



# Technical

## Discussions

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FINAL REPORT OF THE TECHNICAL DISCUSSIONS ON

"Tuberculosis Eradication: A Task for Present  
Planning and Future Action"

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The Technical Discussions were held on 4 September 1954 and dealt with "Tuberculosis Eradication: a task for present planning and future action".

The subject was introduced by the authors of the two working documents: Dr. William A. Barclay, who dealt with the tuberculosis situation in well-developed countries, i. e., the United States of America and Canada, and Dr. José Ignacio Baldo, who dealt with that situation in the other countries in the Region of the Americas.

These introductory statements were then commented on by a group of experts composed of Dr. A. B. Colyar, Dr. Horacio Rodríguez Castells, Dr. William B. Tucker, Dr. José Silveira, and Dr. Halfdan Mahler, who emphasized certain special aspects of the problem.

After summing up the statements made, the Moderator opened the discussion. There ensued a question and answer period in which both the panel members and the delegates took part.

The main themes of the discussion are summarized under broad chapter headings, together with some divergent opinions.

With but a few exceptions, which are indicated, there was general agreement with the views expressed in the working documents.

## 1. TUBERCULOSIS ERADICATION

The theoretical possibility of eradicating tuberculosis was accepted as a long-term objective. It was held that to attain this objective it would be necessary to go through a succession of intermediate stages which should constitute the immediate goals of the control programs.

With our present scientific knowledge and techniques it should be possible to eradicate tuberculosis. However, financial and social obstacles prevent full use of effective diagnostic and treatment procedures. It was therefore held that, in order to attain the final objective, better planning and utilization of available resources would have to go hand in hand with improvements in the economic and social conditions of the people.

It was considered advisable to use the term "eradication" since the establishment of this ultimate goal had made it possible to give new life to slow-moving tuberculosis control campaigns which were inadequate in their coverage of the population and ineffective in their epidemiological work; had strengthened the hands of the authorities and enabled them to make better use of funds, especially those devoted to tuberculosis sanatoria; and had brought to the attention of Governments a problem to

which they had been paying too little attention in their health plans, perhaps because they regarded control activities as too expensive in relation to the effects achieved.

The immediate targets were not dealt with in detail. It was, however, pointed out that, in some areas, the targets established in Resolution XXXVI of the XIII Meeting of the Directing Council in Washington, D.C., in 1961, were unsuitable. The general opinion was that immediate targets should be fixed for each specific area and that the infection, morbidity, and mortality rates should not be established for each country as a whole since the epidemiological survey required for planning and carrying out suitable control programs should be made by areas that were similar in geography and population.

## 2. THE EPIDEMIOLOGICAL APPROACH IN TUBERCULOSIS CONTROL PROGRAMS

Thorough consideration was given to the need for control programs to be based on an epidemiological approach in which the community is regarded as a whole and the basic objectives are to prevent the transmission of the etiological agent from the contagious patient to the healthy individual, to discover all tuberculosis cases that are sources of infection and to treat them in a such manner that they cease to excrete bacilli and become completely cured.

In the same way, BCG vaccination as a means of raising the level of protection of the population against the Koch bacillus should be an integral part of every tuberculosis control program.

Although in the course of their work, tuberculosis dispensaries make an epidemiological study of the members of the household of patients under their care, the proportion of cases detected and treated by them in each community has been so small that it has not been possible to break the chain of transmission to any significant degree.

The following epidemiological indices were considered useful: tuberculin infection rates in children; percentage of individuals with Koch bacillus in the sputum; and percentage of individuals with abnormal x-ray shadows.

The maintenance of local case registers from which regional and national registers could be built up was also considered useful for purposes of follow-up, epidemiological studies, and program evaluation.

### 3. DEFINITION OF A TUBERCULOSIS CASE

The preceding discussion led to the question: what is a case of tuberculosis? It became clear that the definition of a case of tuberculosis can vary depending on the epidemiological situation of the disease in the community and on whether the definition is a clinical or an epidemiological one. A tuberculin-positive person may be regarded as a tuberculosis case in areas where the disease is on the point of being eradicated. In private practice, a case may be a person with an abnormal pulmonary x-ray shadow, accompanied by other symptoms suggestive of tuberculosis. A tuberculin-positive person whose x-ray shows a cavity or exudation and whose contacts under 6 years of age are also tuberculin-positive may be regarded as a case of tuberculosis. Finally, no one doubts that an individual with tuberculosis bacillus in the sputum is an authentic case of tuberculosis.

I was reported that the WHO Expert Committee on Tuberculosis at its meeting from 18 to 24 August 1964 had decided that, from the epidemiological viewpoint, a case of pulmonary tuberculosis meant a person suffering from bacteriologically confirmed disease. It was believed that, if accepted, this definition would make it possible to obtain comparable statistical information and could serve as the basis for the notification of tuberculosis cases. At a meeting of the International Union against Tuberculosis at which a discussion took place on what a "notifiable tuberculosis case" was, the conclusion reached, after all possibilities had been considered, was that the main criterion should be a Koch-positive microscopy. This definition is suitable for epidemiological purposes, but not for the practicing physician dealing with individual cases.

One participant requested that, for the purposes of epidemiology and treatment, persons with primo-infections who had no cavities and produced bacillus with difficulty should be regarded as cases. Reference was made to the fact that owing to the shortage of laboratory facilities a case might have to be accepted as one of tuberculosis even though the presence of bacillus had not been confirmed and that only 30 per cent of the cases could be confirmed bacteriologically.

Some experts stated that, in their experience, appropriate supervision of the services would show that as many as 50 per cent of the cases under treatment were not in fact authentic cases of tuberculosis.

As to the question of priorities and the need to deal first with the most important epidemiological findings it was generally agreed that the person with Koch bacillus in his sputum should receive absolute priority for all purposes, and that once that priority was satisfied, thought could be given to the application of the same measures to other persons suspected to be tuberculous. This scheme appeared to be in line with the epidemiological approach to programs mentioned above.

#### 4. BACTERIOLOGICAL EXAMINATION OF THE SPUTUM

Special importance was given during the discussions to the need for examining a patient's sputum in order to confirm the tuberculous etiology of the case, and to the limited possibilities for making such examinations in Latin America, even in the simplest form of direct microscopic examination. Mention was made of the good results obtained when laryngeal swabbings were seeded on the spot in the Sula liquid medium (lyophilized and reconstituted), and of other experiences with bronchial lavage.

There was general agreement that every effort should be made to increase the possibilities for making sputum examinations at all levels, from the basic method of direct microscopy, duly supervised, to culture methods in regional laboratories to which the media seeded *in situ*, in the local services if possible, should be transported. Mention was made of one experience in Central America in which by using the direct microscopic examination as the initial method of case finding in persons with broncho-pulmonary symptoms a positivity rate as high as 17 per cent had been obtained in rural communities in which other procedures could not be used.

The training of persons who at a future date will be able to make tests to detect resistance to primary drugs was considered to be a further stage in the development of the laboratories. There was a general impression that, although present information on primary resistance is contradictory, the problem is likely to become more serious in the future, so that attention should be given to the possibility of making resistance tests.

As always when the efficacy and cost of ever more refined and sensitive procedures are discussed the question arose as to what the priorities should be and whether it was advisable to begin by applying the simplest, most epidemiologically effective procedures and to continue to improve them as the services gradually developed. When the epidemiological significance of cases that exhibited bacillus in direct examination of sputum and of cases which were found positive only upon culture of gastric lavage was discussed, certain experiences and publications were cited to show that there was a significant difference in the infection rate of the contacts of these two types of cases. Moreover, those same publications showed that the contacts of persons who had suspicious shadows but no cavities and who were not bacteriologically positive did not have a higher rate of infection than the general population of the same age.

5. CHEMOTHERAPY OF TUBERCULOSIS

The results obtained with ambulatory treatment with primary drugs 1/ are fully comparable to those obtained in hospitalized patients; this has been so thoroughly documented that none of the participants called it into doubt. Some of them considered it advisable to use the available tuberculosis beds for initiating treatment, by hospitalizing the patient for very short periods of time, particularly for the purpose of educating him and thereby obtaining better cooperation from him during the subsequent period of ambulatory treatment.

Simultaneous treatment with two of the primary drugs was still considered the ideal; but the use of isoniazid alone, when financial conditions imposed it, was not to be discarded nor should countries impose the use of treatment schedules with three drugs when it was known that they were not easy to apply. The most recent trials with thiacetazone plus isoniazid had been favorable and showed that it would not be advisable in the future to use isoniazid alone, since thiacetazone did not significantly increase the cost. Several of the experts gave reports on trials under way which had demonstrated the efficacy and practical advisability of intermittent treatment schedules. Their efficacy was comparable to that of the schedules used to date, and the cost of material and operating expenses was much lower.

One participant reported that in a country of South America ambulatory treatment of 5,000 tuberculosis patients under the usual service conditions produced 80 per cent cures and 90 per cent sputum negativity in the course of the first 12 months; 8 per cent were chronic cases and 4 per cent, relapses.

Several participants made reference to the high percentage of tuberculosis patients who did not continue treatment and to the need for adopting appropriate measures for retaining them. In this connection, emphasis was placed on the need for educating the patient; for placing supervision and treatment facilities as close as possible to his home and in the hands of persons who, because of their social and cultural conditions, could understand his problems; and for ensuring the continuous provision of drugs. For this reason it was considered advisable to provide local auxiliary personnel with the minimum training for that purpose.

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1/ That is isoniazid, streptomycin, and PAS.

Reference was also made to the systematic and short-term use of secondary drugs 1/ for the treatment of chronic cases who continued to expectorate bacilli resistance to primary drugs, even during ambulatory treatment if no beds were available. It was stated that, despite the high cost of this medication, the extended treatment and the amount of drugs needed to render a high percentage of these cases negative would cost less than the lengthy periods of hospitalization of all the chronic patients registered at the present time.

The effectiveness of chemotherapy when correctly used against tuberculosis, the low cost of the drugs, and their application by auxiliary personnel of the public health services justify the assignment of a high priority to tuberculosis control measures in health plans.

Reports on experience in North America, Asia, and Africa all agreed on the effectiveness of secondary chemoprophylaxis, but most stated that the percentage of people taking the drug regularly was low. One of the experts felt that secondary chemoprophylaxis should be limited to high risk groups and used only in programs where the first stages of efficient diagnosis and treatment of community cases had already been completed. The general impression was that it would be preferable to limit chemoprophylaxis to tuberculin-positive children in contact with cases of tuberculosis under treatment. It was once again pointed out that, in public health work, one must be on the alert "not to allow what is best to become the enemy of what is good".

## 6. BCG VACCINATION

The protective effects of BCG vaccine were unanimously recognized, as was its importance as a tuberculosis control measure. In order to remove any doubts about its effectiveness in tropical areas with a high rate of nonspecific tuberculin-positive reactions, one of the experts reported that in a certain tropical area where groups were followed up for eight years it was found that 70 per cent of the vaccinated individual had been protected.

There would therefore seem to be no doubt that, because of its effectiveness, low cost, and ease of administration, BCG vaccination is one of the basic procedures in any anti-tuberculosis program.

The best age groups for vaccination vary according to the infection rates in the community. As a general rule, in areas with a

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1/ Pyrazinamide, ethionamide, cycloserin, viomycin, kanamycin, etc.

high infection rate, children should be vaccinated at birth and during the first years of life. Where the rate is lower, they may be vaccinated on reaching school age. When the morbidity falls to 5 or 10 cases per 100,000 inhabitants, BCG vaccination may perhaps no longer be necessary.

Two of the experts reported on their experiences in administering BCG orally and by scarification. They were fully satisfied that both procedures were effective and felt that they were easier methods for auxiliary personnel. They suggested that international health organizations should undertake studies to confirm their views, and offered the facilities of their respective countries for that purpose.

It was reported that recent careful experiments in Asia with intradermal administration of BCG without prior tuberculin testing and its simultaneous administration with smallpox vaccine showed that there was no marked reaction or interference with the protection mechanisms.

## 7. RADIOLOGICAL EXAMINATION

The chest x-ray is an important tool in case-finding, since it makes it possible to initiate or supplement, as the case may be, the diagnostic procedure. Therefore, all the facilities that can be brought to bear in this field should be used, even fluoroscopy. In the opinion of one of the experts, fluoroscopy when used on symptomatic groups and contacts can detect significant images which often indicate genuine cases of tuberculosis. It must always be followed up, though, by the standard x-ray and sputum examination.

In spite of a few isolated instances involving intensive use of mobile units for diagnosis and treatment, there was general agreement that they should not be used until such time as services were sufficiently developed to have facilities to complete the diagnosis and provide suitable treatment. These services may range from the most complex to the most basic, according to the development of the country or of the area.

A report was given on a recently initiated program in one South American country where 11 per cent of the x-rays showed suspicious shadows and 4 per cent of the direct sputum examinations were positive. Cases under treatment were cared for by very basic health services, and had been followed up satisfactorily.

It was held that photofluorographic examination of unselected groups by mobile units was a very costly procedure that very few countries could afford on a national scale. It also tends to create an overload of work in x-ray plate diagnosis, while the cases that are more important epidemiologically are frequently overlooked in this type of survey.



Mobile units may be indicated in certain special efforts that are aimed at particular groups as an extension of the permanent services that are able to carry out the subsequent diagnostic and therapeutic procedures.

Facilities for the radiological examination by one method or another of vulnerable groups, persons with symptoms, contacts, or special risk groups should be provided for when planning any tuberculosis control program, to the extent financial limitations and the population distribution of the communities so permit.

#### 8. PERSONNEL TRAINING AND TEACHING OF TUBERCULOSIS

There was unanimous agreement in the working documents and in the statements made during the discussion on the need to train auxiliary personnel in bacteriological diagnoses, follow-up of cases under treatment, and contact supervision. This type of sub-professional personnel is called on to play a fundamental role, under adequate periodic supervision, in all tuberculosis control programs and in other specific programs that come within the general field of public health services.

The inadequate orientation of medical students, their lack of concern about and poor training in tuberculosis control are the result of inadequate teaching programs. These have been aimed more at a sort of specialized clinical apprenticeship rather than the epidemiological aspects or the diagnosis and treatment of tuberculosis as a social and community health problem.

It was held that, in addition to changing the orientation of the students' education, steps should be taken to keep the practicing physicians up-to-date in this field.

The formation of specialized phthisiologists should provide adequate training in epidemiology and in the administration of tuberculosis programs, as well as an over-all view of the general public health aspects. Public health specialists should likewise be given basic training in the clinical characteristics of tuberculosis.

Stress was laid on the importance of training public health officers to cope with the needs of rural and semirural areas, by means of short courses in the practice and theory of the clinical and administrative aspects of the diseases that constitute the most important health problems.

#### 9. PLANNING AND ORGANIZATION OF SERVICES

The planning of national programs of tuberculosis control is today both possible and necessary. Effective means are available to combat transmission of the disease and to repair the ravages it causes.

It is possible to obtain an adequate measure of the tuberculosis problem in a community by means of the indices mentioned in the chapter on "Epidemiological Approach in Tuberculosis Control Programs". There was general agreement, however, that preliminary surveys were not the most useful procedure or the one best accepted by the communities. It was also agreed that it is preferable to initiate the programs on the basis of information at hand, and to proceed in such a way as to improve the quality of the data. This will lead to figures that can be used for later evaluations and for program changes, wherever necessary, as new indices are produced.

The epidemiological characteristics of tuberculosis call for nation-wide programs based on permanent facilities. For administrative purposes, tuberculosis control activities should be integrated or incorporated in the general health services. In certain areas, the initiation of these specific activities may be the starting point for the organization or incorporation of other health services that were not previously covered, such as intensive immunization programs.

It was held that sociological considerations are often overlooked in planning programs, and that it is necessary to adapt the activities to these sociological characteristics in order to ease their implementation and to encourage and guide community participation.

When nation-wide programs are envisaged, provision must be made for sound economic bases that will allow gradual and short range extensions, as experience is gained, until the entire territory can be covered.

If the goal of national coverage is to be achieved, it was agreed that methods must be simplified to the point where they can be effectively applied by auxiliary personnel. Furthermore, a hierarchy of activities and services must be established, from the most elementary ones in rural communities up to the most complete ones in highly developed urban areas, and due care must be exercised to see that investments at the higher levels do not stunt the growth of intermediate and rural services. Particular importance was assigned to the creation and operation of the intermediate services staffed with specially trained medical personnel, not only to look after the communities they serve directly, but also to supervise rural services under the care of auxiliary personnel. The possibilities of a nationwide service and the effective incorporation of tuberculosis control activities in the general public health services will depend to a high degree on the orientation provided in the education of the professional personnel in charge.

If the immediate and future aims of tuberculosis control programs are ever to be achieved, and if the disease is eventually to be eradicated, it is essential that there be a national policy-making authority which is responsible for studying the problems involved, which shares in planning and programming activities and in training personnel, and which is capable of providing technical supervision of all activities.