CHAPTER 3

PROJECT EVALUATION

3.1 Introduction

The evaluation is the systematic assessment of the activities, the process and the results of the project. In addition, evaluation also compares the meaning between "what is" and "what should be". Therefore, the appropriate project evaluation will lead to the success of the project development and continuity of the project in accordance with the set objectives. This study was the study of improvement of OPD dispensing service of Community Pharmacy Department. Therefore, the project evaluation will indicate whether the project is successful and meets the objectives.

3.2 Purpose

The purpose of the project was to assess whether the project achieve the goals and objectives. The evaluation of the project used evaluation pattern of Scriven (1973). This evaluation was focus on each phase of the project which in this case there were 2 phases as follows:

1. Formative evaluation is the evaluation during the implementation of the project. It provides information which is a feed back during the development of the project improvement.

2. Summative evaluation is the evaluation after the project completion. It provides information about the effectiveness of the project which leads to the decision making whether the project is successful and further implementation of the project should be carried out or not.

3.3 Evaluation Question

1. Formative Evaluation

Is the program being carrying out as what it is supposed to be?

This project was divided into 2 phases: Phase 1 assessment of quality of OPD dispensing service using 6 key performance indicators and Phase 2 selection of one of improvement opportunities from the 6 indicators and employed CQI to improve.

It was found that the Pharmacy Department worked as a team by participating to determine the form of selection of the 6 key performance indicators. The 6 key performance indicators were selected and recorded within the set time. Attribute rating map and Consensus were used in prioritization to select the improvement opportunity, improvement of OPD medication dispensing system and provision of advice was selected in according to the key indicator "perception and understanding of medication instructions". The implementation of continuous quality improvement (CQI) was

conducted even though it was delayed for 7 months because the setting up of systems required cooperation with co-professional teams. In addition, there was also a documentation system according to the set form of the hospital that was announced to use. This made the documentation of Step 8 uncompleted and needed to be redone. However, the project team was able to complete the operation of the 9 steps of CQI.

Situation analysis

1. **Waiting time**

   - Record the information for 10 times, there were 709 patients. The average waiting time was 3.4 ± 1.3 minutes and the average advising time was 42 ± 19 seconds.

   - 30 patients were randomly selected and were asked about the convenience of service and waiting time.

Excellent	10%
Good	56.67%
Medium	26.67%
Fair	3.33%
Need to improve	3.33%

2. **Dispensing Errors**

   There were 2 incident of dispensing errors: wrong drug and wrong method of usage.

   - Wrong drug: Nystatin Vag. Tablet was prescribed but Clotrimazole Vag. Tablet was dispensed.

- Wrong method of usage: Doctor prescribed GBC ½ x 1 ac but the label appeared as GBC ½ x 1 every second day.

This occurred from the total of 5,338 medicines which accounted as 0.03%. In case of Nystatin, the staff informed the doctor and Clotrimazole can be used as substitutable. In case of GBC drug label, a staff of Pharmacy Department traveled to the patient's house to change the drug label.

3. Pre dispensing Errors

38 Pre dispensing errors were found out of 1,731 drug prescriptions, accounted as 2.2% (22: 1000 prescriptions) or 38 pre dispensing errors were found out of 5,338 medicines which accounted as 0.7% (7: 1000 medicines) which divided into:

- 10 pre dispensing errors in drug labeling process (26.3%).
- 28 pre dispensing errors in the step of drug preparation (73.7%).

In the step of drug labeling, the highest number of errors was mislabeling of medication usage which accounted 7 times (18.42%). In the step of drug preparation, the highest number of errors was amount of medicines which accounted 15 times (39.47%) and the second was wrong medicine type which accounted 9 times (23.68%).

4. Incident of shortage of medication supplies

There were 5 incidents of medication supplies shortage from 1,731 prescriptions.

2 shortages of M. carminative – no dispensed.

2 shortages of Methyldopa

1 shortage of Folic Acid

The problem solving method was to dispense the medicines to the patients 2-3 days earlier and if it was convenient for them, they could come to the hospital to pick up the medicines. If it was not convenient for them, they could go to a village health center to pick up the medicines or a staff of the hospital would deliver the medicine to the patient's house, or borrow medicine from other hospitals for the patient. The last 3 cases (dispensed), the patients were convenient to pick up the medicines at the hospital.

5. Customer Satisfaction

From the survey of 100 patients, there were 30 male patients (30%) and 70 female patients (70%).

Age

15-29 years old	36%.
30-44 years old	40%.
45-59 years old	16%.
60 years and above	18%.

Highest Education Level

Lower than primary school level (Lower than P 4)	3%
Primary School (P 4)	53%
Junior High school	3%
Senior High School	3%
Diploma	3%
Bachelor Degree	15%
Others please specify	20%

Occupation

Government officers	13%
Agricultures	10%
Trader	17%
Labour	24%
Students	6%
Unemployed	24%
Others, such as soldier/ gardener	6%

Medical Treatment Entitlement

All types of Medicare	20%
Claimable	20%
Health insurance	20%
Social insurance	3%
Others, such as full-fee paying	37%

Your opinion towards the services of pharmacy department

Your opinion towards the service of community pharmacy unit	Agree	Not sure	Disagree
1. Do you think that the drugs that you received from Banprak Hospital were of good quality?	85	10	5
2. The equipments are modern and high-tech.	62	38	-
3. The staff are helpful with providing advice.	91	9	-
4. There is continuous improvement of the dispensing room	77	17	6
5. Each procedural step is easy and convenient.	94	5	1
6. The staff are willing to explain if having questions.	94	6	-
7. The staff are willing to accept any suggestions.	50	50	-
8. The cost is reasonable.	30	57	13
9. Stickers are easy to read.	93	5	2

Satisfaction Level

Satisfaction	Excellent	Good	Moderate	Fair	Poor or need improvement
1. Neat and clean	20	57	23	-	-
2. Fast	14	59	24	2	1
3. Supportive and willing to help	20	64	16	-	-
4. Good service manner	34	60	6	-	-
5. Accepting recommendations	22	53	22	2	1
6. Overall picture	14	67	19	-	-

Receiving and understanding of medication instructions

Receiving and understanding of drug instructions	Didn't receive	Receiving but not understanding	Receiving and well understanding
Indication	7	14–Speak very fast - When read the instructions at home patient had to wear glasses - Cannot remember - Unable to read	79
Dosage and administration	0	15	85
Cautions/ADR of medicine	20	22	58
Practices	34	6	60

Descriptive information

- **Waiting Time**

It was found that majority of patients answered 'good' (56.67%) and 'moderate (26.67%). The information in part of customer satisfaction towards the service of pharmacy department on the topic 'fast of service' showed that customer satisfaction was in a good level (59%) and moderate level (24%).

- **Customer Satisfaction**

When patients think of the word 'satisfaction towards dispensing room', most of them will think of friendly service, supportive service, speak politely and provide advice clearly. From the evaluation opinion of patients towards the service of pharmacy department, most customers have the same opinion that personnel have eagerness in 'good' level (64%) and excellent level (20%). In term of good manner, there were 60% for 'good level, 34% for excellent level. In term of the overall picture of customer satisfaction, levels of the satisfaction were 14%, 63% and 19% for 'excellent', 'good' and 'moderate' respectively.

- **Receiving and understanding of medication instructions**

In the part of 'received advice but did not understand' the patients reported that:

- "staff spoke very fast and they could not catch the words"

- "They would like the staff to explain very clearly"

- They were in doubt, when they arrived home they had to reread again"

- "They cannot read and unable to remember, they had to ask someone to read it for them"

- The font was too small, they could not read, they needed to wear glasses to read the text"

The interviewer randomly selected the medicine that patients received and asked them and found that in case of the medicine for chronic diseases, patients were able to tell the correct instructions, but patient did not understand about cautions or side effects of the medicine such as "this medicine irritates appetite", please directly take the medicine after meals and drink a full amount of water and mo medicine to be taken before meal time. Then patient understood and be able to answer the questionnaire.

Seek Opportunities for Improvement

What kind of service work will be firstly improved?

The attribute rating map was use in ranking priority as following methods:

1. The team will give score for each alternative by considering the 2 criteria which are level of customer priority and level of service quality giving the score of between 0-10.

2. Take the obtained score to plot on the graph and write down a number of each problem (plotted graph comprises of 2 axis which intersect its center. The scale is 0-10 and intersects at the score of 5).

3. Outcomes analysis, where problems or improve opportunities that should be firstly developed were the topics that fall on the above left plot.

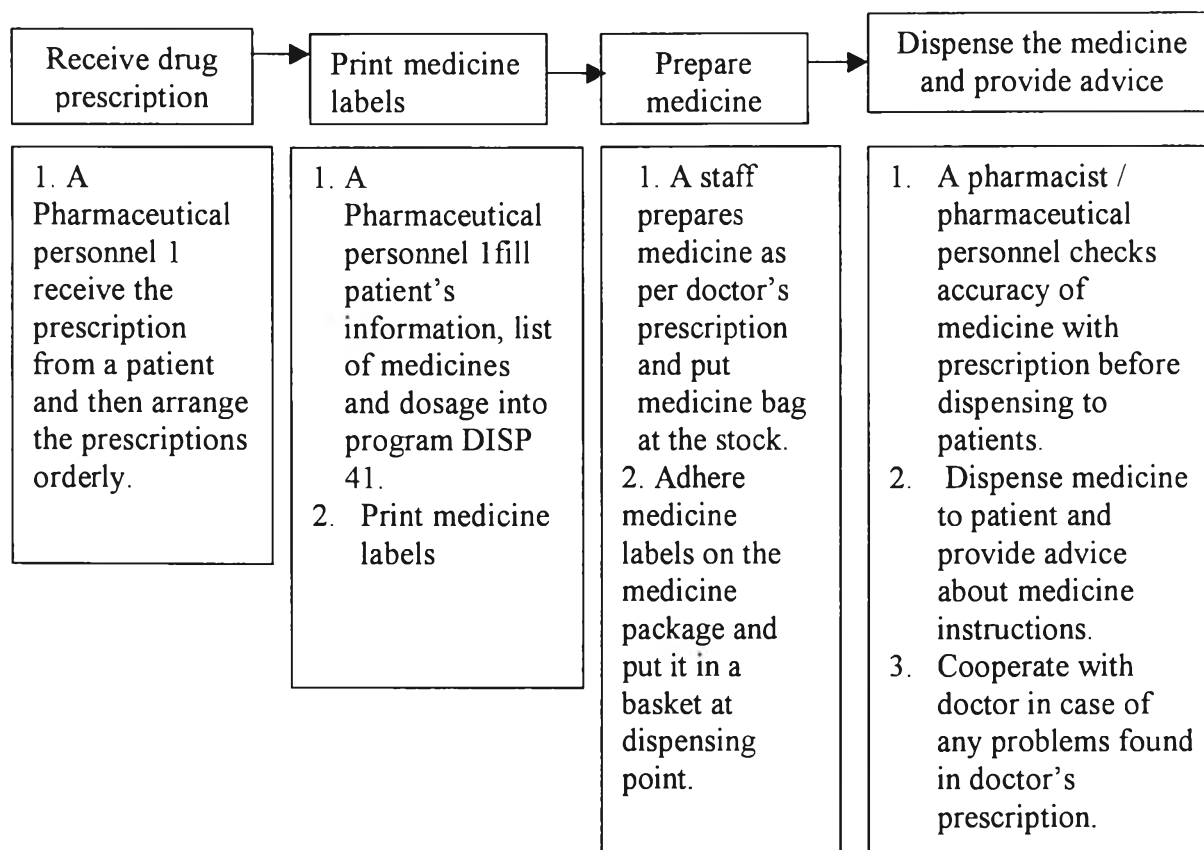**Figure 3.1:   Attribute Rating Map for prioritization**
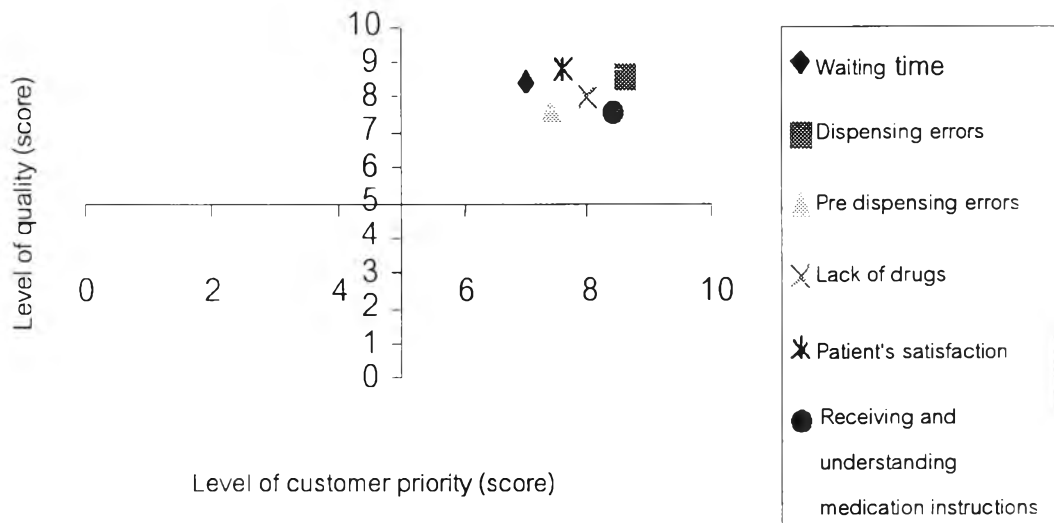
From the analysis of the team of the pharmacy department, it found that all the points fall onto the upper right side of the plot and the points were next to each other. Therefore, consensus method was additionally chosen to help in making decision or so call group opinion. It was conducted by choosing the alternative or strength points that everyone agreed, accepted and willing to support the operation of the project. From the group opinion, the team chose 'receiving and understanding of medication instructions' to be the opportunity for improvement. The project was named "The improvement of OPD dispensing system and provision of advice to the OPD patients".

Define the system

What is the work process of the system and what will we get from the definition of system?

Figure 3.2:   Top-Down flow Chart[9] : Out patient pharmaceutical care

Receive drug prescription	Print medicine labels	Prepare medicine	Dispense the medicine and provide advice
1. A Pharmaceutical personnel 1 receive the prescription from a patient and then arrange the prescriptions orderly.	1. A Pharmaceutical personnel 1 fill patient's information, list of medicines and dosage into program DISP 41. 2. Print medicine labels	1. A staff prepares medicine as per doctor's prescription and put medicine bag at the stock. 2. Adhere medicine labels on the medicine package and put it in a basket at dispensing point.	1. A pharmacist / pharmaceutical personnel checks accuracy of medicine with prescription before dispensing to patients. 2. Dispense medicine to patient and provide advice about medicine instructions. 3. Cooperate with doctor in case of any problems found in doctor's prescription.

Cause Analysis using Cause and Effect Diagram

What are the real causes of the poor quality or the uncertainty of the system?

Figure 3.3: **Illustrates the causes of poor quality of the system.**
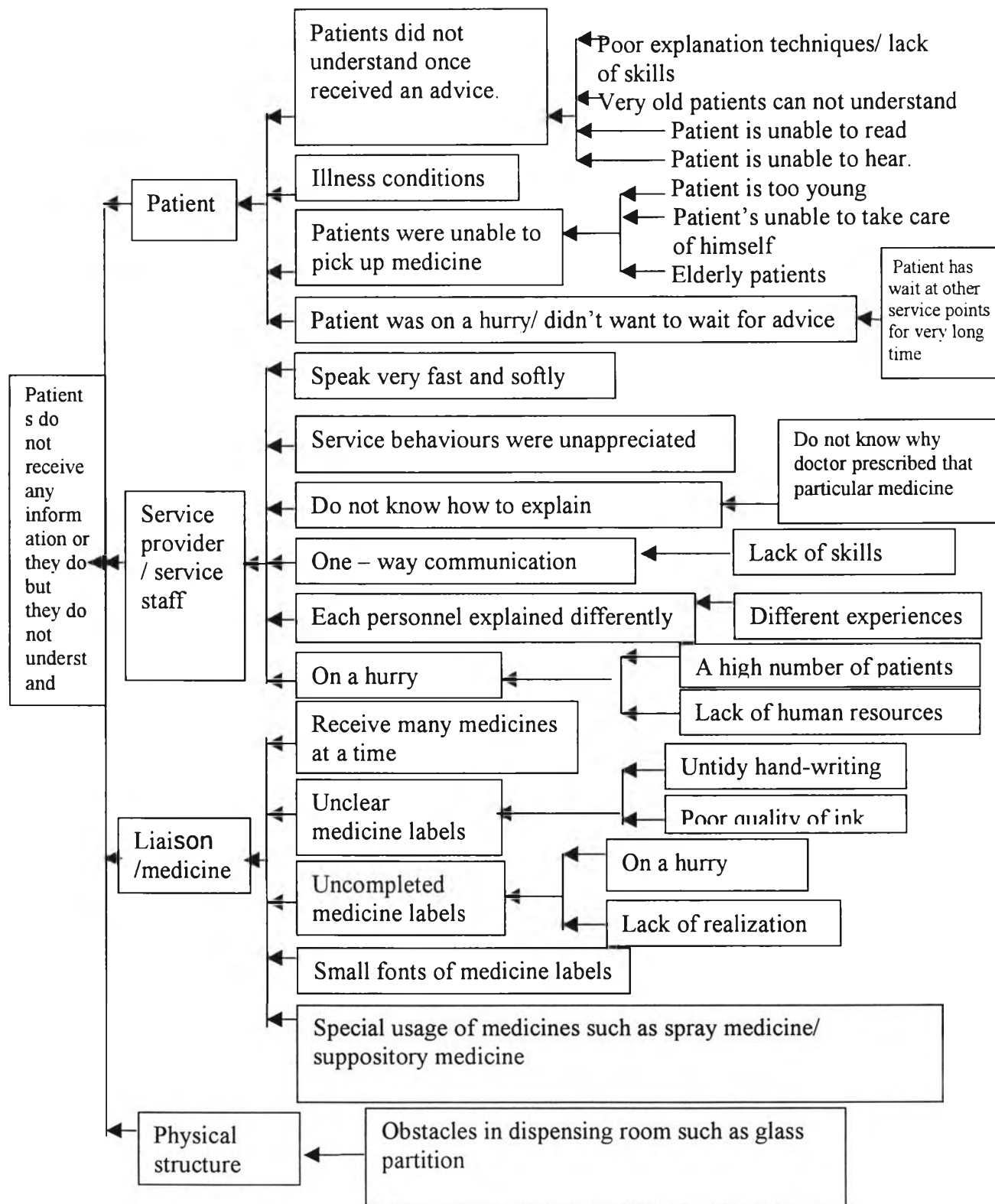
From the cause analysis, it found that there were many causes that made patients unable to receive any information/instructions and have unclear understanding. These causes were for example patients themselves, service personnel, liaison/ medicine and physical structure.

Alternative Analysis

What is the suitable alternative of the quality improvement?

Table 3.1:   Cause of problem and solving solutions

Causes of problem	Solutions	Benefits
Service personnel speaks very fast and very softly and lack of service skills	- Held a conference/training on good service behaviours and "CLOSER" principle in instructions of medicine to staff and personnel of pharmacy department in order to take into practices.	
Each service personnel explain differently.	- Cooperate in determining essential information that customers or patients should receive and determine the step of dispensing and instructions for the same standards. - Conduct work instructions for out patient dispensing service.	

Table 3.1:   Cause of problem and solving solutions (continue)

Causes of problem	Solutions	Benefits
Service personnel lack of basic information that shows the reason of doctor's order for prescriptions such as patient's condition, health examination, and diagnosis.	- Participate in a conference with professional teams about the setting up of OPD card circulation system to dispensing room as well as the development of cooperation system in case of any problems found in doctor's prescriptions by setting up quality policy. - Improve consulting system where pharmacist is a dispenser and follow up the problems of medication uses with each particular patient. Pharmacist is a person who recorded advices that provided to the patient and recorded the problems into OPD card after the consultation.	- It is the best benefits to the patients when pharmacist is able to provide advice about a disease and medicines accurately and in accordance with the treatment provided by doctor. This is because pharmacist has full information of the patient including conditions of the patient, health examination results and diagnosis from doctor. - For the coverage to all patients and for the useful information to doctor and pharmacist who will be a next examiner or dispenser. This is a clear cooperation image between healthcare teams which patient is focused.
Unclear and uncompleted medicine labels	- Develop a computer system in the out patient dispensing system especially about medicine labeling. - Determine the essential information of medicine labels.	- Specification of medicine name, amount of tablets, instructions and special advices such as antiseptic medicine should be taken day-to-day continually, will be benefits to the patients as they can recognize type of

Table 3.1:   Cause of problem and solving solutions (continue)

Causes of problem	Solutions	Benefits
	- Issue medicine instruction leaflets for the special usage technique such as suppository medicine.	medicine and its use. When patients go to other health service center, they can refer the medicine they use to health personnel.
Pre-packing medicines have unclear labels	- Improve the system of pre-packing medicine	- Labeling the name of medicine and expired date can help patient remember the medicine bag and able to put the medicine back to the bag. The pre-packing medicines have 1 year before expiration starting from the packing date. This enables patient to know the use date and able to identify medicine's manufacturer and Lot. Number of the medicine in case there is any problems about the medicine. This will be easy to search for the medicine manufacturer.
Obstacles in dispensing room such as glass partition.	- Arrange dispensing counter in front of a dispensing room.	- Pharmacist is able to conveniently explain the instructions of medicine to patient and it is convenient for patient when there is no glass partition obstructs the conversation.

Try out Improvement Alternative

Table 3.2:   **Time table for try out improvement alternative**

Activities	Responsible person	Duration
Training "Good Service Behaviours" and "CLOSER" principle in medicine instructions	Piyathida/ Orn-Arun	W4M2
Brainstorming to determine the essential information for customers or patients and determine the steps of dispensing and advice provision.	Piyathida	W4M1-W1M2
Conduct Work Instruction for out patient dispensing service	Piyathida	W4M1-W3M2
Participate in a conference with professional team in: - Set up circulation system of OPD card to dispensing room. - Set up cooperation system with the incident of problems in doctor's prescriptions. - Develop recording system of the information in OPD card both doctor's prescriptions and patient's problems.	Piyathida/ Orn-Arun	W3M1
- Develop a computer system especially the information on medicine labels.	Kritsana	W1M1
- Issue medicine instruction leaflets for the special usage technique such as; - suppository medicine - eye drop - Spray medicine	Piyathida/ Orn-Arun	W3M2
Improvement of medicine's pre-packing - Determine the medicine labels - Determine the recoding system of medicine's packing.	Orn-Arun/ Niyom	W2M1
- Arrange dispensing counter	Piyathida	W1M1

Study the results

Since development of the dispensing system and provision of drug instruction for OPD patients was a major system development of dispensing services, studies of the development outcomes required the data from other key indicators in order to see whether the development activities have any effects on other key performance indicators or not and how. Those data included:

1. Waiting time: There were a total of 10 times from a total of 758 patients obtaining the mean waiting time for services of 5.0 ±2.1minutes and the mean detailing time of 2.4±0.8 minutes. In addition, a random interview was conducted on 30 patients asking about the service speed and the time period they wait to be served. The results indicated that 10 % of the population stated it was too long while 90 % of the population stated it was reasonably good.

2. Dispensing error: None was found.

3. Pre-dispensing error: 2.3% /prescription.

4. Shortage of supplies: None

5. Satisfaction

Variables	% (n = 100)
Gender	
Male	17
Female	83
Age (year)	
15-29	0
30-44	10
45-59	44
60 and above	46
Highest educational level	
Lower than P. 4 (Primary School level)	20
P. 4	75
M. 3 or M. 6	3
Certificate/ Vocational education	2
Medical treatment entitlement	
All types of Medicare	40
Health insurance	23
Claimable	24
Full fee paying	13

Your opinions towards services of the Community Pharmacy Department

	Agree	Not sure	Disagree
1. Do you think that the drugs that you received from Banprak Hospital were of good quality?	86	14	-
2. The equipments are modern and high-tech.	67	33	-
3. The staff are helpful with providing advice.	96	4	-
4. There is continuous improvement of the dispensing room	82	18	-
5. Each procedural step is easy and convenient.	86	14	-
6. The staff are willing to explain if having questions.	96	4	-
7. The staff are willing to accept any suggestions.	40	60	-
8. The cost is reasonable.	20	78	2
9. Stickers are easy to read.	95	5	-

Satisfaction Level

Satisfaction	Excellent	Good	Moderate	Fair	Need improvement
1. Neat and clean	27	62	11	-	-
2. Fast	12	56	30	2	-
3. Supportive and willing to help	57	43	-	-	-
4. Service manner	60	36	4	-	-
5. Accepting recommendations	31	55	14	-	-
6. Overall picture	51	42	7	-	-

Receiving and understanding medication instructions

	Not receiving	Receiving but not understanding	Receiving and well understanding
Indication	0	3	97
Dosage and administration	0	5	95
Cautions/ ADR of the drug	32	0	68
Practice	54	0	46

Provision of drug use instruction of the staff

- Time course

Too short	0 %	
Too long	0 %	
Appropriate	100 %	

- Information received

|		
Too much	3 %	
Too little	3 %	
Appropriate	94 %	

Conclusion of the project

The evaluation of the situation relevant to "receiving and understanding drug use instructions" prior to implementation of the CQI system found the outcomes as follows:

- In terms of drug usages (Indication)
    - Not receiving information   7 %
    - Receiving but not understanding   14 %
    - Receiving and well understanding   79 %

- Dosage and adminisstration of the drug
    - Not receiving information   0 %
    - Receiving but not understanding   15 %
    - Receiving and well understanding   85 %

- Cautions and Adverse Reaction of the drug
    - Not receiving information
    - Receiving but not understanding   20 %
    - Receiving and well understanding   22 %
                                          58 %

- Medication practices
    - Not receiving information
    - Receiving but not understanding   34 %
    - Receiving and well understanding   6 %
                                          60 %

After implementation of the CQI process in developing the dispensing system

for a total period of 9 months, the results were as follows:

- *In terms of information on drug Indication, percentages of the patients:*

  - Not receiving information   decreased from 7 % to 0 %,

  - Receiving but not understanding   decreased from 14 % to 3 %,

  - Receiving and well understanding   increased from 79 % to97 %,

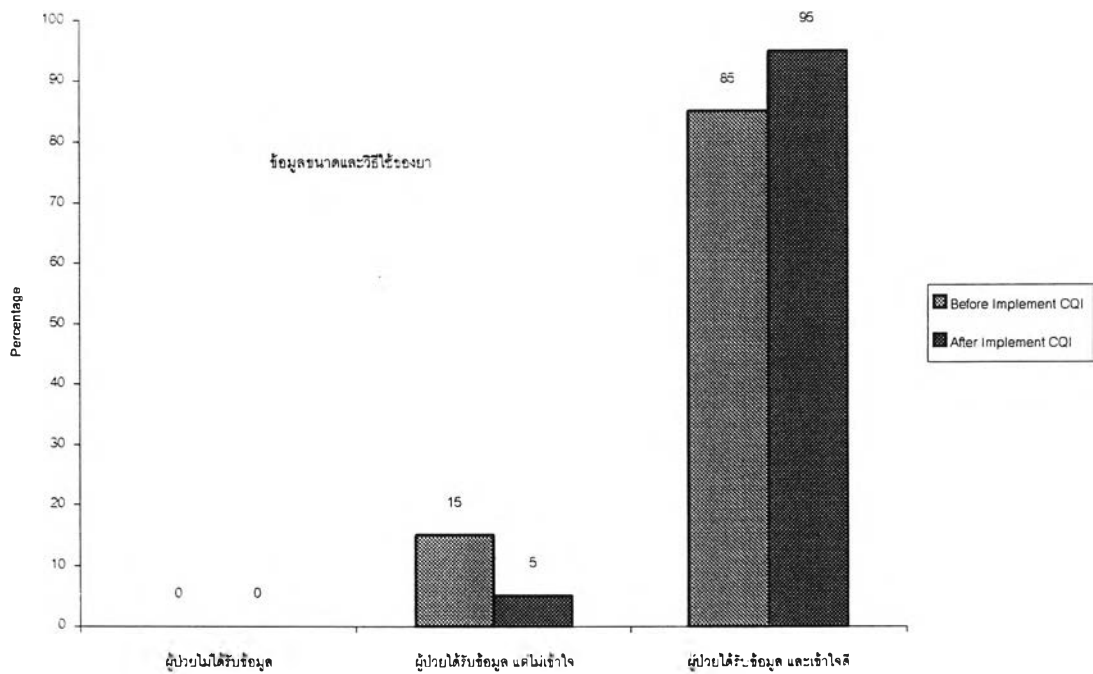   as shown in Figure 3.4

Figure 3.4:   Percentage of the patients: In term of information of drug
Indication before and after implement CQI
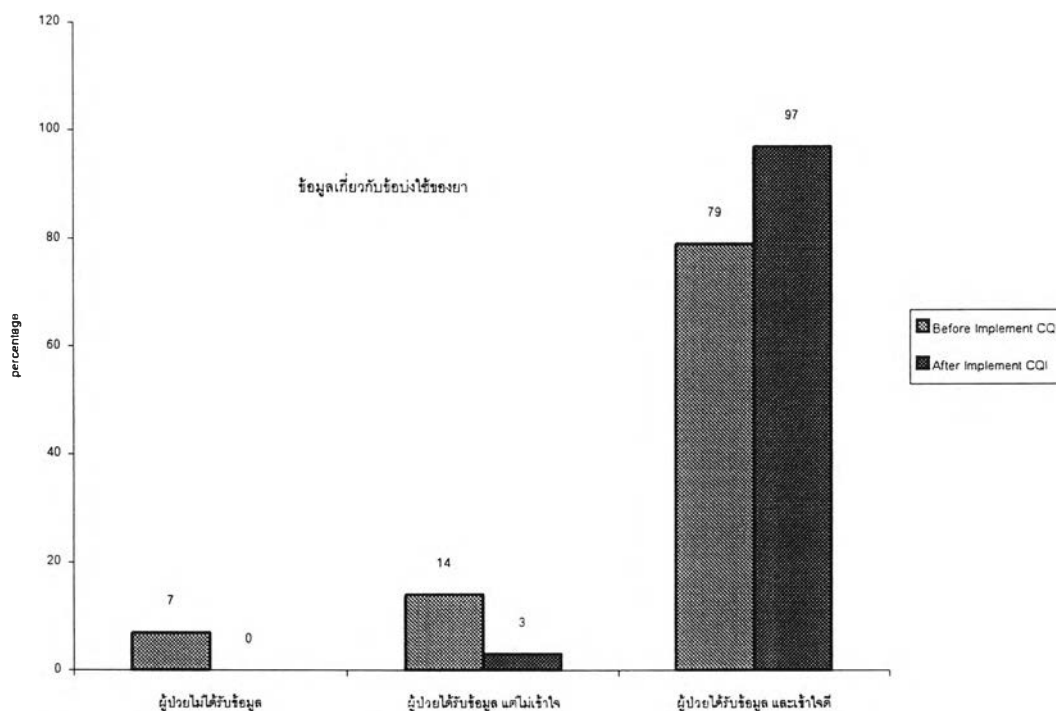
- *In terms of information on Dosage and administration of the drug,*

  percentages of the patients:

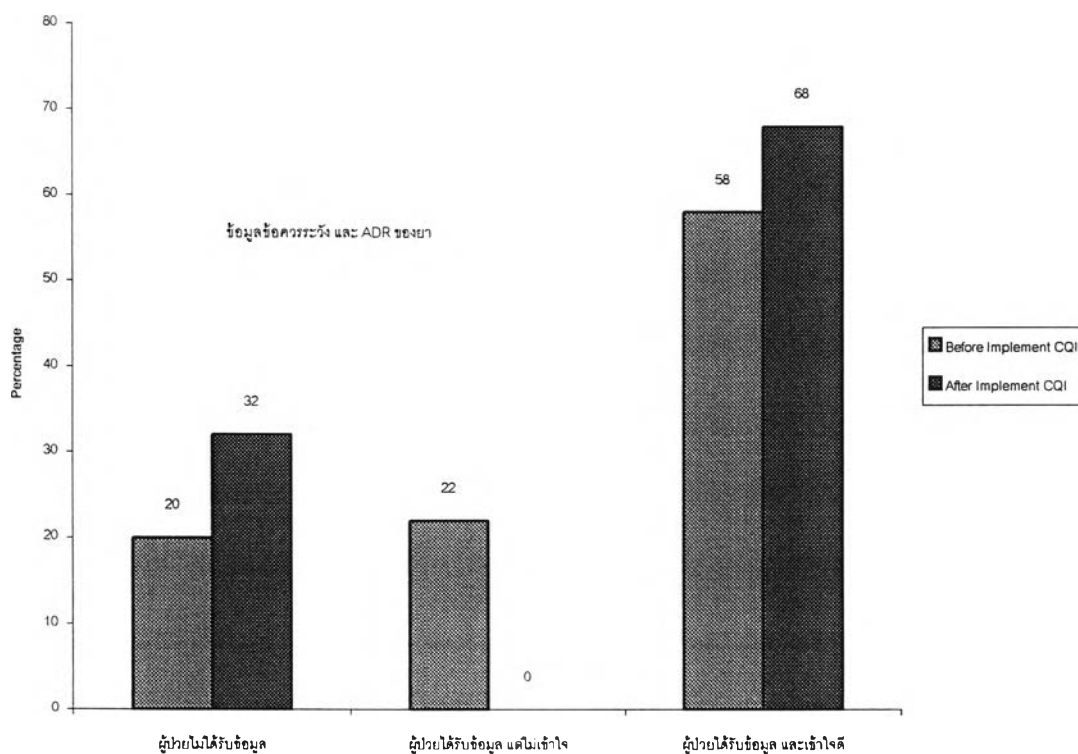|	
- Not receiving information	remained the same at 0 %,
- Receiving but not understanding	decreased from 15 % to 5 %,
- Receiving and well understanding	increased from 85 % to95 %,
	as shown in Figure 3.5

Figure 3.5: **Percentage of the patients :In term of information of Dosage and administration of drug before and after implement CQI**

- *In terms of information on cautions and negative side effects of the drug,*

percentages of the patients:

- Not receiving information   increased from 20 % to32 %,

- Receiving but not understanding   decreased from 22 % to 0 %,

- Receiving and well understanding   increased from 58 % to68 %,

                             as shown in Figure 3.6

Figure 3.6:   **Percentage of the patients: In term of information of caution and adverse effect of drug before and after implement CQI**

- *In terms of information on routine practices, percentages of the patients:*

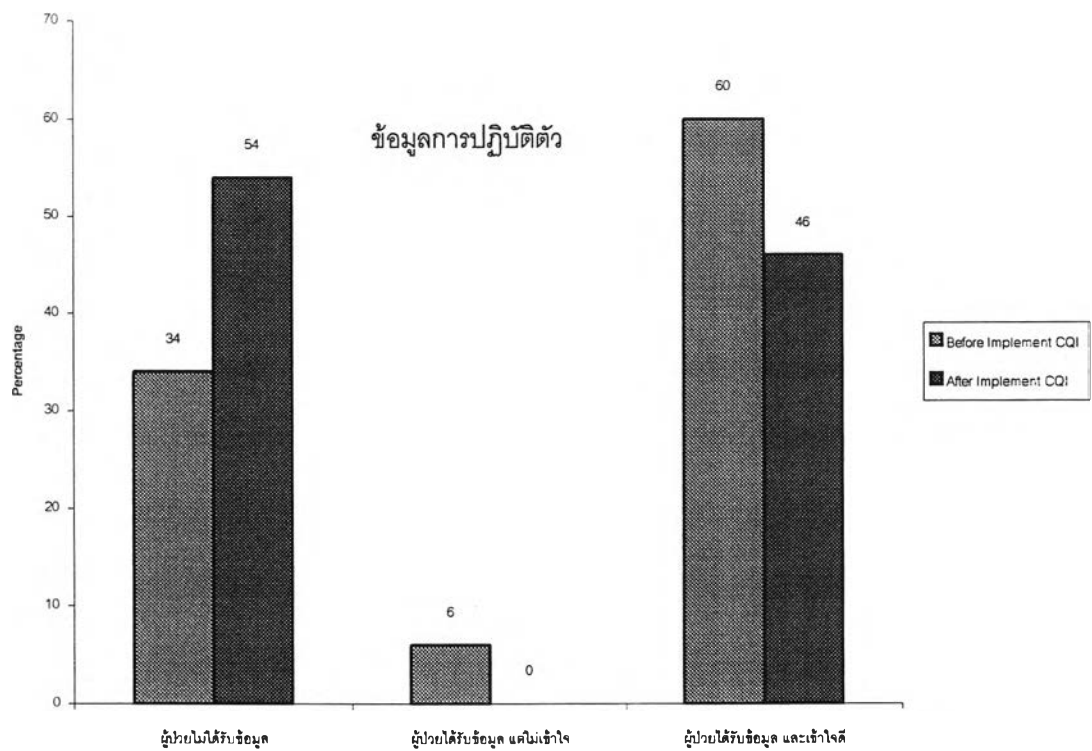 - Not receiving information   increased from 34 % to54 %,

  - Receiving but not understanding   decreased from 6 % to 0 %,

  - Receiving and well understanding   decreased from 60 % to 46%,

                                        as shown in Figure 3.7

Figure 3.7:   **Percentage of the patients: In term of information of practices before and after implement CQI**

Comparison of the evaluation outcomes before and after implementation of the CQI quality development activities indicated that the patients better received and understood about drug use instructions after implementation as can be seen from the followings:

- In terms of the important information, which included drug usages and doses/ use instructions, it was found that the percentage of patients not receiving the information decreased from 7 % and 0 % both to 0 % respectively. That means all patients received advice on drug usages and use instructions/doses. The percentage of patients who received the information but did not understand the advice decreased from 14 % and 15 % to 3 % and 5 % respectively. The percentage of patients who received and well understood the information increased from 79 % and 85 % to 97 % and 95 % respectively. Therefore, the results indicated that after improvement by using CQI techniques, there was an increase in proportion of OPD patients receiving and understanding medication advice in terms of usages and doses/ use instructions.

- In terms of the information on cautions/negative side effects of the drug and practices, it was found that the percentages of patients not receiving the information increased from 20 % and 34 % to 32 % and 54 % respectively. The percentages of patients receiving but not understanding the information decreased from 22 % and 6 % both to 0 % respectively. And the proportion of patients receiving and well understanding the information increased from 58 % to 68 % in terms of caution/ negative side effect information, however, decreased from 60 % to 46 % in terms of practice information.

Since provision of the information on cautions/ negative side effects of a drug was commonly done for chronic patients or for the patient with history of special problems and the information about routine practice such as Suitable food, exercise almost advice by doctors .It's not Pharmacist's role but for community hospital sometimes Pharmacist help doctor to explain this information about routine practice to patients, so the result data for this project found that the patients did not significantly receive more information. However, the result that could demonstrate real quality for this aspect was a decrease in the percentage of patients receiving the information but not understanding to 0 %. It might be concluded that after implementation of CQI techniques, OPD patients were able to better understand cautions and medication practices.

- By replacing the use of small glass window for dispensing and providing advice for the patients with the use of a counter for those services, most patients stated that it was better for the pharmacist to come out of the room as it built more friendly atmosphere and they could hear clearly as well as could conveniently ask questions.

- The consequent outcomes of development of the dispensing and advice provision system were that additional to patients' better receiving and understanding of the information, the service time was also affected by this change. Although the waiting time increased from 3.30 minutes to 5.04 minutes, it was still within the professional standard limit (15 minutes maximum). However, the quality of advice provision service increased

significantly by an increase in the mean time period spent for the service from 0.42 minutes to 2.36 minutes. In addition, the overall satisfaction at excellent level increased from 14 % to 51 %.

Improvement standardization

For the system improvement to further develop and to reduce turning back to the original situation before implementation of the improvement activities, it was necessary to set up the standards for the new system by complying 2 types of *related* documents as follows:

1. Work instructions for OPD dispensing services.

2. Quality policies.

Continuous improvement plans

How can the continuous improvement plan be set up?

After the dispensing service and advice provision system had been well developed, it can be seen that there are several other aspects to be developed. The pre-evaluation of the quality situation of the department from the beginning using the 6 key indicators helped the project team in deciding which aspect will be improved next. The team selected to develop "risk management of medication error" as from the process of dispensing and advice provision that have been improved, there were some potential risks in terms of medication errors and only recording of the percentages of pre-dispensing errors and dispensing errors would not be sufficient to meet the required quality. Keeping of the complete data such as prescription errors and administration errors should be included and recording system should be in forms of qualitative data as

the risks could affect the patients at various levels ranging from no apparent sign to possible death. It can be seen that quality development has no ending point. After developing one aspect to some extent, there will be an opportunity to develop another aspect and it will be continual as the continuous development activities being operated by the project team of the community pharmacy department of Banprak Hospital.

Summative evaluation

Are its objectives achieved?

It was found that the defined objectives were achieved through operation of this project resulting in the systematic quality improvement of the OPD dispensing service system. The procedure involved pre-evaluation of the current quality of the pharmaceutical service, selection of the aspect to be developed, which was development of dispensing service and advice provision systems, and implementation of the quality improvement activities according to the CQI process. The evaluation outcomes of the project are as follows:

- In terms of the important information, which included drug usages and doses/ use instructions, it was found that the percentage of patients not receiving the information decreased from 7 % and 0 % both to 0 % respectively. That means all patients received advice on drug usages and use instructions/doses. The percentage of patients who received the information but did not understand the advice decreased from 14 % and 15 % to 3 % and 5 % respectively. The percentage of patients who received and well understood the information increased from 79 % and 85 % to 97 % and 95 % respectively. Therefore, the results indicated that after improvement by

using CQI techniques, there was a significant increase in proportion of OPD patients receiving and understanding medication advice in terms of usages and doses/ use instructions validated by statistical mean.

In terms of the information on cautions/negative side effects of the drug and practices, it was found that the percentages of patients not receiving the information increased from 20 % and 34 % to 32 % and 54 % respectively. The percentages of patients receiving but not understanding the information decreased from 22 % and 6 % both to 0 % respectively. And the proportion of patients receiving and well understanding the information increased from 58 % to 68 % in terms of caution/ negative side effect information, however, decreased from 60 % to 46 % in terms of practice information.

Since provision of the information on cautions/ negative side effects of a drug and practice was commonly done for chronic patients or for the patient with history of special problems, the result data for this project found that the patients did not significantly receive more information. However, the result that could demonstrate real quality for this aspect was a decrease in the percentage of patients receiving the information but not understanding to 0 %. It might be concluded that after implementation of CQI techniques, OPD patients were able to better understand cautions and medication practices significantly validated by statistical mean.

And after this aspect has been well developed, there is a plan to continually develop other related aspects as been prioritized with systematic approach and without ending point.

What are the results of this project?

- There were work instructions to provide a standard direction in dispensing and providing advice for the patients.

- Quality policies were set up among co-professional teams for coordination in order to provide information for the patients correctly and for them to better perceive and understand medication instructions from the Community Pharmacy Department as follows:

  - The policies in delivery of patient medical records to the dispensing unit.

  - The policies in writing the symbol ↑ or ↓ in front of the name of the medicine whose dose has been adjusted by a doctor.

  - The policies in writing special problems found in certain patients in their medical record.

  - Standardizing coordination process in cases of there is:

    - a problem with not understanding a doctor's prescription.

    - a problem that a patient could not comply with a doctor's instruction.

    - a problem with ADR/ Drug Interaction of the prescribed medicines.

- There were supportive systems for effective provision of drug advice to the patients.

- Computer programs that could provide complete details of necessary information on the label of the drug packages for the patients.

- Leaflets facilitating in providing details about the drugs that required special use instructions such as suppository medicines, eye drops, and Inhaler

- Dispensing service counters that facilitate good interaction between the staff and the patients, as there is no blockage, leading to two-way communication. Patients are allowed opportunities to ask questions for better understanding about drug instructions.

Impact of the program

What are the impacts of this project?

- The staff of the community pharmacy department was satisfied with the outcomes of the project as they helped building confidence in providing dispensing services for the patients.

- There was development of coordinating system/ good relationship among co-professions that would lead to development of other related aspects such as collaborative development of Clinical Practice Guideline (CPG).

- Pharmacy services were more effective according to the standard of HA.

- There was development of policies at the hospital level for all departments to implement CQI techniques as a tool in developing the quality of their work with 1-2 aspects per year.

3.4 Evaluation Design

Figure 3.8: **Chart shows the evaluation design of this project.**

Input	Process	Output	Results	Impacts
- Team in the community pharmacy department - Cross functional team = Patient care team	- Situational analysis. - CQI 9 steps.	*Receiving and understanding the drug use instructions* - In terms of the important information, which included drug usages and doses/ use instructions, it was found that the percentage of patients not receiving the information decreased from 7 % and 0 % both to 0 % respectively. That means all patients received advice on drug usages and use instructions/doses. The percentage of patients who received the information but did not understand the advice decreased from 14 % and 15 % to 3 % and 5 % respectively. The percentage of patients who received and well understood the information increased from 79 % and 85 % to 97 % and 95 % respectively - In terms of the information on cautions/negative side effects of the drug and practices, it was found that the percentages of patients not receiving the information increased from 20 % and 34 % to 32 % and 54 % respectively. The percentages of patients receiving but not understanding the information decreased from 22 % and 6 % both to 0 % respectively. And the proportion of patients receiving and well understanding the information increased from 58 % to 68 % in terms of caution/ negative side effect information, however, decreased from 60 % to 46 % in terms of practice information.	- Development of work instructions for a standard dispensing and drug detailing process. - Development of quality policies among co-professional teams - Policies in recording and delivery of patient medical records - Standard coordination process in cases of finding any problems - Supportive systems for effective provision of drug details - Computer programs - Drug instruction leaflets - Dispensing counters	- The staff of the community pharmacy department were satisfied with the outcomes of the project as they helped building confidence in providing dispensing services for the patients. - There was development of coordinating system/ good relationship among co-professions that would lead to development of other related aspects such as collaborative development of Clinical Practice Guideline (CPG). - Pharmacy services were more effective according to the standard of HA. - There was development of policies at the hospital level for all departments to implement CQI techniques as a tool in developing the quality of their work with 1-2 aspects per year.

3.5   Data Collection Method

This CQI development project was operated for a total of 11-month duration from March 2000 – May 2001. The collection of data for the pre-evaluation process was carried out during the first month. The following 9-months were spent in implementing the CQI activities according to the 9 procedural steps. The last 1-month period was spent for collection of the post-evaluation data as outlined in the followings:

Input

- Forming groups each with 5 members to run the CQI quality development activities then registering and naming the groups.

Process

- Organizing meetings for the project team to brainstorm and find potential problems and means for resolutions. The meetings comprised of the departmental meetings both formal and informal by having the pharmacist as the team advisor.
- Collecting data according to the 6 key indicators. Each required different techniques of data collection as follows:

Waiting time was collected by the staff of the community pharmacy department by recording the time at various moments during each activity in the prescription until completing the procedure. The cumulative time was then calculated for each activity from the raw data that had been recorded.

Percentage of pre-dispensing error, incidence of dispensing error, and incidence of drug supply shortage were collected by the staff of the community pharmacy department by immediately recording the error or any relevant incidence in the form which was adhered onto the wall easily for viewing and recording.

Collection of the data on *satisfaction* and *percentage of receiving and understanding drug use instructions* employed the same set of questionnaires, which contained a total of 4 sections. A nurse was responsible for interviewing the patients after they had received the drugs.

Outcome

After implementation of CQI activities for 9 months, the data were re-collected for all 6 key indicators. The evaluation outcomes found that development of one quality aspect was connected with another aspect. For example, development of the OPD dispensing system that led to the improvement of drug detailing process for the patients resulted in longer time the patients had to wait for the service.

3.6   Data Analysis and Results

1. The results of the study on receiving and understanding drug use instructions were as follows:

    -   In terms of the important information, which included drug usages and doses/ use instructions, it was found that the percentage of patients not receiving the information decreased from 7 % and 0 % both to 0 % respectively. That means all patients received advice on drug usages and use instructions/doses. The percentage of patients who received the information but did not understand the advice decreased from 14 % and 15 % to 3 % and 5 % respectively. The percentage of patients who received and well understood the information increased from 79 % and 85 % to 97 % and 95 % respectively. Therefore, the results indicated that after improvement by using CQI techniques, there was a significant increase in proportion of OPD patients receiving and understanding medication advice in terms of usages and doses/ use instructions.

    -   In terms of the information on cautions/negative side effects of the drug and practices, it was found that the percentages of patients not receiving the information increased from 20 % and 34 % to 32 % and 54 % respectively. The percentages of patients receiving but not understanding the information decreased from 22 % and 6 % both to 0 % respectively. And the proportion of patients receiving and well understanding the information increased from 58 % to 68 % in terms of caution/ negative

side effect information, however, decreased from 60 % to 46 % in terms of practice information.

Since provision of the information on cautions/ negative side effects of a drug and practice were commonly done for chronic patients or for the patient with history of special problems, the result data for this project found that the patients did not significantly receive more information. However, the result that could demonstrate real quality for this aspect was a decrease in the percentage of patients receiving the information but not understanding to 0 %. It might be concluded that after implementation of CQI techniques, OPD patients were able to better understand cautions and medication practices significantly.

2. There were work instructions to provide a standard direction in dispensing and providing advice for the patients.

3. Quality policies were set up among co-professional teams for coordination in order to provide information for the patients correctly and for them to better perceive and understand medication instructions from the Community Pharmacy Department as follows:

   - The policies in delivery of patient medical records to the dispensing unit.

   - The policies in writing the symbol ↑ or ↓ in front of the name of the medicine whose dose has been adjusted by a doctor.

   - The policies in writing special problems found in certain patients in their medical record.

   - Standardizing coordination process in cases of there is:

- a problem with not understanding a doctor's prescription.

- a problem that a patient could not comply with a doctor's instruction.

- a problem with ADR/ Drug Interaction of the prescribed medicines.

4. There were supportive systems for effective provision of drug advice to the patients.

  - Computer programs that could provide complete details of necessary information on the label of the drug packages for the patients.

  - Leaflets facilitating in providing details about the drugs that required special use instructions such as suppository medicines, eye drops, and Inhaler

  - Dispensing service counters that facilitate good interaction between the staff and the patients, as there is no blockage, leading to two-way communication. Patients are allowed opportunities to ask questions for better understanding about drug instructions.