

CHAPTER IV

DATA EXERCISE

4.1. Introduction

The data exercise was conducted in Phachi Hospital that a community hospital in Phachi district, Ayutthaya Province, located about 28 kilometers from Ayutthaya provincial town. The permission to do data exercise was obtained through Dr. Chokchai Leetochawalit, the director of Phachi Hospital.

The population in Phachi District is 30,326. There are 30 beds in Phachi hospital, and is established since 1977 and services are formally provided since 1978. There are 97 staff working in the hospital. Three staff are medical doctors and two are laboratory officers.

4.2. Objectives

The main objectives of this study was:

(i). To test the data collection instruments (in depth interview and questionnaire) of the proposed study in order to get feed back and recheck for necessary changes to improve and modify the questionnaire in terms of applicability, suitability, and clarity of data collection instruments.

(ii). To improve my skills on data collection techniques in terms of observation, in depth interview, and personal interview.

4.3. Research Methodology

4.3.1. Sample Population

The sample population consisted of medical doctors and laboratory officers working in Phachi Hospital.

4.3.2. Sample Size

There are three medical doctors and two laboratory officers working in Phachi Hospital who play roles as clinicians and also laboratory users and laboratory service providers.

4.3.3. Tools Used

In the section of laboratory services in the hospital, observation and in depth interview guideline with laboratory officers were used. Questionnaire for personal interviews with medical doctors working in the hospital were applied.

4.4. The Results of Data Exercise

4.4.1. The Result of Observational Study

Observation study was done twice on Tuesday, 23 November 1999 in the section of laboratory services in Phachi Hospital from 8:30 to 9:30 AM and from 1:30 to 2:30 PM. Laboratory officers are very busy in the morning to provide

laboratory services in the hospital. It was needed to wait for them to do in depth interview till 10:30AM and also during the interview, laboratory staff was called many time by other health staff to perform laboratory tests for urgent cases. But they were not so busy in the afternoon.

The laboratory services section is well equipped and there is no shortage of supplies. Following equipment is:

(i). Microscope: There are 2 binocular microscopes with a light source. The microscopes supplied with $\times 10$, $\times 40$, and $\times 100$ power objectives and can be used for all microscope work in the hospital.

(ii). Spectrophotometer: There is one Spectrophotometer that can be used to perform laboratory tests in biochemistry service.

(iii). Centrifuge: There are 2 centrifuges that can be used to prepare urine deposits for urine analysis, plasma for laboratory tests in serology service, and haematocrite in the hospital.

(iv). Other important equipment and supplies are available in the section of laboratory services e.g. Pipette, VDRL shaker, Hot Air Oven, Hematocrite meter, haematocytometer, test tubes, diagnostic test kits, and reagents.

All of these equipment and supplies facilitate many laboratory tests in Hematology, Serology, Biochemistry, Microbiology, and Parasitology in order to support the quality of care for individual patients in Phachi Hospital.

The storage of reagents and safe blood products within refrigerators inside and outside the laboratory section were also observed. The thermometers outside the two refrigerators pointed out the temperature was in between +2°C and + 8°C, the correct temperature to store reagents and safe blood products.

All laboratory services have been established in one room and it is clean. The mains of water supply and electricity for the hospital are available all the time. However, the space for establishing laboratory services is small about 14 square meters because there are a lot of equipment and supplies within the section of laboratory services. The space is divided into parts by the short wall. One part is for preparing laboratory tests and another is for reporting results and maintaining computer database.

The report results of laboratory tests for each service are small but clear interpretation and they don't use computer for reporting results of laboratory tests and examinations. During the observation study, a laboratory officer was doing laboratory tests and another laboratory officer was reporting the test results and typing the information of laboratory tests into computer.

4.4.2. The Result of In-Depth Interview

During the in-depth interview with laboratory officers, we found that many equipment and supplies were already available and a lot of laboratory tests can be performed by laboratory section of the hospital as shown in the table 4.1 and 4.2 below:

Table 4.1: Equipment and supplies available in laboratory section of Phachi Hospital

Equipment and Supply	Amount
1. Microscope biocculaire	02
2. Spectrophotometer	01
3. VDRL Shaker	01
4. Centrifuge for Hematocrite	01
5. Centrifuge for Plasma and Urine	01
6. Sero Fuge (for matching & grouping)	01
7. Rotator	01
8. Hot Air Oven	01
9. Water Bath	01
10. Refrigerator	02
11. Computer	01
12. Pipette	02
13. Pipette for white blood cell count	several
14. Test tube	several

15. Slide	several
16. Hemocytometer	several
17. Reagents for Biochemical:	
• Blood sugar	several
• Cholesterol	several
• Triglyceride	several
• Bilirubine	several
• Blood urea nitrogen	several
• Liver function test	several
18. Reagents for microbiology & serology	
• Gram stain	several
• AFB (acid fast bacilli for TB)	several
• Wet smear	several
• KOH (fungus)	several
• Diagnostic test kits	several

Table 4.2: Laboratory tests available from the laboratory section of the Hospital

Laboratory Service	Laboratory Test
1. Hematology	<ul style="list-style-type: none"> • Complete blood cell count - Blood cell count: red cell, white cell, and plateletes. - Differential leukocytes: neutrophils, eosinophils, basophils, lymphocytes, monocytes, neutrophil myelocytes, eosinophil myelocytes, basophil myelocytes, and other abnormalities. - Differential erythrocytes: normocytes, macrocytes, microcytes, nucleated red cells, reticulocytes, nuclear remnants, abnormalities in shape, abnormalities in staining and other abnormalities. • Hematocrite • Hemoglobin estimation • Coagulation time • Bleeding time • Malaria • Other blood parasites
2. Serology/ blood transfusion	<ul style="list-style-type: none"> • HIV screening test (PA) • TPHA (syphilis) • VDRL (syphilis) • HbsAg

<p>3. Clinical biochemistry</p>	<ul style="list-style-type: none">• Typhoid test (Widal test)• Agglutination titre for para A, B, and C fever• Pregnancy test• ABO blood group• Cross matching• Rhesus factor (RhD) • Liver function test includes:<ul style="list-style-type: none">- Total protein- Albumin- Direct bilirubin- Total bilirubin- Alkaline phosphatase- SGOT- SGPT• Cholesterol• Triglyceride• Blood sugar• Creatinine• Uric acid• Blood urea nitrogen• Albumin and sugar in urine
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<p>4. Microbiology and parasitology</p>	<ul style="list-style-type: none"> • Culture and antibiotic sensitivity • Acid fast bacilli for tuberculosis • Stool examination • Urine analysis • Fungus examination
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A standard operating procedures manual (SOPM) is available in Phachi Hospital in Thai language developed by the Department of Medical Science, the Ministry of Public Health. However, laboratory officers did not follow SOPM in order to perform laboratory tests in the hospital. They provide laboratory services in the hospital based on their experience in medical laboratory and what they learned from the regular training course for three days every six months given by the Ayutthaya Provincial Hospital and the Provincial Health Department

The reasons why laboratory officers do not follow SOPM in order to provide laboratory services in the hospital is that the SOMP is too long and they do not have time to read due to workload in the hospital.

There are two laboratory officers working in the laboratory section of Phachi Hospital; one staff was trained for two years as laboratory officer. But another staff, she learned medical laboratory from previous staff and she did

not attend any training related to medical laboratory before working in laboratory services. She can provide only clinical biochemistry service. Therefore, one staff does the heavy workload and most of the laboratory activities in the hospital are entrusted with him.

External quality assessment scheme (EQA) so as to check the performance of laboratory staff and equipment have been done every three months by a group of people from the Ministry of Public Health. They said that even though they did not follow SOPM in order to perform laboratory tests in the hospital there have never been problems with the accuracy of laboratory results in laboratory services of Phachi Hospital.

There are two refrigerators for laboratory section in Phachi Hospital. One is for storing reagents of laboratory services and another one is for storing the safe blood products that always have 2-3 bags from the Blood Bank Center in Ayuthaya Provincial town with a temperature control system outside the refrigerators. They usually follow up the temperature within the refrigerators through temperature control system for the storage of reagents and safe blood products once a day.

Furthermore, there is no any complaint from either clinicians or patients that laboratory tests can not be performed in the hospital because there are many laboratory tests can be performed in the hospital and also there is the referral system of specimens. Some laboratory tests that can not be done by the section of laboratory services in the hospital, especially electrolytes and cancer

tests, the specimens have been sent to the Provincial Hospital or other institutes in Bangkok.

4.4.3. The Result of Personal Interview

(A) General Information

All respondents who are clinicians working in the hospital (100%) are male and their age is between 30 and 40 years old

All respondents (100%) are medical doctors. Two of them have 4 to 10 years work experience and one has over 10 years of work experience.

(B) Information about Common Health Problems in the Hospital

Table 4.3: The common health problems in out-patient consultation

Common Health Problems in OPD Consultation
1. Respiratory infection
2. Diarrhea
3. Fever
4. Headache
5. Back pain and muscle skeleton pain
6. Accidents
7. Abdominal pain
8. Anxiety

Table 4.4: The common health problems in in-patient services

Common Health Problems in IPD Services
1. Chronic obstructive pulmonary disease
2. Diarrhea
3. Labor
4. Accidents
5. Diabetes
6. Tuberculosis

(C) Information about the Laboratory Test Needs

Table 4.5: Information about laboratory test needs for out patient consultation and in patient services according to the common health problems in the hospital.

Needed Laboratory Test	Total No.	Percentage %
1. Hematology		
<ul style="list-style-type: none"> • Complete blood cell count includes <ul style="list-style-type: none"> - White blood cell count - Red blood cell count - Platelets - Differential leukocytes - Differential erythrocytes • Heamatocrite • Coagulation time • Bleeding time • Malaria 	3	100%
	2	67%
	1	33%
	1	33%
	1	33%
2. Serology and blood transfusion		
<ul style="list-style-type: none"> • ABO blood group • Rhesus factors (RhD) • Cross matching • Widal test • HIV • HBs Ag • VDRL 	3	100%
	3	100%
	3	100%
	3	100%
	1	33%
	1	33%
	1	33%

3. Biochemistry		
• Liver function test includes:	3	100%
- Total protein		
- Albumin		
- Direct bilirubin		
- Alkaline phosphatase		
- SGOT		
- SGPT		
• Electrolytes*	3	100%
• Blood sugar	2	67%
• Albumin and sugar in urine	2	67%
• Creatinine	2	67%
• Uric acid	2	67%
4. Microbiology		
• Culture	3	100%
• Stool examination	3	100%
• Urine analysis	3	100%
• Acid fast bacilli	3	100%
• Gram stain	3	100%
• Antibiotic sensitivity	3	100%
• Fern test	1	33%

* The specimen for electrolyte test has been sent to the laboratory section of Ayutthaya Provincial Hospital.

- 100% of clinicians need complete blood cell count, ABO blood group, Rhesus factors (RhD), cross matching, Widal test, liver function test, electrolytes, culture, stool examination, urine analysis, acid fast bacilli, gram stain, and antibiotic sensitivity to support diagnosis and treatment services in out patient consultation and in-patient department of the hospital.
- 67% of clinicians need heamatocrite, blood sugar, albumin and sugar in urine, creatinine, and uric acid.
- 33% of clinicians also need coagulation time, bleeding time, malaria, HIV, HBs Ag, VDRL, and fern test.

(D) Laboratory User Satisfaction Survey

All clinicians are satisfied with the tests available in the hospital. Two of them were also satisfied with the quality of tests, the morphology of reports, and knowledge and skills of laboratory staff. However, the other one fairly satisfied with the quality of tests in Phachi Hospital and he suggested that internal quality control should be improved.

At the end of the personal interviews, 2 respondents requested additional laboratory staff (1-2 staff) because they said that there are two staff and one learned laboratory from another one and she can provide only laboratory tests in biochemistry service. Therefore, most of laboratory tests are done by only one staff that leads to high workload in laboratory section of the hospital.

4.5.Limitation of the Study

Due to time constraints and language problems, the observation study in the section of laboratory services was done in a very short time. Moreover, in depth interviews also were conducted through an interpreter and not directly. Therefore, the information may not be accurate in terms of the existing laboratory tests.

The result of this study can not be generalized to other district hospitals in Ayutthaya Province. Such infrastructure, manpower, and staff performance are specific to the section of laboratory services in Phachi Hospital only.

The observation and in depth interview guidelines, and the questionnaire for personal interviews were developed so as to do the study in one country which testing took place in another country that laboratory services were very well equipped and adequately funded. And also most of laboratory tests are already available in the hospital. Therefore, I could not find deficiencies in terms of equipment and supplies in the section of laboratory services and big gap between the existing laboratory tests and test needs.

4.6. Conclusion

The findings from the study showed that there are many kind of laboratory services and tests that can be provided by the laboratory section in order to support the quality of care for individual patients in Phachi Hospital.

Laboratory services have been very well equipped and funded, and provided by the experienced laboratory officer. In-service training has been provided regularly every six months in order to upgrade knowledge and skills of laboratory officers to provide the quality of laboratory services in the hospital.

All clinicians working in Pachi Hospital are satisfied with the existing laboratory tests and there is the referral system of specimens that can not be tested and examined in the hospital. This showed that clinicians do not need additional laboratory tests in the hospital even though we found some gaps between existing laboratory tests and test needs in the hospital, especially for electrolytes.

The questions about common health problems in out patient consultation and in-patient services need to be explained. This is because clinicians avoided answering with the same common health problems in out-patient consultation and in-patient services of the hospital but the common health problems can be the same in realistic. Furthermore, the answers of these questions should not be more specific for the diagnosis of each disease because clinicians may not remember diagnosis of diseases and we can not get information from the real situation in terms of common health problems in the hospital. On these matters, I received feedback for my data collection instrument from my data exercise.

4.7. Recommendation

Based on the findings from observation study in the section of laboratory services in the hospital and in depth interview with laboratory officers provided that information is reliable and valid I would like to make following recommendation as follow:

1. One or two additional staff should be provided in order to carry out the role of laboratory services in the hospital because most of laboratory tests are done by only one laboratory officer and another laboratory officer has two jobs in the hospital as laboratory and X-ray technician. Therefore, one laboratory officer has a heavy workload in the section of laboratory services in Phachi Hospital.
2. Laboratory officers should follow standard operating procedures manual (SOPM) in order to perform laboratory tests in the hospital because it plays a very important role in terms of internal quality control (IQC). Even though there is an external quality assessment to check the accuracy of laboratory tests in the hospital, it may be not enough because internal quality control and external quality assessment (EQA) are complementary each other so as to provide accurate laboratory tests (WHO, 1998).