



## CHAPTER II

### PROJECT DESCRIPTION

#### 2.1 Introduction

Rehabilitation emphasizes restoration to optimal functional performance in the face of chronic illness and commensurate with the limitations imposed by the person's disabilities, reintegration into activities of daily living and previous social structure. A pulmonary rehabilitation program is designed to assist individuals who experience disabled shortness of breath and fatigue due to COPD lead a full, satisfying life and restore them to their highest possible functional capacity.

The American Thoracic Society has defined pulmonary rehabilitation as a multidisciplinary program of care for patients with chronic respiratory impairment that is individually tailored and designed to optimize physical and social performance and autonomy. The principal goals of pulmonary rehabilitation are to reduce symptoms, decrease disability, increase participation in physical and social activities, and improve the overall quality of life for individual with chronic respiratory disease.

Presently, there is no pulmonary rehabilitation program existing for COPD patients in Chiangmuan Hospital. This project proposes to set up the pulmonary rehabilitation program for COPD patients at Chiangmuan Hospital, Chiangmuan district, Phayao province, Thailand. The rehabilitation intervention is geared towards the problems and needs of each patient, and implemented by a multidisciplinary team of health care professionals.

## **2.2 Objectives**

### **General Objective**

To improve the overall quality of life for individual with chronic respiratory disease

### **Specific Objectives**

1. To reduce symptoms and decrease disability in patients with COPD,
2. To increase participation of COPD patients in physical and social activities
3. To evaluate the effectiveness of the pulmonary rehabilitation program on the quality of life, the exercise capacity and the perception of dyspnea after exercise

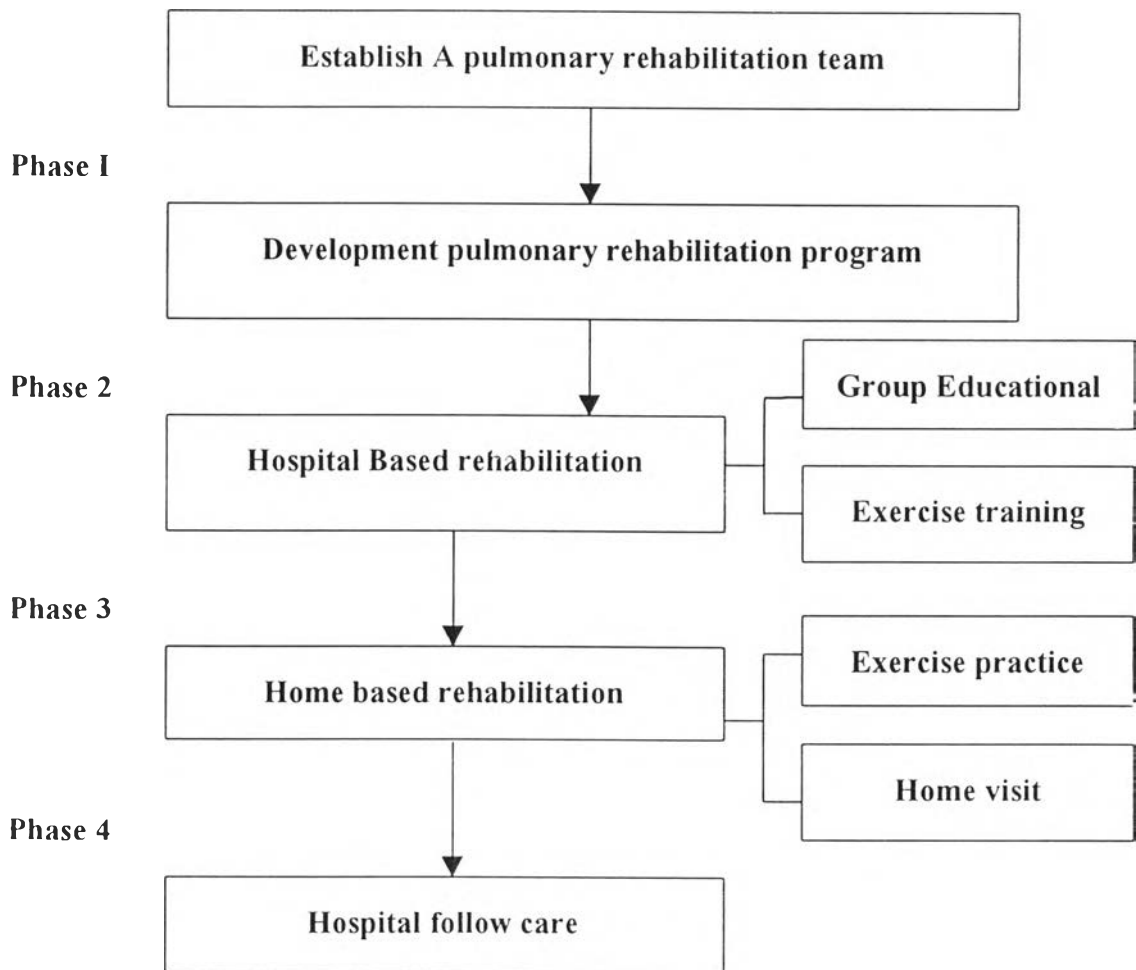
## **2.3 Approaches, Method and/or Techniques**

The pulmonary rehabilitation program was implemented that consisted of four phases; namely, phase 1 was the preparation phase (developing the pulmonary

rehabilitation program); phase 2 was the hospital-based rehabilitation training; phase 3 was the home-based rehabilitation during routine home visit; and phase 4 was the follow-up care in the hospital. Detail descriptions of these phases are described below and Figure 2.1 provides a schematic representation of the pulmonary rehabilitation program.

The hospital-based rehabilitation in phase 2 was an intervention program, consisted of educational and the exercise training. The home-based rehabilitation during routine home visit in phase 3 was used as a retraining strategy after the formalized hospital rehabilitation. And in the follow-up care in the hospital, phase 4, the patients attended the monthly outpatient's follow-up care for 6 months. Evaluation of this pulmonary rehabilitation program used one group of pre and post-test design.

Figure 2.1 : Overview of the pulmonary rehabilitation Program



## 2.4 Program Participants

The target participants were patients with COPD who were being treated at Chiangmuan Hospital, Chiangmuan district, Phayao province. They were selected by purposive sampling and invited to participate in the program. Selection criteria included the following:

1. A medical diagnosis of chronic obstructive pulmonary disease.
2. Absence of significant associated medical problems, such as, congestive heart failure, myocardium infarction, severe hypertension, osteo-arthritis and other diseases that might interfere with the ability to participate in the program.
3. A ratio of forced expiratory volume in 1 second to forced vital capacity (FEV1/FVC ratio) of less than 70 % by performing spirometry.
4. Clinically stable with no change in medication.
5. No physical and communicated limitations.
6. Residents of home-visit area under supervision of Chiangmuan hospital.
7. Willingness to fully participate in the program.

### **Rationale of the participant characteristic criteria**

1. Potential subjects were selected on the basis of the diagnosis of chronic obstructive pulmonary disease that was defined as having a ratio of forced expiratory volume in 1 second to force vital capacity (FEV1/FVC ratio) of less than 70 % by performing spirometry.

2. No physical and communicated limitation allowed the patients full freedom in using their listening, thinking and practice skills to learn and participate in the program activities.
3. Absence of significant associated medical problems of diseases that might interfere with the ability to participate in the program.

### **Outcome of recruitment process of the target group**

Fifteen out of 24 COPD patients met the above criteria and 13 patients, subsequently, volunteered to participate in this project. These 13 subjects are to be called "the study group."

## **2.5 Program Activities**

The pulmonary rehabilitation program consisted of 4 Phases as follows:

- Phase 1 :      Development of the pulmonary rehabilitation program
- Phase 2 :      Hospital-based rehabilitation program training
- Phase 3 :      Home-based rehabilitation program during routine home visit
- Phase 4 :      Hospital follow-up care

Details of each phase are as follows:

### **Phase 1 : Development the pulmonary rehabilitation program**

Development of the pulmonary rehabilitation program began between November and December 2000 and training venue was the Chiangmuan Hospital, Phayao province.

This phase was divided into two activities as follows:

- 1) **Established a multidisciplinary team of pulmonary rehabilitation program.** A multidisciplinary pulmonary rehabilitation team was formed with key member of the professionals who were at the time responsible for the care and treatment of COPD patients in the hospital. The team consisted of the following members:
  - a) 4 project assistants were recruited with the following qualifications:
    - 2 professional nurses who had at least experience in rehabilitation training course and willingness to cooperate in the project. They functioned as instructors in the exercise training part of the program.
    - 1 pharmacist, who had at least two - year experience in the care and treatment of COPD patients in Chiangmuan hospital and willing to co-operate in the program. She functioned as teaching assistant.
    - 1 professional nurse who had at least experience in self-help group activities and involved in the care and treatment of COPD patient in outpatient department of Chiangmuan hospital and

willing to co-operate in the project. She served as the program coordinator and was responsible for home visit in phase 3 and hospital follow-up care in phase 4.

## **2) Developed the pulmonary rehabilitation program**

A multidisciplinary team of pulmonary rehabilitation program was responsible for the development of the pulmonary rehabilitation program by using a multidisciplinary team approach. The details of program development phase were as following:

- Meetings were conducted 6 times for the development of the program. The details of each meeting were as follow:
  - The first meeting began in November 2000, the team explained and clarified each member's role on the team. They selected a facilitator and a team leader. They set objectives and developed action plans during team meetings that took place every Thursday. Consensus methods were used to facilitate group idea generation and the team's decision making and to assign responsibility for each member's role on the team.
  - In the second meeting, the team leader set out a basic draft of a rehabilitation program. This included suggestion for scope of the pulmonary rehabilitation, benefits, the components of the program based on research evidence and the recommendations



from the official statement. This draft was sent out to every member and it served as a basis for discussion and to solicit ideas from all members of the team. At the meeting they share the body of knowledge and experiences among the multidisciplinary rehabilitation team. These included reviewing available literature covering issues of recommendations and research about the pulmonary rehabilitation program. This was to ensure that everybody in the team had the same basic of knowledge.

- In the third, fourth, and fifth meeting, the team put together a small working group to prepare the draft of the program and everyone was involved in this phase. The team started to set out the content of each activity of the program. A carefully designed program required a good deal of effort, not only with regard to the design of contents but also with regard to its implementation. The team understood that they must ensure the validity of the component of the program for which they took responsibility. An overall positive response was received from every member in the team. In the fifth meeting, the multidisciplinary rehabilitation team was able to finalize the structure of the program and its components.
  
- In the sixth meeting, the team set out to indicate and perform each activity when there was the most appropriate time for each

activity. Everyone had individual responsibility to learn and practice the components that they were responsible.

- Program design. The program was developed by using the guideline from (1) the official statement of The American Thoracic Society on pulmonary rehabilitation in patients with chronic respiratory impairment; 1999 and (2) recommendations from Anti-tuberculosis Association of Thailand under the Patronage of His Majesty the King in “Standard in diagnosis and management of chronic obstructive pulmonary disease and pulmonary rehabilitation program in Thailand, 1999.” Based on these two references, the following points were used in the pulmonary rehabilitation program:
  - The goal of the rehabilitation program was to empower COPD patient to develop self-care strategies that would promote healthy adaptation to living with their COPD-related disabilities.
  - The team developed the schedule of the pulmonary rehabilitation program. ( Appendix 6 ), outlines of the content and objectives of the 6 classes
  - Instruments selection: Based on a review of the literature about the instrument used to measure health outcomes in patients with chronic respiratory disease, the team selected

three concepts for the study. They were The Chronic Respiratory Questionnaire (CRQ), the 12- minute distance walk test (12MD) test and the Horizontal Visual Analogue Scale (HVAS) (Guyatt and coworker, 1987; McGavin et al., 1976; Gift, 1986). All of three instruments were translated into Thai language and were tested for content validity and language accuracy by every member of the team. The three instruments were pilot tested with the group of 5 COPD patients who had similar characteristics to the study group. It was found that, overall, the patients could performed the 12- minute distance walk test (12MD test) and Horizontal Visual Analogue Scale test (HVAS), except the Chronic Respiratory Disease Questionnaires test (CRQ). The patients did not fully understand the questions and they were limited in the total recall of the feeling over a 2-week period. Therefore, the CRQ was reviewed again by the rehabilitation team and changes were made. These included translation of instruments again into Northern-Thai language, face-to-face interviews were administered only by a project manager and each patient was allowed more times to complete the questionnaires.

## **Phase 2 : Hospital-based pulmonary rehabilitation program.**

This phase was divided into two activities as follows:

### **Activity 1: Baseline Data**

#### **Objectives**

1. To obtain general and demographic data of COPD patients.
2. To obtain the levels of the quality of life, the exercise capacity and the perception of dyspnea of the COPD patients before participating in the rehabilitation program.

#### **Program Procedure**

Patients who met the criteria were invited to participate in the study. The rehabilitation team approached the participants 1-day before beginning the rehabilitation program to collect baseline data and to give an explanation of the study purposes. The subjects completed the demographic data, the Chronic Respiratory Disease Quality of Life Questionnaires (CRQ), the 12-minute distance walk test (12MD) and Horizontal Visual Analogue Scale (HVAS). Participants then entered the pulmonary rehabilitation program in the hospital. Three and six months after completion, all subjects again were re-tested on the above three instruments ( post-test phase ).

## **Activity 2: Training the pulmonary rehabilitation program.**

### **Objectives**

1. To encourage and empower COPD patients' participation in self-care, develop self-care strategies that promote healthy adaptation to living with their COPD related disabilities.
2. To promote the exercise practice to the COPD patients.

### **Procedure**

The 13 COPD subjects enrolled the rehabilitation training sessions between 9.00 A.M. - 12.00 A.M. of January 5 - February 1, 2001 at the Health Promotion and Prevention unit, Chiangmuan Hospital.

The pulmonary rehabilitation program consisted of series of 3-hour classes conducted by the rehabilitation team once a week over a 6-weeks period. The hospital-based rehabilitation training program composed of health education and exercise training which required a total of 18 hours in 6 classes of training.

### **Training schedule**

All 13 patients participated through out the 6 classes of rehabilitation training in the hospital. Table 2.2 outlines the content and objectives of the 6 classes during a 6-week period.

The hospital-based rehabilitation program included an educational component that focused on such topics as the patho-physiological of COPD, nutrition, self-care instruction, and stress management. Retraining in breathing techniques such as pursed-lip breathing exercises also formed part of the program.

The educational component was combined with the exercise training. Exercise training was based on the general principles of exercise physiology that covered issues of intensity, specificity, and reversibility. The exercise training addressed types of exercise, frequency of exercise, intensity of the exercise, and techniques to progress to higher levels of fitness.

Exercise sessions, which consisted of stretching, breathing retraining, relaxation, and chest mobility exercises, were tailored to each patient's capabilities. The amount of time that spent on each exercise was individualized and depended on each patient's physical tolerance level. The patients were tested about skills in exercise practice at the end of exercise training and recognizing that exercise practice would keep their lives healthy.

In addition, parameters, such as, heart rate, blood pressure, and respiration were monitored during physical activities. This monitoring was designed to prevent participants from exceeding their physical limitations and to instill in them, feeling of confidence that they were being closely observed for possible adverse physical effects of exercise.

The trainers involved in teaching the classes were the rehabilitation team and the educational classes were provided in small groups using group processes.

**Table 2.1 : A Pulmonary Rehabilitation Training Program for COPD**

**Course goal:** To encourage and empower COPD patients' participation in self-care, develop self-care strategies that promote healthy adaptation to living with their COPD related disabilities.

<b>Class</b>	<b>Content</b>	<b>Objectives</b>
1.	Exploring Facts and Figures of COPD	To initiate a working relationship between the teams and participants and to provide an overview of pulmonary rehabilitation program
2.	Exploring How a COPD Creates Disabilities	To present the concept of rehabilitation as an on-going process. Participants built a knowledge base about causes and treatment of COPD
3.	Exploring How and Why of Living with a Disability	To identify the health challenges resulting from COPD. Participants were presented by a variety of self-care strategies for managing these challenges.
4	Exploring COPD Medication and Treatment	To identify the pharmacology of the COPD drugs. Participants built the knowledge about medications.
5.	Exploring Creative ways for Enhancing a Positive life-style	To consider ways of maintaining health in spite of disabilities. Participants hear about and practice a variety of exercises and stress reduction techniques.
6.	Exploring Living With COPD	To allow the participants to review the components in previous classes. Participants shared personal insights gained from the course and celebrated their accomplishments

### **Phase 3: home-based rehabilitation during routine home visit**

#### **Objectives**

1. To provide information, encourage self – reinforcement, motivate the COPD patients for regular exercise and obtaining exercise advice.
2. To ensure the study group to be able to cope with their individual health problems and have correct self-care behaviors and also practiced exercise regularly.

#### **Procedure**

At the end of hospital- based rehabilitation, the home- exercise training was introduced to every COPD patients before discharge. Each patient was encouraged to continue with simple exercise at home. The home exercise practice was tailored for each patient that included breathing exercise, leisure walk each day, stair climbing and respiratory muscle training. The home-based rehabilitation phase involved the subjects practicing exercise individually in their own home and supervised by the home-visit nurses of the rehabilitation team during each routine home visits.

#### **Home visit schedule**

Home visit to the patients' homes not only relieved COPD patients of attendance at the hospital but also offered an opportunity to assess the patients in their own environment and see how they actually live. The home visits were conducted once per month over 6 months period at the participants' own home by the rehabilitation nurses after the formal hospital rehabilitation training in the hospital.



#### **Phase 4: Follow-up care in the hospital**

##### **Objectives**

1. To monitor the compliance of the COPD patients who participated in the rehabilitation program.
2. To determine the patients' outcomes, in terms of, improving or decreasing in the signs and symptoms of COPD.

##### **Procedure**

The subjects attended the outpatient department for follow-up care in the hospital every month for 6 months. The schedule of hospital follow-up care was individualized and depended on the need of the each subject.

##### **Activities**

At this stage the physicians performed physical examined by, checked vital signs, recorded body weight, assessed signs and symptoms of COPD and other diseases, and provided medical treatment when necessary. In addition, patients were given the opportunity to discuss problems, concerns, experiences, anxieties, fears, and coping strategies individually with the rehabilitation team.

## **2.6 Problems, Conflicts, and Means for Resolution**

1. The problems that encountered in the programs development were time constraint.

2. The investigator initially anticipated that only the participants who lived in home visit area of the hospital were to be involved in the program, however, due to shortage of participants, the criteria were changed to allow more patients to participate with the program.
3. The training venue was far from the residential area of the participants, so the team provided transportation to pick up patients who were unable to participate in rehabilitation program because of travel constraints.
4. Most participants were elderly patients and some patients could not read-so the handouts were not provided to everybody among the participants.
5. Some participants increased their shortness of breath while practicing exercise so the participants were first taught how to breathe more efficiently and then to use this technique while engaging in activities, such as, walking or climbing up stairs.
6. Of all the participants, there were 2 male COPD patients who were current smokers. A smoking cessation was offered and tipped on how to give up smoking were provided.

**Table 2.2: Project Activity with time table**

Product/Activities	Time Frame (Month) 2000 -2001											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
1. Recruitment of rehabilitation team	X											
2. Documentary Review	X	X										
3. Team Work Meetings	X	X										
4. Development of rehabilitation program		X										
5. Recruitment of Participants		X										
6. Conduct Pre-test assessment			X									
7. Hospital-based rehabilitation program			XXX X	XX								
8. Home-based rehabilitation program - Monthly home visits				X	X	X	X	X	X			
9. Monthly hospital follow-up care					X	X	X	X	X	X		
10. Conduct post - test assessment							X			X		
11. Data Processing + Data Analysis											X	
12. Report Writing												X
13. Presentation of Findings												X