UNIT COST ANALYSIS OF A PRIMARY CARE UNIT IN THAILAND FISCAL YEAR 2004 A CASE STUDY OF BAN MAI, AYUTTHAYA PROVINCE

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UNIT COST ANALYSIS OF A PRIMARY CARE UNIT IN THAILAND, FISCAL YEAR 2004, A CASE STUDY OF BAN MAI, AYUTTHAYA PROVINCE

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ABSTRACT

A cross-sectional study to analyze the unit cost of OPD service and community services in Ban Mai PCU on Fiscal Year 2004 was conducted. Capital and operating costs were calculated to get total cost. Utilization of cost in OPD service was divided by number of activities in OPD service which was the unit cost of OPD service. Utilization of cost in community services comprise of 7 sub-activities: ANC/PNC, well child/baby clinic, immunization, school health, screening test for high risk group, health education and family planning divided by total of number activities in community services, included in the 7 sub-activities was the unit cost of community services and sub-activities.

Total cost in Ban Mai PCU on Fiscal Year 2004 was 1,742,696.818 baht equal to US$ 44,513.328, which the capital cost was 23.62% and operating cost was 76.38%.

Unit cost of OPD service was 89.898 baht equal to US$ 2.29 per activity and unit cost of community services was 106.709 baht equal to US$ 2.72 per activity, of which OPD service was 45% and community services was 55%.

Unit cost of sub activities in community services were 102.285 baht equal to US$ 2.61 per activity in ANC/PNC, 104.614 baht equal to US$ 2.67 per activity in well child/baby clinic, 104.614 baht equal to US$ 2.67 per activity in immunization, 106.533 baht equal to US$ 2.72 per activity in school health, 105.334 baht equal to US$ 2.69 per activity in screening test for high risk group, 106.599 baht equal to US$ 2.72 per activity in health education and 105.863 baht equal to US$ 2.70 per activity in family planning.

Results of this study showed that the unit cost of community services was more than OPD service. The results were expected due to first goal of the “New Health Insurance Policy in Thailand” which emphasizes ‘health promotion and prevention’. In addition, community service activities, well-trained health personals and strengthening of village health volunteer’s should be focused. This result may have potential for planning and management at primary care level.

KEY WORDS : PRIMARY CARE UNIT / UNIT COST

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LIST OF ABBREVIATIONS

ANC	: Ante Natal Care
CPHCC's	: Community Primary Health Care Center's
CSMBS	: Civil Servant's Medical Benefit Scheme
CUP	: Contracting Unit for Primary Care
EAC	: Equivalent Annual Cost
FP	: Family Planning
GDP	: Gross Domestic Product
HC	: Health Center
HE	: Health Education
HFA	: Health for All
HIV	: Human Immuno Viral
Immu	: Immunization
LICS	: Low Income Card Scheme
MOF	: Ministry of Finance
MOPH	: Ministry of Public Health
MOSLW	: Ministry of Labor and Social Welfare
OPD	: Out Patient Department
PCU	: Primary Care Unit
PHC	: Primary Health Care
PNC	: Post Natal Care
SH	: School Health
SSS	: Social Security Scheme
STHRG	: Screening Test for High Risk Group
UC	: Universal Coverage
VHV's	: Village Health Volunteer's
VHCS	: Voluntary Health Card Scheme
WC/BC	: Well Child/Baby Clinic
WCS	: Workman's Compensation Scheme
WHO	: World Health Organization

CHAPTER 1
INTRODUCTION

1.1 Rational and justification

Worldwide, expenditure on health systems is growing rapidly with an estimated three trillion dollars spent in the late 1990s; nearly half of it in the western hemisphere. In a wide range of countries, health care is provided by a complex and shifting combination of government and private sector entities (1).

For the most countries in Europe, the expenditure of health is very high. Germany and France have the highest expenditure on health in Europe. In 1995, Germany spent 10.4 per cent gross domestic product (GDP) and France 9.8 per cent. They were second only to the US, which spent 14.2 percent of GDP in 1995 (2).

Thailand is a developing country that spends 5-7% of its annual budget on improving the health services for the communities, especially at the rural outlets where 80% of the people are residing. The Thai Government took a number of steps to improve health status of the people in rural areas, during the 4th to the 8th National Health Development Plan (1997 – 2001) of the Ministry of Public Health. Some strategies are used to improve the health status of the Thai population in the rural areas, composed of :

- expansion of health care facilities,
- development of health centers,
- improving knowledge and skills of the health staff,
- increasing number of health staff,
- improving of the administrative activities of the health center (3, 4).

Primary care to reach the goals of Health for all by the year 2000 must be implemented cost-effectively, given the severe constraints facing the health sector in many developing countries. A key requirement is the knowledge about the resources

being used for primary health care, and about the results that are yielded. Although much of the information necessary for simple analysis of inputs and performance is already available, it is seldom in an appropriate form to contribute the decision making (5, 6).

Some of these misunderstanding were represented incompletely and other erroneous. The views of the basic tenets of primary health care are as follow:

1. Primary health care is only community-based health care.
2. Primary health care is the first level of contact of individuals and communities with the health system.
3. Primary health care is only for poor people in developing countries, who cannot afford real doctors.
4. Primary health care is a core set of health services, often referred to as the eight (or nine or ten…) essential elements of primary health care.
5. Primary health care is only concerned with rural areas, simple, “low technology” interventions and health workers with limited knowledge and training and is opposed to doctors, hospitals and modern technology.
6. Primary health care is cheap. The result is often promoted as a relative inexpensive way to develop a health system, particularly among the poorer countries. Given the lessons of the intervening years, the word “cheap” no longer applies (6).

Banchuin C (7) was expressed in the “New Health Insurance Policy in Thailand” and The Ministry of Public Health has set goals to improvement in 2003:

1. Emphasize more on “Health promotion and prevention”,
2. Improve services quality,
3. Improve the financial allocation and payment mechanism,
4. Improve personnel allocation to the areas of needs,
5. Improve the management quality to decrease conflict,
6. Improve personnel satisfaction.

Primary Care Unit (PCU) in Thailand serves as a referral unit at the primary level of the primary health care delivery system. Likewise, it provides support to villages for the development and strengthening of its Primary Health Care (PHC) program, which is one of the goals for improvement in 2003. The government approved the budget for health in 2003 at 1,308.50 baht per registered person for each hospital that the Ministry of Public Health had proposed a budget. The budget is delivered to primary care level through the Provincial Health Office and the Contracting Unit for Primary Care (CUP) (8). The capitation budget is originally allocated to the PCU via the CUP.

Like a health center, Primary Care Unit (PCU) is the places where treatment for minor ailments is provided. These centers act as a first line contact between health care system and communities. Health care services at the rural areas demand active participation of the people and this is possible only if people are assured in the quantity, quality, and continuity of the services. In Thailand, Primary Care Unit covered the area of at least 10,000 people. Generally, most of health staff at the Primary Care Unit consists of an auxiliary, a midwife, and a sanitarian, which is not enough. This Primary Care Unit (PCU) is to provide primary health care services to the rural population of Thailand, where accentuate for 80% of the Thai population (8, 9, 10). However, apparent in the fact that only 10 percent of total health sector expenditure (public and private) is used to finance preventive services (11).

Most of the public expenditure on health constitutes the operating costs of health care facilities (salaries and drugs, capital investment, especially for sophisticated equipment). The increase in health expenditure is generated by the health care providers rather than by the demand from health care seekers. However, expenditures are distributed among the different financing entities and provider health care is one way of gauging the overall role of each in the health system. It could also contribute to developing reform strategies. Detailed financial accounting and allocation of expenditures to different types of providers and the production factors give valuable inputs to economic planning and to the analysis of economic efficiency, which are key

focuses of policy making (1). The cost analysis could be used to solve these problems for effective planning and monitoring of health services programs.

Some of usefulness of cost analysis:

1. Monitoring and evaluation of health care program by comparing expenditures and revenues for making necessary adjustments whether the expenditures are under control and that revenues are coming as planed.
2. Identifying areas of potential savings health service costs while maintain the same quality.
3. Making projections of future costs and to estimating what it would cost to replicate a program in another area/or to sustain/ expand the program.
4. Assessing equity in using health care services among who need (using unit cost at different facilities/geographical).
5. Setting priorities of health care programs, especially vertical programs.
6. Accountability of the health services and health employees.

In Health Economic Evaluation, usefulness of cost analysis are:

1. To estimate the future cost.
2. To use in planning for effective health services
3. To support / use as guideline information to predict trend of health service provision in the future.
4. To evaluate effectiveness / efficiency of health services.

Calculating of the cost can be classified as:

1. Classification by Inputs

This type of classification of costs is useful and widely applicable. It groups inputs into categories in which the elements have recognizably similar characteristics, for example vehicles, personal and supplies. If it is properly used, this scheme has many merits, including the following:

- It involves a manageable number of categories and these categories are general enough to be applied to any health program.

- It distinguishes two important categories of resources, those that are used up in the course of a year and are usually purchased regularly (i.e. recurrent costs) and those that last longer than one year, such as buildings, vehicles and equipment (i.e. capital costs).
- It focuses attention on the operating (recurrent) costs of investments in vehicles, equipment and buildings by making these into distinct categories.

2. Classification by Function / activity

The first of the secondary classifications involves the kinds of activity or function for which the resources are used. For example, maternal and child health programme, encompasses a wide range of activities, such as tetanus toxoid vaccinations for pregnant women, prenatal care, supervision of deliveries, immunization and weighing of children. For each of these activities, groups of physical inputs are required. For example, infant weighing requires personnel to do the weighing and record the results, scales, tables, charts, building space and possibly vehicles.

3. Classification by Level

Another way of dividing up resources is according to the level at which they are used. For most health programmes there is an obvious hierarchy of operations. For example a national programme, some resources are used at the central or national level while others are used at the provincial, regional or district level.

4. Classification by source

This is classification according to the source (provider) of the resources.

5. Classification by currency

Closely associated with the source of the resources is the type of currency required to purchase those resources (5)

This study will collect and analyze data on unit cost of major health services activities in Primary Care Unit (PCU) at the Ban Mai, Ayyuthaya Province on Fiscal Year 2004 based on the classification by Inputs.

The results of this study provided considerable useful information of primary health care on the Primary Care Unit (PCU) such as inputs, outputs, condition of capital goods, distribution of budget among the items of operational cost in addition to indicate the amount of sources used to provide health service activities at PCU Baan Mai as considerable to calculating cost next fiscal year and also an input to the Provincial Health Office and the Contracting Unit for Primary Care (CUP) to planning the budget allocation in the PCU.

1.2 Research question

1. What is the total cost in Ban Mai PCU, Ayutthaya Province, on Fiscal Year 2004?
2. What is distribution of the capital cost and operating cost among OPD service and Community services?
3. What is distribution of the capital cost and operating cost among 7 main activities in Community services that is ANC/PNC, Well child/baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning?

1.3 Research objective

1.3.1 General objective

To analyze the unit cost on the Primary Care Unit (PCU) Baan Mai, Ayutthaya Province, Thailand during Fiscal Year 2004 based on classification by Input.

1.3.2 Specific objective

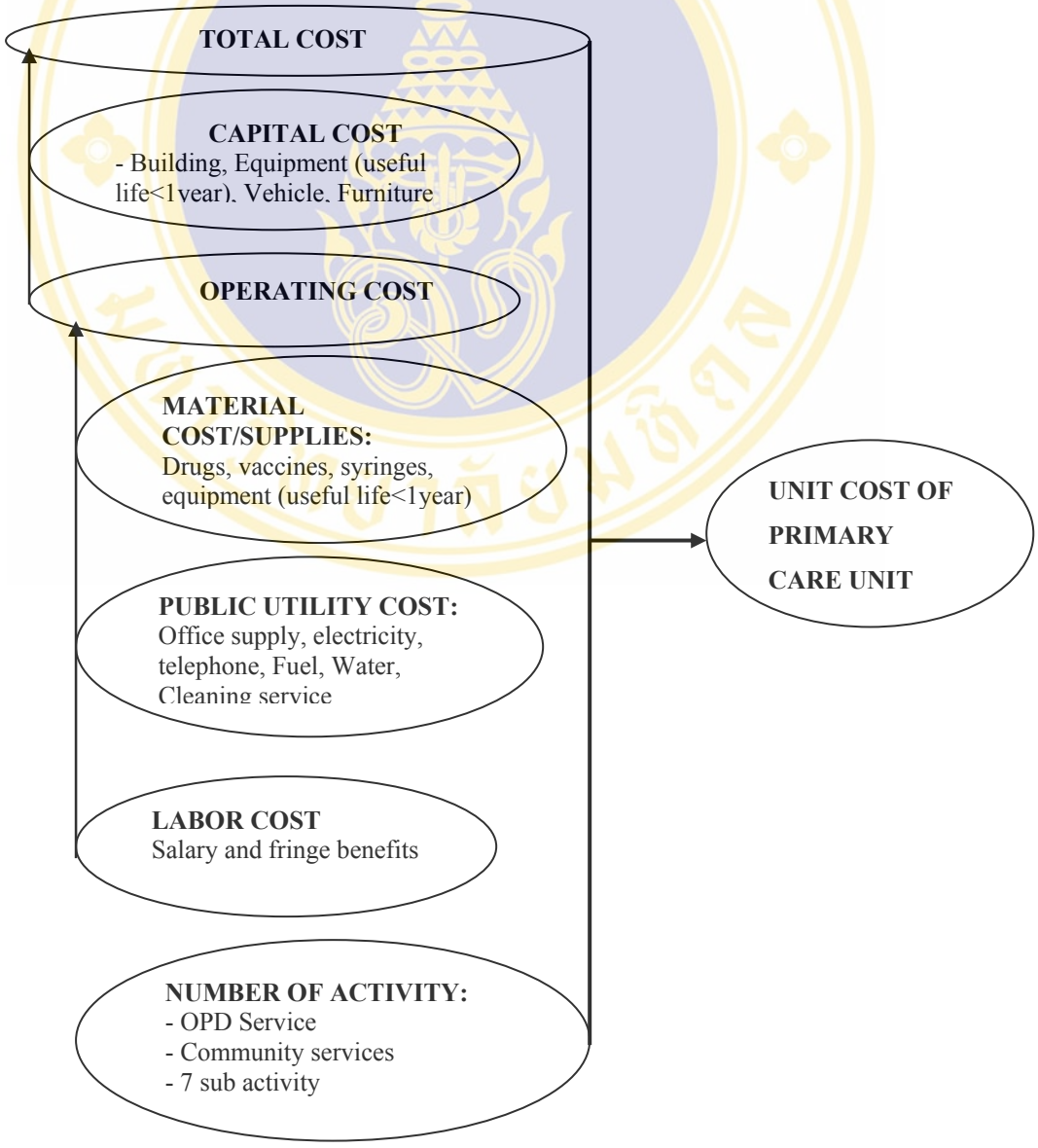
- To calculate capital cost composed of building, equipment, furniture and vehicle cost of Baan Mai PCU.

- To calculate operating cost composed of labor cost, material cost and public utility cost of Baan Mai PCU.

- To estimate the total cost of Baan Mai PCU

- To estimate the unit cost of Primary Care Unit at Ban Mai, Ayyuthaya Province, the unit cost of OPD service and the unit cost of community service particularly to 7 main activities that are ANC/PNC, Well child/baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning on Fiscal Year 2004.

1.4 Conceptual framework



1.5 Operational definition

Costs represent the resources given to a particular situation in order to carry out an activity (12). In this study actual expenditure of Baan Mai PCU during the fiscal year 2004 are used to calculate all of the cost classified by items as following details:

1.5.1 Total cost

Total cost is cost of producing a particular quantity of output. It is the sum of capital cost and operating cost

Total cost = capital cost + operating cost

1.5.2 Capital cost

Capital cost is the costs to purchase the major capital assets required by the program, they represent investments at a single point in time, often at the beginning of the program. Frequently, the capital cost is often not listed in the accounts or budgets because they have funded in advance, perhaps by a one-time grant. Sometimes, the annual budgets and accounts contain an item called depreciation which relates to capital costs and used over time. It is the any thing with a life span of more than one year or price more than US$ 100 is a capital good and its cost is known as capital cost. The capital cost consisted of building, equipment, furniture, and vehicle (5, 12).

1.5.3 Operating cost

Operating cost was represents of the annual sums of labor cost, public utility cost, and material cost.

Operating cost = Labor cost + Public utility cost + Materials cost

a. Labor cost

The total salaries including of all fringe benefits such as house rent allowance, medical allowance for health personal and health family services.

b. Materials cost

It is the cost to run any activity during the year which may be in the form of drugs, vaccine, syringe, equipment (all equipments with useful life one year or less than one year) and other materials.

c. Public utility cost (operating of building and office)

Costs of items that are purchased and used (or replaced) within a period of one year or less, such as water supply, electricity, telephone, fuel, office supplies, maintenance and repairing and cleaning service.

d. OPD service

It is curative activity

e. Community service

It is activity where emphasize to prevention, promotion and rehabilitation involve 7 sub activities such as ANC/PNC, Well child / baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning.

f. Sub activity in community service

- ANC/PNC

  It is health services to pregnant woman and post delivery

- Well child/baby clinic

  It is health services to child/baby before immunization and general of health examination.

- Immunization

  It is vaccination service to baby in target group according to procedure consist of DPT, OPV, HB, JE, Measles.

- School health

  It is health service to student on the basic school involve general health examination, dental health, health information, DT immunization to target group.

- Screening test for high risk group

  It is activity to detection of diseases in high risk group population such as hypertension, diabetes mellitus, breast cancer and Pap smear.

- Health education

  It is health information in the PCU to OPD visitor.

- Family planning

  It is consultation and contraceptive pill/tool service.

- Number of activity/outputs in OPD service

  It is number of activity in OPD service

- Number of activity/outputs in community service

  It is total number of activity in community service involve 7 sub activity

g. Equivalent Annual Cost (EAC)

It is used to calculate the annual cost of capital goods. Present market prices of the goods are divided by the annuity factor according to life span of the goods. For discount rate was currently estimated that 3 % would be the most appropriate real (risk) discount rate for economic evaluations (5,12).

To found the annual cost, calculation of capital goods following the formula:

E = K / [Annuity factor, n period, interest r]

E = Annual cost
K = Present cost of capital goods
n = Useful life years
r = Discount rate

Present market price or current value is the amount that you would have to pay to purchase a similar item (capital item) now (i.e. the replacement value rather than the original price).

Useful life years or working life is time limit to use the capital goods.

Annuity factor or annualization factor depends on useful life (n) and discount rate (r). It is consult a standard table (5, 12).

1.5.4 Unit cost

a. Unit cost of OPD service

It is the total cost of OPD service divided by number of activity in OPD service.

b. Unit cost of community service

It is the total cost of Community services divided by number of activity in Community services.

c. Unit cost of sub activity

It is the total cost of ANC/PNC, Well child/baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning divided by number of activity of the sub activity itself.

1.6 Scope

This study will analyze the unit cost of the OPD service and unit cost of the Community services particularly on the 7 main activities such as ANC/PNC, Well child / baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning in Primary Care Unit (PCU) at Ban Mai, Ayutthaya Province, Thailand. Collected information on the main activities is only for the fiscal year 2004.

1.7 Assumptions of study

The assumptions of the study are as follows:

a. Cost of the land.

The cost of the land was not included in this study because it is a government property and the land was non-depreciable asset because it maintains its value (12).

b. Calculation of the material cost / supplies.

Calculation of the material cost / supplies was limited into list of expenditure of drugs, vaccines, syringes, equipment (useful life <1 year) and other material such as contraceptive tools.

c. Present market price.

The present market prices was according to list of inventory on Fiscal Year 2004 in Ban Mai PCU.

d. Exchange rate

Exchange rate: 1 dollar equal to 39.15 baht (25).

e. Number of activities

The number of main activities of Baan Mai PCU in one fiscal year 2004 (out put) divided by two main activities were OPD service and Community services including ANC/PNC, well child / baby clinic, immunization, school health, screening test in risk group, health education (in the PCU) and family planning.

f. Fiscal Year 2004 (FY 2004)

The fiscal year starts from 1st October 2003 to 30th September 2004.

CHAPTER 2
LITERATUR REVIEW

2.1 Overview of cost analysis

Economists define cost as the value of resources to produce something, including a specific health service or a set of services (5). In this case, the all resources used in the program or intervention were involved such as building, personal, money, etc. Cost analysis is methods to examine of expenditures to determine how resources have been spent.

In economic analysis, there are two characteristics lead us to define economic evaluation as the comparative analysis of alternative courses of action in terms of both their costs and consequences. It's meaning that economic evaluation are to identify, measure, value and compare the costs and consequences of the alternatives being considered (11).

There are three essential elements to calculate of costs:

- It must be relevant to the particular situation.
- The classes (categories) must not overlap.
- The classes chosen must cover all possibilities.

Moreover, overlapping of the calculation is must be avoid to prevent the double calculation and over estimate of the costs. In this case, these categories are well defined and their meaning is clear (5). Furthermore, some steps in classification and allocation of cost are must be considered to calculate of the cost such as functions and responsibilities of unit which measured, activity flow and records, job distribution of personal, utilization of resources and out put of unit activity.

Some criteria and methods of cost allocation are direct allocation method, step down allocation method, step down allocation with interaction method and simultaneous method. While allocation of costs can explained such as:

- Direct allocation

It is clearly attributed to a single category of inputs in each activity.

- Indirect allocation

It is some costs have to be allocated two or more categories include the equally allocated and proportionate allocated according to time devoted.

2.2 Health Expenditure

When governments think about health, attention is usually on the cost of health care as that is where the money goes. The causes of ill-health tend to take second place. To the extent that causes intrude on policy-makers, a convenient, but loose, dichotomy presents itself: in the poorer countries of the world the burden of ill-health is the result of infectious disease linked to poor environmental conditions and malnutrition; the richer countries are now in the era of diseases linked to lifestyle and unhealthy choices (13).

Health and health care are an important role in peoples' life, which evidenced by the willingness of societies to devote a large percentage of their economic resources to the production and distribution of health services. The United States and Canada as well as most Western European nations spend an increasing proportion of their economic wealth on health care. Hospital expenditures account for 40 percent of total health care costs. Increasing hospital expenditures, in turn, have been attributed to rising incomes, growth of insurance coverage, an aging population, increasing of health status and developing of economy in the country (14, 15).

The development of a health-care system depends on a country's economic, political, social and cultural background. For example, China's transformation over the last 20 years from a socialist economy to a market economy, China's health-care

services have been converted from social and public goods to market goods without government planning or intervention (16).

Health care policy makers on the world are faced with competing alternatives, and also for systems of health care financing. Regardless of the particular option, the choice of financing should mobilize resources for health care and provide financial protection (WHO 2000). Over the past two decades, many low income countries have found difficulties to increase and sustain of sufficient financing for health care. Recent estimates of national health care spending show that the group of least-developed countries on average spent US$ 11 per person per year in the period 1997-1999, compared with US$ 23 for other low income countries, US$ 93 for the group of lower middle-income countries and US$ 1907 in high income countries (WHO 2001). Although no definite answer exists to the question as to how much a country should spend on health (in absolute money terms or as a share of gross income), recently policy-oriented work suggests that a country spending less than an estimated threshold value of US$ 80 per capita per year would fail to achieve its potential of care compared to similar countries whose spending per capita is at or above this value (WHO 2000). As shown, the group of low-income countries is currently far from this level (17).

2.3 Health Financing and Health Insurance Policy in Thailand

Thailand has economically evolved from an agrarian society four decades ago to a newly industrialized country with a great leap in societal and people's lifestyle. Health is among the most rapidly growing sectors reflected in both the expanded health care infra structure throughout the country and improvements in the health status of the Thai people.

National health spending in Thailand rose eleven times from $US 562.5 million in 1980 to $US 6,301.7 million in 1998. The per capita health expense rose nearly 9-fold from $US 12.1 to $US 103.6 during the same period. This is higher than the per

capita average annual gross domestic product (GDP) growth of 7.0%. Thus, the share of GDP taken by health nearly doubled from 3.82% in 1980 to 6.21% in 1998 (18).

Thailand's real GDP was increased by 9.6 percent per annum between 1986 and 1996. During the same period, real public sector expenditure for health increased 10 percent per annum, and real private sector health expenditure increased by 5.2 percent per annum. After that, the economic crisis has required the cutting of public sector expenditure for health. Private household expenditures for institutional health care declined in real terms by 36 percent from year 1996 to1998. At the same time, expenditure for self-treatment at pharmacies increased by 12 percent (11).

Before launching the new health insurance policy in Thailand in the year 2001, the Royal Thai Government has gradually increasing the health care coverage for the Thai people. In 1998, 80.3% of Thai people were covered by health insurance, but there was 19.7% or about 12 millions without health insurance of any scheme. Therefore, in 2001 the government decided to launch the new health insurance policy to expand the coverage for all Thai people under the slogan "30 baht for curing every disease". The expected results should be, not only the social safety net and to decrease of burden on house hold expenditures during the economic crisis, but the project also emphasizes on health promotion, prevention and primary care (gates keeper), and also to more efficient health system with long term cost containment in the total health expenditures (7).

There are the five forms of health insurance in Thailand:

a. Civil Servants' Medical Benefits Scheme (CSMBS)

The Civil Servants' Medical Benefits Scheme (CSMBS) covers all government employees and pensioners, and their dependents. The scheme is tax financed and managed by the MOF.

b. Social Security Scheme and Workman's Compensation Scheme

The Social Security Scheme (SSS), a compulsory social health insurance scheme, and the Workman's Compensation Scheme (WCS), a compulsory work-related illness and injury payment scheme, are managed by the MOLSW.

c. Voluntary Health Card Scheme (VHCS)

The Voluntary Health Card Scheme (VHCS) started in the mid-1980s as community revolving funds under the Primary Health Care initiative and has evolved into a voluntary health insurance program aimed the near-poor.

d. Low Income Card Scheme (LICS)

The Low Income Card Scheme (LICS) started in 1975 with the objective of reducing inequity by providing free medical care services to the poor.

e. Simplifying Health Insurance

The process of moving to away from Thailand's from the pluralistic system of payment to a more unified system of payment for medical services.

In 2003, there are three major forms insurance covering personal medical care in Thailand as Civil Servants' Medical Benefit Scheme (CSMBS), Social Security Scheme (SSS) and Thirty Baht Universal Health Care Coverage Scheme (UC). Especially UC is regarding to the government decided to launch the new health insurance policy. This health insurance policy is part of the continuing health care reform "Health for All and All for Health" (8, 11).

2.4 Health system reform in Thailand

Health system in Thailand was developed since long time ago. Thailand had attempted to improve health of the community by conducting various community based programs. In the first, second, third, fourth and fifth year National Health Development Plan (1960-1976), activities to expand and extend basic health facilities were for the whole country.

After the Alma-Ata conference in 1978, the Primary Health Care program in Thailand was implemented as a national priority to reach "Health For All by the year 2000". In the fourth and fifth-year National Health Development Plan (1976-1981), it was the time that most attention was emphasizing on inequality distributed of health care facilities between urban and rural areas. In the fifth national health development plan (1982-1986) the program had expanded to cover all rural villages. In the last year

of the fourth National Health Development Plan, it was emphasized on coordinated rural development. In brief, Health Development Plan (1997 – 2001) has sets some strategy to improve the health status of the Thai population in the rural areas (3, 18, 19, 20, 26, 27). Furthermore, inefficiency and poor performance of the system were the reasons for rampant reform include in health system.

Health system reform is an ambiguous term, which is usually spelled out as limited change within the context of some elements or functions of the health system such as health care, financing or decentralization; the Decentralization Act became effective in November 1999 (18). In the first six provinces, the scheme could cover about 1.47 million people or about 40.7 percent of population in those provinces. In the second phase of policy implementation in June 2001, it could cover additional 4 million people or 28.9 percent of population in provinces in the second phase. There was 97.6 percent of registered population registered with public providers while 2.4 percent of them registered with private providers. In October 2001, the could cover 37.3 million people in 75 provinces and part of Bangkok and private providers still shared the same proportion, 2.3 percent of registered population. The MOPH's providers are the main public health care providers and are responsible for 95 percent of registered population.

In the first 6 provinces, the studies found that health service utilization of those who were covered by the scheme was quite low, 0.58 visits per capita per year for ambulatory and 0.03 admissions per capita per year for in-patient care, when compared with other schemes. Reported health service utilization of beneficiaries in the second phase in the first month was also low, 0.67 visits per capita per year for ambulatory care and 0.03 admissions per capita per year for in patient care (21). For the uninsured, who should be the beneficiaries of the UC policy, the national survey in 1996 found that utilization of ambulatory care by the uninsured was 1.9 visits per capita per year. It means that some beneficiaries don't realize about their rights, and also hesitate about quality of care provided by the scheme.

Actually, the aim of the UC policy equal social welfare and health access for Thai people, equity in access to health service, efficiency of quality care, and cost control on reduce health expenditure. It was implemented to solve almost 20 millions of Thai people who are without health insurance. Then, this policy was arranged for universal coverage of whole health care reform. Consequently, health service system was reform till the lower level such as Health Center (9, 10, 22). Obviously, increasing of health coverage service and fairly to get of health service in particularly to the rural people and poor people was expected.

Moreover, the problems rural areas face in regard to the provision of health care services are remarkably similar to those in all health care systems. These problems involve a shortage of medical resources, a lack of specialized services, the threat of the disappearance of overcapacity hospitals, and so on, all of which lead which lead to lack of access to quality services in the rural areas. This, in turn, raises the issue of fairness in access to health care with the result that frequently, solution to these problems is far from obvious (23).

2.5 Primary Care Unit (PCU)

PCU is the either of “Health System Reform” in Thailand. This is developing form of Health Center. As a developing form of Health Center, PCU have ability and management more than Health Center, as a unit for health service under contracting unit of primary care (CUP)(8).

Some characteristic of PCU according to standardization of PCU under the health insurance project such as:

1. Activity

Health care services in PCU comprise of:

- Curative

Curative or treatment service for ailments is provided. This is activity in OPD service.

- Prevention, promotion and rehabilitation

Activities in this group are include of ante natal care/post natal care, delivery, EPI, nutrition, family planning and other activity where they be able to provide. There are activities in Community services group. Furthermore, these activities were emphasized in PCU.

2. Location / Catchment area

Location of PCU is Tambon or sub district area, responsible for less than 10,000 people, can be accessed by the people for 30 minutes by car. Normally, more than one PCU in the one Tambon or sub district area.

3. Health personnel

Differ by HC, the presence of Physician (in particularly family doctors), Dentist and Pharmacist in PCU is possible. In this case, criteria were established such as 1 doctor to 10,000 population, 1 Dentist to 20,000 population, 1 Pharmacist to 15,000 population, 1 Nurse to 1,250 population.

4. Management

To improvement of recording and reporting system, supervision, continuity of health service to strengthening the primary health care program.

5. Facility support and budget allocation

Availability of essential equipment, communication system, recording and reporting system, transportation and other material to support the activities in PCU will have completed. Furthermore, health facility and capitation budget of PCU is delivered through Provincial Health Office (PHO) and the Contracting Unit for Primary Care (CUP).

6. Primary care network.

CUP is organization providing curative, prevention, promotion, rehabilitation excluding specialized services and PCU is provider of health services as single health facility or primary care network. In this case, as provider of complete health service such as medical doctor and health staffs due to the standard is “main contractor”; if not so called “sub-contractor” (8, 9, 10).

Most of the countries have health services facility in community level as a lower level of health institution of government services for the people. However the name is different from country to country where the same level by PCU such as community

health center, health center, health post and health and family welfare center. Accessibility of the Primary Care Unit will be the foundation of the new master plan for the future. MOPH have review the functions, staffing, planning, design, equipment, organization, and management of PCU and referral hospitals, in order to prepare them for their wider function in supporting Primary Care Unit (PCU). Before investing those services the cost of running them will be considered.

For government, the cost of services to manage the primary health care center is lower, compared to building the most sophisticated hospital at district level, training higher degree qualified doctors, facilitate modern equipment and manage many patient coming at the late stage of illness and needing more sophisticated (6). In that respect was regarding to service responsibility and economic status of the state's.

2.6 Previous study of cost analysis

Information on national expenditure on health is usually incomplete in most country. Therefore, Policy-makers had felt the practical utility of having a framework and suitable methods and tools in hand, so that essential accounting models could be adopted to record and analyze the complex interactions that occur from the moment funds are allocated to the health systems till they reach a beneficiary (1).

Some previous study was related to cost analysis ever done, although different method but useful to compared by the result of this study.

A case study of Salalumunduan, Sakaeo Province, Thailand on Prevention and Promotion Activities-Based Costing of Primary Care Unit Fiscal Year 2003 by Wanaporn Sopana (2004) was found that the total cost of Prevention and Promotion was 1,186, 497.59 baht, the labor cost was equal to 764,165.1 baht, operating cost was 101,055.86 and capital cost 167, 86.81 baht (8).

A case study of Watsuwan Health Center, Nakhon Phatom Province, Thailand on cost analysis was found that capital cost was 26%,and half on the capital cost was

spent on building; almost one fourth (19%) of capital cost was spent on equipment; and still one fourth (28%) spent on furniture 18 %, and 10% spent on vehicle. While on recurrent cost, this study was found three fourths (74%) of the total cost was spent on recurrent cost (74%). Three fourths (75%) of recurrent cost was spent on personnel cost and one fourth (25%), 18% spent on operating cost, and 7% spent on material cost (24).

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Research design

This research is a cross sectional study with collecting the secondary data. In addition, some data would obtain from unstructured interview the health personnel at the PCU in order to ensure the completeness and the relevance of information.

3.2 Research place

Primary Care Unit (PCU) at Ban Mai, Ayutthaya Province, Thailand, which a representative PCU, good collaboration of health personals and all documents are sufficient.

a. Socio-demography

Ban Mai Primary Care Unit located at 4^{th} village, Ban Mai Sub-district, Phranakornsri-ayuthya District, Phranakornsri-ayuthya Province. This is the plain area on the Chao Phraya river side and there has been an overflow from the river every year. The distance is about 9 kilometers from the village to the Phranakornsri-ayuthya district office and about 12 kilometers to the Phranakornsri-ayuthya hospital.

40% of these people do wood carving for occupation, whereas 30% are employees and brick makers, 20% in government sectors and 10% in agricultural sectors. The general economic status are sufficient to poor, Buddhism is the only religion for the people. Most of the peoples use the health service of PCU, The Phranakornsri-Ayuthya Hospital, the center of family medicine, private clinics and hospital in town, as well as drug stores. In addition to the Thai traditional massage and traditional healers in this area and surrounding are available.

b. Basic status of organization

Ban Mai PCU is a general health center, with the wood constructed plan. It was set up and began to service in 1949. In 1978, there was budget allocated for the replacement health center instead of the old one. In 1997, on the 1 Rai and 2 Ngan area donated by people, the premium health center was constructed using budget of the Ministry of Public Health. The health center has provided services since then.

Category of health personnel in Ban Mai PCU is as follows:

Table 1 Category of health personnel in Ban Mai PCU, Ayutthaya Province, Fiscal year 2004.

Category of personnel	Number
Public Health Administrative Officer 6	1
Public Health Scholar 6	1
Public Health Community Officer 6	1
Public Health Community Officer 5	1
Registered Nurse 4	1
Total	5

Table 1 shown that number of health personnel in Ban Mai PCU was 5 persons. Physician and Dentist were not available.

c. Vital Statistics

- Infant vitality rate 47 cases birth rate/1,000 = 0.047
- Death rate 27 death rate/1,000 = 0.027
- Rate of increase in population/1,000 = 4.24
- Number of household = 898
- Number of family = 1.126
- Total of population = 4,722

Vital statistic data showed that number of population in the catchman area of Ban Mai PCU in Fiscal Year 2004 was 4,722 persons.

Table 2 Distribution of population in the age group, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

No	Groups of population	Number (persons)	Percent
1	Children 0-1 years	47	1
2	Children 1-5 years	238	5.1
3	Children 0-12 years	697	14.8
4	Pair of Age fertile	1,047	22.2
5	Age of productive (20-59 years)	2,773	58.7
6	Elderly group (≥ 60 years)	630	13.3
7	Dependent group ($\leq 20 years + \geq 60 years$)	1,923	40.7
8	Adolescent (10-24 years)	1,030	21.8

d. Health Insurance

Coverage of health insurance among the population is as follows:

Table 3 Coverage of health insurance, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

No	Schemes/benefits	Numbers	Percent
1	Children 0-12 years	697	14.8
2	Hi-school students (13-15 years)	99	2.1
3	Welfare for low income people	262	5.5
4	Handicapped	14	0.3
5	Soldiers	3	0.06
6	Monk/religion leadership	16	0.3
7	Community headman	49	1.1
8	VHV and family	66	1.4
9	Elderly	505	10.7
10	Gold card (with 30 baht payment)	1,539	32.6
11	Civil servant medical benefit scheme	458	9.7
12	No benefit	220	4.7
13	Social security scheme	794	16.8
Total		4,722	100

e. Budgeting Status on Fiscal Year 2004

Calculation status of budgeting in Ban Mai PCU on Fiscal Year 2004 is as follow:

a. Income

- Drug	: 46,521.00 baht
- Interest	: 547.27 baht
- Maintenance	: 6,120.00 baht
- Other incomes	: 65,000.00 baht
- Medical services	: 31,780.00 baht
- Social security	: 25,515.00 baht
- Universal coverage	: 124,725.22 baht
Total income	: 300,208.49 baht

b. Expenditure

- Wage	: 87,840.00 baht
- Expenses	: 37,800.00 baht
- Utility payment	: 15,687.00 baht
- Equipment payment	: 2,800.00 baht
- Other expenditure	: 76,070.00 baht
Total expenditure	: 220,197.63 baht

3.3 Costing Methodology

With using of a data sheet, the researcher will estimate the cost based on as presented in table 4 (next page):

Table 4 Check list for costing items

	Items	Capital	Recurrent
1	**Building**	Construction cost, land purchase	Maintenance, electricity, water, fuel, telephone, telex, insurance, cleaning, repairs of electricity, plumbing, roofing, and heating
2	**Equipment and supplies**	Refrigerators, sterilizers, manufacturing machinery, scales, other equipment with unit cost (price) of $100 or more	Small equipment (unit cost of under $100), drugs, vaccines, syringes.
3	**Vehicles**	Bicycles, motorcycles, 4-wheel drive vehicles, trucks	Petrol, diesel, lubricants, tires, spare parts, registration, insurance
4	**Personnel and training**	Training activities for health personnel that occur	Salaries and training short, in-service courses

Source: Cost analysis in primary health care, a training manual for program managers. WHO/SHS/NHP/90.5

3.3.1 Capital costs

Anything with a life span of more than one year is a capital good and its cost is known as capital cost or fixed cost may be in the form of cost building, equipment, furniture and vehicle.

To calculate capital cost of all items a uniform discount rate of 3% will be take and present market prices or current value of all the items were used(4,9).

The equivalent annual cost (EAC) is calculated by an amortization procedure as described below (12).

If the capital outlay is K, we need to find the annual sum EAC which over a period of years (life of the facility) at an interest rate (discount rate) r, will be equivalent to K.

E = K / [Annuity factor, n period, interest r]

Annual cost (E) equal to present cost of the capital goods (K) divided by annuity factor according to useful life years (n) and discount rate (r) of the capital goods itself.

Annuity factor was obtained from the table 2, Drummond MF et al, 1997, p94 (8).

Table 5 Calculation of capital cost (in baht, discount rate of 3%)

Item	Present cost (K)	Useful life years (n)	Discount rate (r)	Year of purchase	Annualizing factor	Annual cost (E)
Building	?	?	?	?	?	?
Equipment	?	?	?	?	?	?
Furniture	?	?	?	?	?	?
Vehicle	?	?	?	?	?	?
Total	?	?	?	?	?	?

a. Building

The current value or present market price of building would be considered. The World Health Organization recommended the life span of building about 20 years (5).

Table 6 Annual cost calculation of building

Building	Present cost (K)	Useful life year (n)	Discount rate (r)	Year of purchase	Annual cost (E)
?	?	?	?	?	?
Total					

b. Equipment

All equipment and instrument with a life span of more than one year or price more than 1 US dollar was taken to be part of the capital goods (5). With the consult to the Health Personal as user the equipments and instruments, goods were divided regarding to the life span of the each items.

Table 7 Annual cost calculation of equipments

Equipment	Present (total) cost (K)	Useful life year (n)	Discount rate (r)	Year of purchase	Annual cost (E)
?	?	?		?	?
?	?	?		?	?
?	?	?		?	?
Total					

c. Vehicle

The current value or present cost of car and motorbike was taken to calculate its EAC. Useful life year of car was 15 years and motorcycle was 10 years.

Table 8 Annual cost calculation of vehicles

Vehicle	Present unit cost (K)	Useful life year (n)	Discount rate (r)	Year of purchase	Annual cost (E)
?	?	?		?	?
?	?	?		?	?
Total					

d. Furniture

Current value or present market price would be using to calculate the cost. There are some differences of the life span among the furniture, depend on material as a wood, stainless steel, etc.

Table 9 Annual cost calculation of furniture

Furniture	Present unit cost (K)	Useful life year (n)	Discount rate (r)	Year of purchase	Annual cost (E)
?	?	?		?	?
?	?	?		?	?
?	?	?		?	?
Total					

3.3.2 Operating cost

It is the cost to run any activity during the year which may be in the form of material costs, public utility costs, labor costs, routine of the training and social mobilization.

Table 10 Calculation of operating cost

Cost category	Cost	Percentage
Material costs	?	?
Public utility costs	?	?
Labor costs	?	?
Total		

a. Materials cost

It is the cost to run any activity during the year which may be in the form of drugs, supplies, equipment, (all equipment useful life for one year or less than one year), other material (contraceptive tools). The material cost of OPD and community service was multiplied by the total cost and proportion of using material of each service.

Table 11 Calculation of Material cost

Items	Quantity	Unit cost	Total cost
?	?	?	?
?	?	?	?
?	?	?	?
?	?	?	?
?	?	?	?
?	?	?	?
?	?	?	?
Total			

b. Public utility cost

Costs of items that were purchased and used (or replaced) within a period of one year or less, such as water supply, electricity, telephone, fuel, maintenance and repairing and cleaning service. Calculation of cleaning service cost was included of wage and cleaner material.

To calculate for all operating cost total of electricity bills of the PCU, records of vehicle maintenance cost. In addition, the maintenance cost of the vehicle would calculate as the amount of money spent on the vehicle in fiscal year 2003-2004.

Table12 Calculation of public utility cost

Utility	Office supply	Telephone	Electricity	Maintenance/ repair	Fuel	Cleaning service
October	?	?	?	?	?	?
November	?	?	?	?	?	?
December	?	?	?	?	?	?
January	?	?	?	?	?	?
February	?	?	?	?	?	?
March	?	?	?	?	?	?
April	?	?	?	?	?	?
May	?	?	?	?	?	?
June	?	?	?	?	?	?
July	?	?	?	?	?	?
August	?	?	?	?	?	?
September	?	?	?	?	?	?
Total	?	?	?	?	?	?

c. Labor cost

The total salaries inclusive of all fringe benefits such as house rent allowance, medical allowance include the health personal health family services and educational support for children. The labor cost of OPD and community service were calculated

from total labor cost multiplied by the proportion of time allocation times of each Primary Care Unit (PCU) staff worked at OPD and community service.

Table 13 Labor cost

Category of personnel	Gross annual salary	Cost of annual allowances	Total Annual cost
?	?	?	?
?	?	?	?
?	?	?	?
?	?	?	?
Total	?	?	?

3.3.3 Unit cost

The unit cost of each activity would calculate by using the following formula:

$$Unit\,Cost = \frac{Total\,Cost\,of\,the\,Activity}{Total\,Unit\,of\,the\,Activity}$$

Total cost activity: It's the means that the total cost of activity in the form of capital and operating cost.

Total unit activity in this study was classified into two main groups as OPD service and community service:

- For OPD service: It means that the total number of out patients (treatment) who attended the activity during of fiscal year 2003-2004.
- For community service: It means that the total number of the visitor or services in the seven main activities of the community service include: ANC/PNC, well child/baby clinic, immunization, school health, screening test in risk group (breast cancer, Pap smear, Diabetes mellitus, Hypertension), health education (in PCU), and family planning.

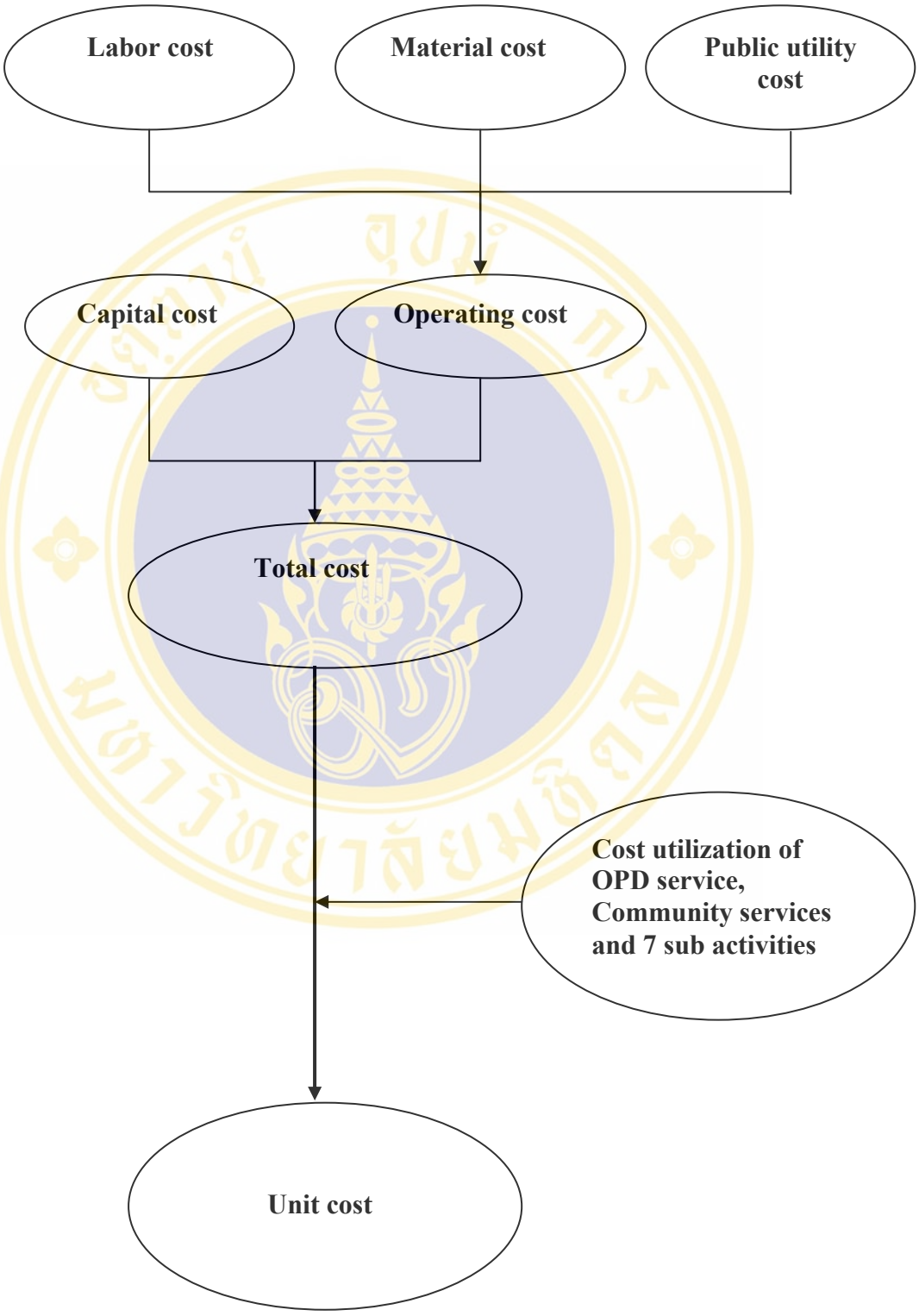


Figure 1 Unit cost calculation

3.4 Data collection

The data sheets have used to collecting the all related secondary data. Data sheets have translated to Thai language and with the aid of Thai people who expert the Thai language and English language, the researcher collected the all data at Ban Mai PCU, Ayutthaya Province.

Determination of useful life years of capital goods was refers to opinion of health personals in Ban Mai PCU as user.

3.5 Data processing

The whole data have been analyzed according to the objectives of the study to estimate the building cost, equipment cost, furniture cost, vehicle cost and capital cost in order to find the capital cost, and then the data was also used to calculate for labor cost, material cost and public utility cost were collected in order to estimate the operating cost. The sum of capital cost and operating cost will have found the total cost. Total cost utilization of the OPD service will have found the unit cost of OPD service, and then total cost utilization of the community services will have found the unit cost of community services.

Data were analyzed and shown by Microsoft word and Microsoft Excel program.

CHAPTER 4
RESULTS

The whole data related to unit cost analysis of primary care unit in Ban Mai, Ayutthaya Province, on Fiscal Year 2004 were collected. Regarding to objectives of this study, analysis of unit cost was calculated following as:

4.1 Cost of Primary Care Unit

4.1.1 Capital cost

Calculation of capital cost was according to formula. Present cost (K) of capital goods was based on list of inventory in PCU, useful life years (n) was according to opinion of the health personal as user. In particularly, useful life years of building were consulted to reference by WHO. Discount rate 3% had taken and annuity factor was referred to standard table (5, 12).

a. Building

Useful life years of building referred to WHO were 20 years and discount rate 3% so annuity factor was 14.8775.

Table 14 Annual cost calculation of building, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004 (in baht)

Item	Present cost (K)	Useful life years (n)	Discount rate (r)	Annuity factor	Annual cost (E)
Main building of PCU and housing building	4,704,000.000	20	3%	14.8775	316,182.154

Following the formula, annual cost of building on Ban Mai PCU in Fiscal Year 2004 was **316,182.154 baht.**

b. Equipment

Determination of useful life years of equipment were according to opinion of the health personals. Useful life years of equipment were divided by 2 groups according to material (stainless steel, wood, etc) and quality of equipment that is 15 years and 10 years.

Table 15 Annual cost calculation of equipment, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004 (in baht).

Useful life years (n)	Total present cost (K)	Discount rate (r)	Annuity factor	Annual cost (E)
15 years	200,700	3%	11.9379	16,811.995
10 years	80,470	3%	8.5302	9,433.534
Total				26,245.529

Following the formula, annual cost of the equipment in 15 years group was 16,811.995 baht and annual cost of the equipment in 10 years group was 9,433.534 baht. Total annual cost of the equipment was **26,245.529 baht.**

c. Furniture / office equipment

According to consultation and agreement by health personals, useful life years of the furniture / office equipment divided by 3 groups as 15 years, 10 years, and 5 years. Grouping of the furniture / office equipment was according to material of the equipment (stainless steel, wood, etc), quality, and utilization of the equipment itself.

Table 16 Annual cost calculation of furniture / office equipment, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004 (in baht).

Useful life years (n)	Total present cost (K)	Discount rate (r)	Annuity factor	Annual cost (E)
15 years	28,200.000	3%	11.9379	2,362.224
10 years	218,300.000	3%	8.5302	25,591.428
5 years	50,500.000	3%	4.7135	10,713.906
Total				38,667.558

Following the formula, annual cost the equipment in 15 years group was **2,362.224 baht**, annual cost the equipment in 10 years group was **25,591.428 baht**, annual cost the equipment in 5 years group was **10,713.906 baht** and total annual cost of furniture/office equipment was **38,667.558 baht**. Some equipment and furniture have a life span exceeding their limit and they have not used already the annual cost was estimated 1 baht.

d. Vehicles

Vehicles in the Ban Mai PCU comprise of one car and two motorcycles. According to consultation and agreement by health personals, useful life years of car was 15 years, motorcycles was 10 years.

Table 17 Annual cost calculation of vehicles, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004 (in Baht)

Vehicles	Present cost (K)	Useful life years (n)	Discount rate (r)	Annuity factor	Annual cost (E)
Car	268,000	15	3%	11.9379	22,449.509
Motorcycle	34,500	10	3%	8.5302	4,044.453
Motorcycle	34,882	10	3%	8.5302	4,089.235
Total					30,583.197

Following the formula, annual cost of car was 22,449.509 baht, motorcycles (2 motorcycles) were 8133.688 baht and total annual cost of vehicles was **30,583.197 baht.**

e. Summary of capital cost calculation

Total capital cost was calculated according to total annual cost of building, equipment, furniture/office equipment and vehicles.

Table 18 Capital cost in annual cost (Discount rate 3%) and percentage of Primary Care Unit in Ban Mai, Ayutthaya Province, Fiscal Year 2004

Item	Cost (baht)	Percentage (%)
Building	316,182.154	76.80
Equipment	26,245.529	6.37
Furniture / Office equipment	38,667.558	9.39
Vehicles	30,583.197	7.42
Total	411,678.438	100.00

Table 18 showed that total capital cost of Ban Mai PCU, Ayutthaya Province on Fiscal Year 2004 was 411,678.438 baht.

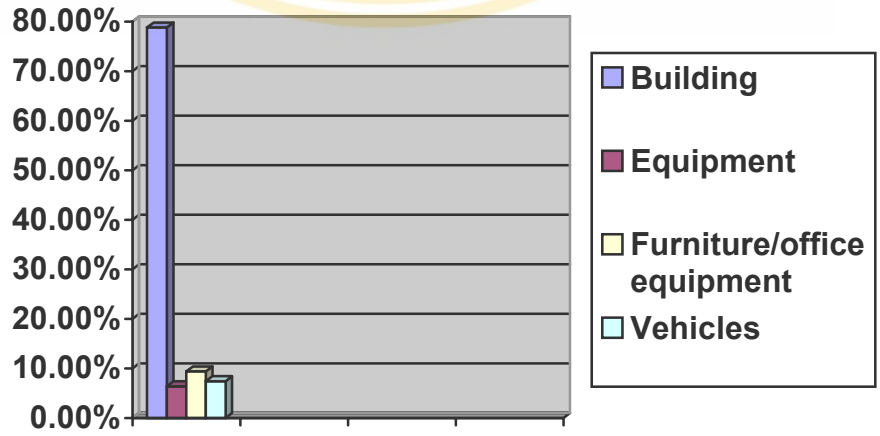


Figure 2 Bar diagram of capital cost on Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

Figure 2 showed that annual cost of building was highest. Whereas annual cost of furniture/office equipment was higher than equipment and furniture.

4.1.2 Operating cost

Calculation of operating was according to list utilization of material and list of purchasing in the Ban Mai PCU on Fiscal Year 2004.

a. Material cost / supplies

Material cost / supplies comprise of drugs, vaccines, contraceptive pill/tool, small equipment and other material which the unit cost of less than $100 or 3,915 baht ($1 equal to 39,15 baht) (29).

Table 19 Cost and percentage of material cost / supplies in Ban Mai PCU, Ayutthaya Province, on Fiscal Year 2004

Item	Cost (baht)	Percentage (%)
Drugs	307,375.637	89.17
Vaccines	9,835.380	2.85
Contraceptive pill/tool	8,911.098	2.58
Small equipment and other material	18,581.060	5.39
Total	344,703.175	100

Total cost of material / supplies in Ban Mai PCU on Fiscal Year 2004 was **344,703.175 baht**. Nearly nine tenth (89.17%) was drugs cost, around one tenth were distributed to vaccines, contraceptive pill/tool, small equipment and other material.

b. Public utility cost

Public utility cost comprise of office supply, telephone, electricity, water, cleaning service and fuel. The costs of them were shown in table 20.

Table 20 Cost and percentage of public utility cost in Ban Mai PCU, Ayutthaya Province, Fiscal year 2004

Item	Cost (baht)	Percentage (%)
Office supply	27,200.00	32.84
Telephone	3,104.61	3.74
Electricity	8,281.39	10.00
Water	2,220.00	2.68
Fuel	6,000.00	7.24
Cleaning service	36,000.00	43.47
Maintenance/repair	0.00	
Total	**82,806.00**	**100**

Office supply was the all necessity of office such as papers, ink, etc. were incurred in Ban Mai PCU during Fiscal Year 2004. Cost of office supply was 27.200 baht (32.84%) of the public utility cost, cost of telephone was 3,104.61 baht (3.74%), electricity was 8,281.39 baht (10.00%), water was 2,220 baht (2.68%), fuel was 6,000 baht (7, 24%), cost of cleaning service was included of wage of worker and cleaner material was 36,000 baht (43.47%). Total of public utility cost during the Fiscal Year 2004 in Ban Mai PCU was **82,806.00 baht.**

c. Maintenance / repair

During the Fiscal Year 2004, maintenance / repair was not incurred in Ban Mai PCU. Consequently, cost of maintenance / repair was not available.

d. Labor cost

Gross annual salary and cost of annual allowances were according to Thai Government Policy. Housing support were utilization of housing building in PCU, calculated based on charge of rent house in that village per month was 4,250 baht. Treatment were refers to fringe benefit of civil servant.

Table 21 Annual cost of salary of health personnel in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

Category of personnel	Gross annual salary (baht)	Cost of annual allowances (baht)	Housing support (baht)	Treatment (baht)	Total annual cost (baht)
Public health adm. Officer 6	212,010.000	18,480.000	51,000.000	9,664.000	291,154.000
Public health scholar 6	165,570.000	17,280.000	000	14,287.000	197,137.000
Public health com. Officer 6	161,280.000	17,280.000	000	6,863.000	185,423.000
Public health com. Officer 5	96,390.000	17,280.000	000	8,171.000	121,841.000
Registered nurse 4	87,200.000	17,280.000	000	3,474.000	107,954.000
Total	**722,450.000**	**87,600.000**	**51,000.000**	**42,459.000**	**903,509.000**

Table 21 showed that total annual cost of salary in Ban Mai PCU on Fiscal Year 2004 was **903,509 baht.**

e. Summary of operating cost calculation

Calculation of operating cost was according to total cost of material cost/supplies, public utility cost and labor cost.

Table 22 Operating cost and percentage of Primary Care Unit in Ban Mai, Ayutthaya Province, Fiscal Year 2004.

Item	Cost (baht)	Percentage (%)
Material cost / supplies	344,703.175	25.89
Public utility cost	82,806.000	6.22
Labor cost	903,509.000	67.89
Total	1,331,018.380	100

Table 22 showed that operating cost in Ban Mai PCU, Ayutthaya Province on Fiscal Year 2004 was **1,331,018.830 baht**, more than half (67.89%) of operating cost was labor cost, more than one fourth (25.89%) was material cost, while public utility cost only few part (6.22%).

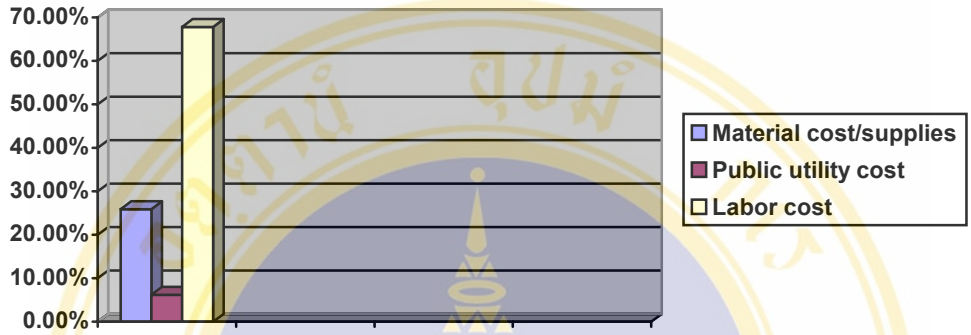


Figure 3 Bar diagram of operating cost on Ban Mai PCU, Fiscal Year 2004

Figure 3 showed that labor cost was highest on the operating cost and material cost/supplies was higher than public utility cost.

4.2 Total Cost of Primary Care Unit

Calculation of total cost was according to total of capital cost and total of operating cost in Ban Mai PCU on Fiscal Year 2004.

Table 23 Total cost and percentage of Primary Care Unit in Ban Mai, Ayutthaya Province, Fiscal Year 2004.

Kind of cost	Cost (baht)	Percentage (%)
Capital cost	411,678.438	23.62
Operating cost	1,331,018.380	76.38
Total	**1,742,696.818**	100.00

Table 23 showed that total cost of Ban Mai PCU, Ayutthaya Province on Fiscal Year 2004 was **1,742,696.818 baht.** More than three fourth of the total cost on Fiscal Year 2004 in Ban Mai PCU was operating cost, while less than two fifth was capital Cost.

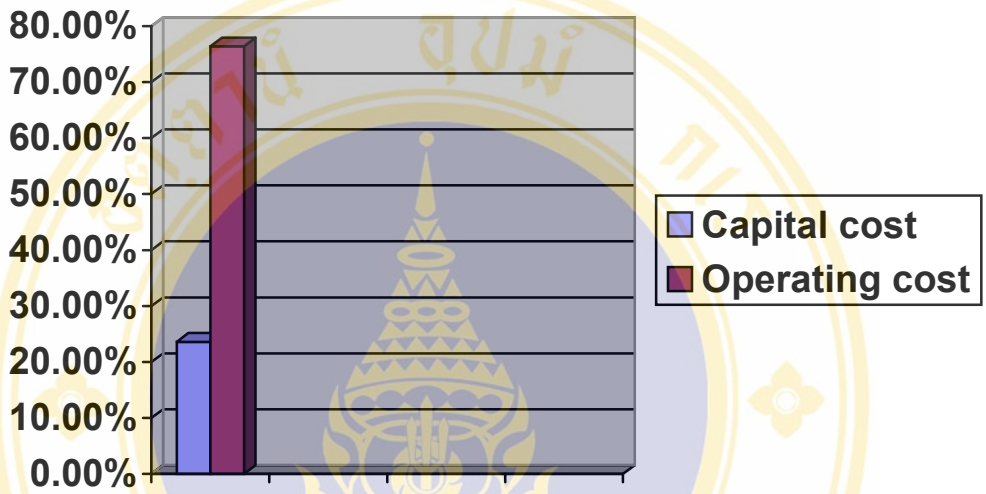


Figure 4 Bar diagram the comparison of capital cost and operating cost in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

Figure 4 showed that operating cost was higher than capital cost. Around three fourth was capital cost and around one fourth was operating cost.

4.3 Cost utilization

a. Building

Calculation of cost utilization of building was according to proportion of number of activity in OPD service and number of activity in community services include the number of activity in sub activity as indoor activity of community service such as ANC/PNC, Well child/baby clinic, Immunization, Screening test for high risk group, Health education and Family planning.

Table 24 Proportion of cost utilization the annual cost of building among OPD service and community services (indoor sub activity), Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

No	Activity	Number of activity	Proportion	Annual cost of building (baht)	Cost utilization (baht)
				316,182.154	
I	OPD service	7,032	0.43		135,958.326
II	Community services	9,375	0.57		180,223.828
Total		16,407	100		316,182.154

Table 24 showed that utilization of annual cost of building was more in community services than OPD service.

b. Equipment

Calculation of proportion of cost utilization the annual cost of equipment among OPD service and community services was according to kind and equipment function.

Table 25 Proportion utilization of annual cost of equipment among OPD service activity and community services, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

No	Activity	Proportion	Annual cost (baht)	Cost utilization (baht)
			26,245.529	
1	OPD service	0.72		18,896.781
2	Community services	0.28		7,348.749
Total		100		26,245.529

Table 25 showed that utilization of annual cost of equipment was more OPD service than community services.

c. Furniture/office equipment

Calculation of proportion utilization of furniture among OPD service and community services was according to number of activity in OPD service and community service in particularly in indoor activity.

Indoor activity in community services was ANC/PNC, Well child / baby clinic, Immunization, Screening test for high risk group, Health education and family planning.

Table 26 Proportion utilization of annual cost of furniture / office equipment on the OPD service and community services, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

No	Activity	Number of activity	Proportion	Annual cost baht)	Cost utilization (baht)
				38,667.558	
I	OPD service	7,032	0.43		16,627.049
II	Community services	9,375	0.57		22,040.509
Total		16,407	100		38,667.558

Table 26 showed that cost utilization of annual cost of furniture/office equipment more in community services than OPD service.

d. Vehicles

Calculation of proportion utilization of annual cost among OPD service and community services was according to number of outdoor activity in OPD service (home visit in emergency case) and number of outdoor activity in community service, in this case, school health.

Table 27 Proportion utilization of annual cost of vehicles among OPD service and community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

No	Activity	Number	Proportion	Annual cost (baht)	Cost utilization (baht)
				30,583.197	
I	OPD service	366	0.26		7,951.631
II	Community services	1,032	0.74		22,631.566
Total		1,398	100		30,583.197

Table 27 showed that cost utilization of annual cost of vehicles more in community services than OPD service.

e. Material cost / supplies

Calculation of proportion utilization of material cost among OPD service and community services was according to kinds and function of material. In this case was divided by 3 groups as drugs, small equipment and other material mostly was used in OPD service, contraceptive pill/tool was used to family planning activity and vaccines were used to immunization activity.

Table 28 Proportion utilization the annual cost of material cost / supplies among the OPD service and community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

No	Activity	Proportion	Annual cost (baht)	Cost utilization (baht)
			344,703.175	
I	OPD service	0.94		324,020.985
II	Community services	0.06		20,682.190
Total		100		344,703.175

Table 28 showed that utilization of annual cost of material/supplies was mostly in OPD service.

f. Public utility cost

Calculation of proportion utilization annual cost of public utility cost was according to number of activity among OPD service and community service.

Table 29 Proportion cost utilization of annual cost of public utility cost among OPD service and community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

No	Activity	Number of activity	Proportion	Annual cost (baht)	Cost utilization (baht)
				82,806.000	
I	OPD service	7,032	0.40		33,122.400
II	Community services	10,407	0.60		49,683.600
Total		17,439	100		82,806.000

Table 29 showed that utilization of annual cost of public utility cost was more in Community services than OPD service.

g. Labor cost

Calculation proportion of annual cost of labor cost among OPD service and Community services was according to average of time allocation of health personals in OPD service and community services.

Time allocation of health personals to activities in OPD service and community services were found by time schedule and unstructured interview with the Chief of PCU.

Table 30 Proportion utilization of annual cost of Labor cost among OPD service and community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

No	Activity	Average of time allocation (%)	Annual cost (baht)	Cost utilization (baht)
			903,509.000	
I	OPD service	10.58		95,591.25
II	Community services	89.42		807,917.75
Total		100		903,509.00

Table 30 showed that annual cost utilization of labor cost was more in Community services than OPD service.

4.3.1 Summary of proportion utilization of cost among OPD service and community services.

Table 31 Summary of proportion utilization of cost among OPD service and community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

Cost category	Cost utilization		Total
	OPD service (baht)	Com. services (baht)	
Building	135,958.326	180,223.828	316,182.154
Equipment	18,896.781	7,348.749	26,245.530
Furniture/office equipment	16,627.049	22,040.509	38,667.558
Vehicles	7,951.631	22,631.566	30,583.197
Material cost/office supply	324,020.985	20,682.190	344,703.175
Public utility cost	33,122.400	49,683.600	82,806.000
Labor cost	95,591.250	807,917.750	903,509.000
Total	632,168.422	1,110,528.396	1,742,696.818

Table 31 showed that utilization of cost was more in community services than OPD service.

4.3.2 Proportion of cost utilization among sub activity in Community services.

Proportion of cost utilization among sub activity in community services was calculated according number of activity in sub activity itself that is ANC/PNC, Well child and baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning as sub activity in community services in Ban Mai PCU.

Table 32 Proportion utilization of cost among sub activity of community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004.

No	Activity	Number of activity	Proportion	Total cost of Com. Service (baht)	Cost utilization (baht)
				1,110,528.396	
1	ANC/PNC	76	0.007		7,773.698
2	WC/BC	414	0.039		43,310.607
3	Immunization	414	0.039		43,310.607
4	School health	1,032	0.099		109,942.311
5	STHRG	369	0.035		38,868.493
6	Health education	7,032	0.675		749,606.667
7	Family planning	1,070	0.102		113,273.896
Total		10,407	1.00		1,110,528.396

Table 32 showed that distribution of cost utilization among sub activity in community services was more in health education, family planning and school health.

4.4 Number of activity

Number of main activities of OPD service and Community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004:

I. OPD service	: **7,032 activities**
II. Community services	
II.1. ANC/PNC	: 76
2. Well child/baby clinic	: 414
3. Immunization	: 414
4. School health	: 1,032
5. Screening test for high risk group	: 369
6. Health education	: 7,032
7. Family planning	: 1,070
Total activity in community services: **10,407 activities**	

4.5 Unit cost

Unit cost calculated by formula:

$$Unit\ Cost = \frac{Total\ Cost\ of\ the\ Activity}{Total\ Unit\ of\ the\ Activity}$$

Unit cost was total cost of the activity divided by total unit of the activity.

Total cost activity was the total cost in the form of capital cost and operating cost on Fiscal Year 2004.

Total unit activity was total unit activity during the Fiscal Year 2004. In that respect, total unit activity classified by two main groups as OPD service and Community services.

Total unit activities in OPD service activity was total unit activities of OPD service in Ban Mai PCU during the Fiscal Year 2004.

Community services comprise of 7 sub activities were ANC/PNC, Well child/baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning.

Total unit activities in Community services was total activities of Community services (ANC/PNC, Well child / baby clinic, Immunization, School health, Screening test for high risk group, Health education and Family planning).

Table 33 Unit cost of OPD service, Community services and sub activities in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

No	Activity	Sub activity	Cost utilization (baht)	Number of activity	Unit cost (baht)
I	**OPD service**	-	632,168.422	7,032	**89.898**
II	**Community services (total)**		1,110,528.396	10,407	**106.709**
		ANC/PNC	7,773.698	76	**102.285**
		Well child/baby clinic	43,310.607	414	**104.614**
		Immunization	43,310.607	414	**104.614**
		School health	109,942.311	1,032	**106.533**
		Screening test for high risk group	38,868.493	369	**105.334**
		Health education	749,606.667	7,032	**106.599**
		Family planning	113,273.896	1,070	**105.863**

4.5.1. Unit cost of OPD service

Table 33 showed that unit cost of OPD service was 632,168.422 baht (total cost of OPD service) divided by 7,032 activities (total of OPD service activity) equal to **89.898 baht** equal to **2.29 US dollar per activity.**

4.5.2. Unit cost of community services

Table 33 showed that unit cost of Community services was 1,110,528.396 baht (total cost of community services) divided by 10,407 activities (total of community services activities) equal to **106.709 baht** equal to **2.72 US dollar per activity.**

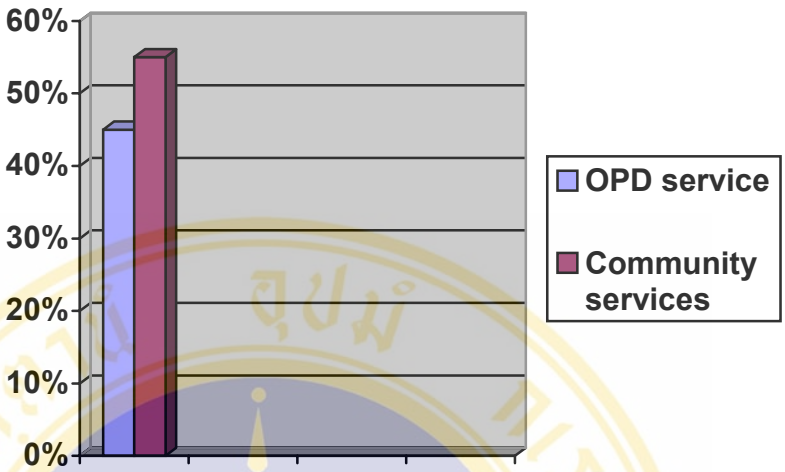


Figure 5 Bar diagram of comparison of the unit cost of OPD service and community services in Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

Figure 5 showed that unit cost of OPD service in Ban Mai PCU on fiscal year 2004 was four fifth and unit cost of community services highest that is five fifth.

4.5.3. Unit cost of sub activity in community services.

Table 33 has shown the calculation of unit cost of sub activity in community services.

- **Unit cost of community services-ANC/PNC.**

Total cost of ANC/PNC sub activity was 7,773.698 baht divided by 76 activities equal to **102.285 baht**, equal to **2.61 US dollar per activity.**

- **Unit cost of community services-Well child/baby clinic.**

Total cost of well child/baby clinic sub activity was 43,310.607 baht divided by 414 activities equal to **104.614 baht**, equal to **2.67 US dollar per activity.**

- **Unit cost of community services-Immunization.**

Total cost of immunization sub activity was 43,310.607 baht divided by 414 activities equal to **104.614 baht**, equal to **2.67 US dollar per activity.**

- **Unit cost of community services-School health.**

Total cost of school health sub activity was 109,942.311 baht divided by 1,032 activities equal to **106.533 baht,** equal to **2.72 US dollar per activity.**

- **Unit cost of community services-Screening test for high risk group.**

Total cost of screening test for high risk group sub activity was 38,868.493 baht divided by 369 activities equal to **105.334 baht,** equal to **2.69 US dollar per activity.**

- **Unit cost of community services-Health education.**

Total cost of health education sub activity was 749,606.667 baht divided by 7,032 activities equal to **106.599 baht,** equal to **2.72 US dollar per activity.**

- **Unit cost of community services-Family planning.**

Total cost of family planning sub activity was 113,273.896 baht divided by 1,070 activities equal to **105.863 baht,** equal to **2.70 US dollar per activity.**

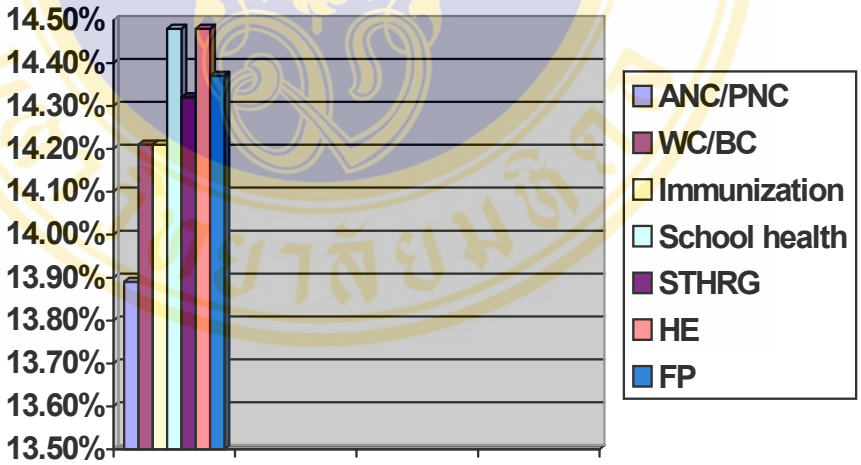


Figure 6 Bar diagram the comparison unit cost of sub activities in community services, Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004

Figure 6 showed that unit cost of community services-school health and health education were higher and unit cost of ANC/PNC was lowest.

CHAPTER 5
DISCUSSION

Health financing is a most popular issue in the entire country; in the low income countries, middle income countries, although in the high income countries. Fairly of distribution of the budgeting among the people in the rural and urban area should be considered according to ability of the people and state's.

Costs to operate of the PCU on one fiscal year were shown how to burden of health service with the result that we could determine policy of health financing and budget allocation such as showed in the result of this study.

5.1 Total cost

Total cost of Ban Mai PCU, Ayutthaya Province, Fiscal Year 2004, was 1,742,696.818 baht, more than three fourth (76.38%) was operating cost and less than one fourth was capital cost (23.62%). Those results shown that cost to run any activity in PCU so more than cost to investment or cost to build up the one PCU. In the other words, to increase the number of PCU will be incriminated the economic of the country. This is challenge of government or policy maker's when they will have applied the "Health Development Plan" such as expansion of health care facilities and development of health centers (3). Note that operating cost is routine expenditure every year. It's means that operating cost is permanent burden in the annual funding of government. In this case, properness study must be applied before decision making.

Moreover, those shown that to operate the one PCU or of the same level by PCU needed costs with the comparison among capital cost and operating cost were one fourth.

5.2 Capital cost

Total capital cost in Ban Mai PCU on Fiscal Year 2004 was 411,678.438 baht. More than three fourth (76.38%) was spent on building, about 6% was spent on equipment, about 9% was spent to furniture / office equipment and about 7% was spent to vehicles. Expenditure to equipment and furniture / office equipment just few but actually the case is equipment and furniture / office equipment so influential to quality of services refers to set goals of MOPH in 2003 that is “Improve services quality” (6). We faced in the two sides: construct the luxurious building with the low of quality services or construct the simple building with the high of quality of services. Normally, expenditure to equipment is high because that is related to technology like expenditure in the hospital (10). Moreover, to improvement the ability of health services related to “Health system reform in Thailand” so increasing the expenditure of equipment and office equipment should have considered according to health care seekers.

5.3 Operating cost

Total operating cost in Ban Mai PCU on Fiscal Year 2004 was 1,331,018.380 baht. More than half was spent to labor cost (67.86%), more than one fourth was spent to material cost / supplies (25.89%) and about 6% was spent to public utility cost. Expenditure to labor cost was highest. This refers to “Improve personnel satisfaction” in the “New Health Insurance Policy in Thailand” (6). Conversely, refers to “National Health Development Plan” that is a burden when the government setting to increasing number of staff and “Improve personnel allocation to the areas of needs” (3, 6).Therefore, efficiency and effectiveness study involve kind of the staff was recommended.

Furthermore, material cost / supplies were related to quantity, quality and kind of drug. Improvement the expenditure of material cost / supplies should have considered by policy maker to improve the quality of services.

5.4 Unit cost

5.4.1 Unit cost of OPD service

According to result of cost calculation, unit cost of OPD service in Ban Mai PCU, Ayutthaya Province on Fiscal Year 2004 was 89.898 baht equal to 2.29 US dollar per activity per year. This value was influenced by number of activities in OPD service. Based on the number of activities were 7,032 activities, budget allocation of unit cost in the OPD service should have considered. Furthermore, compared to the budget for health in 2003 was 1,308.50 baht per registered person for each hospital (7), so unit cost of OPD service in Ban Mai PCU on FY 2004 was lowest. Whereas, PCU was centers act contact between health care system and communities. Moreover, according to number of activity in OPD service was high (average 30 patients per day) so availability of Physician was proper to recommended.

5.4.2 Unit cost of Community services

According to result of cost calculation, unit cost of Community services in Ban Mai PCU, Ayutthaya Province on Fiscal Year 2004 was 106.709 baht equal to 2.72 US dollar per activity. This value was influenced by number of activity in the 7 sub activities on Community services, in particularly the number of activity in health education, well child / baby clinic and immunization. Ideally, procedure in OPD activity following as interview, physical examination, examination support (laboratory), diagnosis, therapy and explanation of diseases and healthy life style/behavior. In this case, the final step was calculated as “Health education activity”. Likewise, activities in the two sub activity were well child / baby clinic and immunization. Properly, that is one activity because we must be determining the health status of baby or child before we put vaccine to his body. In that case we said as inefficiency.

5.4.3 Unit cost of sub activity in Community services.

According to result of cost calculation, unit cost of sub activity in community services in Ban Mai PCU, Ayutthaya Province on Fiscal Year 2004 was different.

Unit cost of community services-ANC/PNC was 102.285 baht or 2.61 US dollar per activity. This value was lowest among unit cost in the other sub activity because total unit activity was few compared to the other sub activities. Conversely, time allocation to ANC/PNC was more. This is opportunity to reducing the maternal morbidity and maternal mortality rate.

Unit cost of community services-Well child/baby clinic was 104.614 baht or 2.67 US dollar per activity. Have explained above that properly those sub activity included in immunization activity.

Unit cost of community services-Immunization was 104.614 baht or 2.67 US dollar per activity. This value was according to number of target population, vaccines and other material which used. Time allocation to immunization was according to time schedule of vaccination process.

Unit cost of community services-School health was 106.533 baht or 2.72 US dollar per activity. Activities in school health was involved the general health examination to all students and DT immunization to target population according to guideline of the program. This is efficient activity.

Unit cost of community services-Screening test for high risk group was 396.873 baht or 10.137 US dollar per activity. This value was according to time allocation and number of target population.

Unit cost of community services-Health education was 105.334 baht or 2.69 US dollar per activity. Have explained above that properly those sub activity included in OPD service.

Unit cost of community services-Family planning was 105.863 baht or 2.70 US dollar per activity. Normally, unit cost of family planning was high related to material which used is expensive such as contraceptive injection. In this respect, contraceptive injection was not included as health expenditure or purchasing of Ban Mai PCU.

Perhaps, awareness and willingness of people to pay for them selves as private service was good.

5.5 Strengths and Weakness

5.5.1 Strengths

Health expenditure and health policy was debate till now. Ideally, health expenditure and health policy must consider ability of the people and the state's, covered to the poor people, distributed in the urban and rural area and based on health care seekers. Frequently, health policy and health expenditure become as political issue with override the reality.

This study had done in Thailand as a developing country. Result of this study was reflection how distribution of health expenditure among the people in the rural area, where accentuate 80% of the Thai population, distribution of budget in the clinical or treatment activity (OPD) service and in the prevention and promotion activity (Community services) in developing country. Therefore, comparison study of PCU in rural area and PCU or the same level by PCU in urban area was recommended. Furthermore, result of this study can be compared to health policy and health system reform in Thailand.

5.5.2 Weakness

Health services in PCU were not only OPD service but also 7 main activities in community services. Some activity as Prevention and Promotion had done but it didn't include in this research. Furthermore, some data were got by unstructured interview, determination of useful life year by government was not available, separating of utilization of some cost had not been done, so possibility to bias. The presence of OPD service activity and Community services activity done together was evokes fold calculation. So, restructure of PCU properly was considered by policy makers.

5.6 Comparison with the previous study

Some previous study related to cost analysis had done, although was different of method, time and research place but proper to compared. Results of those studies were found the difference value of costs.

Cost analysis of Prevention and Promotion- Activity Based Costing in PCU (Thailand) on FY 2003 by Wannaporn Sopanna was found the total cost of prevention and promotion was 1,186,497.59 baht, labor cost was 764,165.1 baht, operating cost was 101,055.86 baht and capital cost was 167,86.81 baht (supported from government) (15). This is cost analysis based on classification by Activity/Function in PCU and their health center network. Compared to this study that total cost of **community services** was 1,110,528.396 baht, labor cost was 807,917.750 baht, public utility cost was 49,683.600 baht and capital cost was 232,608.652 baht. Capital cost in this study was higher because community services in this study mostly were indoor activity.

Cost analysis based on classification by inputs of health center (Thailand) on FY 2002 by Sok Kong was found that average value of the costs lower than average value of this study. Those shown that was found the difference (improvement) of the cost between health center and PCU according to health system reform in Thailand.

The other previous studies had done on the long time ago were found the difference value among the costs. Generally, labor cost and operating cost were high than the other costs.

CHAPTER 6
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Data collecting, calculating and analyzing according to objective of this study has done. Operating cost was needed in the big number rather than capital cost to operate the one PCU or the same level by PCU. Cost of building was big number in the capital cost, drugs cost was big number in materials cost / supplies and utilization of material cost mostly used in OPD service, labor cost and material cost were big number in operating cost. Generally, operating cost was highest. Moreover, budget allocation of OPD service in PCU lower than budget allocation per registered person for each hospital.

6.2 Recommendation

a. Recommendation to Ban Mai PCU

Field visit to observation and data collecting then calculating and analyzing had done according to time schedule. Therefore, some recommendation was reasonable to be suggested such as:

- To improve the quality of health services in Ban Mai PCU and according to capital goods, number of visit then was properly to presence of Physician.
- Real separation between OPD service and Community services in utilization of the costs should be done, so each activity was distinguishable to calculation and evaluation.
- Restructure of OPD service and Community services should have considered.
- Improvement the expenditure of material cost/supplies.
- Improvement the expenditure of equipment and office equipment.

b. Recommendation to further study

Related to results in this study, some recommendation to further study were:

- Properness study to expansion of health care facilities and development of health centers.
- Efficiency and effectiveness of health personnel
- Comparison study between PCU or the same level by PCU in the rural area and urban area.
- Correlation between total cost and quality of services in PCU.
- Effectiveness and efficiency of cost utilization in PCU.
- Relationship between total cost and achievement of program in PCU.

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APPENDIX

APPENDIX A

Annual cost calculation

Form I

Capital costs

Object : Building
Local currency : Baht
Time of data collecting : January 21 – 27, 2005
Source of data : List of inventory in Ban Mai PCU, 2004
Fiscal year : 2004

a. Availability of building

Building	Present cost	Useful life year	Year of purchase
Main building of PCU and housing building	4,704,000	20	1998

b. Calculation

Formula: E = K / [Annuity factor, n period, interest r]

Item	Present cost (K)	Useful life years (n)	Discount rate (r)	Annuity factor	Annual cost (E)
Main building of PCU and housing building	4,704,000	20	3%	14.8775	316,182.154

Form II

Capital costs

Object : Equipment (Instrument of medicine)
(Useful life >1 years or price >39150 baht)
Local currency : Baht
Time of data collecting : January 21-27, 2005
Source of data : List of inventory of Ban Mai PCU, 2004
Fiscal year : 2004

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a. Availability of equipment

No.	Equipment	quantity	Present unit cost	Total unit cost	Useful life year	Year of purchase
1	Height scale	1 unit	1,000	1,000	15	1996
2	Blood sugar test	1 unit	12,840	12,840	10	1997
3	Spraying machine	1 unit	49,000	49,000	15	1998
4	Centrifuge	1 unit	21,000	21,000	15	1998
5	CPR set	1 unit	5,380	5,380	10	1998
6	CPR set	1 unit	5,800	5,800	10	1998
7	Minor surgery set	1 set	12,600	12,600	10	1998
8	Blood pressure machine	2 unit	3,000	6,000	10	1984
9	Blood pressure machine	1 unit	3,000	3,000	10	1998
10	Blood pressure machine	1 unit	3,000	3,000	10	2003
11	Dental equipment	1 unit	20,000	20,000	15	1998
12	Dental chair	1 unit	1,500	1,500	10	1998
13	Bed	1 unit	3,200	3,200	15	1998
14	Bed	1 unit	3,500	3,500	15	1998
15	Sterilizer	1 unit	35,000	35,000	15	2003
16	Sterilizer	1 unit	6,000	6,000	10	1986
17	Weight scale	1 unit	12,400	12,400	10	1997
18	Weight scale	1 unit	12,400	12,400	10	1998
19	Height scale	1 unit	3,770	3,770	10	1998
20	Bed	2 unit	4,000	8,000	15	1984
21	Delivery bed	1 unit	30,000	30,000	15	1989
22	Delivery bed	1 unit	30,000	30,000	15	1998
23	IV pole	1 unit	1,500	1,500	10	1997
24	Sterilizer	1 unit	9,500	9,500	10	1998
25	Sterilizer	1 unit	600	600	10	1984
26	Oven	1 unit	1,200	1,200	10	1997
27	Oven	1 unit	1,200	1,200	10	1998
Total				**299,390**		

b. Utilization of equipment

No	Equipment	Proportion of utilization	
		OPD service (%)	Community services (%)
1	Height scale	100	-
2	Blood sugar test	40	60
3	Spraying machine	-	100
4	Centrifuge	100	-
5	CPR set	100	-
6	CPR set	100	-
7	Minor surgery set	100	-
8	Blood pressure machine	50	50
9	Blood pressure machine	50	50
10	Blood pressure machine	50	50
11	Dental equipment	-	-
12	Dental chair	-	-
13	Bed	100	-
14	Bed	100	-
15	Sterilizer	100	-
16	Sterilizer	100	-
17	Weight scale	100	-
18	Weight scale	-	100
19	Height scale	100	-
20	Bed	100	-
21	Delivery bed	100	-
22	Delivery bed	100	-
23	IV pole	100	-
24	Sterilizer	100	-
25	Sterilizer	100	-
26	Oven	100	-
27	Oven	100	-

c. Calculation

Formula: E = K / [Annuity factor, n period, interest r]

No	Item	Quantity	Present unit cost	Total present unit cost (K)	Useful Life years (n)	Years of purchase	Discount rate (r)	Annuity factor	Annual cost (E)	Proportion of utilization	
										OPD service % / baht	Com. Services % /baht
1	Height scale	1 unit	1,000	1,000	15	1996	0.03	11.9379	83.766	100 / 11.937	-
2	Spraying machine	1 unit	49,000	49,000	15	1998	0.03	11.9379	4,104.574	40/ 1,641.829	60 / 2,462.744
3	Centrifuge	1 unit	21,000	21,000	15	1998	0.03	11.9379	1,759.103	-	100 / 1,759.103
4	Dental equipment	1 unit	20,000	20,000	15	1998	0.03	11.9379	1,675.336	100/ 1,675.336	-
5	Bed	1 unit	3,200	3,200	15	1998	0.03	11.9379	268.053	100 / 268.053	-
6	Bed	1 unit	3,500	3,500	15	1998	0.03	11.9379	293.183	100 / 293.183	-
7	Sterilizer	1 unit	35,000	35,000	15	2003	0.03	11.9379	2,931.838	100/ 2,931.838	-
8	Bed	2 unit	4,000	8,000	15	1984	0.03	11.9379	670.134	50 / 335.067	50 / 335.067
9	Delivery bed	1 unit	30,000	30,000	15	1989	0.03	11.9379	2,513.004	50 / 1,256.502	50 / 1,256.502
10	Delivery bed	1 unit	30,000	30,000	15	1998	0.03	11.9379	2,513.004	50 / 1,256.502	50 / 1,256.502
11	CPR set	1 unit	5,800	5,800	10	1998	0.03	8.5302	679.937	100 / 679.937	-
12	Minor surgery set	1 set	12,600	12,600	10	1998	0.03	8.5302	1,477.104	100/ 1,477.104	-

	Continue page 75										
No	Item	Quantity	Present unit cost (baht)	Total present unit cost (baht)	Useful life years (n)	Year of purchase	Discount rate (r)	Annuity factor	Annual cost (E)	Proportion of utilization	
										OPD service %/baht	Com. Services %/baht
13	Blood pressure machine	2 unit	3,000	6,000	10	1984	0.03	8.5302	703.383	100 / 703.383	-
14	Blood pressure machine	1 unit	3,000	3,000	10	1998	0.03	8.5302	351.691	100 / 351.691	-
15	Blood pressure machine	1 unit	3,000	3,000	10	2003	0.03	8.5302	351.691	100 / 351.691	-
16	Dental chair	1 unit	1,500	1,500	10	1998	0.03	8.5302	175.845	-	100 / 175.845
17	Sterilizer	1 unit	6,000	6,000	10	1986	0.03	8.5302	703.383	100 / 703.383	-
18	Weight scale	1 unit	12,400	12,400	10	1997	0.03	8.5302	1,453.658	100/ 1,435.658	-
19	Weight scale	1 unit	12,400	12,400	10	1998	0.03	8.5302	1,453.658	100/ 1,435.658	-
20	Height scale	1 unit	3,770	3,770	10	1998	0.03	8.5302	441.959	100 / 441.959	-
21	IV pole	1 unit	1,500	1,500	10	1997	0.03	8.5302	175.845	100 / 175.845	-
22	Sterilizer	1 unit	9,500	9,500	10	1998	0.03	8.5302	1,113.690	100/ 1,113.690	-
23	Sterilizer	1 unit	600	600	10	1984	0.03	8.5302	70.338	100 / 70.338	-
24	Oven	1 unit	1,200	1,200	10	1997	0.03	8.5302	140.676	100 / 140.676	-
25	Oven	1 unit	1,200	1,200	10	1998	0.03	8.5302	140.676	100 / 140.676	-
Total									**26,245.529**	**72.39/ 18,899.138**	**27.61/ 7,246.391**

d. Proportion utilization of equipment

No	Kinds of activities	Number utilization of equipment	Percentage
1	OPD services	18,899.138	72.39
2	Community services	7,246.391	27.61
Total		26,245.529	100.00

Form III

Capital cost

Object : *Furniture/office equipment*
Local currency : Baht
Time of data collecting : January 21- 27, 2005
Source of data : List of inventory in Ban Mai PCU 2004
Fiscal Year : 2004

a. Availability of furniture/office equipment

No.	Furniture	Quantity	Present price per unit	Total unit cost	Useful life year	Year of purchase
1	Transformer	1 set	800	800	10 years	1993
2	Transformer	1 set	6,700	6,700	10 years	2001
3	Transformer	2 set	2,850	5,700	10 years	2001
4	Generator	1 unit	3,500	3,500	10 years	2001
5	Development kit	1 set	5,500	5,500	10 years	1983
6	Grill	1 unit	4,350	4,350	10 years	1988
7	Curtain	1 set	25,000	25,000	5 years	2003
8	Extinguisher	1 unit	3,500	3,500	10 years	1994
9	Extinguisher	2 unit	3,500	7,000	10 years	1997
10	Washing machine	1 unit	5,400	5,400	10 years	2000
11	Cart dressing dispending	1 unit	5,000	5,000	10 years	1992
12	Cooler	1 unit	2,800	2,800	10 years	1999
13	Electric fan 16”	1 unit	1,300	1,300	5 years	1989
14	Electric fan 16”	2 unit	1,300	2,600	5 years	1997
15	Electric fan 16”	4 unit	1,300	5,200	5 years	1998
16	Electric fan 16”	5 unit	1,300	6,500	5 years	2003
17	Ceiling fan	3 unit	1,500	4,500	10 years	1995
18	Amplifier	1 unit	25,000	25,000	10 years	2003
19	Telephone	1 unit	2,700	2,700	5 years	2001
20	Television	1 unit	9,000	9,000	10 years	1998
21	Radio HT	1 unit	14,000	14,000	10 years	1993
22	Light lamp	1 unit	14,400	14,400	10 years	1989
23	Light lamp	1 unit	14,400	14,400	10 years	1997
Continues from page 9						
No.	**Furniture**	**Quantity**	**Present**	**Total unit**	**Useful**	**Year of**

			price per unit	cost	life year	purchase
24	Light lamp	1 unit	18,900	18,900	10 years	1998
25	Wood cabinet	1 unit	3,500	3,500	10 years	1986
26	Wood cabinet	1 unit	3,500	3,500	10 years	1999
27	Wood cabinet	1 unit	5,600	5,600	10 years	1984
28	Wood cabinet	1 unit	5,600	5,600	10 years	1998
29	Wood cabinet	2 unit	800	1,600	5 years	1998
30	Wood cabinet	1 unit	6,000	6,000	10 years	1998
31	Table	1 unit	2,000	2,000	5 years	1984
32	Table	1 unit	1,500	1,500	5 years	1984
33	Steel cabinet	1 unit	2,200	2,200	10 years	1990
34	Steel cabinet	1 unit	2,200	2,200	10 years	1998
35	Steel cabinet	1 unit	2,200	2,200	10 years	1995
36	Wood cabinet	1 unit	2,200	2,200	5 years	1998
37	Wood cabinet	1 unit	2,300	2,300	5 years	2001
38	Wood cabinet	2 unit	3,000	6,000	10 years	2002
39	Steel cabinet	1 unit	4,600	4,600	10 years	2003
40	Steel cabinet	1 unit	2,300	2,300	10 years	1995
41	Chair	5 unit	400	2,000	10 years	1998
42	Computer table	1 unit	3,000	3,000	10 years	2001
43	Steel table	1 unit	2,500	2,500	10 years	1996
44	Wood table	2 unit	1,200	2,400	5 years	1983
45	Wood table	1 unit	1,500	1,500	5 years	1998
46	Wood table	1 unit	1,900	1,900	5 years	1998
47	Wood table	1 unit	1,600	1,600	5 years	1997
48	Wood table	1 unit	1,600	1,600	5 years	1998
49	Chair	2 unit	2,500	5,000	10 years	1998
50	Steel cabinet	1 unit	11,000	11,000	15 years	1998
51	Shelf	1 unit	1,500	1,500	10 years	1998
52	Calculator	1 unit	2,500	2,500	10 years	1998
53	Typewriter	1 unit	8,600	8,600	15 years	1997
54	Typewriter	1 unit	8,600	8,600	15 years	1998
55	Computer	1 unit	25,000	25,000	10 years	2001
56	Printer	1 unit	13,500	13,500	10 years	2001
57	Video player	1 unit	7,500	7,500	10 years	1998
Total				**344,750**		

b. Calculation

Formula: E = K / [Annuity factor, n period, interest r]

No	Item	Quantity	Present unit cost	Total present unit cost (K)	Useful life years (n)	Years of purchase	Dis-count rate (r)	Annuity factor	Annual cost (E)
1	Steel cabinet	1 unit	11,000	11,000	15 years	1998	0.03	11.9379	921.435
2	Typewriter	1 unit	8,600	8,600	15 years	1997	0.03	11.9379	720.394
3	Typewriter	1 unit	8,600	8,600	15 years	1998	0.03	11.9379	720.394
4	Transformer	1 set	800	800	10 years	1993	0.03	8.5302	93.784
5	Transformer	1 set	6,700	6,700	10 years	2001	0.03	8.5302	785.444
6	Transformer	2 set	2,850	5,700	10 years	2001	0.03	8.5302	668.214
7	Generator	1 unit	3,500	3,500	10 years	2001	0.03	8.5302	419.151
8	Development kit	1 set	5,500	5,500	10 years	1983	0.03	8.5302	1.000
9	Grill	1 unit	4,350	4,350	10 years	1988	0.03	8.5302	1.000
10	Extinguisher	1 unit	3,500	3,500	10 years	1994	0.03	8.5302	419.151
11	Extinguisher	2 unit	3,500	7,000	10 years	1997	0.03	8.5302	820.613
12	Washing machine	1 unit	5,400	5,400	10 years	2000	0.03	8.5302	633.044
13	Cart dressing dispending	1 unit	5,000	5,000	10 years	1992	0.03	8.5302	1.000
14	Cooler	1 unit	2,800	2,800	10 years	1999	0.03	8.5302	328.245
15	Ceiling fan	3 unit	1,500	4,500	10 years	1995	0.03	8.5302	538.909
16	Amplifier	1 unit	25,000	25,000	10 years	2003	0.03	8.5302	2,930.763
17	Television	1 unit	9,000	9,000	10 years	1998	0.03	8.5302	1,055.074
18	Radio HT	1 unit	14,000	14,000	10 years	1993	0.03	8.5302	1,641.227
19	Light lamp	1 unit	14,400	14,400	10 years	1989	0.03	8.5302	1.000
20	Light lamp	1 unit	14,400	14,400	10 years	1997	0.03	8.5302	1,688.119
21	Light lamp	1 unit	18,900	18,900	10 years	1998	0.03	8.5302	2,263.418
22	Wood cabinet	1 unit	3,500	3,500	10 years	1986	0.03	8.5302	1.000
23	Wood cabinet	1 unit	3,500	3,500	10 years	1999	0.03	8.5302	419.151
24	Wood cabinet	1 unit	5,600	5,600	10 years	1984	0.03	8.5302	1.000
25	Wood cabinet	1 unit	5,600	5,600	10 years	1998	0.03	8.5302	656.491
26	Wood cabinet	1 unit	6,000	6,000	10 years	1998	0.03	8.5302	703.383
27	Steel cabinet	1 unit	2,200	2,200	10 years	1990	0.03	8.5302	257.907
28	Steel cabinet	1 unit	2,200	2,200	10 years	1998	0.03	8.5302	257.907
29	Steel cabinet	1 unit	2,200	2,200	10 years	1995	0.03	8.5302	257.907
30	Wood cabinet	2 unit	3,000	6,000	10 years	2002	0.03	8.5302	703.383
31	Steel cabinet	1 unit	4,600	4,600	10 years	2003	0.03	8.5302	539.260
32	Steel cabinet	1 unit	2,300	2,300	10 years	1995	0.03	8.5302	269.630
33	Chair	5 unit	400	2,000	10 years	1998	0.03	8.5302	234.461
34	Computer table	1 unit	3,000	3,000	10 years	2001	0.03	8.5302	351.691
35	Steel table	1 unit	2,500	2,500	10 years	1996	0.03	8.5302	293.076
36	Chair	2 unit	2,500	5,000	10 years	1998	0.03	8.5302	586.152

Continues

No.	Item	Quantity	Present Unit cost	Total present unit cost (K)	Useful life years (n)	Year of purchase	Dis-count rate (r)	Annuity factor	Annual cost (E)
37	Shelf	1 unit	1,500	1,500	10 years	1998	0.03	8.5302	175.845
38	Calculator	1 unit	2,500	2,500	10 years	1998	0.03	8.5302	293.076
39	Computer	1 unit	25,000	25,000	10 years	2001	0.03	8.5302	2,930.763
40	Printer	1 unit	13,500	13,500	10 years	2001	0.03	8.5302	1,582.612
41	Video player	1 unit	7,500	7,500	10 years	1998	0.03	8.5302	879.229
42	Curtain	1 set	25,000	25,000	5 years	2003	0.03	4.7135	5,303.914
43	Electric fan 16”	1 unit	1,300	1,300	5 years	1989	0.03	4.7135	1.000
44	Electric fan 16”	2 unit	1,300	2,600	5 years	1997	0.03	4.7135	1.000
45	Electric fan 16”	4 unit	1,300	5,200	5 years	1998	0.03	4.7135	1,103.214
46	Electric fan 16”	5 unit	1,300	6,500	5 years	2003	0.03	4.7135	1,379.017
47	Telephone	1 unit	2,700	2,700	5 years	2001	0.03	4.7135	572.822
48	Wood cabinet	2 unit	800	1,600	5 years	1998	0.03	4.7135	339.450
49	Table	1 unit	2,000	2,000	5 years	1984	0.03	4.7135	1.000
50	Table	1 unit	1,500	1,500	5 years	1984	0.03	4.7135	1.000
51	Wood cabinet	1 unit	2,200	2,200	5 years	1998	0.03	4.7135	466.744
52	Wood cabinet	1 unit	2,300	2,300	5 years	2001	0.03	4.7135	487.960
53	Wood table	2 unit	1,200	2,400	5 years	1983	0.03	4.7135	1.000
54	Wood table	1 unit	1,500	1,500	5 years	1998	0.03	4.7135	318.234
55	Wood table	1 unit	1,900	1,900	5 years	1998	0.03	4.7135	403.097
56	Wood table	1 unit	1,600	1,600	5 years	1997	0.03	4.7135	1.000
57	Wood table	1 unit	1,600	1,600	5 years	1998	0.03	4.7135	339.450
Total									**38,667.558**

Form IV

Capital cost

Object : *Vehicles*
Local currency : Baht
Time of data collecting : January 21-27, 2005
Source of data : List of inventory in Ban Mai PCU 2004
Fiscal Year : 2004

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a. Kind of vehicles

No	Vehicles	Quantity	Present of unit cost (K)	Useful life year (n)	Year of purchase	Discount rate (r)	Annuity factor	Annual cost (E)
	Car	1	268,000	15	1998	0.03	11.9379	22,449.509
	Motorcycle	1	34,500	10	1997	0.03	8.5302	4,044.453
	Motorcycle	1	34,882	10	1997	0.03	8.5302	4,089.235
Total								**30,583.197**

Form V

Operating cost

Object : *Material costs / Supplies: drugs, vaccines, contraceptive pill/tool, small equipments (unit cost <4000 baht/or useful life < 1 year)and other material.*

Local currency : Baht

Time of data collecting : January 21 – 27, 2005

Source of data : List of drug utilization in Ban Mai PCU 2004

Fiscal Year : 2004

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a. Utilization of Material costs / Supplies

No.	Items	Unit	Quantity	Unit cost (baht)	Total cost (baht)
1	Amoxicillin 250 mg	Cap	5,468	1.150	6,288.200
2	Amoxicillin DS	Btl	176	14.000	2,464.000
3	Allumina and magnesia	Tab	1,340	0.248	332.320
4	Antacid susp syrup 240 ml	Btl	147	11.000	1,617.000
5	Bysacodyl 5 mg	Tab	1,716	0.286	490.776
6	Chlorpheniramine 60 ml syr 2mg/5ml	Btl	250	4.380	1,095.000
7	Chlorph. Maleate inj. 10 mg/ml 1 ml	amp	13	2.300	29.900
8	Cimetidine 400 mg	Tab	4,784	0.720	3,444.480
9	Cinnarizine 25 mg	Tab	14,376	0.054	776.304
10	Co-trimoxazole adult	Tab	1,145	0.700	801.500
11	Co-trimoxazole susp 60 ml	Btl	21	9.730	204.330
12	Diclofenac 25 mg	tab	5,060	0.085	430.100
13	Hydroxyzene 10 mg	tab	4,785	0.097	464.145
14	Bromhexine 8 mg	tab	9,290	0.055	510.950
15	Curcuma	Cap	50	1.500	75.000
16	Cloxacillin 250 mg	Cap	3,296	1.280	4,218.880
17	Cloxacillin syr 125mg/5ml	Btl	20	18.000	360.000
18	Dextometrophan HBr 15 mg	Tab	2,412	0.310	747.720
19	Diazepam 2 mg	Tab	4,769	0.102	486.430
20	Aminophylline 200 mg	Tab	120	0.128	15.360
21	Dimenhydrinate inj. 50 mg/ml, 1ml	Amp	12	4.000	48,000.000
22	Dimenhydrinate 50mg	Tab	2,310	0.176	406.560
23	Dromperidone tab	Tab	1,983	0.182	360.906
24	Dromperidone susp 30 ml (1mg/ml)	Btl	27	6.000	162,000.000
25	Erythromycin 250mg	Cap	849	1.588	1,348.212
26	Erythromycin DS 60 ml (125 mg/5ml)	Btl	47	16.840	791.480
27	Ferro-B-Cal	Tab	4,650	0.184	855.600
28	Glyseryl Guiacolate syr 60 l (100 mg/5ml)	Btl	509	5.000	2,545.000
29	Hydroclorothiazide 50 mg	Tab	7,239	0.254	1,838.706
Continuous from page 15					

No.	Items	Unit	Quantity	Unit cost (baht)	Total cost (baht)
30	Hyoscine-N-buthybromide	Tab	1,210	1.120	1,355.200
31	Hyoscine-N-buthybromide inj. 10 mg/ml, 1mg	Amp	3	4.500	13.500
32	M. Carminative 180 ml	Tab	164	8.510	1,395.640
33	Mist Scill Ammon 180 ml	Btl	31	12.890	399.590
34	M. Tussis (Brown Mixture) 60 ml	Btl	33	8.000	264.000
35	Sodamine tab 300 mg	tab	5,740	5.400	30,996.000
36	Sodium bicarbonate mixt. 60 ml	Btl	36	3.200	115.200
37	Ibuprofen 200 mg	Tab	8,400	0.190	1,596.000
38	Multivitamin syr	Btl	20	9.730	194.600
39	Acetaminophen 325 mg	Tab	3,735	0.080	298.800
40	Acetaminophen 500mg	Tab	26,375	0.161	4,246.375
41	Penicillin V 250 mg	tab	14,508	0.666	9,662.328
42	Penicillin V DS 60 ml (125 mg/5ml)	Btl	315	9.630	3,033.450
43	Salbutamol 2 mg	Tab	1,330	0.198	263.340
44	Salbotamol syrup 2 mg/5ml 60 ml	Btl	33	8.000	264.000
45	Tetracyclin HCL 250 mg	Cap	5,969	0.380	2,268.220
46	Multivitamin tab	Tab	6,300	0.235	1,480.500
47	Vit. B complex	Tab	3,305	0.121	399.905
48	ORS powder 6.975gr	Sac	580	2.000	1,160.000
49	D-5-S/2 infuse sol 1000ml	Btl	3	18.500	55.500
50	D-5 1000 ml	Btl	2	18.500	37.000
51	D-5-W 1000 ml	Btl	3	18.500	55.500
52	NSS 0.9% 1000ml	Btl	36	18.500	666.000
53	Alcohol 70% 450ml	Btl	11	35.000	385.000
54	Calamine lotion 60ml	Btl	111	7.230	802.530
55	Chloramphenicol ED 0.5% 10 ml	Btl	264	8.000	2,112.000
56	Clotrimazole cream 1% 5g	Tube	37	15.000	555.000
57	Prednisolone cream 0.5% 5gr	Tube	206	5.350	1,102.100
58	Povidone Iodine sol. 10% 450 ml	btl	24	15.000	360.000
59	Povidone Iodine scrub 7.5% 450 ml	btl	1	32.000	32.000
60	Triamcinolone Acetonide oral paste 1 gr	tube	99	3.500	346.500
61	Lidocain HCl 1% 50ml	Vial	2	26.000	52.000
62	Cotton/wool 0.35 g	pack	18	45.000	810.000
63	Gauze bandage 2”x 6 yard	roll	98	2.500	245.000
64	Gauze bandage 3”x 6 yard	roll	84	3.750	315.000
65	Gauze bandage 4”x 6 yard	roll	28	3.410	95.480
66	Gauze 3”x 3”x 3”	roll	10,000	0.315	3,150.000
67	Set IV adult	set	6	7.800	46.800
68	Disp. Needle No. 21G x 1 ½”	Unit	1,000	0.450	450.000
69	Disp. Needle No. 24G x 1 ½”	Unit	600	0.450	270.000
70	Disp. Needle No. 25G x 1 ½”	Unit	1,200	0.450	540.000
71	Disp. Syringe 3cc	Unit	700	1.170	819.000
72	Plaster 12”	Roll	4	23.000	92.000
73	Disp. Needle No. 24Gx1”	box	400	0.450	180.000
74	Norgesic	Tab	6,300	0.129	812.700
75	Anti-tetanus serum 0.5 ml inj.	Amp	109	12.000	1,308.000
76	Oi		226	8.510	1,923.260

Continuous from page 15&17

No.	Items	Unit	Quantity	Unit cost (baht)	Total cost (baht)
77	Ammonia sol	Btl	1	41.000	41.000
78	Oral pill contraceptive	Strip	314	16.230	5,096.220
79	Oral pill contraceptive	Strip	699	4.922	3,440.478
80	Blood sugar test	stick	293	16.000	4,688.000
81	Pregnant test	stick	48	10.000	480.000
82	Glove	unit	16	7.500	120.000
83	T.A cream	tube	10	9.000	90.000
84	Anti-louse	pot	1	10.000	10.000
85	Urine test	stick	5	13.500	67.500
86	Nylon 4/0	roll	12	46.360	556.320
87	Condom	unit	160	1.590	254.400
88	DTP vaccine	dose	290	7.33	2,125.700
89	OPV vaccine	dose	380	8.67	3,294.600
90	HBV vaccine	dose	110	5.87	645.700
91	JE vaccine	dose	144	5.33	767.520
92	GM/MMR	dose	50	55.91	2,795.500
93	DT vaccine	dose	67	3.08	206.360
Total					**344,703.175**

b. Proportion utilization of material cost / supplies:

- OPD service : 94.56% (drugs, other material)
- Community services : 5.44% (Vaccine, contraceptive pill/tool,)

Form VI

Operating cost

Object : *Public utility cost*
Local currency : Baht
Time of data collecting : January 21 – 27, 2005
Source of data : List of payment in Ban Mai PCU 2004
Fiscal Year : 2004

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a. Number of public utility cost

No	Kinds of public utility	Cost
1	Office supply	27,200.000
2	Telephone	3,104.610
3	Electricity	8,281.390
4	Water	2,220.000
5	Fuel	6,000.000
6	Cleaning service	36,000.000
7	Maintenance / repair	0.000
Total		82,806.000

Form VII

Operating cost

Object : *Labor cost*
Local currency : Baht
Time of data collecting : January 21 – 27, 2005
Source of data : List of salary in Ban Mai PCU 2004
Fiscal Year : 2004

VII a. Main salary (per year)

No	Category of personnel	Gross annual salary (baht)	Cost of annual allowances (baht)	Housing support	Treatment (baht)	Total Annual Cost (baht)
1	Public Health Adm. Officer 6	212,010	18,480	51,000	9,664	**291,154**
2	Public Health Scholar 6	165,570	17,280	000	14,287	**197,137**
3	Public Health Com. Officer 6	161,280	17,280	000	6,863	**185,423**
4	Public Health Com. Officer 5	96,390	17,280	000	8,171	**121,841**
5	Registered Nurse 4	87,200	17,280	000	3,474	**107,954**
Total		722,450	87,600	51,000	42,459	**903,509**

VIIb. Proportion the time allocation of health personal

No	Personal	Total annual cost	OPD services (%)	Community services (%)	Unit cost	
					OPD service	Community services
	Public Health Adm. Officer 6	**291,154**	**10.4**	**89.6**	**30,280.016**	**260,873.984**
	Public Health Scholar 6	**204,337**	**10.7**	**89.3**	**21,864.059**	**182,472.940**
	Public Health Com. Officer 6	**185,423**	**10.8**	**89.2**	**20,025.684**	**165,397.316**
	Public Health Com. Officer 5	**121,841**	**10.5**	**89.5**	**12,793.305**	**109,047.695**
	Registered Nurse 4	**107,954**	**10.5**	**89.5**	**11,335.170**	**96,618.830**
Total		**910,709**	**10.58**	**89.42**	**96,298.234**	**814,410.765**

APPENDIX B

Main activities

Form VIII
Object : OPD
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

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a. Time schedule

No	Days	Time (hours)
1	Monday	7.00 am – 7.00 pm
2	Tuesday	7.00 am – 7.00 pm
3	Wednesday	7.00 am – 7.00 pm
4	Thursday	7.00 am – 7.00 pm
5	Friday	7.00 am – 7.00 pm
6	Saturday	8.00 am – 12.00 am
7	Sunday	8.00 am – 12.00 am

b. Number of visit

No	Month	Number of visit
1	October	375
2	November	374
3	December	275
4	January	289
5	February	1,506
6	March	357
7	April	598
8	May	880
9	June	643
10	July	705
11	August	650
12	September	380
Total		**7,032**

c. Number of home visit (emergency cases)

No	Month	Number of visit
1	October	31
2	November	30
3	December	31
4	January	31
5	February	29
6	March	31
7	April	30
8	May	31
9	June	30
10	July	31
11	August	31
12	September	30
Total		**366**

Number of home visit (OPD services) average about 1 case per day (unstructured interview)

Form IX

Main activities

Object : Community services-ANC/PNC
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

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a. Time schedule:

No	Days	Time (hours)	Information
1	Monday	08.30 – 12 .00	1 times/week
2	Tuesday	-	-
3	Wednesday	-	-
4	Thursday	-	-
5	Friday	-	-
6	Saturday	-	-
7	Sunday	-	-

b. Number of visit

No	Month	Number of visit
1	October	5
2	November	6
3	December	5
4	January	4
5	February	6
6	March	7
7	April	10
8	May	7
9	June	9
10	July	6
11	August	5
12	September	6
Total		**76**

Form X

Main activities

Object : Community services-Well child/baby clinic
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

a. Time schedule:

No	Days	Time (hours)	Information
1	Monday	-	-
2	Tuesday	-	-
3	Wednesday	08.30 – 12.00	1 times/month
4	Thursday	-	-
5	Friday	-	-
6	Saturday	-	-
7	Sunday	-	-

b. Number of visit

No	Month	Number of visit
1	October	27
2	November	26
3	December	35
4	January	34
5	February	42
6	March	39
7	April	30
8	May	39
9	June	49
10	July	31
11	August	31
12	September	31
Total		**414**

Form XI

Main activities

Object : Community services-Immunization
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

a. Time schedule

Second week

No	Days	Location	Time allocation	Information
1	Monday	-	-	-
2	Tuesday	-	-	-
3	Wednesday	PCU	08.30 –12.00	1 times/month
4	Thursday	-	-	-
5	Friday	-	-	-
6	Saturday	-	-	-
7	Sunday	-	-	-

b. Coverage of immunization

No	Month	Number of visit (target population)
1	October	27
2	November	26
3	December	35
4	January	34
5	February	42
6	March	39
7	April	30
8	May	39
9	June	49
10	July	31
11	August	31
12	September	31
Total		**414**

Form XII

Main activities

Object : Community services-School Health
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

Time schedule/activities

No	Month	Number of activities	Number of activities
1	February	3	258
2	June	3	258
3	July	3	258
4	August	3	258
Total		**12**	**1,032**

Form XIII

Main activities

Object : Community services-Screening test for high risk group

Time of data collecting : January 21 – 27, 2005

Source of data : Time schedule of Ban Mai PCU

Fiscal Year : 2004

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a. Time schedule:

No	Days	Time (hours)	Information
1	Monday	-	-
2	Tuesday	-	-
3	Wednesday	-	-
4	Thursday	-	-
5	Friday	08.30- 11.00	Every Friday, March - July
6	Saturday	-	-
7	Sunday	-	-

b. Number of activities/visit

No	Month	Number of visit
1	March	71
2	April	75
3	May	81
4	June	76
5	July	63
Total		**369**

Form XIV

Main activities

Object : Community services-Health education
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

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a. Time schedule

Time	**Target population**
Every day	Every patient in OPD service

b. Number of activities

No	**Month**	**Number of activities**
1	October	375
2	November	374
3	December	275
4	January	289
5	February	1,506
6	March	357
7	April	598
8	May	880
9	June	643
10	July	705
11	August	650
12	September	380
Total		**7,032**

Form XV

Main activities

Object : Community services-Family Planning
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

a. Time schedule: Every day

No	Days	Time (hours)
1	Monday	07.00 am – 07.00 pm
2	Tuesday	07.00 am – 07.00 pm
3	Wednesday	07.00 am – 07.00 pm
4	Thursday	07.00 am – 07.00 pm
5	Friday	07.00 am – 07.00 pm
6	Saturday	08.00 am – 12.00 pm
7	Sunday	08.00 am – 12.00 pm

b. Number of visit/activities

No	Month	Number of visit
1	October	86
2	November	73
3	December	84
4	January	100
5	February	84
6	March	86
7	April	93
8	May	86
9	June	96
10	July	96
11	August	91
12	September	95
Total		**1,070**

Form XVI

Main activities

Object : Summary the number of main activities
Time of data collecting : January 21 – 27, 2005
Source of data : Time schedule of Ban Mai PCU
Fiscal Year : 2004

No	Kinds of activities		Number of activities
I	**OPD services**		**7,032**
II	**Community services**		**10,407**
1	ANC/PNC	76	
2	Well child/baby clinic	414	
3	Immunization	414	
4	School health	1,032	
5	Screening test for high risk group	369	
6	Health education	7,032	
7	Family planning	1,070	

BIOGRAPHY

NAME	Franky Obron Novijanes Soriton
DATE OF BIRTH	November 5, 1966
PLACE OF BIRTH	Noongan, District of Minahasa, Province of North Sulawesi, Indonesia.
INSTITUTION ATTENDED	District Health Office of Bitung City, North Sulawesi, Indonesia.
FELLOWSHIP/RESEARCH GRANT	Asian Development Bank / Decentralized Health Support I of North Sulawesi Province
PRESENT POSITION	Medical Doctor (Chief the Community Health Center of South Bitung Sub District)