Evaluation of the National Tuberculosis Control Program in Iligan City

MARIFE MOLINA-MAMAUAG
DELIA P. MAATA

Rationale of the Study

One of the health issues noted by the World Health Organization (WHO) is the resurgence of tuberculosis in many countries worldwide. Declared by WHO as a "global emergency", tuberculosis has been projected to claim over 30 million lives by the end of the decade, unless immediate action is taken to strengthen national tuberculosis programs (Health Alert, 1993).

In the Philippines alone, the disease continues to plague approximately 8 million Filipinos and causes death to 23,000 others every year or 63 Filipinos each day. In fact, the country's TB incidence ranks third worldwide with 280 infected persons per 100,000 population (WHO, 1995).

World health statistics show that its average morbidity of 369.7 and mortality rate of 81.7 in 1966-1970 declined to 290.2 and 50.2, respectively during the period 1986-1988. Despite this decline over the years, tuberculosis remains a formidable health problem, especially that it is faced with new emerging threats brought about by the spread of HIV/AIDS disease. There has been a link found between these two diseases partly because HIV/AIDS victims are vulnerable to TB infection once their immune system bogs down.

Moreover, poorly-managed and ineffectively conceptualized TB control programs have contributed to the emergence of drug-resistant tuberculosis

---

MARIFE M. MAMAUAG received her MS in Educational Measurement and Evaluation from De La Salle University in 1993 as a CEM-IEMES (Center for Educational Measurement-Institute of Educational Measurement, Evaluation and Statistics) scholar. She is currently a University Researcher at the Office of the Vice Chancellor for Research & Extension and Associate Lecturer at the College of Education, MSU-IIT.

DELIA P. MAATA is a holder of a master's degree in Public Administration from MSU-Marawi in 1997, and a Medical Technologist by profession. MAATA is currently the Chief of the Medical Laboratory of the Iligan City Health Office. MAMAUAG served as technical adviser in her masteral thesis which is the coverage of this paper.

Evaluation of the National Tuberculosis Control Program in Iligan City

MARIFE MOLINA-MAMAUAG
DELIA P. MAATA

Rationale of the Study

One of the health issues noted by the World Health Organization (WHO) is the resurgence of tuberculosis in many countries worldwide. Declared by WHO as a "global emergency", tuberculosis has been projected to claim over 30 million lives by the end of the decade, unless immediate action is taken to strengthen national tuberculosis programs (Health Alert, 1993).

In the Philippines alone, the disease continues to plague approximately 8 million Filipinos and causes death to 23,000 others every year or 63 Filipinos each day. In fact, the country's TB incidence ranks third worldwide with 280 infected persons per 100,000 population (WHO, 1995).

World health statistics show that its average morbidity of 369.7 and mortality rate of 81.7 in 1966-1970 declined to 290.2 and 50.2, respectively during the period 1986-1988. Despite this decline over the years, tuberculosis remains a formidable health problem, especially that it is faced with new emerging threats brought about by the spread of HIV/AIDS disease. There has been a link found between these two diseases partly because HIV/AIDS victims are vulnerable to TB infection once their immune system bogs down.

Moreover, poorly-managed and ineffectively conceptualized TB control programs have contributed to the emergence of drug-resistant tuberculosis

---

MARIFE M. MAMAUAG received her MS in Educational Measurement and Evaluation from De La Salle University in 1993 as a CEM-IEMES (Center for Educational Measurement-Institute of Educational Measurement, Evaluation and Statistics) scholar. She is currently a University Researcher at the Office of the Vice Chancellor for Research & Extension and Associate Lecturer at the College of Education, MSU-IIT.

DELIA P. MAATA is a holder of a master's degree in Public Administration from MSU-Marawi in 1997, and a Medical Technologist by profession. MAATA is currently the Chief of the Medical Laboratory of the Iligan City Health Office. MAMAUAG served as technical adviser in her masteral thesis which is the coverage of this paper.

strains. Drug resistance usually develops when patients do not take their anti-TB medicines regularly up to the end of the course of treatment. For the treatment to be successful, it requires 6-8 months of consistent, uninterrupted medication.

Several studies (Cordero, 1991; Ardales, 1992; Lacuesta, 1992; Sarmiento, et al, 1989) revealed that emphasis was put in case finding and little has been accomplished in terms of its other equally important component, which is treatment or case handling. Problems as to poor logistics and inadequate drug supplies as well as poor knowledge of TB and attitude toward health providers which consequently affected patients' health seeking behavior were reported, but due attention was never carried out effectively over the years.

In 1994, the national consolidated field reports showed that Region 12 accomplished 77.79% in its case finding target, and 77% efficiency rate and 93.36% efficacy rate in its treatment program. However, this sounds rather puzzling to many because of the sad fact that TB is still considered as the 4th leading cause of mortality as well as the 6th leading cause of morbidity in Iligan City (CHO, 1995).

Aggravating the problem is the reduction of DOH's budget allotment for the National Tuberculosis Control Program (NTP) from 206 million pesos in 1994 to 187 million in 1996. This sounds rather ironical — the alarming increase in number of drug-resistant TB cases implies that treatment may be difficult and, thus, rendered more expensive. Public policies of this sort may further lead the program to deteriorate, unless effective intervention will have been duly obtained.

Over time, there has been a felt need for evaluation studies on such government program as the NTP (and for other government health programs for that matter). Otherwise, strengthening government's administration's capability to serve the public through effective and efficient government would prove futile.

This evaluative study, therefore, was conceived with the hope of providing health policy makers and program managers with invaluable information which could serve as basis for formulation of future policies and plans related to the NTP. So far, this study is the first ever conducted in Iligan City, and perhaps in Region 12.

Review of Anti-Tuberculosis Efforts

Historically, the fight against TB in the country was pioneered by the Philippine Islands Anti-Tuberculosis Society, Inc. (now the Philippine Tuberculosis Society, Inc. or PTS) as early as July 1910.

In 1930, the Tuberculosis Commission was established and led the enactment

of the Tuberculosis Law in 1954. This law later became the legal basis of the National Tuberculosis Control Program or the NTP.

In 1968, the NTP was reformulated by integrating BCG vaccination, case finding by sputum microscopy among TB symptomatics and anti-tuberculosis treatment by domiciliary and/or ambulatory treatment into the regular activities of the Rural Health Units of the Department of Health.

In 1976, the basic immunization of children from birth to eight years old became mandatory. Thus, the conception of the Expanded Program of Immunization (EPI) which emphasizes BCG vaccination among children.

A year after the EPI was implemented, the National Institute of Tuberculosis (NIT) which was tasked to strengthen the NTP through training and research was created. This was jointly undertaken by the DOH, PTS, the World Health Organization (WHO), and the United Nations International Children Education Fund (UNICEF).

Later in 1978, the NTP works through a reorganized health care delivery system with rural units and barangay stations providing primary care. Those patients needing emergency care of higher levels of care were referred to specialized hospitals such as the Quezon Institute and TB pavilions of the PTS.

The NTP was strengthened in 1988 and since then refers to the nationwide anti-tuberculosis scheme, i.e., BCG vaccination, case finding (diagnosis) and treatment (chemotherapy) integrated into the community health structure and equipped to control tuberculosis in a systematic, sustained manner.

Generally, its long-term goal is to control tuberculosis in the community as soon as possible until such time it will no longer be a public health problem.

The NTP has the following specific objectives: a) to vaccinate with BCG the majority of the eligible population under the EPI schemes, schools and hospitals; b) to detect the maximum number of TB sputum positive cases by offering sputum examination to all tuberculosis symptomatics attending a health institution; and c) to treat effectively detected cases.

To be able to achieve these objectives, the following strategies were formulated a) fully integrating the basic tuberculosis control measures such as BCG, case finding and treatment with the government's basic medical health services and other Non-Government Organizations (NGOs) utilizing the primary health care approach; b) making operational a bilateral referral system; c) making more intensive use of information education and communication activities; d) standardizing recording and reporting with a built-in monitoring and evaluating system; e) supervising the program regularly; f) adopting Short Course Chemotherapy (SCC) regimen (HRZ) for six months for all sputum-positive and cavitary patients; and g) providing adequate logistical support and making available drugs and reagents.

Objectives of the Study

The study generally aimed to evaluate the overall implementation of the National Tuberculosis Control Program (NTP) in Iligan City. It further assessed the effectiveness of the program in relation to its strategies and objectives. It attempted to answer the following questions: a) What are the disease control strategies used by its program implementors in carrying out the NTP?; b) What are the capabilities of its program implementors in carrying out the program in terms of educational attainment, technical knowledge of TB, seminars/trainings attended, length of work experience, and attitudes toward the NTP?; c) What are the problems encountered in the implementation of the NTP as perceived by its program implementors and TB patients?; d) What are the solutions suggested in solving the problems?; and e) How effective is the implementation of the program in terms of its program services; and program outcome?

Evaluation Model/Conceptual Framework

This study adapted Daniel L. Stufflebeam's (1973) evaluation model, otherwise known as CIPP model, i.e., Context-Input-Process-Product model. This systems approach evaluation model attempts to obtain as much information useful for decision-making in improving programs.

The CIPP model presents four types of decisions. *Context* evaluation serves planning decisions to determine program objectives; *Input* evaluation serves structuring decisions to determine program design; *Process* evaluation serves implementing decisions to control program operations; and *Product* evaluation serves recycling decisions that judge and react to program attainments (Worthen & Sanders, 1974).

Inasmuch as the objectives of the NTP have already been clearly defined even from the start of the program inplementation, *Context* evaluation was omitted in this study. Only Input-Process-Product evaluation was employed.

The conceptual framework based on Stufflebeam's model is drawn in Figure 1. *Input* evaluation attempted to identify and assess the strategies used by program implementors and their capabilities in terms of educational attainment, technical knowledge about TB, seminars/trainings attended, length of work experience, and general attitude toward the NTP.

Process evaluation identified the problems encountered in the implementation of the NTP as perceived by the program implementors as well as

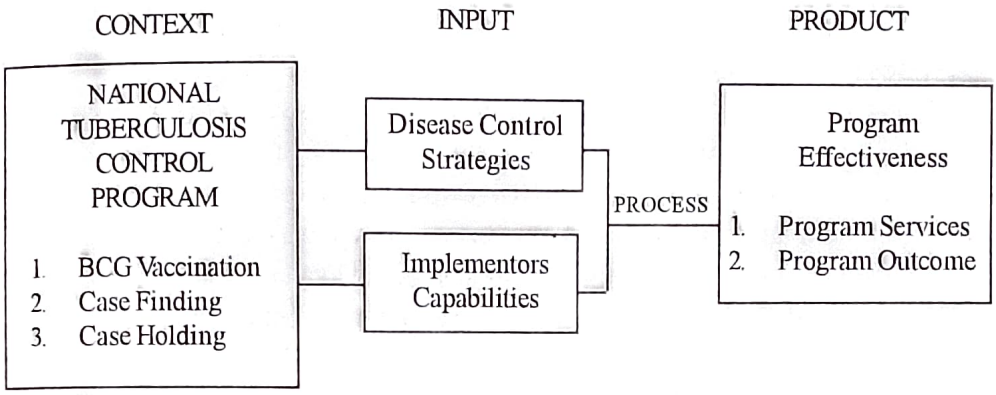

Figure 1. *Conceptual Framework*
Adopted from the Evaluation Model designed by Daniel Stufflebeam, 1973

TB patients themselves. Moreover, suggested solutions to the problems cited were likewise made.

Product evaluation attempted to relate outcome information to program objectives and to input and process information. It specifically assessed the effectivesness of the program relative to its strategies and objectives earlier defined.

Program effectiveness in this context is evaluated in two levels, namely: a) program services, and b) program outcome. As indicated in arrows, these factors may lead to important information in the form of feedback or evaluation information that may be crucial to decision-makers in improving the NTP.

Methods

The study employed descriptive research design, specifically the survey method. Two groups of respondents were utilized, namely: program implementors and program clients/TB symptomatics and patients. Using purposive sampling, 35 (including 10 key implementors) out of 100 implementors were selected to compose the first group. On the other hand, a total of 148 out of 4,227 TB symptomatics and patients were randomly selected to compose the second group, using a sampling frame which was based on the CHO records of cases/patients as of 1995.

A structured questionnaire was utilized as the data gathering instrument. Two forms were used; one for the program implementors, and another one designed for the program clients/TB patients. A follow-up interview was done to validate responses to the questionnaire, especially those questionable ones.

A test named as "TB Knowledge Test" was constructed to measure the extent by which program implementors know about the technical aspects of TB. This 20-item, multiple-choice test (with five options) was pre-tested and validated as to its content and consistency of responses before it was finally administered.

To validate further all other responses obtained in all the three instruments, another data gathering tool called "NTP Observation Checklist" was used. Items included in this instrument were extracted from the 1988 NTP Manual.

NTP records and reports in all levels of program implementation serve as other sources of data. A content analysis of these documents supplemented the data gathered through the observation checklist and other data sources. Frequency counts and percentages were used to analyze the data collected.

Although the NTP started as early as 1910, this evaluation study was limited to the period covering 1988-1995, since the time when the NTP was strengthened and implemented in Iligan City.

Salient Findings of the Study

Disease Control Strategies

Of the seven identified program strategies in the NTP, only two strategies, namely: "fully integrating the basic tuberculosis control measures such as BCG, case finding and treatment with the government's basic medical health services and other non-governmental organizations utilizing the primary health care approach" and "adopting Short Course Chemotherapy (SCC) regimen (HRZ) for six months for all aputum-positive and caviatry patients" are most often used by the program implementors (33 or 94.2% and 31 or 93% of the respondents, respectively).

To carry out effectively these strategies, program implementors used various management approaches. Most commonly used approach is the imposition of monthly quota to barangay health workers for casefinding. 22 out of the 35 implementors (62.8%) usually utilize such approach for them to be able to accomplish program targets.

Capabilities of NTP Implementors

In terms of educational attainment, 16 or 45% of the NTP implementors are

degree holders while more than half of them are non-degree holders. Around 6 or 17% of them are master's degree holders while 5 or 14% are only high school graduates.

With regard to their technical knowledge about TB, majority of them (21 or 60%) have at least "average" achievement as shown in their scores obtained in the "TB KNowledge Test". Only 6 or 17% of them are considered to have obtained "below average" scores in the test.

However, surprisingly these implementors lack adequate formal training in NTP procedures. Slightly more than half of them (18 or 51%) received formal training for only 8 to 40 hours, practically for only 1 to 5 days of attendance in seminars and training programs.

In terms of work experience, 27 or 77% of them have been working in the City Health Office for at least 10 years; three of whom have been working for the past 34 to 36 years.

Generally, NTP implementors have favorable attitude towards the NTP.

Problems Encountered in the Implementation of the NTP As Perceived by Program Implementors

Majority of the program implementors (24 or 68.6%) have identified "negative attitude toward TB symptomatics and patients" as the leading problem in the implementation of the NTP.

This social stigma which has long been lingering on makes them unable to do, for instance, sputum collection properly. This problem likewise renders case holding and treatment difficult and ineffective.

Consequently, they tend to give low priority to NTP activities among other health programs assigned to them. It must be noted that the NTP is only one among the other 20 programs currently implemented by the City Health Office.

Another top ranking problem perceived by implementors (21 or 60%) is "lack of knowledge about TB. Although most of them have at least average scores in the given "TB Knowledge Test", not all of them fully understood what tuberculosis is really meant. Ironically, these implementors are mostly graduates of medical and allied courses, hence, supposed to be adequately prepared to do their jobs.

This problem consequently hampers them from motivating effectively TB symptomatics and patients to avail of the various NTP activities as well as benefits. Primarily due to lack of ample knowledge and awareness about TB, any doubts that may be raised by TB patients, for instance, cannot easily be cleared out bt health workers.

Other problems include inadequate facilities, lack of coordination among other implementors, and poor evaluation, monitoring and supervision. Also, there

has been observed a lack of properly and accurately maintained NTP records and reports apparently indicate that the program implementors are quite lax in monitoring and evaluating NTP activities.

For instance, a very basic record or form which is the ID card or passport for TB patients has never been implemented as provided for in the standards set in the NTP Manual.

Problem Encountered in the Implementation of the NTP As Perceived by TB Symptomatics and Patients

Majority of the respondents (104 or 70%) commonly feel the lack of knowledge about TB, in general, and NTP, in particular.

Consequently, TB symptomatics and patients do not immediately consult at the health center or any health institution, rendering them unaware of the available services for TB control as well as immediate action when symptoms occur.

Inasmuch as most of the patients belong to the low income group, oftentimes they do not immediately consult the physician for fear that they may not afford to pay consultation fees and medicines.

Poor health-seeking habits such as self-medication, failure to take any action whatsoever, and consulting the "mang-hihilot" or "albulario" instead of the doctor also aggravate the problem of TB control.

Like the program implementors, the TB symptomatics and patients also doubt the efficacy of the anti-TB drugs mainly because of lack of knowledge and awareness about it. Coupled with the social stigma of the disease, TB symptomatics seem reluctant to be subjected to sputum examination.

In some instances, patients believe more on x-ray examination rather than on sputum microscopy as a case-finding tool, whose cost they may not afford which in turn discourages them from being examined and treated.

Non-availability of anti-TB drugs in the health centers is another alarming problem in TB control in Iligan City. Worst, even when they are available, there is difficulty in getting them fast, as experienced by 37 or 75% of the patients interviewed especially those residing in far-flung areas.

Delays in the release of sputum examination due to distance between collection site and microscopy center also hampers adequate delivery of NTP services.

Possible Solutions Cited

NTP implementors made suggestions as to the possible solutions to the prob-

lems earlier cited. Although the program clients, i.e., the TB symptomatics and patients, were asked to make suggestions, there were no substantial answers which could be worth mentioning here. Apparently because of their low educational background, the clients were more vent on giving more complaints and apprehensions instead of suggestions.

Strengthening the information campaign about TB and NTP is the most common suggestion by implementors. While it is true that information materials have already been distributed even at the barangay level, there is still a need to follow-up and update these materials to be able to increase awareness among the target program clients.

The implementors also suggested to train health workers at the barangay level. Considering that the immediate implementing arm of the program is the barangay health unit, more training designed for Barangay Health Workers (BHWs) must be conducted in order to maintain a pool of competent personnel.

Program Effectiveness

Program Services

In terms of coverage in the BCG vaccination, the Iligan City Health Office accomplished more than what has been targetted from 1988 to 1995, except during the years 1993 and 1994 when BCG vaccines were unavailable.

However, some implementors have observed that some services in the BCG component of the NTP were not adequately delivered based on the standard procedures set in the NTP Manual. According to them, ampules of dry vaccine are sometimes kept safe in bottles, instead of dark paper or cloth as prescribed in the manual.

Others also observed that the quality of BCG vaccination used at the time of vaccination is not oftentimes checked by post-vaccination tuberculin tests, because in the first place, there are no tuberculin tests available.

Over the past years that the NTP was implemented in Iligan City, TB case finding component has posted an accomplishment of at least 45% of the targets, and has been steadily increasing since 1988.

In so far as case holding or treatment component is concerned, only 35% to 77% of the targets have been accomplished since 1988.

Program Outcome

Its accomplishment in maintaining low TB morbidity and mortality rates has not been consistently acheived over the past years.

Table 1. Annual TB Morbidity Rates and Mortality Rates in Iligan City, 1988-1995.

Iligan City	1988	1989	1990	1991	1992	1993	1994	1995
Total Population	194,290	224,633	227,109	233,429	240,706	247,950	255,996	263,696
No. of Cases	560	420	375	301	540	470	479	638
A. Morbidity Rate	288	181	165	129	224	190	187	242
No. of Deaths	102	108	101	110	120	104	98	85
B. Mortality Rate	52	48	44	47	50	42	38	32

Table 1 reveals that TB morbidity rates in Iligan City continued to decrease from 288 in 1988 to 129 in 1991. However, there was a big margin by 43% in 1992 compared to its level in 1991. It further decreased in 1993 until 1994, but later increased by 22% in 1995.

As also revealed in Table 1, TB mortality rate in Iligan City has been decreasing from 52 in 1988 to 44 in 1990. There were slight increases seen in 1991 and 1992, but decreases later were felt in the subsequent years.

Intriguingly, during the same period starting in 1991, the number of TB cases that completed treatment increased from 47% in 1991 to 73% in 1994. In 1995, however, it deteriorated down to only 41% — the level of accomplishment that was seen earlier in 1988.

These inconsistencies rather imply that improvement in program services may not necessarily lead to improvement in program outcome, not until all TB cases are completely cured.

Even if the number of TB cases completely cured will continue to rise over the next few years, but the number of new cases resulting from the transmission of the disease from uncured infectious patients has not been consistently put in a controllable level, program effectiveness cannot be readily sustained.

Concluding Statements

Program Input

The NTP is fortunate enough to have on hand clearly defined strategies as well as management approaches to carry out the program effectively in accordance with the standard technical and operational procedures. Unfortunately, however, its manpower capabilities are not adequate to support in carrying out these program strategies effectively.

Program Process

The disease control strategies have an indirect impact on program effectiveness. However, these strategies are mandated by management approaches that are carried out by its program implementors. Consequently, the NTP has continually been beset with both administrative and social problems over the past years, primarily because these strategies and approaches in the process of implementation have somehow fallen short of the expectations and standards of the program.

A leading adminsitrative problem in the NTP is lack of knowledge and awareness about the disease and the available TB control services among the program clients, and ironically also among its implementors. Another management approach that needs attention is the imposition of quota for the periodic outputs by NTP implementors, be it in the case finding or case holding activity. While this imposition may compel the health workers to intensify their TB control activities, this approach may not be totally effective. Quotas that are beyond their capability may result in deterioration of the quality of their outputs, especially if supervision and monitoring is not closely conducted.

Ideally, program implementors can monitor and assess the process of implementing the program even if they cannot conduct frequent supervisory visits to the lower levels, as long as periodic reports are accurately and properly done. But the bulk of paperwork that implementors in various levels have to accomplish using standardized forms, may consume much of their time and effort, hence derailing them from devoting more time to actual delivery of services, so much so if basic office supplies like mimeographed NTP forms are not even available.

The social stigma of the disease coupled with the problem of poverty aggravates the situation. Not unless the standard of living of the poor is uplifted, the expectation of letting them acquire decent housing facilities and maintain good nutrition and general well-being will be found nowhere.

Program Product

The combined effects of all the aforementioned problems that may be both external and internal to the NTP indicate that the program could have had a much remarkable impact if greater attention was placed on the quality of management support to field facilities and to service delivery than to service coverage.

Emphasis was put on case finding, consequently neglecting its case holding component of the program. While it cannot be denied that many cases were found and reported, not all of them received the treatment due them. The efforts of program implementors were so thinly spread out to different aspects of public health concerns, consequently leaving the labor-intensive task of closely monitoring TB patients for at least 6 months poorly accomplished.

Generally, the NTP in Iligan City has not been effective in achieving its long-term objective which is to control tuberculosis in the community as soon as possible until such time it will no longer be a public health problem.

While the program has accomplished beyond expected targets in its first 2 components, namely BCG vaccination and case finding, it failed to monitor closely the case holding/treatment component. It must be noted that unless TB patients are completely cured with the disease, TB control efforts will continue to become a public health menace.

Lastly, it has been shown in this study that feedback through formal evaluation, whether it be positive or negative, is a helpful tool, indeed, in threshing out both strengths and weaknesses of a certain program such as the NTP. This study, therefore, hopefully serves as a springboard for government to exert more effort in improving the NTP, for it to achieve its ultimate goal.

Recommendations

In the light of the findings and conclusions of the study, the following recommendations are drawn for future action:

1. Strengthen information campaign about the NTP. Lack of knowledge and awareness of the disease and its control measures postpones and deteriorates the cure of TB. Some important information on TB control measures regarding the necessity of complete rest, observance of cleanliness as to personal hygiene and backyard and house premises, health and nutrition, and avoidance of excessive vices such as smoking and drinking must be emphasized.

2. Seek the active assistance from health NGOs and POs in fighting against TB. It has been seen that health workers in Iligan City are faced with assignments in other health programs besides the NTP, hence, tend to give least prioirity to TB control activities, aside from the grim reality that they, themselves, are faced with the social stigma of the disease. It is, therefore, imperative to tap the assistance from external organizations for the program to work out effectively.

3. Conduct yearly performance review or evaluation of the NTP in order that problems could be discussed and given due attention.

4. Attempt to adopt WHO's recommended innovative strategy to eliminate TB as a public health threat, i.e., the "Directly Observed Treat-

ment, Short-Course" or dubbed as DOTS. In this strategy, health workers must watch their patients swallow each dose of medicines, to ensure that the six-month treatment is religiously taken.

5. Hire additional NTP microscopists and more NTP Coordinators to closely supervise and monitor TB control activities, especially at the barangay level.

6. Ask the local government to pour in more funds for the program to support adequate supply of anti-TB drugs, laboratory facilities and reagents, and higher remuneration and monetary incentives to health workers.

7. Implement the holding of a monthly "catchment area conference", primarily to assess the performance of health programs in various implementing levels. This monthly activity could be an effective venue for motivating program implementors to continuously and substantially improve their performance not only in TB control but in all public health programs. However, the success of this activity depends largely upon how it is conducted and how well admonistrators respond to the emerging problems as presenetd by those in the lower implementing levels.

8. Continually yield new, but more effective disease control strategies, gather additional resources and develop organizational systems that will nurture the participation of different sectors of society. If changes are to be enforced to enable the program to work effectively, then there is a need for a political will from government to face the fact that the NTP will have to break away from the status quo.

9. Conduct further studies on the following topics:

   9.1 epidiomology/endemicity of TB;
   9.2 cohort analysis of TB treatment cases;
   9.3 social survey about TB patients and their health-seeking behavior;
   9.4 KAP (Knowledge-Attitude-Perception) of the TB patients using the social-behavioral approach;
   9.5 TB drug-resistant cases in relation to HIV-AIDS disease; and
   9.6 trend analysis of the TB prevalence, morbidity and mortality.

Selected References

Alarm Raised vs. Drug-Resistant TB. *Philippine Daily Inquirer*, January 5, 1995, p.2.

Ardales, V. B. (1992). An Evaluation of the NTP in Western Visayas. *Health Research Network*, vol. 2, No. 3.

Cordero, R. R. (1992). The NTP: A Case Study in Program Administration. *Health Research Network*, vol. 1, no.3.

Devolution Hampers Health Care Delivery. *Health Alert*, no. 157, May 1-15, 1994. Quezon City: HAIN.

DOH Alarmed Over Drug-Resistant TB. *Health Alert*, October 1-15, 1994. Quezon City: HAIN.

DOH Launches Campaign Against TB (and at the Name Game Continues). *Health Alert*, no. 143, July 1993. Quezon City: HAIN.

Focus on Tuberculosis. *Health Alert*, no.145, September 1993, Quezon City: HAIN.

Health Statistical are Accurate. *Health Alert*, no. 118, June 1991. Quezon City: HAIN.

Tuberculosis Control Services, Office for Public Health Services, DOH, Manila. *Killing Silence*. 1994 Report on the National Tuberculosis Control Program.

Lacuesta, M. C. Viacrusis, M. & Ozoa, M. C. (1993). Health-Seeking Behavior of PTB Symptomatics. *Tambara*, vol. 10.Davao City: Ateneo de Davao University.

Ministry of Health, Manila. *1988 Manual on National Tuberculosis Control Program.*

QI Controversy. *Health Alert*, no. 134, October 1992. Quezon City: HAIN.

Sarmiento, A. G. , et al. 1989. *Operational Assessment of the Case Finding and Treatment Aspects of the Strengthened National Tubreculosis Control Program.* Quezon City: National Institute of Tuberculosis.

WHO. 1995. *Stop TB at the Source.* WHO Report on the Tuberculosis Epidemic.

Tan, M. L. (1991). Health and Development in the Philippines. *Health Alert*, no. 120. Quezon City: HAIN.

Tuberculosis A Global Emergency. *Health Alert*, no. 142, June 1993. Quezon City: HAIN.

WHO Forsees a New Case of TB Every Second. *Philippine Daily Inquirer*, March 22, 1995, p. 29.

WHO Resolutions of Health Issues. *Health Alert*, no. 138, February 1993. Quezon City: HAIN.

World Development Report. 1993. Differing Views. *Health Alert*, no. 147, November 1993.