Rehabilitation of Pulmonary Cripple in Private Practice

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The rehabilitation of patients with severe chronic respiratory insufficiency, particularly those with emphysema and chronic bronchitis, is assuming a place of ever-increasing importance for the physician in private practice. No longer are these patients the sole responsibility of large medical centers. A program of total patient care which utilizes the resources of the entire community is now possible and brings meaningful respiratory care and rehabilitation to this group of patients.

The need for aggressive community-wide respiratory rehabilitation programs which utilize the private practitioner and the resources of the community becomes evident when one considers the problems created by the increasing incidence of chronic respiratory disease, the mounting loss of work hours caused by chronic morbidity and the immense cost of medical care for chronically ill persons. The total socioeconomic impact of these diseases can be greatly reduced by community programs which use available physicians and allied health manpower.

Many patients are first seen in the hospital during acute respiratory emergencies. This fact emphasizes the need for a well-organized respiratory care unit. This unit becomes the vehicle by which the newer concepts of respiratory care can be brought to physicians of different training and specialty interest. The unit becomes the nucleus for active physician postgraduate training as well as inservice training for nurses. It provides a uniform approach to complex medical emergencies and provides a forum for patient teaching.

The respiratory care unit is under the supervision of a nurse who has received special training in all phases of respiratory care and rehabilitation. It is her primary responsibility to conduct an ongoing educational program for all hospital and other interested nursing personnel. This program covers all phases of acute and chronic respiratory care and rehabilitation. This approach has enabled us to provide highly specialized respiratory care and to institute early rehabilitation for any patient needing it on a 24-hour basis with a minimum extra expenditure of personnel and money.

This program has led to an effective inhospital effort to institute early rehabilitative measures carried out by a respiratory care team made up of the respiratory care supervisor, the intensive care nursing personnel, the floor nursing personnel and physical therapists, all of whom function under the direct supervision of the patients’ private physician. At the end of the patients’ hospital stay, the visiting
nurse service becomes an active member of the respiratory care team. This team endeavors to teach the patient and his family the skills that he will need to care for himself at home and to provide the security offered by early follow-up home visits to continue the educational program.

Early ambulation of the acutely ill patient with chronic respiratory disease is essential. This can be accomplished by providing the patient with skilled nursing care. If oxygen therapy is necessary to accomplish early ambulation, this can be accomplished using small oxygen tanks (usually "E" size) on wheels from which the patient may obtain oxygen through a nasal cannula during periods of activity. The Linde liquid system can be utilized if necessary. This technique of ambulatory outpatient oxygen therapy has been valuable in returning a significant number of patients to an active life.

The basic techniques of rehabilitative respiratory care consist of postural drainage, positive pressure breathing, use of nebulizers, of humidifiers, controlled cough, breathing retraining, graded exercise program, proper use of $O_2$ and other medications. Early attention to pulmonary infections and the elimination of pulmonary irritants are continually stressed. This has been discussed in Dr. Miller's article in detail. The program must be tailored to the needs of each patient. By the time of discharge, the patient and his family are familiar with the techniques of respiratory care and the equipment that he will be using at home.

At this point, the visiting nurse service becomes an active member of the team and provides continual supervision and assistance at home. The visiting nurse referral contains all of the information necessary for the nurse to go into the home and evaluate the use of equipment and the effectiveness of the home care program. Each patient receives a minimum of two visits. The patient's physician is then contacted, and if further teaching visits are necessary these will be arranged. Arrangements are also made for long-term follow-up visits depending upon the need.

Patients whose initial illness does not necessitate hospital care are handled in much the same manner, but are primarily outpatients. The office nursing personnel of physicians who are interested in the rehabilitation program are encouraged to attend the inservice training programs so that a similar patient teaching approach can be carried out in the physician's office. Office referrals to the physical therapy department for breathing retraining and graded exercise programs are also available. In our office we maintain a complete assortment of equipment used in respiratory care in the home for patient instruction.

An active outpatient teaching program that reinforces the principles of rehabilitative respiratory care is conducted twice a year. All patients who have had contact with the rehabilitation program and their families are invited to participate. These are informal meetings designed to encourage the free flow of questions from patients and their families, particularly during demonstrations.

It should be emphasized that although patient care is conducted by a team consisting of physicians and allied health personnel, the actual responsibility for directing total patient care remains in the hands of the physician.

The results of our efforts have been most gratifying. An illustrative case emphasizes this point.

A 59-year-old white man with a 45 pack-year smoking history was first seen in October of 1963 with a sudden onset of dyspnea. He was known to have severe emphysema with extensive bullae and a spontaneous pneumothorax precipitated the current admission (Fig 1). Attempts to re-expand the lung failed, and a left pneumonectomy was finally performed. He did well at first but later developed acute influenza, right lower lobe pneumonia, and for the first time lesions of bullous emphysema were seen in the right lung (Fig 2). These lesions contained air-fluid levels. Recovery was complicated by the development of a spontaneous pneumothorax on the right. At that time arterial pH was 7.48, $P_{CO_2}$ was 36, $P_{O_2}$ was 49, oxygen saturation was 85 percent. This was re-expanded, but the patient was unable to return to work and led a very limited existence. In April of 1969 at age 65, he was started on ambulatory oxygen therapy, breathing retraining, graded exercise program and bronchial hygiene. On this program arterial pH was 7.49, $P_{CO_2}$ was 33, $P_{O_2}$ was 80 and percent saturation was 96 with supplemental oxygen. The chest x-ray film at this time is shown in Figure 1.

![Figure 1. Spontaneous pneumothorax necessitating left pneumonectomy. Status of right lung was radiographically normal.](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21520/ on 06/21/2017)
3. He was able to return to work. Most remarkably, he is still able to go to an elevation of 9,400 feet and fish for several hours with the aid of his ambulatory oxygen system. Certainly the quality of his life has been improved by the rehabilitation program.

In my own practice, which is not limited to pulmonary disease, I have seen, since the inception of our rehabilitation program, 31 patients with sufficiently severe chronic respiratory disease to require a concentrated program of respiratory care and rehabilitation. Of these, seven must be considered to be treatment failures. Of this group of seven, two refused treatment and were lost to follow-up. Two committed suicide shortly after being seen, and three never achieved improvement beyond bed-to-chair existence. These three have since died. The average survival time from first contact to death in the five patients who died and to the present time in the two lost to follow-up is 3.4 years.

Four patients have died after achieving initial marked improvement in the rehabilitation program, two with respiratory failure and two of acute myocardial infarction. The average survival in this group was 7.25 years.

Twenty patients are living at this time. In this group, three have progressed to a home-bound existence after having achieved initial marked improvement. The average survival from work-up until the present time in this group of 20 patients is 5.5 years.

In this last group, after institution of the rehabilitation program, the need for repeated hospitalization has been reduced. Many of the patients have returned to work or to a more normal level of activity and nonhospital morbidity has been reduced.

The program has created an increased awareness in the medical community of problems of the chronic respiratory cripple. The patients with chronic respiratory diseases now seek and expect this type of specialized care.

Although we may have failed to greatly extend the lives of patients within this series, we have done much to increase the quality of their remaining years.