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TUBERCULOSIS CONTROL: PLANS FOR INTENSIFIED INTER-COUNTRY ACTION IN EUROPE

Report of a Study-Group

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STUDY-GROUP ON TUBERCULOSIS CONTROL

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TUBERCULOSIS CONTROL : PLANS FOR INTENSIFIED INTER-COUNTRY ACTION IN EUROPE

Report of a Study-Group

1. INTRODUCTION

Many European countries, noting an accelerated decline in tuberculosis mortality in recent years, have begun a critical review of their own programmes and expressed the wish to profit from the experiences of their neighbours.

The present Study-Group was convened in order to explore the possibility of a systematic inter-country exchange of comparable information on tuberculosis control and to enable countries to intensify and economically apply their efforts to reduce further the incidence of this infectious disease.

The Group considered at length the basic requisites for comparable data and the mechanism for exchange of information. It confined its observations to respiratory tuberculosis and discussed methods of tuberculosis control in use at present in the different countries.

Although fully realizing that tuberculosis is highly influenced by social, economic, and environmental factors, the Group limited its discussion to specific methods of tuberculosis control. Considerable information and detailed statistical data were prepared in advance by the participants and presented to the Group in working documents.

2. PLANNING FOR INTER-COUNTRY COMPARABILITY OF STATISTICAL DATA

2.1 Need for comparable statistical data

In the past, mortality rates have sufficed for estimating and comparing tuberculosis problems in many countries of Europe and given an indication of trends. It is realized, however, that mortality rates are now no longer

sufficiently reliable for this purpose, and that there is a great need for other indices. It may be possible to obtain these from routine health statistics or special surveys conducted for this purpose.

2.2 Definition of terms

As at the present time considerable difficulty in comparing data derives from the lack of precisely defined terms, certain problems of terminology require clarification.

“*Case of pulmonary tuberculosis*”. In attempting to define what should be considered a case of tuberculosis, such terms as “active” or “those requiring treatment”, while perhaps of value for national purposes, are of little use for inter-country comparison. It is therefore recommended that the diagnosis of a case of pulmonary tuberculosis be based on objective criteria, and essentially the findings of radiological and/or bacteriological examinations. The detailed information thus reported would clearly indicate the basis on which the diagnosis was made in each case. Detailed reporting would permit the grouping of cases for inter-country comparability. Definite cases should obviously be clearly separated from doubtful ones. It is specifically recommended that no case be notified solely on the basis of a reaction to the tuberculin test, i.e., without radiological or bacteriological signs.

“*Morbidity rate*”. For statistical purposes, the term “morbidity rate” should always be qualified, since at present it is frequently used with different meanings. Examples of necessary qualifications are:

- (a) incidence of new cases ;
- (b) incidence of remanifestation in already reported cases ;
- (c) prevalence from the total reported cases on a register (“inventory”);
- (d) prevalence of cases found by survey in a given area at a given time.

2.3 Indices from health statistics

Health statistics serve a useful purpose only if based on complete notifications, but whether notification is compulsory or not seems immaterial and depends on local circumstances.

2.3.1 Notification and renotification of cases

In giving information it should be clearly indicated whether the case is being notified for the first time or whether it is a renotification of a previously reported case.

2.3.2 *Tuberculosis case register*

Suggested items of information to be ascertained for each case introduced into a tuberculosis case register are given in Annex 1 (page 11).

The establishment in each country of a central tuberculosis register covering notified and renotified cases would be of great value for the study of the epidemiology of the disease. Should it not prove possible, at least in the near future, to organize national registers, it is recommended that, to begin with, regional registers be established to cover one or more areas of a country, it being understood that these should conform with national practice and that as soon as possible they should be extended to cover the whole country.

If valid statistics are to be compiled, it is essential that the central register be periodically (at least annually) brought up to date through the submission of information on the progress of all registered cases. No records should be removed from the central register except in the event of the patient's death or departure from the country. When a patient is reported as "cured", the record should be retained in a special section of the central register or otherwise specially distinguished.

2.3.3 *Indices of incidence and prevalence*

From a reliable and up-to-date central register it is possible to obtain considerable information on tuberculosis, including the annual incidence of new tuberculosis cases as well as that of remanifestations and the prevalence of bacillary cases of tuberculosis, the latter being the result of an inventory of the register. Information on tuberculosis from the register would need to be tabulated in a uniform way for inter-country comparability. One example of a suggested grouping of cases in the register is presented in Annex 2 (page 13). The suggested classification code was discussed at the fourth session of the Expert Committee on Tuberculosis, in 1949,¹ and subsequently studied by several national health organizations.

2.3.4 *Lethality*

Special studies in the past have indicated the percentage of deaths per annum amongst new cases notified in preceding years, but the use of a central register would permit this to be done on a routine basis. Lethality statistics would be useful in studying both the degree of severity of the disease and the influence of therapeutic measures on its course.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1950, 7, 10

2.4 Indices obtained from special surveys

When complete notification is not attained in a uniform manner that will permit inter-country comparison of statistics, two possible procedures for obtaining a complementary index from special surveys are suggested.

2.4.1 *Index based on tuberculin testing*

It is important to have an index for tuberculous infection, which can be obtained by tuberculin testing. The technique, reading, and interpretation of the test should be uniform and the tuberculin used in the different countries standardized by a biological assay against the International Standard. It is recommended that school-age groups (school entrants and school leavers) be used for establishing the index, but in countries where BCG vaccination is given on a wide scale below these age-groups the value of the tuberculin index will be limited. It is important for the sake of comparison that national teams working to establish a tuberculin index apply international methods. It is recommended that the results of these examinations be given not in traditional terms of reactors or non-reactors, but in millimetre measurement of the reaction.

In order to ensure inter-country comparability, it is necessary to have direct comparisons of the techniques, especially of the readings, of teams in different countries. One way of obtaining this would be to have a specially trained team visit the different countries.

2.4.2 *Index based on complete examination for tuberculosis*

Complete pulmonary examinations of sample groups are necessary to obtain a reliable index for the prevalence of tuberculosis.

Mass miniature radiography is an essential part of these examinations. A close follow-up of each person with abnormal pulmonary X-ray findings should be made in order to reach a reliable diagnosis, and the results should be given in the same terms as for general notification. Dual reading of the X-ray films should be the rule, and efforts should be undertaken to bring about international comparison by an exchange of films.

The most reliable index will be obtained by examining complete population groups covering all ages; an attempt should be made to do so in the few countries where this is feasible.

In other countries where this is not practicable, the problem is to determine which groups should be examined for the purpose of obtaining an index. The composition of most of the groups which might be considered is so variable from country to country that they do not lend themselves to international comparison. The military conscript class would appear to be the most rewarding for this purpose.

2.5 Some general conclusions

After detailed discussion as to the reliability of each of the above tuberculosis indices and the feasibility of obtaining them, the Group concluded that :

- (1) mortality rates no longer give sufficient information.
- (2) prevalence rates give sufficiently useful information only when based on a reliable register. However, countries with large populations may have difficulty in establishing a national register, and this source of information at present is practicable in only a few such countries.
- (3) indices based on complete examination for pulmonary tuberculosis are reliable only when surveys are made of community groups. This, again, is only possible in a few countries.
- (4) the tuberculin index is feasible in practically all countries, but its value is limited.

Not all tuberculosis indices are at present obtainable in the various countries, but the tuberculin index is usually possible and it is recommended that it be widely used in as many countries as possible as a first step in inter-country comparison.

3. SPECIFIC METHODS OF TUBERCULOSIS CONTROL

3.1 General observations

The Group limited its discussion to respiratory tuberculosis. Based primarily on figures presented to the group by the participants from the different countries, an exchange of information took place on experiences in present methods of tuberculosis control and on plans for reorientation of control methods for the future. It was recognized that, because of differences in the methods used and a lack of comparable statistics, it was not always easy to evaluate the various methods.

3.2 Case-finding

3.2.1 *Purpose of case-finding*

From the public-health viewpoint, the primary purpose of case-finding is to discover and treat tuberculosis cases in order to avoid transmission of infection. Case-finding will continue to be an important measure in tuberculosis control, but it is realized that exact methods will vary, depending on the prevalence of the disease in a country. In those countries with

low prevalence, the extensive examination of contacts will become increasingly necessary.

3.2.2 *Tuberculosis dispensaries*

Tuberculosis dispensaries will still be needed for many years as local centres for tuberculosis control. They should continue to be the diagnostic centre for suspected cases sent by physicians or those found by group or mass examination. A high percentage of cases is found in patients referred by local physicians because of chest symptoms. It is considered important to continue and intensify examination of contacts. Household contacts should still represent the most important group, but with the present low prevalence of infectious tuberculosis, examination could well be extended to contacts outside the household.

It is especially important to find infectious cases among persons having close contact with children, such as teachers and other personnel in schools, nurseries, and kindergartens.

Another group that it was considered important to examine includes those especially exposed because of their profession, i.e., medical and dental students and the staff of tuberculosis institutions and laboratories. A further important group are food handlers and those who come in contact with large numbers of people, for example postal and banking employees.

3.2.3 *Group examination*

In the past years examination of total population groups has been widely used, and it is considered useful if a high percentage of the population is reached. When only a low percentage attend, special measures should be envisaged to remedy the position.

Responsibility for the mass examination of populations or of special groups should lie with the dispensaries. If other institutions of the public-health service are responsible, they should work in close co-operation with the dispensaries.

In countries with a medium or high prevalence, mass examination of special groups or even of total population groups will be justified for some time to come. In areas with a low prevalence, more attention should be given to cases with minimal lesions. In some areas the stage has been reached when a close follow-up becomes important even for those persons whose only sign of infection is a reaction to the tuberculin test.

In several countries with a low prevalence, experience with examination of total population groups has shown that this method may not be the most profitable procedure and reorientation towards examination of special

groups is therefore planned. Patients admitted to hospitals and attending out-patient clinics are likely to give the best results from this standpoint.

Because of the recognized high prevalence of infectious tuberculosis among old people, especially men, it was deemed important to take every opportunity to examine this group.

The experience in most countries indicates that a systematic examination of students should be continued.

Where total populations are concerned, many countries have found that a yearly examination is no longer justified for certain age-groups, for which examinations every three years might be sufficient.

3.3 BCG vaccination

Without entering into detailed discussion on the protective value of BCG, it may be stated that BCG vaccination is a useful supplement to other control methods. Some members of the Group consider that it may well be required on a mass scale for some time to come in countries with a medium prevalence of tuberculosis. Others believe that its use on a mass basis should be confined to certain age-groups of the population. Some members feel that in countries with low and continuingly decreasing prevalence of tuberculous infection, BCG vaccination ought to be limited to groups that are particularly exposed, whilst others feel that even in such countries BCG vaccination on a mass scale could be usefully applied at a low cost. BCG vaccination will be useful for a considerable time in all countries for contacts of infectious cases and such highly exposed groups as the staffs of tuberculosis institutions.

3.4 Cattle tuberculosis

In a number of European countries, cattle tuberculosis still remains a problem. It should be emphasized that, with the decreasing number of infectious patients, the relative importance of tuberculous cattle as a source of infection will increase. Hence the control of cattle tuberculosis becomes an increasingly important factor in the control of tuberculosis in man.

3.5 Treatment of cases

3.5.1 Hospitalization

Hospitalization will be a major factor in tuberculosis control for a number of years, even for pulmonary cases, because it is generally considered that the community is best served if such cases are treated in institu-

tions so long as they continue to be infectious. Special efforts are needed to encourage patients to go to hospitals and sanatoria. It is expected that the number of beds required for tuberculosis will diminish and that practically no country in Europe will need to increase its number of tuberculosis beds.

3.5.2 *Anti-tuberculosis drugs*

Extensive use of the new anti-tuberculosis drugs has an important role to play in the control of tuberculosis.

3.5.3 *Problems connected with drug resistance*

The development of drug-resistant strains of tubercle bacilli and the emphasis laid by clinicians on their importance for the community make it desirable to obtain facts on the frequency of development of new cases from infection with these strains. This might be achieved by systematic determination of the drug resistance of the tubercle bacilli isolated from all new cases in a limited, defined area. Children and young adults who have recently become tuberculin positive and who have X-ray lesions would form an especially suitable group for this study.

3.6 **Rehabilitation**

Improvement in the treatment of tuberculosis and the consequent decreased fatality have resulted in an increase of the cured but partially disabled. Utilization of rehabilitation facilities greatly assists in minimizing the danger of relapse and hence of the possible further spread of infection. The medical cure of a patient with tuberculosis is only the first step in returning him to a useful place in society. The establishment of full rehabilitation facilities should therefore be encouraged in all countries.

3.7 **Other aspects**

The active participation in tuberculosis control of the local physician becomes more and more important. Special efforts should be made to ensure practitioners' continuous interest by giving them current information on changes in measures for the treatment and control of tuberculosis.

In educating the public there is need to emphasize that, with modern methods of treatment and control, a person who has had infectious pulmonary tuberculosis represents no risk to the community if he has followed the directions given by the physician responsible for his treatment and follow-up examinations.

Social and economic assistance to patients and their families is an important factor in tuberculosis control and, with the decreasing number of cases, might be extended to make control even more effective.

4. SUMMARY AND CONCLUSIONS

Tuberculosis is still an important problem in all European countries and can be expected to remain so for a number of years. Intensified efforts are needed in all countries to determine the exact incidence and prevalence of the disease. Control of tuberculosis will therefore require considerable funds for some time to come. It should be remembered that catastrophes such as war can rapidly increase the tuberculosis problem.

It is recognized that the prevalence of tuberculosis influences the measures used for control. From this standpoint, the countries of Europe fall roughly into two groups: those with a low prevalence and those with a medium prevalence. The tuberculosis control methods used in these two groups of countries will therefore be different for some years.

With decreasing prevalence it becomes increasingly important to orientate tuberculosis control programmes towards the epidemiological approach, and to utilize those methods that have proved effective for the control of other infectious diseases. Control measures should be planned on the principle that tuberculosis is an infectious disease.

Annex 1

SUGGESTED ITEMS OF INFORMATION TO BE ASCERTAINED FOR EACH CASE INTRODUCED INTO A TUBERCULOSIS CASE REGISTER

I. Identification

1. Name (for married women also maiden name)
2. Sex
3. Day, month, and year of birth
4. Marital status
5. Place of birth
6. Place of residence

II. Occupational status**III. Previous BCG vaccination****IV. In which way has case been found ?**

1. By family doctor
2. By routine mass examination
3. By contact examination
4. Other

V. Diagnosis

1. Statement of diagnosis
2. When was a diagnosis of tuberculosis first made, and which diagnosis was made at that time ?
3. X-ray of chest
 - (a) Lesions of lungs :
 - (i) definite cavity
 - (ii) doubtful cavity
 - (iii) no cavity
 - (b) Lesions of mediastinal glands
 - (c) Lesions of pleura

For each of the items mentioned, information should be given on date of examination and on whether the involvement is unilateral or bilateral.

4. Bacillary examination
 - (a) Microscopy of sputum
 - (b) Culture of sputum
 - (c) Culture of gastric lavage
 - (d) Culture of pleural fluid

Information should be given concerning date of examination, result, and type of bacillus (human or bovine).

Annex 2**SUGGESTED CLASSIFICATION CODE FOR RESULTS OF
STANDARD EXAMINATION FOR PULMONARY TUBERCULOSIS****Bacillary Findings**

0. Both laryngeal swab and sputum negative by culture (no attention to microscopy)
1. Either laryngeal swab or sputum negative by culture (result for the other may not be available or culture may be contaminated; no attention to microscopy)
2. No culture result available; sputum negative by microscopy (culture contaminated)
3. Sputum not present; laryngeal swab either not made or contaminated
4. No culture result available; sputum positive by microscopy
5. Sputum not present; laryngeal swab positive by culture
6. Sputum and/or laryngeal swab positive by culture; sputum negative by microscopy
7. Sputum and/or laryngeal swab positive by culture; sputum +1 by microscopy
8. Sputum and/or laryngeal swab positive by culture; sputum +2 by microscopy
9. Sputum and/or laryngeal swab positive by culture; sputum +3 by microscopy

A simple method of classifying the results is as follows :

First, look for positive culture results. If one or both are positive, the case should have one of the code numbers 5, 6, 7, 8, or 9, and further classification is relatively simple. If there is no positive culture, look for negative cultures. In case of two negative cultures, the code number is 0; if there is only one negative culture, the code number is 1; if there is no negative culture, the code number is either 2, 3, or 4, and further classification is easily done.

X-ray Findings

0. No pathology
1. Pulmonary pathology on one side only, no suspicion of cavity
2. Pulmonary pathology on both sides, no suspicion of cavity

3. Pulmonary pathology on one side only, suspicion of cavity
4. Pulmonary pathology on one side only, definite cavity
5. Pulmonary pathology on both sides, suspicion of cavity on one side
6. Pulmonary pathology on both sides, definite cavity on one side
7. Pulmonary pathology on both sides, suspicion of cavity on both sides
8. Pulmonary pathology on both sides, definite cavity on one side, suspicion of cavity on the other side
9. Pulmonary pathology on both sides, definite cavity on both sides

NOTE : Definite calcification is not to be considered pulmonary pathology.

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