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Report on the

**INTERCOUNTRY MEETING ON TUBERCULOSIS
AND MEDICAL SCHOOLS**

Amman, Jordan, 20–21 September 2000



World Health Organization
Regional Office for the Eastern Mediterranean
Cairo, Egypt
2001

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1. INTRODUCTION

The WHO Regional Office for the Eastern Mediterranean, in collaboration with the Ministry of Health and the Ministry of Education of Jordan, convened an intercountry meeting on tuberculosis and medical schools in Amman, Jordan, from 20 to 21 September 2000. The objectives of the meeting were to define the desired curriculum content and learning process to enable future medical practitioners to contribute effectively to the management of tuberculosis control programmes, and to suggest ways for enhancing collaboration between medical schools and other interested bodies in the implementation of national tuberculosis control strategies.

The meeting was attended by national tuberculosis programmer managers and representatives of medical schools from 14 countries of the Region; Bahrain, Egypt, Islamic Republic of Iran, Iraq, Jordan, Lebanon, Libyan Arab Jamahiriya, Morocco, Pakistan, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia and Republic of Yemen, as well as by WHO staff and temporary advisers. The programme and list of participants are attached in Annexes 1 and 2, respectively.

Three officials addressed the meeting. These included Dr Ghazi Al Khreishe from the Ministry of Education, who delivered the message of H.E. Dr Khaled Toukan, Minister of Education, Jordan; Dr Donald Enarson, Scientific Director, International Union Against Tuberculosis and Lung Diseases (IUATLD); and Dr Abdullah Assa'edi, WHO Representative to Jordan, who delivered the message of Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean.

The World Health Organization held a Global Workshop on Tuberculosis Control and Medical Schools in Rome, Italy, from 29 to 31 October 1997, following the recommendations on the World Health Assembly in 1995 and of the Coordination Advisory and Review Group of the WHO Tuberculosis Programme in 1996.

A 1995 resolution of the World Health Assembly (WHA 48.8, 1995) on reorientation of medical education and medical practice stated that medical practitioners can play a pivotal role in improving the relevance, quality, and cost-effectiveness of health care delivery and urged Member States to define the desired profile of the future medical practitioner. The WHO strategy to implement the resolution, articulated in the document *Doctors for health*, encourages coordinated reforms in health care, medical practice and medical education to optimally take up the challenge of "Health for all". The Coordination Advisory and Review Group of the WHO Tuberculosis Programme recommended in its meeting in 1996 that WHO should develop partnerships with the academic and scientific communities and other units of WHO to ensure that relevant training materials, including the medical school curriculum and nursing school teaching materials, incorporate tuberculosis control and the directly observed treatment, short-course (DOTS) strategy.

The global workshop developed guidelines on training doctors in tuberculosis and on sustainable changes in medical education and medical practice in the realm of tuberculosis

through partnership. The global workshop produced recommendations that highlighted several key steps to ensure partnership development with medical schools, including convening a similar meeting at the WHO regional level. This intercountry meeting is the follow-up of the recommendations of the global workshop in the Eastern Mediterranean Region. It is the first meeting in the Region to discuss partnership development between the national tuberculosis programmes and medical schools (WHO/TB/98.236).

2. KEYNOTE PRESENTATIONS ON TUBERCULOSIS AND MEDICAL SCHOOLS

2.1 Global tuberculosis situation

Dr Donald Enarson, International Union Against Tuberculosis and Lung Disease

The epidemic of tuberculosis is very serious, killing 2 to 3 million people every year. This magnitude can be simplified by saying that tuberculosis deaths are equivalent to the crash of a Boeing 747 jet plane every hour of every day in the year. Tuberculosis kills more women than any single cause of maternal mortality. The incidence rate of tuberculosis is also increasing, and in some sub-Saharan African countries it is rapidly approaching 1% per year. Emergence of drug resistance is also a concern. The most important reason for development of clinically significant drug resistant tuberculosis is a failure of medical practice.

Despite these immense problems, global tuberculosis control is still possible. The WHO tuberculosis control strategy, widely known as the DOTS strategy, represents an organizational framework for effective tuberculosis control. The DOTS strategy contains five key components: political commitment, secured system of supplies, diagnosis and follow-up by bacteriology, proper recording and reporting, and short-course treatment with measures to protect rifampicin, such as direct observation of treatment. The World Bank identifies the DOTS strategy as the most cost-effective development assistance for health.

Countries applying the DOTS strategy have shown clear improvement in tuberculosis control. More and more countries are implementing the DOTS strategy: 119 countries in 1998. Currently, 43% of the global population has access to DOTS, which is double the rate in 1995. The total number of smear positive cases notified in DOTS areas in 1998 was 767 235, double the number in 1995. The treatment success rate has improved to approximately 80% of detected cases even among low-income countries. The global average treatment success rate in DOTS areas was 78% in 1997.

However, overall case detection by DOTS is still low—only 21% of the estimated global incidence—in contrast to the 2000 target of 70%. There is obviously a need to implement the DOTS strategy more widely in order to achieve the global targets of 70% of case detection rate.

2.2 Importance of collaboration between national tuberculosis programmes and medical schools

Dr Zuhair Hallaj, Director, Communicable Disease Control, WHO/EMRO

Tuberculosis control has made good progress in the Region. All countries have adopted the DOTS strategy as a national policy and have made efforts to achieve the regional target for tuberculosis control, namely nationwide implementation of the DOTS strategy, or DOTS ALL OVER, by the end of 2000. As of September 2000, 13 countries have achieved DOTS ALL OVER, and by the end of 2000, 20 out of 23 countries plan to have achieved DOTS ALL OVER. Progress has been observed in both resource-full countries and resource-less countries in the Region.

However, while the treatment success rate is reasonably high in DOTS areas, the case detection rate is still low in the Region, around 33%. Wider implementation of the DOTS strategy is clearly much needed. Increasing the comprehensiveness of DOTS ALL OVER activities, namely development of partnerships in the health sector, is important to ensure the real success of tuberculosis control in the community.

In this regard, development of successful collaboration with medical schools is essential. This is primarily because medical education provides training/education of future doctors and health personnel. The DOTS strategy will not succeed widely unless doctors are trained to manage tuberculosis cases properly. In addition, active participation of doctors in tuberculosis control will have a "cascade" effect on other health care providers, whose involvement will then be more easily obtained. Medical schools also play other critical roles such as delivery of health services to communities and conduct of operational research activities that address important issues in public health.

Perhaps most importantly, tuberculosis control is a good example of medical schools adapting to priority health concerns. With the growing desire of the public to obtain better value for the increasing investment in health care, stakeholders in the health sector are being asked to demonstrate how they will contribute to improving health care and the health status of society. The introduction of quality control and total quality management are expressions of this trend towards demanding better returns from investment in the health sector.

Medical schools must also adapt to these changes. They must accept a certain degree of accountability for society's health if they wish to continue to be forces for social progress and consequently to merit public support. To fully respond to the needs of society, medical schools must accept responsibility for the outcome of their training. By introducing changes in medical education, research and delivery of care for tuberculosis control, medical schools have the unique opportunity to demonstrate their social accountability. In short, tuberculosis is a major public health and social concern: medical schools should respond to this priority.

3. COUNTRY EXPERIENCES IN MEDICAL EDUCATION ON TUBERCULOSIS

The participants from medical schools presented their experiences on medical education on tuberculosis, particularly in relation to the DOTS strategy, and exchanged their views in the plenary session.

It was found that more and more medical schools have come to include the DOTS strategy among their medical education subjects. Some medical schools have developed partnerships with national tuberculosis programmes in their countries. However, many medical schools still have not included the DOTS strategy in their medical education curricula. Teaching methods and materials are also not always updated in line with modern tuberculosis control. By the end of the country presentations, it was evident that collaboration between national tuberculosis programmes and medical schools is generally weak in the countries of the Region.

4. TRAINING DOCTORS IN TUBERCULOSIS

4.1 Doctors of the future

The participants reaffirmed that doctors of the future should possess the following five aptitudes, as described in *Doctors for health: A WHO global strategy for changing medical education and medical practice for health for all* (WHO/HRH/96.1).

- **Care provider**, who considers the patient holistically, as an individual and as part of a family and a community, and who provides high quality continuing care within a doctor-patient relationship based on mutual respect and trust.
- **Decision maker**, who chooses which technologies to apply in enhancing care in an ethical and cost-effective way.
- **Communicator**, who is able to promote healthy lifestyles by effective explanation and advocacy appropriate to the cultural and economic context, thereby empowering individuals and groups to improve and protect their health.
- **Community leader**, who having gained local respect and trust, can reconcile individual and community health requirements and initiate action on behalf of the community.
- **Manager**, who can work efficiently and harmoniously with individuals and organizations inside and outside the health care system to meet the needs of patients and communities.

Although the definition of an ideal doctor should be the result of wide consultation within the health system and society at large, the participants agreed that it is still the primary task of medical schools to train them.

With the above understanding, the participants discussed the following four important points in medical training in tuberculosis as described in the report of the first Global Workshop on Tuberculosis and Medical Schools (WHO/TB/98.236, pages 13–22).

- What the future doctor must know about tuberculosis
- The attitude and practical skills that the future doctor needs in managing tuberculosis
- Suggested changes in methods of learning
- Suggested changes in assessment.

The participants produced the summary for each of the above point as described in the following chapters (4.2–4.5). The participants also identified useful references for teaching (4.6).

4.2 What the future doctor must know about tuberculosis

Upon qualifying as a doctor, the general practitioner should:

a) *Know the tuberculosis burden and the national tuberculosis programme*

- Describe the importance of tuberculosis including its socio-economic consequences in his/her country and compare tuberculosis epidemiology in neighbouring countries and worldwide.
- Explain how the tuberculosis bacillus is transmitted in the community, the factors that favour transmission and those that increase the risk of progression from infection to disease (high-risk groups): e.g. poverty, malnutrition, over-crowding, urbanization, HIV/AIDS and other reasons for decreased immunity.
- List the aims, objectives, strategy and structures of the national tuberculosis control programme within the network of primary health care in his/her country.

b) *Know the fundamental scientific facts about tuberculosis*

- Describe the main biological features of *M. tuberculosis*
 - Describe the condition for replication of *Mycobacterium tuberculosis* in humans and the conditions under which strains resistant to antibiotics are selected and transmitted.
 - Describe the morphological appearance of the *M. tuberculosis* in properly stained smears of sputum under microscopy.
 - Describe the characteristics of *M. tuberculosis* in culture and the characteristics and relative importance of other mycobacteria.
- Describe the natural history, and histopathological and immunological changes following *Mycobacterium* infection and disease.

c) *Know how to manage tuberculosis*

- Diagnose pulmonary tuberculosis in adults.

- Identify tuberculosis suspects through symptoms, physical signs, and chest X-ray features suggestive of pulmonary tuberculosis
 - Describe how to collect sputum specimens (optimally three) from tuberculosis suspects for smear examination (and sputum culture, if possible) in the nearest laboratory.
 - Know how to prepare and stain a sputum smear in order to be able to identify acid-fast bacilli on microscopy.
 - Classify pulmonary tuberculosis cases as smear positive or smear negative in accordance with national tuberculosis programme policy.
 - Explain the importance of recording and reporting in tuberculosis control.
 - Know how to notify the diagnosed case of tuberculosis to the tuberculosis coordinator according to the policy of the national tuberculosis programme.
- Diagnose the most frequent forms of extrapulmonary tuberculosis (e.g. meningitis, pleural, lymph node, bone and joint, peritoneal, etc.).
 - Identify symptoms, physical signs, radiological, biochemical, and cytological features suggestive of extrapulmonary tuberculosis.
 - List the criteria for diagnosis recommended by the national tuberculosis programme for extrapulmonary tuberculosis.
 - Notify the extrapulmonary cases to the tuberculosis coordinator according to the policy of the national tuberculosis programme.
- Diagnose tuberculosis in children.
 - Describe the symptoms, signs, radiological, biochemical and cytological features suggestive of active tuberculosis in children
 - List the criteria for diagnosis of childhood tuberculosis recommended by the national tuberculosis programme for extra pulmonary tuberculosis.
 - Explain why childhood tuberculosis, especially meningitis, must be reported.
- Treat a tuberculosis patient until cured.
 - Describe the appropriate advice that should be given to a patient and to his/her relative(s) before, during and at the end of the treatment.
 - Describe the mechanisms of action of anti-tuberculosis drugs and the rationale for the chemotherapy regimens as recommended by the National tuberculosis programme. Describe, in addition, the consequences of inappropriate medical prescription.
 - Prescribe anti-tuberculosis chemotherapy according to the treatment category of the patient, and to any special indications (pregnancy, renal failure, and liver disease) as recommended in the National tuberculosis programme policy.
 - Explain the advantages and importance of direct observation of treatment and know how it is to be provided according to the national policy.

- Explain the limited indications of susceptibility testing (if available and reliable) in the treatment of tuberculosis: i.e. only for failure cases after the first treatment and for chronic cases.
 - Explain why and how frequently the patients should be monitored clinically and bacteriologically (smear microscopy) during the course of treatment.
 - Describe measures to be taken when treatment or clinic attendance is irregular
 - List the most frequent and most serious side effects of anti-tuberculosis drugs and recognize quickly those requiring immediate action or referral.
 - Ensure directly observed treatment, at least during the initial phase of treatment.
 - Know the criteria of treatment success, failure and relapse.
 - Know the principles of cohort analysis and how to classify treatment outcome for this purpose.
- Specify the management of close contacts of smear positive patients, especially children under 5 years of age for whom preventive chemotherapy and/or BCG vaccination is indicated according to the national tuberculosis programme.
 - Describe the indications and guidelines for preventive chemotherapy in individuals in high-risk groups according to the national tuberculosis programme.
 - Describe the national policy for BCG vaccination, its method of administration and management of adverse reactions.

4.3 The attitudes and practical skills that the future doctor needs in managing tuberculosis

Upon qualifying as a doctor, the general practitioner should be able to:

- Relate and communicate well with patients, their relatives, the community and the health team, with appropriate knowledge of language and culture.
 - Take a history and perform a physical examination in order to identify the patient's medical and social (family, job) problems.
 - Identify the acid-fast bacilli by microscopy of sputum smears
 - Collect the requisite number of sputum samples for smear from patients and suspects according to the national policy
 - Complete the microscopy examination form to be sent with the correctly labeled specimen to the nearest laboratory.
 - Prepare smears, stain and examine them under the microscope and record the results according to the national tuberculosis control policy.
 - Recognize from a series of normal and abnormal chest radiographs the appearances consistent with pulmonary tuberculosis.
-

- Perform the intradermal tuberculin test, read and record the size of induration, and interpret the results.
 - Perform pleural tap and send the fluid for microscopic (and culture if available) and other relevant laboratory examinations.
 - Perform lymph node aspiration and send the aspirate for microscopic examination (and culture if available).
 - Explain to an adult with tuberculosis and to the parent of a child with tuberculosis, the means of transmission, and the disease management plan.
 - Complete treatment cards and register of a series of pulmonary and extra-pulmonary patients according to the documents and registers of the National tuberculosis programme.
 - Make the appropriate management decisions, including referral to a specialist, in the following situations:
 - Severe forms of tuberculosis, including nutritional supplementation and corticosteroid therapy, where indicated.
 - Complications of tuberculosis (e.g., severe haemoptysis, pneumothorax, etc.)
 - Side effects of anti-tuberculosis drugs
 - Transfer of the patient out of the district in which the patient was registered
 - Premature treatment interruption
 - Concomitant disease (e.g. HIV, diabetes, renal failure, liver disease, etc.) and special situations (e.g. pregnancy).
 - Supervise, and where necessary provide additional guidance for, health workers on:
 - Health education of a tuberculosis patient and his/her family
 - How to collect sputum samples (ideally three) over the course of two days, and to send them correctly labelled to the nearest laboratory with a properly completed request form for smear examination
 - Ensuring direct observation of treatment
 - Recognizing severe side effects (like jaundice, hypersensitivity, deafness, etc.) that require immediate interruption of treatment and referral to specialists
 - Implementation of late patient tracing methods (letter, phone, home visit) for those who fail to come for treatment or follow up.
 - Register the outcome of treatment in a series of patients.
 - Make professional links with:
 - The nearest laboratory for microscopy (and culture if available), chemical and cytological analysis.
-

- The referral hospital or tuberculosis consultant.
- The coordinator of the National tuberculosis programme in the District where the patient is registered.

4.4 Suggested changes in methods of learning

- Standardize, at country level, the methods of training in tuberculosis according to the new educational strategy recommended by WHO.
- Focus on active methods of training involving student participation in
 - problem solving approach
 - small groups for discussion and demonstration
 - case discussion
 - role playing and simulation
 - technical protocols for training in practical skills
 - use of interactive tools, such as CD-ROM.
- Choose modular training, semi-integrated and, when possible, fully integrated.
- Adopt multi-disciplinary and concomitant training on the national tuberculosis programme, DOTS and case management for at least:
 - medical students
 - nursing students
 - laboratory technician students.
- Develop practical skills in the health centre at the peripheral level (delivery of DOTS) under the guidance of the responsible senior nurse or general practitioner.
- Allocate sufficient time to achieve all educational objectives theoretical and practical during the curriculum, according to the priority of the tuberculosis problem.

4.5 Changes suggested in assessment

- Develop continuous assessment of practical skills acquired during the curriculum.
 - Phase out oral and essay-type examination methods.
 - Develop multiple choice question (MCQ) and objective structured clinical examination (OSCE).
 - Develop practical assessment for smear preparation, staining and reading, and X-ray reading.
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- Develop checklists to evaluate the clinical assessment of the patient with regard to history taking, physical examination, communication with and behaviour towards the patient, and finally, interpretation.
- Compulsory examination, theoretical and practical, before national licensing.

4.6 Useful references for teaching

The following three documents were found as useful reference for teaching

- Abbatt FR, *Teaching for better learning: a guide for teachers of primary health care staff*, 2 ed. Geneva, WHO, 1992.
- Guilbert J.J, *Educational handbook for health personnel*, 6th ed. Geneva, WHO, 1992.
- *Increasing the relevance of education for health professionals*. Report of a WHO study group on problem-solving education for the Health professions. Geneva, WHO, 1997.

5. ENSURING SUSTAINABLE CHANGE IN MEDICAL EDUCATION AND IN MEDICAL PRACTICE THROUGH PARTNERSHIP

The participants agreed that, in order to respond to the urgent need for practitioners who are properly trained in tuberculosis, a task force for tuberculosis should be set up in each medical school. The task force should aim to ensure that:

- Essential knowledge and skills are covered by every teacher in their respective fields of tuberculosis teaching/training.
- Evaluation covers essential knowledge, skills and attitudes.
- Progress is made towards the ideal of integrated modules, which emphasize integrated learning (more beneficial to the students) rather than integrated teaching (easier for teacher).
- The content of the curriculum and the systems of evaluation are updated according to priorities in the national tuberculosis programme.

It was agreed that the composition of the task force should be a matter for local decision, but that it should certainly contain a bacteriologist, histopathologist, chest physician, radiologist, infectious disease physician, and public health physician and official as well as representatives of medical students.

At the same time, it was also suggested that the size of the task force should be kept small so as to maintain the dynamism of the task force. An example of members of a "small" task force might be the dean of the faculty (policy-maker); representative of the national

tuberculosis programme; community medicine physician; chest physician; bacteriologist; and relevant specialist as needed.

6. RECOMMENDATIONS

The participants in the meeting, with the help of the WHO Secretariat, developed the following recommendations.

1. In each medical school, a task force for tuberculosis should be set up in order to revise the curriculum to ensure that graduates have the knowledge, skills and attitudes essential to the proper management of tuberculosis in the individual patient as well as in the community.
 - 1.1 In countries where there is more than one medical school (private and/or public), a national task force should be formed with proper representation of the medical schools. The national task force will aim to facilitate and coordinate changes in the curriculum on tuberculosis.
 - 1.2 In each task force, the guidelines on medical training summarized in section 4, especially sub-sections 4.4–4.5, should be adapted according to the existing education strategy in each country.
2. The task force should be comprised of representatives of all groups involved in teaching (e.g. bacteriologists, histopathologists, chest physicians, infectious disease physicians, paediatricians, general physicians with expertise in tuberculosis, radiologists, public health physicians) as well as the national tuberculosis programme and medical students.
3. The task force should use this report, specifically section 4, as the basis for its deliberations and plans of action for improving the curriculum for tuberculosis and the evaluation of graduates.
4. The task force should bear in mind that the information in section 4 constitutes the basic minimum package of clinical skills needed for general physicians in countries with intermediate to high prevalence of tuberculosis; accordingly the document should be adapted to the context of management of the most prevalent respiratory diseases in each country.
5. The task force should encourage partnership between medical schools, governmental health authorities, medical professional associations and concerned organizations and groups in the community in achieving, sustaining, evaluating and revising policy and procedures in medical education and in clinical practice.
6. These partners should take responsibility for continuing postgraduate education, practice guidelines and performance assessment for practitioners and for institutions.

7. The task force should give consideration to the socioeconomic environment and its impact on control and elimination of tuberculosis in any given community.
8. The WHO Regional Office for the Eastern Mediterranean should act as the catalyst for these plans. The report of the meeting, with a cover letter from the Regional Office, should be sent to Ministers of Health, national tuberculosis programme coordinators/managers, deans of medical schools, presidents of relevant medical professional associations and relevant nongovernmental organizations in the countries of the Region. The Regional Office should also identify and inform other key personnel and organizations in the countries of the Region.
9. The Regional Office should develop a mechanism to monitor progress in the implementation of these recommendations.

Annex 1

PROGRAMME

Wednesday, 20 September 2000

- 08:30 – 09:00 Registration
- 09:00 – 09:50 Opening session
Message from Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean
Address by Dr Donald Enarson, IUATLD
Message from H.E. Dr Khaled Toukan, Minister of Education, Jordan
- 09:50 – 10:00 Plenary session
Introduction of participants
Objectives and methods of work of the meeting / Dr Chaulet, EMRO
- 10:00 – 10:20 Global tuberculosis situation: progress and challenges / Dr Enarson, IUATLD
- 10:20 – 10:40 Importance in collaboration between tuberculosis control programmes and medical schools: regional point of view / Dr Hallaj, EMRO
- 11:40 – 14:30 Country presentation on teaching experiences on tuberculosis
- 14:30 – 15:00 Summary of country presentations and instruction on group work
Dr Chaulet, EMRO
- 15:00 – 16:30 Group work in 4 groups
Issue 1: Changes needed in medical curriculum
Issue 2: Changes needed in methods of learning
Issue 3: Changes needed in assessment
- 16:30 – 17:00 Group work continued
- 17:00 – 17:30 Plenary presentation by groups and discussions

Thursday, 21 September 2000

- 09:00 – 09:30 Summary of group presentations and instruction
on group work on action plan development / Dr Chaulet, EMRO
- 09:30 – 10:45 Group work on action plan development in 4 groups
- 10:45– 11:30 Group work continued
- 11:30 – 12:00 Plenary presentation by groups and discussions
- 12:30 – 14:00 Final discussions and recommendations
Closing

Annex 2

LIST OF PARTICIPANTS

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