

CHRONIC NON-SPECIFIC LUNG DISEASES

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This report has been prepared by the Regional Office for Europe of the World Health Organization for governments of Member States in the Region and for those who participated in the European Symposium on Chronic Non-Specific Lung Diseases, Moscow. Copies are available for persons officially or professionally concerned in this field of study on request to the WHO Regional Office for Europe, Copenhagen.

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CHRONIC NON-SPECIFIC LUNG DISEASES

Report on a Symposium

Introduction

Interest in chronic respiratory diseases has increased in the past decade. It has become apparent, in many countries, that they are causing widespread morbidity and mortality which is persisting despite advancing medical knowledge. At the same time, there is clearly considerable disagreement among experts in this field concerning appropriate terminology and methods of diagnosis. This disagreement interferes with international communications and inhibits research into causation upon which effective prevention and treatment of these important diseases must depend.

It was to study problems of terminology and discuss methods of conducting prevalence surveys in different environments, as well as various methods of prevention, that the WHO Regional Office for Europe convened the Symposium on Chronic Non-Specific Lung Diseases in Moscow.

The Symposium was welcomed by Professor V.D. Timakov, Vice-President of the USSR Academy of Medical Sciences.

In opening the meeting on behalf of the Regional Director, Dr P. van de Calseyde, Dr J.D. Cottrell, Deputy Director, referred to the aims of the Symposium. He hoped that after reviewing recent findings concerning the epidemiological and clinical aspects of chronic non-specific lung diseases closer agreement on terminology and diagnosis could be reached in

Europe and that suggestions with regard to research requirements and preventive measures would be made.

Professor N.S. Molchanov was elected Chairman of the Symposium and Dr C. Fletcher, Rapporteur.

1. Mortality and morbidity statistics

The participants agreed that mortality statistics in different countries coded under the rubric B32 (Bronchitis) of the International Classification of Diseases (Special Tabulation List B) suggested large international contrasts in mortality from chronic non-specific lung diseases (CNSLD). Since crude death rates could be seriously misleading, comparisons could only be made with due regard to sex and age-groups. Even such specific rates were at present too inaccurate to provide really reliable evidence.

Factors contributing to the inaccuracy of these mortality rates were:

differences in diagnostic terminology,

individuality in the choice of the main cause of death by the certifying physician, and

variations in the practice of coding and classifying causes of death for statistical purposes.

A particular difficulty in the certification of deaths from diseases in this group was that, while the early stages might be predominantly broncho-pulmonary, the terminal illness was often

cardiovascular in its clinical manifestations. Further, since the disabling stages of the disease in the main affected the elderly, the immediate cause of death was often non-pulmonary, so that the prevalence of respiratory invalidity was underestimated by mortality rates.

The meeting considered various sources of morbidity rates, which were difficult to interpret for various reasons. First, there was diagnostic inaccuracy; secondly, the ability to continue working despite disablement differed in different occupations and this affected sickness absence rates; thirdly, the financial implications of sickness absence, depending on different compensation schemes, affected the frequency and duration of sickness absence. It was agreed, however, that social security data might provide the most immediately available information on respiratory disability if they were used with due regard to the sources of error outlined above. The use of data derived from attendances at polyclinics should be encouraged. In using such data for international comparisons, care would be needed to ensure that the conditions of attendance were comparable.

Hospital figures showing the proportion of cases of cardiac failure due to respiratory and to other causes could readily be collected and could provide interesting contrasts, but diagnostic accuracy must be ensured.

There was agreement as to the importance of post-mortem confirmation of the cause of death in all mortality studies.

It could be concluded from mortality rates that the prevalence of chronic non-specific lung diseases was likely to differ largely from one country to another. In countries with

high rates in late middle age, the male/female ratio tended to be high at these ages, whereas in those with lower rates, the ratio was close to unity. For instance, in the United Kingdom at ages 40 - 64 the ratio for pneumonia and bronchitis (B31 and B32) was 3.4, whereas in Norway it was 1.1. It was considered that these differences might reflect differences in male cigarette consumption.

The meeting considered ways in which mortality data could be improved, and recommended:

(1) that in as many countries as possible a random sample of certificates of deaths attributed to respiratory and cardiovascular diseases should be selected and clinical information sought in a standard fashion from the certifying practitioners to see how far and in what way certifying practice varied;

(2) that a representative set of full case histories of patients who had died from cardio-respiratory diseases should be sent to a sample of practitioners in different countries to see how they would certify the cause of death;

(3) that the World Health Organization consider the desirability of asking statistical offices in countries using the international form of medical certificate of cause of death to code all the individual diagnoses recorded on such certificates, whether "underlying" or "contributory", and to tabulate, for example, all cases in which bronchitis was recorded on certificates, recording whether the diagnoses occurred alone or in combination with other diagnoses.

For accurate international comparison, surveys of comparable samples of the general population in different countries were needed to ensure the inclusion of the healthy as well as the sick and to avoid the distortion introduced by the selective processes of hospital attendance and admission.

Standardized clinical techniques suitable for use in such surveys were described, and some results which had been obtained by their use, particularly in Finland, the Scandinavian countries, and the United Kingdom, were considered. The basic principles of the techniques exemplified by the British Medical Research Council's questionnaire on respiratory symptoms were the reduction of observer variation and the recording of individual symptoms rather than of clinical diagnoses such as "chronic bronchitis" or "pneumosclerosis".

Surveys of this kind had, for instance, shown a similar prevalence among men in England and Scandinavia of minor symptoms such as morning cough and sputum but a higher prevalence of the severer symptoms such as recurrent illnesses and breathlessness in English males. This suggested a more frequent progression from the early to the advanced stages of the disease in England than in Scandinavia.

The objective measurement of sputum volume and ventilatory capacity could be used to check on observer variation in recording symptoms. The use of more detailed diagnostic techniques, referred to later in this report, should be made in epidemiological surveys whenever possible.

Simple tests of ventilatory capacity with a high degree of reproducibility were considered. The FEV_{1.0} (forced expiratory volume in one second) had this characteristic and had been widely

used. As new techniques were developed it was important to include this widely used test to assist in the interpretation of the newer tests. These simple tests should not, however, be regarded as giving a full indication of lung function. More elaborate tests could be used in special circumstances to provide a more complete functional assessment.

It was agreed that these techniques should be used on random samples of the general population, or samples from comparable occupational groups in as many different countries as possible, to determine more accurately differences in prevalence which might throw light on etiological factors. When occupational groups were used, special care had to be taken to ensure that conditions of employment were similar. The translation of the questionnaire had to be accurate and the interviewers well-trained. Small pilot studies might be needed for this purpose. Translations were already available in Danish, Dutch, Finnish, French, German, Italian, Norwegian, Russian and Swedish. Gramophone records of interviewers using the questionnaire in English could be obtained from Professor Reid (United Kingdom). In countries with special industrial health services, occupational groups might readily be used for the collection of information of this kind.

2. Etiology and pathogenesis

The meeting agreed that it was difficult, in considering any etiological agent in CNSLD, to distinguish primary causation from aggravation. Both were important in relation to preventive measures. Evidence on etiological factors from epidemiological studies was considered. These factors include the following:

2.1 Age and sex

In most studies a steep increase in prevalence of CNSLD has been observed with advancing age, especially in males after the age of 40. The steeper increase in men than in women results in a high male/female ratio, particularly between the ages of 45 and 64. There appears to be more respiratory disease in younger children than in adolescents.

2.2 Air pollution

The effect of air pollution is revealed not only by a higher prevalence and mortality in urban than in rural areas, but also by a tendency for a sharp increase in mortality to occur at times of high pollution during meteorological conditions causing "smog". A considerable increase in childhood morbidity has been reported in families exposed to exceptionally high concentrations of SO₂.

2.3 Cigarette smoking

The prevalence of cough and sputum is directly related to the number of cigarettes consumed. The more serious symptoms of CNSLD are more prevalent in smokers than in non-smokers, but the prevalence of these more severe manifestations, such as recurrent illnesses, purulent sputum and dyspnoea, appear to be more closely related to urban conditions such as air pollution than to smoking. Cigarette smoking produces a simple condition of bronchial irritation and hypersecretion which, in turn, can increase liability to more severe effects. This emerges particularly in comparisons of symptom prevalence made by standardized techniques in the United Kingdom, Finland, Norway, and the United States of America. Sex differences in the habit of smoking may be largely responsible for the different prevalence of the disease in men and women.

2.4 Social and occupational influence

There was no detailed discussion of the effect of occupation on CNSLD or on the differentiation of these diseases from occupational diseases of the lung. But in many countries a social class effect has been observed. This group of diseases, it is true, affects unskilled labourers much more than the professional classes, skilled artisans being intermediate. In the United Kingdom, the mortality is five times as great in unskilled labourers as in men in professional occupations. However, several studies have shown that the wives of men in occupations with a high prevalence of CNSLD also have higher prevalence. The effect would therefore appear to be of a social rather than occupational origin.

2.5 Bronchial and pulmonary infections

There is ample evidence, both epidemiological and clinical, that bronchial and pulmonary infections are important. From some studies it appears that broncho-pulmonary acute infection, associated with a decline in ventilatory capacity, has caused permanent changes in a high proportion of subjects. The microbiology of these infections varies considerably from centre to centre, but the organisms most commonly incriminated are Haemophilus influenzae and Streptococcus pneumoniae. The latter organism was reported to have been less prevalent in recent years. Other streptococci and staphylococci are involved, and influenzal and other viral infections are important. There is evidence that the effect of air pollution may be due to the fact that it increases susceptibility to acute respiratory infections.

It was agreed that infective and inflammatory processes of many kinds could initiate and encourage the progression of CNSLD, and that further systematic study of the role of various types of infection in relation to CNSLD was required.

2.6 Constitutional factors

The fact that, in populations exposed to any of these adverse agents, only a minority have developed CNSLD indicates that some constitutional factors are concerned, especially in the asthmatic forms of these diseases. Clinical studies have shown that cases of CNSLD tend to have abnormal sensitivity to tobacco smoke, acetylcholine, histamine and irritants such as cold air and SO₂. Family studies have suggested that this type of "bronchial reactivity" may be partly inherited, and that factors such as thoracic structure may be involved.

2.7 Hyper-reactivity

The Netherlands participant felt that hyper-reactivity was an essential factor in CNSLD apart from and in addition to allergy. He considered that allergy and hyper-reactivity each had a specific and different natural history and that the clinical reactions of patients were the result of the interaction of allergic or non-specific stimuli with the allergic or hyperactive state. These reactions resulted in bronchial obstruction in varying degrees which encouraged secondary bacterial infection, possibly leading to localized or diffuse bronchiectasis as well as to irreversible obstruction of the airways.

2.8 Climate

Other less clearly incriminated factors were also considered. Evidence concerning climate - in terms of temperature and humidity - is conflicting. Some studies have shown that certain symptoms are related to humidity and low temperature; others indicate that a dry climate may reduce sputum production. The effects of climatic conditions require much more careful study.

2.9 Alcohol

Alcoholic intake (beer in some countries, wine in others) is reported to have an effect. This might, in some cases, be due to associated smoking habits or to obesity.

2.10 Psychological stress

The possibility that psychological stress may increase liability to CNSLD was raised, but no clear evidence of its effect was available.

3. Pathology

Demonstrations of the pathology of CNSLD were given by participants from the United Kingdom and the USSR.

The study made in the United Kingdom, dealing with patients over the age of 40, emphasized, by means of whole lung sections from autopsies, the type and severity of emphysema. Histological study showed hyperplastic mucus gland changes in the bronchi with inflammatory changes extending into the bronchioles.

The USSR demonstration was predominantly of surgical specimens removed from patients under the age of 40, but reference was also made to autopsy material from older patients. It demonstrated selective segmental lesions with atelectasis, bronchiectasis and emphysema and inflammatory changes, often extending into the lung parenchyma, giving chronic pneumonia, pneumosclerosis (fibrosis) and the most severe forms of this fibrosis, with gross deformation, designated pneumocirrhosis.

In the later stages of the disease, inflammation often became generalized in the bronchi. Histologically, there were changes in all layers and elements of the bronchial wall including blood vessels and intramural nervous structures. There was consequential gross disruption of bronchial function.

It was agreed that the localized type of the disease in younger subjects might be a contributory factor in the development of diffuse bronchial and pulmonary changes. In most cases of CNSLD, however, the process was diffuse from the outset. It was important, but would be difficult, for the pathological anatomist to secure material for examination with adequate clinical information before the terminal stage of any disease and to relate changes in fixed tissues to functional abnormalities during life. The site of obstruction to bronchial airflow could not always be identified. Cor pulmonale could arise from either structural or functional changes in pulmonary vessels.

4. Clinical aspects

In the absence of a clear definition of the range of conditions covered by the term chronic non-specific lung diseases (CNSLD), the meeting found it hard to define any precise clinical syndromes. It became apparent, however, that, in the majority of the cases attending the clinics of the participants, the predominant symptoms were cough and sputum, usually preceding by many years the onset of dyspnoea. This course of events was often described as "chronic bronchitis leading to emphysema". In a minority of cases - the proportion varying in different centres - dyspnoea might be the first symptom, and in such cases diagnoses such as "dry" or "primary" emphysema had been made. Fluctuation of the severity of symptoms with changes in the weather was a characteristic feature.

Physical signs were liable to serious inconsistency owing not only to observer variation but also to lack of uniformity in the individual patient, except in the later stages of the disease. Persistent or recurrent rhonchi were commonly heard and might indicate the diagnosis in mild cases, but for accurate diagnosis of airways obstruction function tests were required.

Variation in clinical types in different countries and in different areas within the same country, which might have an interesting bearing on etiology and prophylaxis, could be studied by direct comparisons between different clinics using standardized clinical techniques, as had been done in a recent study of "emphysema" cases in Chicago and "chronic bronchitis" cases in London. A close similarity between clinical types had been revealed with a few striking contrasts that were being further investigated.

The participants agreed that more use should be made of special bacteriological techniques, for instance, on specimens obtained at bronchoscopy, and more attention should be paid to the cellular content, particularly of eosinophils, in the sputum.

5. Functional aspects

The participants agreed that the earliest and most characteristic disorder of lung function in CNSLD was obstruction of bronchial airflow, especially during expiration.

They first considered simple tests that could measure the severity of this obstruction. The most widely used and acceptable test was measurement of the expiratory volume in one second

(FEV_{1.0}). In order to demonstrate that impairment of FEV was due to an obstructive rather than a restrictive lesion it was necessary to measure vital capacity (VC) and show that FEV_{1.0} expressed as a percentage of VC was reduced, but since the VC was also reduced in many severe cases of uncomplicated airways obstruction, and since the FEV was directly related to maximum breathing capacity, the FEV, in absolute terms, also provided a good index of the severity of the ventilatory impairment. Since the FEV was related to both age and height, standardization of these variables was desirable. In the United States of America the maximum mid-expiratory flow (MMF) had been widely used; the results of this test correlated closely with FEV.

Various other simple and portable apparatuses for testing airways obstruction were considered, including the Wright peak-flow meter and the Goldsmith "Puffmeter". These gave some indication of maximal expiratory flow, but had the disadvantage of requiring fuller collaboration from the subject and offered no means of discriminating between restrictive and obstructive impairment. A portable instrument for measuring inspiratory and expiratory flow, developed in Finland, was demonstrated. The ratio between these two values had been found to differ sharply in patients with airways obstruction and normal subjects. The Russian peak-flow meter also enabled expiratory and inspiratory flow to be measured.

The meeting received a paper by Dr C.B. McKerrow (United Kingdom) which analyzed the advantages and disadvantages of various simple tests for simple impairments of ventilatory functions.

The influence of drugs such as adrenalin, aminophylline, anti-histamines, anti-cholinergics and diuretics on the severity of airways obstruction was considered to throw interesting light on the mechanism of the obstruction and might assist differentiation between the various types of labile obstruction in asthma and bronchitis and the more constant obstruction which is found in many cases of both advanced bronchitis and emphysema. No generally agreed standardized techniques for the administration of such pharmaco-dynamic tests had yet been established. The participants agreed that steps should be taken to encourage their standardization.

Exercise tests could provide a valuable index of working capacity, but the technique needed to be carefully standardized. The meeting did not discuss the question of assessment for compensation.

6. Terminology and definitions

It was considered desirable that there should be more general agreement about the meaning of terms such as chronic bronchitis, chronic pneumonia, pneumosclerosis, asthma and emphysema, which were the diagnostic terms most frequently used in the countries of the participants to describe cases of CNSLD, and also concerning the range of conditions that should be included within this broad group of diseases.

6.1 Chronic non-specific lung diseases (CNSLD)

It was first agreed that the concept of a group of diseases designated as CNSLD was useful, even though in some instances a specific etiology could be recognized. This group of diseases referred to patients with generalized broncho-pulmonary abnormality

causing either recurrent cough with sputum or breathlessness, or both these symptoms, when they were not solely due to:

- (1) generalized specific infections of the lung (e.g. tuberculosis or a mycosis);
- (2) pneumoconiosis;
- (3) malignant disease of the lung;
- (4) collagen disease (e.g. chronic diffuse interstitial fibrosis of the lungs (Hamman-Rich syndrome), granulomatosis);
- (5) mucoviscidosis;
- (6) primary cardiovascular disease;
- (7) disease of the chest wall;
- (8) psychoneurosis.

There was some uncertainty about the place of bronchiectasis within CNSLD. When this was consequent upon diffuse broncho-pulmonary disease it should be included. When it was strictly localized it might (as might other conditions such as acute bronchitis or influenza) play an etiological role, but it should not be included within CNSLD unless the broncho-pulmonary system was diffusely affected.

The conditions to be included within CNSLD could be defined in anatomical terms when the morbid anatomy was known. When this was not established, as in cases of chronic bronchitis with airways obstruction, a clinical or functional basis for the definition was preferable.

6.2 Chronic bronchitis

The meeting considered the definitions given in section 4.2 of the Report of the WHO Expert Committee on Chronic Cor Pulmonale.¹ These definitions had served to encourage more precise thinking, but had not received universal acceptance. The Committee's definition of bronchitis caused considerable controversy. This reads as follows: "a chronic or recurrent increase above the normal in the volume of bronchial mucous secretion, sufficient to cause expectoration when this is not due to localized broncho-pulmonary disease. The words chronic or recurrent may be further defined as present on most days during at least three months in each of two successive years".

There was a general consensus of opinion that chronic bronchitis was a generalized irritative or inflammatory condition of the bronchial tubes which initially resulted in excessive secretion of mucus or pus. In some cases the secretions were swallowed and not expectorated so that "production of sputum" or "bronchorrhoea" seemed preferable terms.

Some participants, moreover, considered that bronchitis, as defined by the Committee, was too innocent a condition to merit inclusion within CNSLD. The majority, however, agreed that subjects with bronchial hypersecretion might be liable to more serious disease which indicated the need for prophylaxis, and were satisfied with the Expert Committee's definition.

¹ Wld Hlth Org. techn. Rep. Ser., 1961, 213, 15

It was agreed that the term "infected chronic bronchitis" could be used to describe those cases in which the sputum was purulent.

6.3 Generalized airways obstruction

The Expert Committee's definitions of generalized airways obstruction were accepted with little disagreement. These read:

"Intermittent or reversible airways obstruction: asthma

"Asthma refers to the condition of subjects with widespread narrowing of the bronchial airways, which changes its severity over short periods of time either spontaneously or under treatment, and is not due to cardiovascular disease.

"Persistent or irreversible generalized airways obstruction

"Irreversible or persistent airways obstruction refers to the condition of subjects with widespread narrowing of the bronchial airways, which has been present for more than one year and which is unaffected by bronchodilator drugs.

"Comment

It is important to note that most cases of persistent airways obstruction also have some degree of reversible obstruction or asthma. The term 'generalized airways obstruction' is accurately descriptive and its use in diagnosis would encourage the conscious consideration of the degree to which it is reversible, or irreversible, and when irreversible, the separation of those cases with evidence of destructive emphysema from those without such evidence."

It was agreed that when persistent generalized airways obstruction co-existed with chronic bronchitis or chronic pneumonia, the term "chronic obstructive bronchitis" could be used.

6.4 Bronchiectasis

Bronchiectasis indicates enlargement of the calibre of bronchial tubes proximal to the respiratory bronchioles, with chronic inflammatory changes in their walls.

There is usually intrabronchial infection with purulent sputum but dry bronchiectasis without clinical symptoms also exists. Bronchography is usually necessary for the diagnosis of bronchiectasis.

6.5 Chronic pneumonia

Chronic pneumonia indicates persistent inflammatory changes in the pulmonary parenchyma which may be consequent upon acute pneumonia or may extend from bronchial infection and result in fibrosis.

6.6 Pneumosclerosis

Pneumosclerosis indicates the development of fibrous tissue in the lung consequent upon the spread of inflammation from chronic bronchitis or bronchiectasis or as a sequel to chronic pneumonia. Used as a clinical diagnosis, this term is commonly applied to the type of case described under 6.3 as "chronic obstructive bronchitis".

6.7 Emphysema

There was much discussion concerning the definition of emphysema. Some participants wished to continue to use the word in a clinical sense to indicate an increase in residual volume, usually due to generalized airways obstruction. Others recognized that pathologists would certainly continue to use the term to indicate irreversible enlargement of air spaces beyond the terminal bronchiole, as a readily defined morbid anatomical entity. They suggested that clinicians should accept an anatomical definition and use the term "irreversible airways obstruction" to describe clinical cases in which there was uncertainty whether or not there were changes in the lungs which the pathologist would recognize as emphysema. They considered that the present use of the same term by clinicians and pathologists in different senses would perpetuate misunderstanding.

The participants considered that more extensive correlation between clinical, functional and anatomical studies would be needed before widespread agreement on the clinical definition and diagnosis of emphysema could be attained.

6.8 Conclusion

The participants felt that their discussion on the clinical and functional aspects of CNSLD had enabled them to understand each other with greater clarity and that it would stimulate research that would advance their understanding and enable fuller agreement to be reached on definitions and terminology.

7. Prophylaxis and prevention

The meeting considered measures that could be taken against the various recognized etiological factors in CNSLD which they had already discussed (section 2).

It was agreed that the reduction of air pollution from industrial and domestic sources was of the greatest importance and urgency. Further research was needed to identify the most harmful constituents of pollution.

The dangers of cigarette smoking were now so well established that every possible step should be taken to curb the present pandemic of the habit. The attention of governments should be drawn to the urgency of this matter. Doctors should set an example and education should be concentrated on the younger generation.

The question of preventing infection had to be considered from two aspects.

First, there were measures designed to raise resistance to infection. Vaccination might be of use in preventing influenza, but there were no specific measures available to prevent the majority of acute respiratory infections. There was no evidence that bacterial vaccines had any useful effect.

Secondly, there were therapeutic measures directed against acute and recurrent infections. It was most important to provide early and complete treatment for pneumonia and acute bronchitis, and to ensure full resolution before therapy was relaxed

or work resumed. Adequate social insurance provision was essential for this. The use of antibiotics in the prophylaxis of infection was a matter that required further investigation. Small doses usually appeared to be ineffective and prolonged doses had the drawbacks of toxicity and costliness and of producing bacterial resistance. The participants felt that the danger of chloramphenicol, which was a most effective antibiotic in respiratory infections, had been overstressed.

The value of regular medical supervision to detect the earliest stages of CNSLD was generally agreed. Practitioners should be alerted to the need to give special attention to patients with symptoms of early disease, such as persistent expectoration. Careful investigation of such cases was required. Where treatment was needed, this might be carried out in special establishments.

In the opinion of some participants, the encouragement of sport and respiratory exercises could reduce the incidence and delay the progression of CNSLD.

It was agreed that the value of preventive measures should be assessed by adequate follow-up and measurement of their effects.

In concluding the discussions, the participants wished to place on record their gratitude to WHO for having organized the Symposium. Their deliberations had increased international understanding and they hoped their report would draw attention to the increasing importance of CNSLD as a cause of mortality and morbidity, and would indicate areas in which research was particularly needed to increase the effectiveness of preventive and therapeutic measures. The field of CNSLD was rapidly

expanding and the participants considered that it might be opportune to convene from time to time meetings of experts from various countries to review and consolidate advances in research and practice which had been achieved throughout the world.

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- EURO-212/3 Chronic non-specific lung disease -
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- EURO-212/4 Practical considerations of a medico-social
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- EURO-212/6 Chronic non-specific lung disease: an
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- EURO-212/7 Chronic non-specific lung disease: termi-
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- EURO-212/9 International comparisons of chronic non-
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- EURO-212/10 Occupational distribution of chronic bron-
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- EURO-212/12 Chronic non-specific lung disease - Professor N.G.M. Orie
- EURO-212/13 Epidemiological methods in the study of chronic non-specific lung disease - Professor D.D. Reid
- EURO-212/14 A comparison between cases of chronic bronchitis in Hammersmith and cases of emphysema in Chicago - Dr C.M. Fletcher
- EURO-212/15 A prospective study of early chronic bronchitis - Dr C.M. Fletcher
- EURO-212/16 The nomenclature of chronic non-specific lung disease - Professor N.S. Molchanov
- EURO-212/17 Bronchial obstruction and impairment of bronchial drainage in the pathogenesis, clinical aspects and prevention of chronic non-specific lung disease - Professor B.E. Vochal
- EURO-212/18 The pathology of chronic bronchitis and related affections of the lung tissue - Professor A.I. Strukov
- EURO-212/19 Chronic non-specific lung disease - Professor A. Meyer

- EURO-212/20 The diagnosis of pulmonary emphysema in the presence of chronic bronchitis -
Dr C.M. Fletcher, in collaboration with
P. Hugh-Jones, M.W. McNicol and N.B. Pride
- EURO-212/21 Short questionnaire on respiratory symptoms approved by the Medical Research Council's Committee on Aetiology of Bronchitis, United Kingdom
- EURO-212/22 List of participants
- EURO-212/23 Some notes on the prevalence of chronic non-specific lung diseases and on their prevention - Dr M. Akhmetely