CHAPTER III

PROPOSAL:

IMPROVING DRUG USE

IN HEALTH CENTERS, MUANG DISTRICT,

KANCHANABURI PROVINCE, THAILAND

3.1 Introduction

Working as the chief of a health center, I'm facing problems of national drug use in my workplace. The problems are caused from factors within the health center and outside. Examples of those factors are the drug supply system, recording system, drug and treatment knowledge of health personnel, patient expectation and requests, etc. I discussed this issue with my colleges who work in other health centers and found that we are all facing similar problems. I do not know how serious the problem is, what the causes and consequences are. I only know that the drug problem has impact on either people's health or health worker's performance.

During my study in Master Degree of Public Health, I found that the World Health Organization had developed a set of indicators to investigate drug use in health facilities. The indicators were tested in many developing countries. I feel that these

indicators are very useful in exploring the drug use situation at the health center level to identify problems and their causes before introducing any intervention. Thus, I would like to try out the indicators in my work area. The outcome of the study will be valuable field experience for further development of indicators which would be more appropriate for use in the Thai context and by other developing countries. And, of course, it would be beneficial to the global population.

In this proposal, I will use the drug use indicators, designed by the World Health Organization as the tool. And I would like to express my recognition and appreciation to all the contributors to the manual and WHO staff in Action Program on Essential Drugs.

There are four states in the project: baseline investigation; intervention implementation; post-intervention evaluation of short-term impact; and follow-up evaluation of long-term effect. The participatory approach will be used. And the participants will participate at the very early and at every stage of the project.

3.2 Background

This section describes general information about health centers in Munag District, Kanchanaburi Province.

- **Geography**
  - Muang District, Kanchanaburi Province is 129 kilometers far from Bangkok to the west. It is one of the 13 districts of Kanchanaburi Province. It occupies 6.23% of the total provincial area. At the west of the district is the border to Myanmar.
  - Muang District, Kanchanaburi is divided into 13 Tambons, 97 villages. There are 1 municipal area and 3 sanitation areas in the district.

- **Demography**
  - In the year 1999, population of Muang District, Kanchanaburi is 148,369. Population density is 85 per sq. km.

Table 3.1 Population of Muang District, Kanchanaburi by Tambon

Tambon	village	household	Population		
			male	female	total
Tha Makam	5	2,488	2,778	2,976	5,754
Ko Samrong	8	1,849	3,780	3,886	7,666
Wang Dong	11	2,082	3,522	3,706	7,228
Wang Yen	7	1,695	2,580	2,620	5,200
Chong Sadao	7	891	1,419	1,491	2,910
Kang Sian	9	1,871	3,807	3,952	7,759
Lad Ya	7	7,565	13,219	11,136	24,355
Nong Bua	9	1,978	3,304	3,494	6,798
Nong Ya	7	1,496	2,384	2,543	4,927
Ban Kao	14	2,943	5,120	4,838	9,958
Pak Prak	13	7,455	8,083	7,738	15,821
Ban Nua	0	12,488	24,704	25289	49,993
Ban Tai					
Total 13	97	44,801	74,700	73,669	148,369

Source: District Health Coordination Committee, 1999 Annual Report. (document, 1999) pp. 4-5.

- The population under 5 years old is 8.61% of population. About 14% of population are the school age. There are about 11% of population of elderly.

Table 3.2 Population of Muang District, Kanchanaburi by Age

Age	Population %		
	Male	**Female**	**Total**
0-4	4.24	4.37	8.61
5-9	4.33	4.60	8.93
10-14	2.23	3.95	6.18
15-19	4.89	4.05	8.94
20-24	4.69	4.39	9.08
25-29	5.21	5.03	10.24
30-34	5.14	4.25	9.39
35-39	4.28	3.75	8.03
40-44	2.51	1.96	4.47
45-49	2.44	2.35	4.79
50-54	2.27	2.46	4.73
55-59	2.10	2.46	4.56
60-64	1.77	1.63	3.39
65-69	1.48	1.55	3.03
70-74	1.49	1.54	3.03
75	1.25	1.35	2.60
Total	50.33	49.67	100

Source: District Health Coordination Committee, 1999 Annual Report. (document, 1999) p.6.

- **Economic**
  - The agriculture area occupies 31.38% of area. Major products are sugar cane, cassava, rice and corn.
  - Average income of population per head is 18,000 Baht per year.

- **Social data**
  - There are 67 government schools, 10 private schools and 4 colleges.
  - There are 63 temples. Most of population (97%) is Buddist.
  - There are 5 hospitals, 24 health centers, 25 private clinics and 55 drug stores.

Table 3.3 Health facilities in Muang District, Kanchanaburi by Tambon

Tambon	Provincial hospital, MoPH		Health center, MoPH		Municipal health center	Other governmental hospital		Private hospital	
	No.	beds	large	general		No.	beds	No.	beds
Tha Makam				1				1	30
Ko Samrong				1					
Wang Dong				4					
Wang Yen				1					
Chong Sadao				2					
Kang Sian				2					
Lad Ya			1	1		1	150		
Nong Bua				1					
Nong Ya				2					
Ban Kao			2	3					
Pak Prak	1	362		1					
Ban Nua					1			1	30
Ban Tai					1			1	30
Total	1	362	3	19	2	1	150	3	90

Source: District Health Coordination Committee, 1999 Annual Report. (document, 1999) p.14.

- **Major health problems**

Table 3.4 1999 Causes of Sickness of Outpatient (1,000 population)

Causes of sickness	number	rate
Diseases of the respiratory system	22,978	154.80
Diseases of the digestive system	10,033	67.60
Diseases of the skin and subcutaneous tissue	5,939	40.00
Other causes of morbidity	5,211	35.10
Diseases of the circulatory system	5,137	34.60
Symptoms, signs and abnormal clinical and laboratory finding, not elsewhere classified	3,850	25.90
Diseases of the musculoskeletal system and connective tissue	3,635	24.40
Disease of the eye and adnexa	1,915	12.90
Certain infectious and parasitic diseases	1,313	8.80
Diseases of the genitourinary system	919	6.10

Source: District Health Coordination Committee, 1999 Annual Report. (document, 1999) p.11.

Table 3.5 1999 Causes of Sickness of In-patient (100,000 population)

Causes of sickness	number	rate
Accidents	2,834	1,909.00
Diarrhea and intestinal infectious diseases	1,068	719.00
Upper respiratory tract infectious diseases	914	615.00
Malaria	769	518.00
Diabetes mellitus	757	510.00
Hypertensive diseases	697	469.00
Gastric and duodenal ulcer	622	419.00
Ischaemic heart diseases	597	402.00
Human immunodeficiency virus disease	570	384.00
Diseases of appendix	470	316.00

Source: District Health Coordination Committee, 1999 Annual Report. (document, 1999) p.12.

Table 3.6 1999 Number and Rate of Diseases Under Surveillance (100,000 population)

Causes of sickness	number	rate
Diarrhea	1,316	886.98
Malaria	775	522.35
Pneumonia	284	191.41
Chickenpox	99	66.73
Food poisoning	80	53.92
Influenza	73	49.20
Haemorrhagic conjunctivitis	67	45.16
Dengue Haemorrhagic fever	43	28.98
Intentional self-harm, except self-poisoning	39	26.29
Tuberculosis	29	19.55

Source: District Health Coordination Committee, 1999 Annual Report. (document, 1999) p.13

- **Health manpower (MoPH)**

Table 3.7 Health Manpower per 1,000 Population

Health manpower	Muang District, KB	Whole Kingdom
Physician	0.18	0.29
Dentist	0.04	0.06
Pharmacist	0.07	0.10
Professional nurse	1.14	0.92
Technical nurse	0.85	0.47
Practical nurse & midwife	0.11	0.63
Dentist assistant	0.50	0.03
Pharmacist assistant	0.05	No data
Public Health Administrator	0.10	No data
Public Health Officer	0.04	No data
Community Health Worker	0.30	No data
Family Planning Worker	0.02	No data

Sources: 1) District Health Coordination Committee, 1999 Annual Report. (document, 1999) p. 4-5.

2) The National Health Association of Thailand, 1999 Public Health Diary. (Bangkok: Sahapracha Panit, 1999) p 194, p.203.

- **Basic characteristics of health center**
  - Health centers are considered to be the closest health facilities to the people. The numbers of villages under their responsibility vary between one to five.
  - Health center provides integrated health care within and outside health center. Its roles are health promotion, prevention and control of

diseases, provision of treatment. rehabilitative services and support of health development activities, include primary health care, and community development projects as well as quality of life development. The curative service is provided around the clock every day.

- There are no physicians at health centers. The personnel are health workers with different backgrounds: - nurse, technical nurse, midwife, junior sanitarian, auxiliary dental worker, family planning worker, and public health officer. The numbers of workers vary from two to four.
- Costs of services and medicines for the patients are considered very low at the health center.
- Numbers of patients seen daily vary from ten to more than one hundred.
- The longest waiting time at health center is less than thirty minutes.

- **Classification**
  - In Muang District, Kanchanaburi. Kanchanaburi, there are four type of areas: - urban, semi-urban, rural and border area
  - The health centers are divided into two types: - general and large health center. Most of the health centers are general heath centers. The large health centers are selected from the health centers that located in the center area of the community, include transportation, communication and socio-economic, that allow them to serve more people in wider area. The large health centers may have higher health

services capacities such as basic dental health services that are not provided at the general health centers. The large health centers will also support general health center in their network for referral system, administration and technical issues.

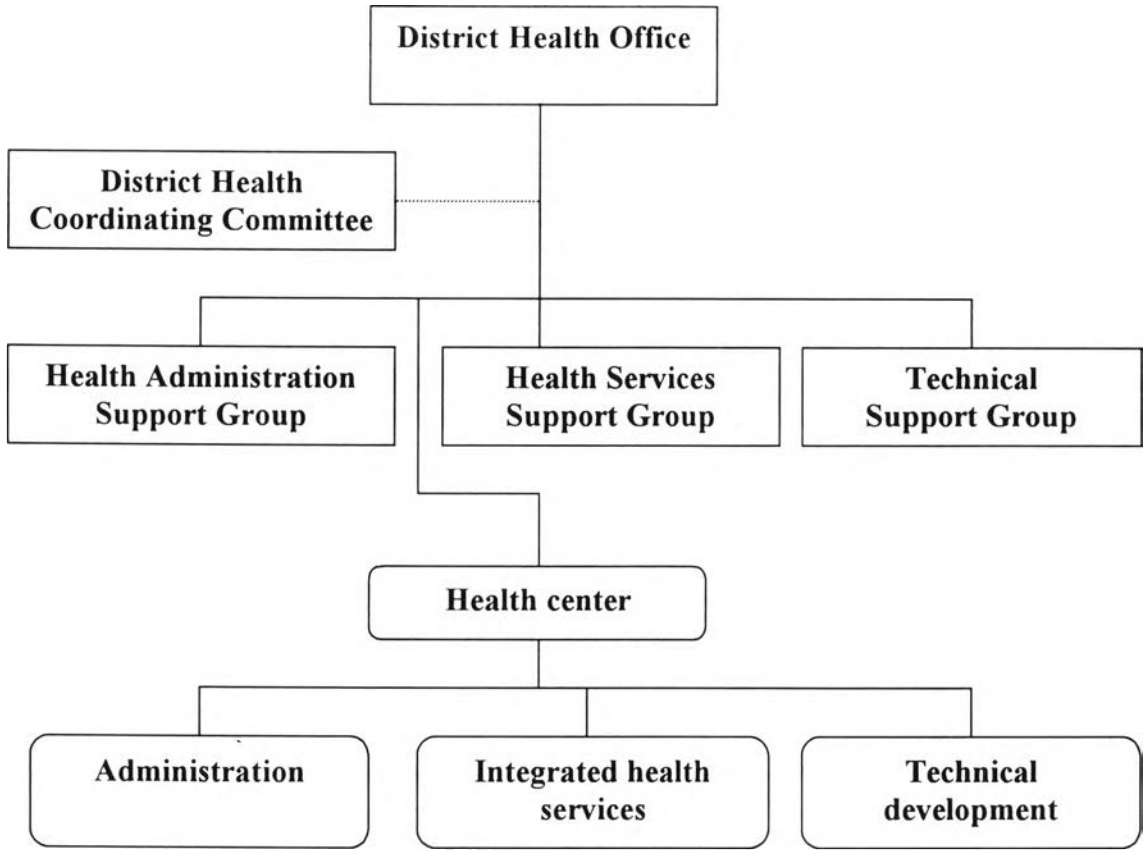
- There are 22 health centers in Muang District, Kanchanaburi located in different areas, as shown below.

Table 3.8 Health Centers by Type and Location

Type of health center	Area of location			
	Urban	Semi-urban	Rural	Border
Large health center	♦ Ladya		♦ Ban Kao ♦ Lum Thahan	
General health center	♦ Kaeng Siang ♦ Nong Bua	♦ Kao Purang	♦ Ban Yang ♦ Nong Song Ton ♦ Kang Luang ♦ Nong Kae ♦ Wang Dong ♦ Huay Num Kao ♦ Wang Yen ♦ Nong Ya ♦ Wang Pra Mu ♦ Tha Thungna ♦ Tap Sila ♦ Tha Manao ♦ Tha Tum ♦ Nong Sampran	♦ Takian Ngam ♦ Pu Num Ron
TOTAL = 22	3	1	16	2

- **Administration system of health center**
  - The 22 health centers organize themselves into five teams. Within the team, they help each other in all aspects: - health campaign, school health program, training volunteers or community leaders, survey, research, etc. They also support each other when short of drugs or equipment. Cooperation and coordination are strong within the team as well as among the teams. This is potentially a good network for learning.
  - Once a month, at the beginning of the month, a meeting among heads of health centers and district health staff is organized. In the meeting, the management and technical issues are discussed. At the middle of each month, the one of the health staff form each health center has a meeting at the district health office with the district health staff.
  - For supervision, there is a *District Health Coordinating Committee (DHCC)*. The members are from district health office and hospital. The committee visits each health center twice a year to evaluate the performance. In the evaluation, the committee uses a set of indicator that was designed by the provincial health committee.

- **Organizational structure of health center**



- **Drug system**
  - The National Drug Committee prepared a national drug list.
  - Each year, the Provincial Pharmacy Committee sets a health center drug list and sent it to the district health office. The district health office sent the list to each health center. The health centers select drugs from the list and sent the requests back to the district health office.
  - Using the annual budget send from the Provincial Health Office, the district health office orders drugs as requested by the health centers.
  - The drugs are distributed to each health centers according to its major health problems and numbers of patients.

3.3 Objectives

The objectives of this study are:

a) To explore drug use in health centers in Muang District, Kanchanaburi Province, Thailand;

b) To collect baseline data on prescribing practices by health personnel, patient care, and facility-specific factors;

c) To try out, in the Thai context, indicators and methods designed by the WHO Action Program on Essential Drugs ;

d) To improve health center personnel prescribing patterns by using interactive educational intervention or managerial intervention.

3.4 Method

- **Select type of facilities for the study**

This is a cross-sectional study to compare between both individual health centers and between individual prescribers.

Every health center in Muang District, Kanchanaburi Province is included. The total number is 22 health centers.

- **Sampling units and units of analysis**

  - Area

    The sample includes all health centers in Muang District, Kanchanaburi Province. It includes urban, semi-urban, rural, and border areas because many factors related to drug supply and utilization patterns vary between facilities.

  - Type of health center

    Both large and general health centers will be the sample.

  - Health providers

    The study will identify the identity and background of the individual providers who treated patients in the sample. It is possible to examine provider-specific differences in treatment patterns.

  - Prescribing encounters

    Encounters are collected from all health centers in the sample and studied as a whole. Large enough samples will provide reliable answers to the study question.

- **Sample size**

In order to get more reliable within-facility estimates of prescribing patterns, at least 100 cases of prescribing encounters per health center and prescriber will be collected in this cross-sectional survey. Retrospective data collection over the past year

will be used while patient care and facility indicators are always collected prospectively.

- **Tool**

The three groups of core drug use indicators will be used as the measuring tool: - prescribing indicators with 5 indicators; patient care indicators with 5 indicators; and facility indicators with 2 indicators. The total number of indicators is 12.

- GROUP 1: Prescribing indicators

  These indicators measure the performance of health workers in relation to the use of drugs. No information on signs and symptoms is required. This is to find out whether health workers follow appropriate diagnostic procedures and whether they select products and dosage schedules to fit underlying health problems.

  The data to measure the prescribing indicators will be recorded on the *prescribing indicator form* (Appendix 1) and the detailed prescribing encounter form (Appendix 2).

There are five indicators in this group: -

(1) Average number of drugs per encounter

The purpose of this indicator is to measure the degree of polypharmacy. The number of encounters will be collected, even if no drugs were given.

$$\text{Average number of drugs} = \frac{\text{total number of drugs prescribed}}{\text{total number of encounters}}$$

(2) Percentage of drugs prescribed by generic name

The purpose of this indicator is to measure the tendency to prescribe by generic name.

$$\%\ \text{described as generic} = \frac{\text{total number of generic drugs prescribed}}{\text{total number of drugs prescribed}} \times 100\%$$

(3) Percentage of encounters with an antibiotic prescribed

The purpose of this indicator is to measure the overall level of use of antibiotic, which is commonly overused and costly. Antibiotics to be measured include - Penicillin; other antibacterial; anti-infective dermatological drugs; anti-infective opthalmological agents; and anitidiarrhoeal drug with streptomycin, neomycin, nifuroxazide or combinations.

$$\%\ \text{antibiotics} = \frac{\text{total number of patients who received antibiotic}}{\text{total number of encounters}} \times 100\%$$

(4) Percentage of encounters with an injection prescribed

The propose of this indicator is to measure the overall level of use of injection, another drug therapy which is commonly overused and costly

$$\%\ \text{injections} = \frac{\text{total number of patients who received injections}}{\text{total number of encounter}} \times 100\%$$

(5) Percentage of drugs prescribed from the essential drugs list

The purpose of this indicator is to measure the degree to which practices conform to the national essential drug list for health centers.

$$\% \text{ drugs from EDL} = \frac{\text{total number of EDL drugs prescribed}}{\text{total number of drugs prescribed}} \times 100\%$$

- GROUP 2: Patient care indicators

These indicators measure key aspects of what patients experience at health centers, and how well they have been prepared to deal with the drugs received.

There are five indicators in this group: -

(6) Average consultation time

The purpose of this indicator is to measure the time that the health worker spends with a patient in the process of consultation. That is the time between when individual consultations actually begin and end. Waiting time is not included.

$$\text{Average consultation time} = \frac{\text{total consultation time}}{\text{total number of cases}} \text{ minutes}$$

(7) Average dispensing time

The purpose of this indicator is to measure the time that the health worker spends with a patient in the process of prescribing

and dispensing. That is the time between arriving and leaving the dispensing counter. Waiting time is not included.

$$\text{Average dispensing time} = \frac{\text{total dispensing time}}{\text{total number of cases}} \quad \text{seconds}$$

(8) Percentage of drugs actually dispensed

The purpose of this indicator is to measure the degree to which health centers are able to provide the drugs, which were prescribed. Information on drugs obtained outside the health center provides some indication about reliability of drug supply, as well as how prescribing choices match the range of drugs available in the system.

$$\%\ \text{drugs actually dispensed} = \frac{\text{Total drugs actually dispensed}}{\text{total number of drugs prescribed}} \times 100\%$$

(9) Percentage of drugs adequately labeled

The purpose of this indicator is to measure the degree to which health workers record essential information on the drug packages they dispense.

$$\%\ \text{drugs adequately labeled} = \frac{\text{Total drugs adequately labeled}}{\text{total of drugs dispensed}} \times 100\%$$

(10) Percentage of patients' knowledge of correct dosage

The propose of this indicator is to measure the effectiveness of the information given to patients on the dosage schedule of the drugs the receive.

Ideally, the patient should be thoroughly told details about drugs described including the reasons why the drugs are given, how each drug should be used, as well as, information about precautions and possible side effects. But if the necessary data (patient name, drug name, when to be taken and in what quantity) are available in written form on the drug package, the knowledge of patient can be evaluated against this record.

The interviews will be held away from the main clinic area. Failure to know either of when and in what quantity each drug should be taken should be scored as inadequate.

$$\% \text{ knowledge of correct dosage} = \frac{\text{total patients with adequate report}}{\text{total number of patients interviewed}} \times 100\%$$

- GROUP 3: Health facility indicators

  The ability to prescribe rationally is influenced by the working environment. Important components are the adequate supply of drugs and information.

There are two indicators in this group: -

(11) Availability of copy of essential drugs list

The purpose of this indicator is to indicate the extent to which copies of the national essential drug list are available at the health centers.

This indicator reads either yes or no for the facility as a whole. No calculation needed.

(12) Percentage of availability of key drugs

The purpose of this indicator is to measure the availability at health centers of key drugs recommended for the treatment of common health problems.

The list of key drugs that should be always available will be compiled.

$$\% \text{ availability of key drugs} = \frac{\text{Total drugs in stock}}{\text{total of drugs on key drugs list}} \times 100\%$$

3.5 Activity Plan

3.5.1 Baseline investigation

(1) Preparation activities

- At the original state, it is essential to involve the Provincial Chief Medical Officer, District Health Officer, District Health Development Committee, supervisor, and all health personnel in Muang District, Kanchanaburi. It is necessary to explain the conceptual framework of the study, and to call for participatory action.

- A key drugs list will be created before the fieldwork begins. Essential drugs, generic names, antibiotics that should always be in stock will be listed. As the study progresses, new drugs, not on the initial lists found by data collectors, will be put on the list. The updated list will be distributed to all data collectors.
- Confirm the availability and accessibility of records

(2) Selecting and training data collectors, and conducting pilot tests

- The WHO recommended that the most effective data collectors are persons with clinical experience. Thus, the data collectors in this project will be selected from health personnel within Muang District, Kanchanaburi. They will be trained to collect data, assign code, and handle missing information. (For detail, please refer to 3.6 manpower requirement.)

(3) Collecting data

- The process of data collecting and coding the specific indicators will not be separated because data collectors are sufficiously familiar with pharmaceutical terms to be able to reliably extract information from records and to record it accurately during observation. The *prescribing indicator form* (Appendix 1) will be used. The indicators can be coded and recorded directly on the form.

- Before data collection starts, the heads of all health centers will participate in preparing a schedule of visits with the dates of every site visit. The schedule will be sent to every health center in advance.
- Data collection should include selecting samples of encounters; filling in encounter form; observing episodes of patient care; completing a facility summary form; and coding.
- A procedure will be developed to verify each day that data collected are complete and of good quality.
- Once data collection is underway, the study coordinator will meet regularly with data collectors and go out into the field with them to ensure that the agreed procedures are being followed.

(4) Processing data

- Decisions on coding the prescribing indicators can be delayed until the data are returned to the study office.
- To process the data from the study, manual tabulation analysis will be used.
- Data collection in one health center can be completed in a single day by a team of two investigators

(5) Displaying the results

- At the facility

- At the end of the day when all data have been collected and the results calculated, a meeting will be held with staff of the participating health center to report the results. The results will be discussed in a non-judgmental way. The result sheet will be circulated and each participant will be asked for one comment and suggestion.
- If the results are better than the provincial norms, the participants will be asked for suggestions as to how the provincial situation could be improved.
- If the results are worse, the participants will be asked how the situation at the health center could be improved.

❑ At the administrative level

- After all the data have been collected and analyzed, an administrative level meeting will be conducted. The participants are policy-maker officials involved in drug use issues, the district health officer, a representative from the district health development committee, and representative staff from the health centers surveyed.
- Summary tables and graphics will be prepared.

3.5.2 Intervention implementation

❑ A meeting of the five health teams will be held. The result of investigation will be posed in the problem-posing process.

- The participants will identify their own problems, causes, and consequences.
- The participants will propose alternative solutions to the problem. An investigation of each alternative solution will be done.
- Participants will select the solution, which is most appropriate to their own health center.
- Each health center, in cooperation with their own team, will plan for action. The objectives will be set. And the strategy will be clearly determined.
- Each health center implements the intervention.
- The process of reflection, evaluation, and re-identification of the problem will be integrated.
- This phase will take six months.

3.5.3 Post - intervention: Evaluation of short-term impact

- This phase will be done right after the six months of intervention implementation.
- The drug use indicator, which had been used in the investigation phase, will be used again as the evaluation tool.
- The processes, which had been carried out in the investigation phase (collecting data, processing data, and displaying the results), will be repeated.

- The recommendations and the lessons learned will be valuable input for the next step. The participants will reconsider the strategy and proceed with the improvement through integration of routine work. This may be called as intervention implementation phase 2.

3.5.4 Follow-up: Evaluation of long-term effect

- This phase will follow after the 18 months of intervention implementation phase 2.
- Once again, the drug use indicators will be used as the evaluation tool. The processes - collecting data, processing data, and displaying the results- will be repeated.
- As it is the end of the project, the health workers from other districts will be invited to the display of workshop the result workshop. The recommendations will be collected.

3.5.5 Time frame

The project will take three years to complete. There are four major phrases: - baseline investigation; intervention implementation; post-intervention: evaluation of short-term impact; and follow-up: evaluation of long-term effect.

- **Baseline investigation**

  Month 1 - notification to relevant authorities of the purposes and methods of the study;

- visit each sample site beforehand to promote active cooperation;
- logistical preparation; administrative procedure; creation of key drugs list.

Month 2 Recruit and train data collectors; conduct pilot tests

Month 3 Collect data at 22 health centers, with drug use indicators

Month 4 Data processing

Month 5 Write up report

Month 6 Workshop at provincial level to report and discuss findings, gather recommendations for alternative solutions.

- **Intervention implementation (1)**

Month 7 Intervention design by using participatory approach. The steps and issues include problem posing, problem identification, investigation of alternative solutions, planning for action, monitoring, and evaluation.

The preparation for intervention implementation and administrative procedure will be done.

Months 8-13 Implementation of intervention (1). This phase includes reflection, evaluation, and problem re-identification.

- **Post-intervention: evaluation of short-term impact**

  Month 14 Evaluation by using drug use indicators as the tool. The results will be used as input for development of intervention

- **Intervention implementation (2)**

  Months 15-32 Implementation of intervention (2). This phase includes reflection, evaluation, and problem re-identification.

- **Follow-up: evaluation of long-term effect**

  Month 33 Evaluation by using drug uses indicators as the tool.

  Months 34-35 write up report

  Month 36 Workshop at provincial level to discuss and disseminate findings and recommendations

3.6 Manpower Requirement

Data collection can be a tiresome task. It requires concentration and attention to detail. People who have discipline and flexibility but lack of technical knowledge can be trained to perform effectively. In this project, the data collectors will be selected from health personnel who work at health centers or the district health office.

a) Trained data collectors are essential for the study. In a team, there will be two data collectors, so that all data can be collected in a single day in each health center. To identify and solve unforeseen problems, all data collectors will be trained together and practice together at one or two pilot sites.

b) The model training course for data collectors recommended by the WHO will be used.

Topic	Aids	Time
1. How data are collected: ❑ Show prescribing and patient care indicator forms; facilities summary form ❑ Indicate fields for different types of data and point out that some require coded data.	Data collection forms	15 min.
2. Coding prescribing encounters: ❑ Data must be organized in a standard manner ❑ Form has space for both names and codes for patient, and codes for indicators ❑ The data collector's role is to locate in clinical record information on patient demographics and drugs prescribed, and enter it into the form.	Prescribing indicator form	15 min.
3. Drug codes: ❑ Drug names can be similar, and there is need for precision ❑ All drugs must be recorded, whether dispensed or not.	Reference drug list	15 min.
4. Practice session to enter data into prescribing indicator forms: ❑ 10 sample cases which are problem free, and illustrate how to transcribe data from the health facility records to the forms ❑ 10 additional sample cases illustrating various problems likely to be encountered (illegible data, encounters for which no drug is prescribed, antibiotic not on drug list)	Prescribing indicator forms; sample data for entry	60 min.

Topic	Aids	Time
5. How to draw the retrospective sample of patient encounters: ❑ Procedures for assembling the list that comprise the sample frame, and listing cases ❑ Linking other necessary data on health problems and drugs for the encounters.	Listing / facility summary forms	60 min.
6. Observing and interviewing patients: ❑ How to sample patients for process of care and knowledge ❑ Getting accurate times on examination and dispensing ❑ Criteria for adequate knowledge.	Patient care forms	50 min.
7. Collecting other indicators: ❑ Criteria for essential drug lists and formulary ❑ Survey health facility stores for drugs in stock.	Facility summary forms	30 min.
8. Field practice: ❑ Visit and collect complete set of data for 1-2 facilities ❑ Complete facility summary table and report	All forms	1 day
9. Final discussion: ❑ Review field test experiences and address concerns and questions ❑ Assign data collectors to working teams ❑ Finalize data collection plan and organization of work (schedules, transportation, communication).	Schedules	1/2 day

3.7 Budget

The preparation of the budget was based on the Royal Thai Government system. The budget was designed only for the major activities. The detailed budget for the implementation stage will be designed by each of the project participants.

Budget category	Sub-total	Total (Baht)
Baseline investigation		
Notification to relevant authorities of the purposes and methods of the study; visit each sample site beforehand to promote active cooperation; logistical preparation; administrative procedure; creation of drug reference list etc.		3 500
▪ Stationery	500	
▪ Transportation - fuel	3 000	
Recruit and train data collectors; conduct pilot tests		20 260
▪ Training material 22 persons x 3 days x 20 Baht	1 320	
▪ Stationery 22 persons x 20 Baht	440	
▪ Communication: phone, fax etc.	300	
▪ Food, snack & beverage 27 persons x 3 days x 200 Baht	16 200	
▪ Transportation - fuel 10 days x 200 Baht	2 000	

Budget category	Sub-total	Total (Baht)
Collect data with drug use indicators		6 440
▪ Data collection forms 22 sites x 20 Baht	440	
▪ Transportation - fuel 30 days x 200 Baht	6 000	
Data processing		500
▪ Stationery	500	
Write up report		2 500
▪ Report printing 50 copies x 50 Baht	2 500	
Workshop at provincial level to report, discuss findings, and gather recommendations		1 750
▪ Snack & beverage 25 persons x 50 Baht	1 250	
▪ Stationery 25 persons x 20 Baht	500	
Baseline investigation Sub-total		34 950
Intervention implementation		
To be designed by the participant under the integration of routine work.		
Intervention implementation Sub-total		(Not included)

Budget category	Sub-total	Total (Baht)
Post-intervention: Evaluation of short-term impact		
Collect data with drug use indicators		6 440
▪ Data collection forms 22 sites x 20 Baht	440	
▪ Transportation - fuel 30 days x 200 Baht	6 000	
Data processing		500
▪ Stationery	500	
Write up report		2 500
▪ Report printing 50 copies x 50 Baht	2 500	
Workshop at provincial level to report, discuss findings, and gather recommendations		1 750
▪ Snack & beverage 25 persons x 50 Baht	1 250	
▪ Stationery 25 persons x 20 Baht	500	
Post-intervention : Evaluation of short-term impact Sub-total		11 190

Budget category	Sub-total	Total (Baht)
Follow-up: Evaluation of long-term effect		
Collect data with drug use indicators ▪ Data collection forms 22 sites x 20 Baht ▪ Transportation - fuel 30 days x 200 Baht	 440 6 000	6 440
Data processing ▪ Stationery	 500	500
Write up report ▪ Report printing 100 copies x 50 Baht	 5 000	5 000
Workshop at provincial level to report, discuss findings, and gather recommendations ▪ Snack & beverage 100 persons x 25 Baht ▪ Stationery 100 persons x 20 Baht	 2 500 2 000	4 500
Follow –up: Evaluation of long-term effect Sub-total		16 440
GRAND TOTAL		62 580 (US$ 1788)

Note: the exchange rate as of current date.

3.8 Evaluation Plan

- The monitoring of intervention implementation will be done on a regular basis during routine activities as designed by participants.

- There will be two major evaluation periods. The first evaluation will be done after implementing the intervention for six months. The second evaluation is designed to be done after implementing the next intervention for eighteen months. The drug use indicators will be used as the evaluation tool.

3.9 Expected Outcome

- During the process, the investigation of health problems will be a by-product.

- The assessment of diagnosis and treatment quality diagnosis and treatment will be reviewed. The standard for adequate performance may be developed.

- The activities in the process will help strengthen health services system development such as improving the recording system, monitoring system, supervision system, drug supply system, etc.

- The educational and managerial interventions such as peer-review, self-monitoring, etc may be brought into action.

- Health workers will be alerted to the rational use of drug.

- A set of Thai drug use indicator, and appropriate strategies may be developed.

3.10 Ethical Issues

- The project action could be an important part of the reason that a group of sample suffered.

- Voluntary participation:

  No one should be forced to participate. The sample may fear that their nonparticipation will somehow affect their lives.

- No harm to the participants:

  The participants may feel uncomfortable answering some questions. Some of the questions may be unpleasant for the participants. The participants may begin questioning their own morality and ethics.

- Anonymity:

  The respondents may decide not to identify themselves.

- Confidentiality:

  Soon after verification of the interview and that further information no longer is needed, all identifying information identifying the participants will be safely removed.

- Deceiving participants:

  To make sure that the participants are not left with bad feelings or doubts about themselves based on their performance, the researchers have to identify themselves as researchers and tell the participants the truth that they are doing research, why they are doing it, and for whom. Deception needs to be justified by scientific or administrative concerns.

- Analysis and report:

  Both positive and negative finding will be reported. The report will also record pitfalls and problems, which were experienced in the inquiry.

3.11 Constraints

- Scientific constraints

  The researcher has to admit that she/he has very little experience in using the indicators, and has personal biases and beliefs in selecting these indicators. There might be other techniques that I am unaware of. Those techniques may be more appropriate to investigate the situation.

- Administrative constraints

  This is a sensitive issue. The investigation is always creating a feeling of finding fault. Those who participate in the project should not be harmed, unless they are willing and knowingly accept the risks of harm.

  The retrospective data may be missing or incomplete because it might not be recorded. The reliability of the data may be questioned. Where records do not exist or key components are missing, a prospective data collection will be used.

- Political constraints

  There may be some people who have an opposite point of view. Some people could influence the group decision making process. Some people would refuse to participate and might even attempt to block the project.

3.12 Limitations

- Since people who participate in providing information in the survey may have something in common such as general personality traits, the results of the study will not be generalizable to all kinds of people.

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