Besides, there will be a team of interviewers go to every households to seek patients who have coughed for more than 3 weeks but did not go to the HP, and invite them again go there to be examined.

All patients will be interviewed with a questionnaire by an interviewer either before or after they are examined. The patients are given freedom to accept or refuse the interview. However, they all receive proper examination and treatment, whether they volunteer for the study or not.

The research team will keep the questionnaires secretly. The members of the research team are not physicians who examine patients at the HP.

Appendix 4: The prescriptions for TB suspects in the HP:

1/ Amoxylline 500 mg 9 tablets

(PO) 1 tablet *3 times /day

2/ Paracetamol 500 mg 9 tablets

(PO) 1 tablet *3 times /day

3/ Terpin 12 tablets

(PO) 2 tablets *2 times /day

4/ Bisolvon 8 mg 9 tablets

(PO) 1 tablet *3 times /day

1/ Cephalexine 500 mg 9 tablets

(PO) 1 tablet *3 times /day

2/ Diatalvic 9 tablets

(PO) 1 tablet *3 times /day

3/ Eucalyptyl 18 tablets

(PO) 2 tablets *3 times /day

1/ Cotrime 480 mg 12 tablets

(PO) 2 tablets *2 times /day

2/ Paracetamol 500 mg 9 tablets

(PO) 1 tablet *3 times /day

3/ Terpinocodeine 12 tablets

(PO) 2 tablets *2 times /day

Appendix 5: The range score for awareness part of the questionnaires:

Total score	100
<i>1. Treatment part:</i>	50
1.1 Fee for treatment:	10
1.1.1 Free:	10
1.1.2 As common health problem:	5
1.1.3 Expensive:	0
1.2 Curable disease:	30
1.2.1 Yes:	30
1.2.2 No:	0
1.3 Period of time for treatment:	10
1.3.1 Six to twelve months:	10
1.3.2 Longer than 12 months:	5
1.3.3 Shorter than 6 months:	0
<i>2. Seriousness part:</i>	50
2.1 Causation:	8
2.1.1 Bacterium:	8
2.1.2 Others:	0
2.2 Danger for patients:	12
2.2.1 Reducing health or bleeding cough or die: 4 for each	4*(3)
2.2.2 Others:	0
2.3 Danger for people contacting the patients:	30
2.3.1 Transmission:	30
2.3.2 Others:	0

If the score ≥ 60 :Good knowledge

If the score < 60 :Poor knowledge

Appendice 6: The information from the laboratory register report.

REPORT FOR TAN THANH DONG HEALTH POST
The year 1997

Month	1	2	3	4	5	6	7	8
Total smears	4	4	2	8	4	6	2	4
Total suspects	2	2	1	3	2	3	1	2

The year 1998

Month	1	2	3	4	5	6	7	8
Total smears / number of suspects had 2 smears	10	3	3	6	2	1	3	4
Total suspects	2	1	1	2	6	7	8	8

The year 1999

Month	1	2	3	4	5	6	7	8
Number of suspects had 2 smears	2	2	6	4	3	1	0	0
Total suspects	8	3	13	12	7	2	5	6
Suspects had positive sputum smears	3	0	3	2	1	1	1	2
Registered suspects had positive sputum smears for treatment	4	0	3	1	0	3	1	1

The year 2000

Month	1	2	3	4	5	6	7	8
Number of suspects had 2 smears	3	2	1	0	0	0	4	8
Total suspects	9	5	6	4	8	7	8	17
Suspects had positive sputum smears	1	1	1	0	1	1	1	1

TB patients were registered for treatment in intensive phase in 2000 at Tan Quy polyclinic:

Month	1	2	3	4	5
-------	---	---	---	---	---

New positive sputum smears patients	2	2	2	1	2	
New negative sputum smears patients	1	0	1	0	0	
Extra-pulmonary TB	1	2	2	1	0	
Others	1	0	0	0	0	

CU CHI LABORATORY REGISTER REPORT

The year 1998

Month	1	2	3	4	5	6	7	8
Total suspects	120	94	109	217	120	157	139	145
Suspects had positive sputum smears	19	15	18	46	27	26	23	25
Registered suspects had positive sputum smears for treatment	19	17	19	31	28	20	21	22

The year 1999

Month	1	2	3	4	5	6	7	8
Total suspects	131	105	169	151	191	114	102	92
Suspects had positive sputum smears	18	18	34	20	26	17	18	19

The year 2000

Month	1	2	3	4	5	6	7	8
Total suspects	162	126	186	139	147	165	133	136
Suspects had positive sputum smears	28	17	26	24	21	18	16	13