

# **Respiratory Diseases**

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## **Task Force Report on**

- **Prevention**
  - **Control**
  - **Education**
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**March 1977**

**The Division of Lung Diseases  
National Heart, Lung, and Blood Institute**



**U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE**

**Public Health Service**

**National Institutes of Health**

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## FOREWORD

This report, prepared by the Task Force on Prevention, Control and Education in Respiratory Diseases, is the logical extension of a planning effort that began in October 1971, when a task force was constituted to recommend initiatives for research in respiratory diseases. Over the intervening years, the Division of Lung Diseases, with counsel from the Pulmonary Diseases Advisory Committee, has drawn upon the report<sup>1</sup> of that first task force to develop a *research program* that has expanded more than fourfold and has fostered many innovative approaches. We now look to this report by a second task force to provide similar impetus to an *education program for prevention and control* of respiratory diseases.

The pulmonary research program has contributed to better understanding of the causes of respiratory diseases and the processes that underlie their development, to more precise and earlier detection of abnormalities associated with these disorders, and to improvements in therapy. We are, however, mindful that the findings of research can have only minimal impact on national health unless there is an informational link between experts in academic medicine and those who practice medicine in the community. Moreover, if individuals are to participate in maintaining their own health, they must be informed about the types of behavior and life-styles that contribute to good health and the known factors that can cause or contribute to disease.

The Division of Lung Diseases is strongly committed to the goals of the legislative mandate<sup>2</sup> of the National Heart, Lung, and Blood Institute, which was expanded in 1972 to include (1) education and training of scientists, clinicians and educators, (2) development and demonstration of diagnostic, treatment and preventive approaches, and (3) public education. In its current program, the Division supports a Lung Research and Demonstration Center at the University of Vermont, and twelve contracts for educational projects addressed to these goals. The modest dimensions of this prevention, control and education program are in large measure due to lack of a comprehensive plan comparable to the one that has served the pulmonary research program over the years.

As a first step toward correcting this deficiency, the Division of Lung Diseases convened a steering group<sup>3</sup> that met in June 1975 and recommended guidelines for initiation of the Task Force on Prevention, Control and Education in Respiratory Diseases.

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<sup>1</sup>Respiratory Diseases: Task Force Report on Problems, Research Approaches, Needs. October 1972, DHEW Publication No. (NIH) 73-432.

<sup>2</sup>National Heart, Blood Vessel, Lung and Blood Act of 1972 (Public Law 92-423).

<sup>3</sup>Members of Steering Group: Drs. Leo Black, Thomasina Borkman, Morris Collen, Sol Katz, Edwin Rosinski, Carlos Vallbona. (When the Task Force was constituted, all members of the Steering Group were invited to participate. Drs. Collen and Rosinski were unable to accept.)

The 18-member Task Force was constituted to include experts in an array of fields and disciplines: pulmonary and community medicine, family practice, health professional and public health education, sociology and psychology, economics and health statistics, and mass media communication. Each Task Force member served as cochairman of a Task Group that involved between six and 14 other experts. Hence, the Task Force tapped a broad spectrum of opinion in preparing the chapters of this report.

On February 27 and 28, 1976, the Task Force met for the first time. It selected the topics to be covered in the report, agreed on areas of expertise to be represented in the Task Groups, and established procedures for preparing the report. All Task Groups met at least once before the second Task Force meeting on July 9 and 10, when the drafts of the chapters were discussed. At the next meeting, on October 1 and 2, the semifinal draft was reviewed and a consensus reached on recommendations to be presented in the final report. The Task Force met for the last time on March 4, 1977, when it approved this report.

The Task Force addressed some topics that are beyond the mandate of the Division of Lung Diseases, and made some suggestions or recommendations that require actions outside the missions of the National Institutes of Health. Where recommendations are more suitable to the goals of other Institutes of the National Institutes of Health or other Federal agencies, we hope they will be implemented by those agencies, either alone, or when appropriate, in cooperation with the Division of Lung Diseases.

Before the Division of Lung Diseases initiates a given recommendation, it will establish evaluative procedures for assessment of the effectiveness of the health-related intervention. To this end, we will draw upon the approach described in this report,<sup>4</sup> an approach which assesses benefits in terms of improved functional status, i.e., "quality of life." This is a departure from the customary measurement of benefits in terms of reduced economic costs associated with decreased morbidity and mortality.

The Task Force and Task Groups devoted large segments of time and considerable effort to meeting, collecting data and preparing chapters. In all, 113 experts contributed generously to this undertaking, which represents a cooperative enterprise by members of professional communities that have only rarely worked together in the past. We believe that this report will be a valuable resource, not only to the Division of Lung Diseases and the Pulmonary Diseases Advisory Committee, but also to pulmonary academicians, researchers, health planners and educators. It should generate a self-perpetuating cycle that will bring the findings of research to practicing physicians, other health professionals and the public, and will bring to pulmonary academicians an understanding of community health problems that require further basic or clinical investigation. The effect should be reflected in better care for patients with pulmonary disease, in better health for the public at large and, ultimately, in prevention of some of these disorders.

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<sup>4</sup>Chapter X.

The Task Force and Task Group members who contributed to this report are listed in the following pages. In addition, many individuals and governmental and private agencies assisted the Task Force, Task Groups and our staff. To all of these, and particularly to Dr. Clement Brown who served with me as cochairman of the Task Force, I acknowledge, on behalf of the Division of Lung Diseases and the National Heart, Lung, and Blood Institute, our gratitude for their invaluable help.

Bethesda, Maryland  
March 4, 1977

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# **TASK FORCE ON PREVENTION, CONTROL AND EDUCATION IN RESPIRATORY DISEASES**

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## COCHAIRMEN'S SUMMARY

I  
INTRODUCTION

In the charge to the Task Force, the Division of Lung Diseases asked for a report that would provide the basis for a feasible, manageable program to prevent and control respiratory diseases through the education of health professionals and the public. The report was to be addressed to lung diseases\* or disease categories that (1) constitute national health problems and (2) have been studied to the point where knowledge is available for translation to education and demonstration projects. The program to be recommended could have immediate or long-range (five to ten years) goals, and when hard data were unavailable could be based on the professional judgments of experts. Moreover, the report could recommend activities appropriate to the missions of other Federal Agencies and other Institutes of the National Institutes of Health, but the recommendations would also have to be consonant with the goals of the prevention, control and education programs of the National Heart, Lung, and Blood Institute as defined in the National Plan: \*\*

- The overall goal of the prevention and control programs is to benefit the citizens of our country by demonstrating to the practicing medical profession and the public means to promote health, prevent disease, treat disease, and restore health.
- The overall goals of the education and information programs are to:
  - Make the public aware of the magnitude of these disease problems, the associated risk factors and available methods of therapy.
  - Keep the health professional community abreast of new information and techniques and, thereby, also to facilitate the flow of modern therapy and information to the public.

Within this general framework, the Task Force defined its concepts of prevention, control and education. Interventions to prevent disease before biologic onset is considered to be *primary prevention*, and interventions after a disease can be detected but before it is symptomatic are designated *secondary prevention*. As used by the Task Force, *control* refers to measures taken to arrest or modify the course of disease after onset of symptoms. (These concepts are amplified in Appendix A.)

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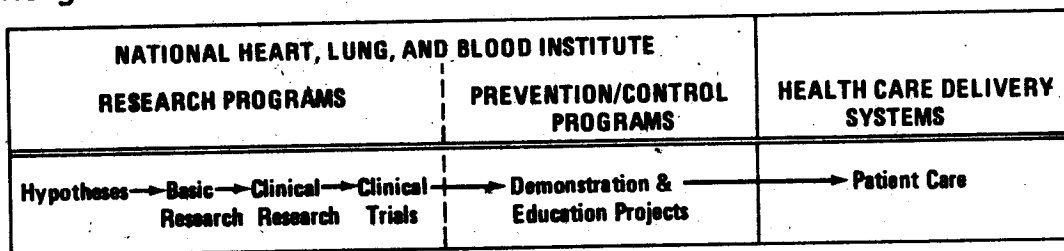
\*Excluding cancer of the lung.

\*\*National Heart, Blood Vessel, Lung and Blood Program: Volume I  
National Heart and Lung Institute Summary, May 1, 1973, DHEW Publication No. (NIH) 73-515.

For purposes of this report, the Task Force used the term *education* for a process that widens personal choice and facilitates changes in behavior which, in the context of the report, are necessary to improve health or health care. Used in this sense, education means more than mere dissemination of information, which too often is all that education programs attempt to achieve. The educational programs recommended by the Task Force are expected to result in the acquisition and practice of new health-promoting behavior by individuals, groups or communities.

### Task Force Responsibilities and Activities

The sphere of Task Force responsibilities is delineated in the diagram below, which illustrates the sequence from development of new biomedical knowledge to its use in the health care delivery system.



The continuum represented by this figure begins with scientific hypotheses, progresses to basic and clinical research to test the hypotheses, and then continues to controlled clinical trials. When the efficacy of new diagnostic techniques, preventive measures or therapeutic regimens has been established through clinical trials, they are ready to be tested in demonstration and education projects. Selected target groups are used to determine whether the techniques or procedures that have been used successfully in medical centers can also be utilized effectively in community settings. When demonstration or education projects have shown that techniques or procedures are applicable to the community at large, they then become part of standard medical practice in the health care delivery system.

In this sequence, the activities of the Task Force are concerned with the development of a prevention and control program through demonstration and education projects.

To discharge its responsibilities, the Task Force began by selecting the topics to be covered in the report. The diseases represented in chapters V through IX were selected because they are prevalent disorders that contribute greatly to morbidity or mortality, or both, and have a major economic impact. Although these diseases constitute major health problems at this time, they are potentially preventable or controllable. Cigarette smoking, and airborne environmental and occupational pollutants were selected for special attention (chapters II through IV) because they are pervasive risk factors that cause or contribute to many respiratory diseases. To emphasize that prevention and control programs should be concerned with maintaining and improving health as well as avoiding and treating disease, the

report devotes chapter I and part of chapter V to the topic of respiratory health. Finally, because critical evaluative procedures are an essential element in a prevention or control program, chapter X presents an innovative approach to the assessment of health-related interventions.

The recommendations of the Task Force are the outcome of selective procedures that began in Task Groups, continued at Task Force meetings, and will be further pursued as steps are taken to implement the recommended programs. All Task Groups as well as the Task Force addressed the following basic questions to arrive at recommendations:

- What new knowledge or techniques are ready to be used in community settings?
- What available knowledge or techniques are being utilized ineffectively? need to be reinforced? need to be replaced or updated?
- What procedures or regimens are being used in community settings although evidence is lacking that they are effective?
- What types of educational programs are needed for wider and more effective use of available knowledge and techniques?
- What evidence is there to support the impression that health professionals and the public are not utilizing, or are incorrectly utilizing, or do not know how to utilize knowledge that is available to prevent or control respiratory diseases?
- What components of the health care system, as presently constituted, are not being used effectively to facilitate utilization of health-related knowledge and techniques?

### The Task Force Report

The content of the chapters is derived from the deliberations and written reports of Task Groups that were constituted to include experts in fields or disciplines appropriate to the topic, and were cochaired by two members of the Task Force. For each Task Group, one cochairman was an expert in pulmonary medicine, the other an expert in a different area. As now presented, the chapters represent the views of the Task Force and may not reflect the opinions of all Task Group members who participated in developing the content.

The chapters begin with an overview (*Statement of the Problem*) of the importance of the topic in terms of national health. The *Assessment of State of Knowledge*, based on both data and professional judgments, is not intended to be an exhaustive survey, but to highlight information that is ready for wider application in medical practice. This section also identifies what is not known and sometimes includes suggestions for research that is

needed to fill gaps in knowledge before an education program can be undertaken. Of no less importance, in some instances the chapters identify therapeutic regimens that are being widely used, although their efficacy has never been adequately demonstrated in controlled trials. The *Conclusions and Recommendations* summarize the main issues discussed in the chapter, and recommend actions for a prevention, control and education program.

As this report is intended for audiences even more diverse in experience and interests than the members of the Task Force and Task Groups, it is inevitable that some terms will be read with different meanings by those with different professional backgrounds. In fact, during the Task Force deliberations there was a great deal of mutual education and sorting out of diverse meanings. Therefore, to increase understanding, the report includes several appendices that explain terminology used by the Task Force.

## II SYNTHESIS OF THE REPORT

Recurring themes and many common threads link the different topics covered in the report. The following synthesis emphasizes these links among the various chapters.

### Disease-Related Problems

Most of the diseases discussed in the report are chronic conditions, usually with slow onset and a long downhill course. In most instances pulmonary dysfunction is the primary disorder, but in cystic fibrosis, sarcoidosis and the connective tissue diseases pulmonary involvement is part of a systemic disorder. However, the pulmonary lesion is a major cause of morbidity or mortality in these systemic diseases.

Both genetic and environmental factors are implicated in the etiology of the chronic lung diseases. Cystic fibrosis is genetically determined, and emphysema (and possibly asthma) results from an inherited predisposition coupled with exposure to environmental hazards to the lung. Environmental insults such as cigarette smoking, air pollution or occupational exposures also cause or contribute to chronic bronchitis, pneumoconioses and hypersensitivity pneumonitis. The etiology of sarcoidosis and the connective tissue diseases is still unknown.

Despite differences in their clinical manifestations and etiology, chronic lung diseases present several similar problems relative to their prevention and control. Because they can be arrested or the rate of progression retarded, early detection is a crucial step to their control. Hence, the report emphasizes the importance of periodic clinical examinations coupled with simple spirometry to detect alterations in pulmonary function that may be the first clues to early stages of disease. The pulmonary function tests, which can be performed by practicing physicians, are described in Appendix B. However, where differential diagnosis is necessary, more sophisticated tests by pulmonary specialists may be required.

A problem common to treatment of many chronic diseases is the failure of patients to adhere to regimens known to be beneficial. One reason is the discouraging prospect to the patient of lifelong adherence to a regimen, or lifelong change in behavior patterns or life-styles that were previously established. Task Force recommendations include approaches to cope with this problem.

Among the *acute respiratory diseases* covered in the report, some are life-threatening but potentially preventable, for example, nosocomial pneumonia and hyaline membrane disease. On the other hand, upper and lower respiratory tract infections are not preventable and may exacerbate such chronic conditions as asthma, emphysema and chronic bronchitis. Acute respiratory failure, another life-threatening illness, may result from progression of chronic lung disease and sometimes from drug-induced pulmonary reactions. For such acute conditions, prompt therapeutic intervention is essential. This depends on physicians being aware of the causes, early signs and symptoms of these disorders. Hence, in recommendations to prevent or control acute respiratory diseases, the Task Force emphasizes educational programs for physicians and other health professionals.

### Prevention

*Primary prevention*, through intervention before biologic onset, is possible for many respiratory diseases.

Immunoprophylaxis can prevent influenza, measles, pertussis, and some adenoviral infections. The reason these diseases continue to occur despite the availability of effective preventive measures is discussed in the chapter on INFECTIOUS LUNG DISEASES. The Task Force recommends approaches to correct this problem.

Where airborne organic or inorganic dusts, aerosols or gases are known to be specific causes, the respiratory disease is preventable if the environmental hazards can be avoided, or if communities and industries take steps to eliminate pollutants. The chapters on ENVIRONMENTAL FACTORS IN LUNG DISEASES, OCCUPATIONAL FACTORS IN LUNG DISEASES, and FIBROTIC AND IMMUNOLOGIC LUNG DISEASES discuss such preventive measures and recommend specific prevention programs.

Hyaline membrane disease is preventable if elective deliveries or Caesarian sections are postponed until the fetal lung has reached maturity, as determined by prenatal assessment of surfactant levels. A preventive program is recommended in the chapter on PEDIATRIC PULMONARY DISEASES.

Drug-induced pulmonary diseases, which may be acute or chronic, are preventable if physicians are sufficiently aware of the hazards associated with use of certain drugs. The chapter on FIBROTIC AND IMMUNOLOGIC LUNG DISEASES discusses this problem and recommends an educational program to correct it.

Nosocomial pneumonias can be prevented by relatively simple precautions to decontaminate ventilatory equipment in hospitals, and to invoke hygienic practices by hospital personnel who can be vectors for the offending bacteria. The chapter on **INFECTIOUS LUNG DISEASES** recommends educational programs to these ends.

*Secondary prevention*, through interventions that arrest disease or prevent progression to clinical onset, is possible for most of the diseases covered in the report.

Because cigarette smoking contributes to so many respiratory disorders, smoking cessation is emphasized in several chapters. The report stresses programs to discourage children and teenagers from beginning to smoke and to change behavior in those who have acquired the smoking habit. It also emphasizes the special importance of nonsmoking for those who are either genetically predisposed to risk of emphysema or who are at high risk of chronic respiratory disease because of exposure to air pollutants or occupational hazards to the lung. Problems associated with smoking and recommendations to deal with them are discussed in the chapters on **SMOKING AS A FACTOR IN LUNG DISEASE**, **CHRONIC OBSTRUCTIVE LUNG DISEASES**, **ENVIRONMENTAL FACTORS IN LUNG DISEASES**, and **PEDIATRIC PULMONARY DISEASES**.

For diseases caused by environmental and occupational exposures, the approaches to secondary prevention are the same as those for primary prevention. If hazards to the lung are avoided or eliminated, progression can be arrested before the diseases present symptoms.

Secondary prevention of hyaline membrane disease is possible if surfactant levels are determined in all premature infants and, where the lung is shown to be immature, precautions are taken to insure appropriate therapeutic interventions. The chapter on **PEDIATRIC PULMONARY DISEASES** recommends a regional approach to this problem.

### Control

Control of respiratory diseases, through interventions to arrest or reverse symptomatic disorders, is possible for some of the diseases covered in this report, but in other instances effective control must await evidence from clinical trials that effective modes of therapy are available. Some therapeutic regimens of established efficacy are not being adequately utilized in community medical practice. This problem and recommendations to correct it are discussed in the chapters on **ASTHMA**, **CHRONIC OBSTRUCTIVE LUNG DISEASES**, **FIBROTIC AND IMMUNOLOGIC LUNG DISEASES**, **INFECTIOUS LUNG DISEASES**, and **PEDIATRIC PULMONARY DISEASES**. On the other hand, some procedures and medications are being widely used at considerable expense to the public although their efficacy has never been established. Two noteworthy examples are the use of over-the-counter drugs for upper respiratory infections, and of intermittent positive pressure breathing to treat respiratory distress.



## Education

Education, viewed by the Task Force as a strategy for achieving measures that will contribute to prevention and control of respiratory diseases, is essential to implementation of programs discussed in the report. The educational recommendations are directed to (1) changing the health-related beliefs, attitudes and behaviors of individuals, communities and health professionals, and (2) providing opportunities for them to practice and utilize new problem-solving and psychomotor skills and new behaviors that will lead to improved prevention and control of pulmonary diseases.

Although the educational recommendations are addressed to groups as diverse as the general public, physicians and other types of health professionals, these programs must all be planned in terms of established educational principles, which are described below.

- The learner must (1) share in setting the educational goals, (2) perceive the relationship between the activities of the educational process and the objectives of the instruction, and (3) be motivated to learn.
- The educational process must provide frequent feedback, evaluation, and incentives for the learner to change beliefs or attitudes, or to acquire the problem-solving or psychomotor skills that are the goals of a prevention and control program.

When health education programs are addressed to the public, the target groups must be clearly delineated in terms of demographic characteristics, psychological attributes, information-seeking habits, attitudes, beliefs and values. Moreover, it is necessary to identify existing behavior patterns that are influenced or reinforced by the day-to-day environment of the individual or community. The educational program must then be planned to alter these patterns when their modification is necessary to the educational goals. As in all educational programs, the individuals or communities to be educated must participate in setting the goals, selecting actions to achieve them, and planning how the program will be implemented.

*Educational programs addressed to health professionals* should give special attention to research knowledge and its application to medical practice. The health professional must understand the validity of the information being utilized. Insofar as possible, this information should be based on rigorous research or, in the absence of hard data, on the best professional judgments of experts. Education of health professionals will of necessity include acquisition of psychomotor skills to use diagnostic and therapeutic equipment.

To achieve an effective health education program, health professionals who are educators must have educational skills as well as knowledge of their medical disciplines. Hence, there is a need for *staff development* so that medical faculties will understand how educational programs must be planned and what is necessary to implement them.