CHAPTER IV

DATA EXERCISE

INVESTIGATING DRUG USE IN A HEALTH CENTER

4.1 Introduction

My research question, as stated in the essay, is *how can we improve prescribing practice of health workers at the health centers?* This chapter is about the data exercise, which follows the research question.

The data exercise is aimed to develop my ability to:

- Plan the logistical aspect of the data collection process
- Prepare and implement a drug use indicators study
- Understand the strengths and weaknesses of different methods of sampling and data collection
- Analyze drug use practice in a setting using the drug use indicators
- Present the results of a drug use indicator study.

4.2 Methodologies

This is a cross-sectional study to explore drug use practice in a health center. The study includes both qualitative and quantitative methods.

Quantitative methods describe drug use patterns, or pinpoint specific problems that need attention. Qualitative methods are used to examine why these patterns or problems exist. The methods to collect qualitative data on drug use include in-depth interview, observations, and group discussion.

4.3 Data collection tool

The data collection tool for this exercise is WHO's core drug use indicator forms. (See Appendix 1-5). There are three groups of indicators:

Group One: Prescribing indicators

These indicators record how many drugs are prescribed and what types of drugs are prescribed. The prescribing indicators form for data collecting and recording is in Appendix 1.

There are five indicators in this group.

1 Average number of drugs per encounter

2 Percentage of drugs prescribed by generic name

3 Percentage of encounters with an antibiotic prescribed

4 Percentage of encounters with an injection prescribed

5 Percentage of drugs prescribed from essential drug list.

Prescribing indicator data are collected retrospectively because of an adequate source of data at the health center such as chronological treatment records.

Group Two: Patient care indicators

These indicators measure the adequacy of the patient care process. The patients care form for data collecting and recording is in Appendix 2.

There are five indicators in this group.

1 Average consultation time

2 Average dispensing time

3 Percentage of drugs actually dispensed

4 Percentage of drugs adequately labeled

5 Patients' knowledge of correct dosage

Patients care indicators data is collected prospectively by observation technique, in-dept interview with the patients who came to health center at the time the data was collected.

Group Three: Facility indicators

These indicators measure the factors that effect drug use at the facility level. The facility summary form for data collecting and recording is in Appendix 3.

There are two indicators in this group.

1 Availability of copy of essential drugs list

2 Availability of key drugs

Health facility indicator data are collected at the present situation.

4.4 Logistical preparation for field work

1 Set criteria for selecting health facility:

- A health center in a province near Bangkok
- Available with administration line
- Available resource of data
- The circumstances are similar to the target groups in my proposal.

2 To select the facility, I discussed with my advisor and MPH students in the learning-at-the-workplace program from Ayutthaya Province, Chonburi Province, and Bangkok. It was agreed that Ayutthaya would be the most appropriate province for this data exercise. And due to the criteria mentioned above, Pilom Health Center, Phachi District is the most appropriate.

3 After the selection of the facility, I contacted the head and the staff of the health center informally. I explained them about the thesis, the exercise, and the objectives. I discussed with them the feasibility of doing the exercise at their setting. I also requested their participation on a voluntary basis.

4 I requested the Academic Administrator of the College to send an official letter to the Provincial Chief Medical Officer of Ayutthaya Province.

5 I confirmed the schedule with the head of health center.

4.5 Technical preparation for field work

Prescribing indicator

1 I checked with the health center whether the source of data was available. I decided to collect retrospective data.

2 The sample size was drawn. The sample size is 30 cases of patient treatment records as recommend by WHO. It was planned to use systematic random sampling technique, and I decided to pick 5 cases of treatment record per month from January 1999 to June 1999.

Because the data are available and these months start from the middle of academic year (October-September cover all seasons of Thailand) and for

the sample of each case used. For example, if there were 100 cases of patient's records per month and a sample of 5 is needs, the sampling interval would be 100/5=20. Therefore, I selected every 20^{th} from the records and started from the first case of each month, random start by the simple random.

3 Prepared a list of drugs to be classified as generic name.

4 Prepare the prescribing indicator form.

Patients care indicator

1 The process would start when the patient came to the Health Center to consult with the health workers about his/ her problem(s), the health worker diagnosis, giving treatment, prescribing drug (s), and preparing and dispensing drug(s).

2 The observation technique is designed to collect both consultation and dispensing time for the same patient. This is considered as quantitative data.

3 It was planned to compare between the drug(s) prescribed and drug(s) actually dispensed to patient.

4 The criteria to evaluate patients' knowledge about drug(s) s/he received, was prepared. The criteria are type or names of drugs, reason for taking that drug, how to take it, for how long, what are the side effects, etc.

5 Prepare the patient care form.

Facility indicators

1 Find an up- to- date national essential drug list for the health center.

2 Prepare a list of key drugs as recommended by pharmaceutical staff, which depends on health problems in the health center.

3 Prepare the summary facility form.

4.6 Collecting data

I arrived at Pilom Health Center, Phachi District, Ayutthaya Province in the morning and met the head and staff of the health center. I introduced myself again and again explained the objectives of data collecting and briefly discussed the thesis.

Profile of Pilom Health Center

Pilom Health Center, under the Ministry of Public Health, is situated at Tambon Pilom, Phachi District, Ayutthaya Province. It covers 11 villages, 3,345 population and

670 household. There were 4 health workers at this health center. The head of the Health Center has been working here for more than 12 years. His background was junior sanitarian. He was 59 years old. Other staffs were two midwives and one dental nurse. The average patients were 125 per month and average patients fee was 50 Baht per case. The three health problems of this health center were:

1. Diseases of the respiratory system
2. Pyrexia of unknown origin
3. Diseases of digestive system

There were 75 items in the essential drug list for the health center. It was distributed by district hospital (Phachi Hospital). All of the health staff said that drugs were always available. The relationship between staff of the health center and the staff of Phachi Hospital (doctors, nurses, and pharmacists) was good. The staff of the health center received informal training about pharmaceutical and treatment once a month in average.

4.7 Analyze data

The followed data were analyzed and presented to all of the staff of Pailom Health Center at the end of the data collecting schedule.

Data on prescribing indicators were calculated and summarized on the prescribing form. The patient care indicators were calculated and summarized on the

patients care form. The facility indicators were calculated and summarized on the facility summary form. The report of the result of this exercise was recorded in the facility indicator reporting form.

The calculation of the data was based on WHO's recommendations.

4.7.1 Prescribing indicators

Prescribing Indicator Form

Location: Pilom Health Center, Phachi District, and Ayutthaya Province

Investigator: Punnarasi Jariyanuwat

Date:

Seq. #	type (R/P)*	date of Px	age (year)	# drugs	# generics	antib. (0/1)♦	Injec. (0/1) ♦	# on EDL	Diagnosis (optional)
1	R			2	2	1	0	2	
2				4	4	1	1	4	
3				3	3	0	0	3	
4				4	4	1	0	4	
5				2	2	0	0	2	
6				4	4	0	0	1	
7				3	2	1	0	2	
8				5	5	1	0	5	
9				3	3	1	0	3	
10				3	2	1	0	3	
11				2	1	1	0	2	
12				3	3	1	0	2	
13				3	3	0	0	2	
14				3	3	0	0	3	
15				2	2	1	0	2	
16				3	3	1	0	2	
17				3	3	1	1	3	
18				3	3	1	0	3	
19				4	3	1	0	3	
20				5	5	1	0	5	
21				3	3	0	0	3	
22				2	2	0	0	2	
23				2	2	0	0	2	
24				4	3	0	0	3	
25				2	1	0	0	2	
26				3	3	0	0	2	
27				3	3	0	0	2	
28				2	2	1	0	2	
29				2	1	0	0	1	
30				2	2	0	0	2	
Total				89	82	16	2	77	
Average				2.97(3)					
Percentage					92.13 % of total drugs	53.33 % of total cases	6.67 % of total cases	86.52 % of total drugs	

* Retrospective / Prospective

♦ 0 = No 1 = Yes

1. Average number of drugs per encounter

Start from counting the numbers of encounters for which data were collected. For this exercise this number will be 30 (a basis indicator survey). Then add up the number of drugs prescribed in all 30 cases of encounter. It's 89. Divide the total number of drugs prescribed by the total number of encounters. Express the result with one decimal.

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

$$= \frac{89}{30}$$

$$= 2.97$$

$$= 3$$

$$\text{SD} = 0.94$$

2. Percentage of drugs prescribed by generic name

Add up the number of generic drugs prescribed, then divide by the total number of drugs prescribed and multiply by 100. Express the result with one decimal.

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

$$= \frac{82}{89} \times 100$$

$$= 92.13$$

$$= 92.1\ \%$$

3. Percentage of encounters with an antibiotic prescribed

Add up the number of prescriptions for an antibiotic and divide by total number of encounters and multiply by 100. Express the result with one decimal

$$\% \text{ Prescribed with an antibiotic} = \frac{\text{number of prescription for an antibiotic}}{\text{number of encounters}} \times 100$$

$$= \frac{16}{30} \times 100$$

$$= 53.33$$

$$= 53.3\ \%$$

4. Percentage of encounters with an injection prescribed

Add the number of encounters with an injection, then divide by the total number of encounters and multiply by 100. Express the result with one decimal.

$$\% \text{ Prescribed with an injections} = \frac{\text{number of encounters with an injection}}{\text{number of encounters}} \times 100$$

$$= \frac{2}{30} \times 100$$

$$= 6.67$$

$$= 6.7\ \%$$

5. Percentage of drugs prescribed from the essential drug list

Add the number of drugs prescribed from the essential drug list, then divide by total number of drugs prescribed and multiply by 100. Express the result with one decimal.

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

$$= \frac{77}{89} \times 100$$

$$= 86.51$$

$$= 86.5\ \%$$

4.7.2 Patients care indicators

Patient Care Form

Location: Pilom Health Center, Phachi District, Ayutthaya Province

Investigator: Punnarasi Jariyanuwat

Date:

Seq. #	Patient identifier (if needed)	Consulting time (mins)	Dispensing time (secs)	# drugs prescribed	# drugs dispensed	# adequately labeled	Knows dosage (0/1)*
1		2.0	18	1	1	/	1
2		1.5	15	2	2	/	1
3		0.5	10	2	2	/	1
4		0.5	8	2	2	/	1
5		0.5	7	2	2	/	1
6		1.0	80	2	2	/	1
7		1.5	70	2	2	/	1
8		1.0	200	4	4	/	1
9		2.5	60	4	4	/	1
10		1.0	40	1	1	/	1
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Count		10	10				
Total		12	503	22	22	22	22
Average		1.2	50.3				
Percentage					100% of prescribed	100% of dispensed	100% of cases asked

* 0 = No 1 = Yes

1 Average consultation time

Start from counting the number of cases observed. It was 10 at this data collecting. Then add up all consultation times and divide by the total number of cases. Express the result as time in minutes and with one decimal.

$$\text{Average consultation ti} = \frac{\text{All consultation times}}{\text{total number of cases observed}}$$

$$= \frac{12 \text{ mins}}{10 \text{ cases}}$$

$$= 1.2 \text{ mins}$$

2. Average dispensing time

Count the number of cases observed. Add up the dispensing times then divide by the total number of cases observed. Express the result as time in seconds and with one decimal.

$$\text{Average dispensing time} = \frac{\text{all dispensing times}}{\text{total number of cases observed}}$$

$$= \frac{503}{10}$$

$$= 50.3 \text{ seconds}$$

3. Percentage of drugs actually dispensed

Add up the number of drugs prescribed and the number of drugs actually dispensed. After that divide the number of drugs actually dispensed by the total number of drugs prescribed and multiply by 100.

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

$$= \frac{22}{22} \times 100$$

$$= 100$$

4. Percentage of drugs adequately labeled

Add up the number of drugs with adequate labels. Then divided by the total number of drugs actually dispensed and multiply by 100.

$$\% \text{ of drugs adequately labeled} = \frac{\text{number of drugs with adequate labels}}{100} \times \text{total number of drugs actually dispensed}$$

$$= \frac{22}{22} \times 100$$

$$= 100$$

5. Patients' knowledge of correct dosage

Count the number patients who can correctly give the dosage for all drugs that they received. Then divide by the number of patients questioned and multiplies by 100.

$$\% \text{ of knowledge of correct dosage} = \frac{\text{total number of patient corrected dosage}}{\text{number question}} \times 100$$

$$= \frac{10}{10} \times 100$$

$$= 100$$

4.7.3 Health facility indicators

Facility Summary Form

Location: Pilom Health Center, Phachi District, Ayutthaya Province

Investigator: Punnarasi Jariyanuwat

Date:

Contacts: _____

_____

Problems or Comments: _____

_____

_____

_____

_____

Cases:

Retrospective	_____	covering dates	_____	to _____
Prospective	_____	covering dates	_____	to _____
Patient care	_____	covering dates	_____	to _____

Essential Drug List / Formulary available at facility? (0 / 1) 1

Key drugs in stock to treat important conditions			In stock (0 / 1)	
1	Aspirin (300 mg)	Tab	1	% in stock this facility
2	Paracetamal (500 mg)	Tab	1	
3	Chlorpheneramine (4 mg)	Tab	1	
4	Tetracycline (250 mg)	Cap	1	
5	Amoxycillin (500 mg)	Cap	1	90.91
6	Hydrochlorothaiazide (50 mg)	Tab	1	= 91%
7	Adrenaline injection	Amp	1	
8	Aminophylline (100 mg)	Tab	1	
9	ORS (oral dehydration salt)	Pack	1	
10	Tetracycline eye ointment	Tube	0	
11	Antacid oral suspension	Bottle	1	

1 Availability of copy of essential drugs list (EDL)

This indicator was checked with the health staff to determine whether they have a copy of essential drugs list at their health center, it is up to date, and they follow that EDL or not.

In other words, the criteria are:

1 there is a copy of EDL

2 it is up to date

3 the health workers follow the EDL

Availability of copy of EDL = yes

2. Availability of key drugs

According to the key drugs list recommended by the pharmacist, which are appropriated for the local health problems, the name of key drugs surveyed were recorded in the health facility form. The drugs in stock were checked to compare with the key drug list. Then added the number of drugs actually still in stock, divide by the total number of key drugs surveyed and multiply by 100. Express without decimal.

$$\% \text{ Availability of key drugs} = \frac{\text{number of drugs in stock}}{\text{number of key drugs survey}} \times 100$$

$$= \frac{10}{11} \times 100$$

$$= 90.9$$

$$= 91\ \%$$

4.8 Present results

After completing data collecting and analyzing, I met with the staff of the health center and displayed the results of data collecting as shown in the Facility Indicator Reporting Form.

Facility Indicator Reporting Form

Location: Pailom Health Center, Phachi District, Ayutthaya Province

Investigator: Punnarasi Jariyanuwat

Date:

		This facility	National standard
Number of cases	Prescribing	30	
	Patient care	10	
Average number of drugs prescribed		3	
Percentage of drugs prescribed by generic names		92.1%	%
Percentage of encounters with an antibiotic prescribed		53.3%	%
Percentage of encounters with an injection prescribed		6.7%	%
Percentage of drugs prescribed on essential drug list		86.5%	%
Average consultation time		1.2 Mins	mins
Average dispensing time		50.3 secs	secs
Percentage of drugs actually dispensed		100%	%
Percentage of drugs adequately labeled		100%	%
Percent correct patient knowledge of dosage		100%	%
Availability of essential drugs list or formulary		Yes	%
Percentage availability of key indicator drugs		91%	%

COMMENTS:

SIGNATURES:

I and the health center staff discussed about opinion on the situation, whether it is a problem, if it is so, what do they want to do.

The results of the discussion are:

1. Average number of drugs prescribed:

   The health center staff think it is a problem but they do not know how to change this situation because most patients request more than one drug.

2. Percentage of drugs prescribed by generic names:

   Though the percentage of this indicator was 92.1%, the problem is when the health center staff send the request list of drugs to the hospital by generic name, The health center staff received drugs by trade name. So the health center staff have to use that trade name for the next request.

3. Percentage of encounters with antibiotic:

   This is one of the big problems in this health center, according to the health workers. The health center staff said patients in their area take too many antibiotics most of the cases represent inappropriate use. To solve this problem, they try to use the standard treatment guideline, but it does not work because patients strongly believe that antibiotics can cure every pain and fever thus patients request antibiotic. If health workers refuse to provide these, patients will go to clinics, drug stores or the grocery stores to buy antibiotic, which the health workers considered as more dangerous.

4. Percentage of encounters with injection:

   This is not a problem in terms of health centers because the health workers have the authority to order injections, but only which on the job.

5. Percentage of encounter with essential drug list (EDL):

   This depends on the health problem and it's the relevancy to the EDL.

6. Average consultation time, average dispensing time:

   This also depends on local health problems, new or old patients, educational background of patients and the relationship between health workers and patients. The health workers think that time is not a problem.

7. Percentage of drugs actually dispensed, percentage of drugs adequately labeled, patients' knowledge of correct dosage, and availability of copy of EDL:

   There is no problem.

8. Availability of key drugs:

   Though there is not 100 % availability, it is not a problem, because the drugs actually necessaries are usually stilled in stock.

4.9 Lessons learned and recommendations

1. Good technical and logistical preparations are very important. For the technical preparation, I have to clearly determine type of data needed, and the type data collecting tools. I have to make sure that the source of data is available and needs to select and train a person to help me collect and code the data because I can not collect data all by myself within one day. The data needed are both retrospective and perspective. I can collect the retrospective data from the previous treatment record, but I have to collect the prospective data from the patients who visited the health center at that time of data collecting. For the logistic preparation, I have to reconfirm the schedule a few days in advance, I have to note down name of person I contacted, and I have to find a road map to the health center.

2. Only good preparation is not enough, I had to have a flexible schedule as well. To collect data, I have to contact many people - health workers and patients - who are all different but similar in some aspects. I learned to wait patiently until getting the data I needed. I needed 10 cases for the patient care indicators, and planned to finish the data collecting by noon, but the number of patients was not enough so I have to reschedule. There were times that the health workers are all busy and not available for this exercise.

3. To display and discuss the results, I have to do it very carefully and tried not to hurt anyone's feeling. I do not want the health center staff to feel that I was finding fault in their work, but is working together with them to improve a situation. I encourage them to speak freely about what they wanted to do.

4. To implement the WHO's indicators, I found that the health workers were confused between generic name and essential drugs. The other problem is there is no national standard or standard treatment guideline in some aspects.

4.10 Limitations

The health workers are interested in the MPH program, which I am studying. I can not cut them off thus quite a long time was spent talking about the program. They are more interested in the program than in my schedule and need to finish my work.

To collect data from retrospective records, I faced difficulty in reading the handwriting. And had to wait for the owner to read it for me and that wasted time.

It was difficult collect prospective data especially counting the consultation time, because patients and health workers have close relationships, thus they talked not

only about the sickness, but about all things; and not as a pair but as a group So I thinks the result of consultation time is not reliable.

4.11 Conclusion

I would like to say that the objectives of the data exercise were realized, Though the results of the exercise can not be generalized. Through this exercise, I have clearer view in implementing the proposal. More than that I feel that the health workers and I had started re-thinking and developing an awareness of rational use of drugs. There was no great result from the exercise, but it is a very good start of doing the right thing for the Thai people.