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**EXPERT COMMITTEE ON  
PROFESSIONAL AND TECHNICAL  
EDUCATION OF MEDICAL  
AND AUXILIARY PERSONNEL**

**Report on the First Session**

*Geneva, 6-10 February 1950*

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WORLD HEALTH ORGANIZATION  
PALAIS DES NATIONS  
GENEVA  
DECEMBER 1950

**EXPERT COMMITTEE ON PROFESSIONAL AND TECHNICAL  
EDUCATION OF MEDICAL AND AUXILIARY PERSONNEL**

**First Session**

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- Dr M. S. Akalin, Director, School of Public Health, Ankara, Turkey
- Dr G. W. Anderson, Mayo Professor and Director, School of Public Health, University of Minnesota, Minneapolis, Minn., USA (*Vice-Chairman*)
- Miss M. Andrell, Instructor of Nursing, Royal Swedish Board of Health, Stockholm, Sweden
- Dr C. K. Lakshmanan, Director, All-India Institute of Hygiene and Public Health, Calcutta, India
- Dr J. M. Mackintosh, Dean, London School of Hygiene and Tropical Medicine, London, United Kingdom (*Rapporteur*)
- Dr H. Romero, Professor of Hygiene and Preventive Medicine; Director, School of Hygiene, University of Chile, Santiago, Chile
- Dr R. Sand, Professeur de Médecine sociale à l'Université libre de Bruxelles, Brussels, Belgium (*Chairman*)

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- Dr J. Parisot, Professeur d'Hygiène et de Médecine sociale à la Faculté de Médecine de Nancy, France
- Dr G. H. de Paula Souza, Director and Professor, Faculty of Hygiene and Public Health, University of São Paulo, Brazil
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# EXPERT COMMITTEE ON PROFESSIONAL AND TECHNICAL EDUCATION OF MEDICAL AND AUXILIARY PERSONNEL

## Report on the First Session<sup>1</sup>

### 1. Opening of the Session

Dr Brock Chisholm, the Director-General, opened the session and welcomed the members of the committee. He outlined the structure of the World Health Organization, in particular as it concerns the expert committees. The importance of the latter lay in their study of general problems and the solutions to be applied in differing circumstances. He laid particular emphasis on the fact that the reports of expert committees were forwarded by the Executive Board to the World Health Assembly, without any change but with comments. Then the reports were sent to governments for their information, intact and directly. It was therefore

<sup>1</sup> In accordance with the instructions of the Executive Board at its fifth session, an ad hoc committee examined this report and, acting on behalf of the Board, adopted the following resolution:

The ad hoc committee of the Executive Board

1. NOTES the report of the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel on its first session, and
  2. AUTHORIZES its publication;
- Taking into account the recommendations of the expert committee in considering relevant items on its agenda,
3. TRANSMITS the present report to the Third World Health Assembly, and
  4. POINTS OUT that recommendations of expert committees which concern WHO policy and operations remain recommendations unless and until they are implemented by the Executive Board or the World Health Assembly in adopting and putting into action the annual programme of WHO.

(*Off. Rec. World Hlth Org.* 28, Annex 2)

The Third World Health Assembly adopted the following resolution (WHA3.2):

The Third World Health Assembly

1. NOTES the report of the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel on its first session;
2. EXPRESSES its gratitude to the committee for their work;
3. ACCEPTS the views of the committee regarding the importance of the sociological and preventive components in education of health personnel;
4. CALLS the attention of countries to the necessity of adequate preparation of medical and other personnel essential for health care;
5. CONSIDERS that the preparation of doctors should be so balanced as to produce a body of men who can practise diagnosis and prevention, social as well as clinical pathology and psychosomatic medicine;
6. REQUESTS the Executive Board and the Director-General to take into account the recommendations contained in the report, in so far as they may be applicable, when implementing the programme.

(*Off. Rec. World Hlth Org.* 28, 15)

important that the wording of such reports be carefully studied and that the conclusions reached by the committee should be such as to be applicable to all countries, whatever their stage of development.

Dr Martha Eliot, Assistant Director-General for Department of Advisory Services, said that the committee might eventually have to take into consideration problems going beyond the specialized field of its members. The primary question of training of public-health officers would be extended to the training and medical education of auxiliary workers and eventually, she hoped, would include the health education of the public and the social aspects of health. She reminded the committee of the necessity for training the professional workers who would be required under the programme of Technical Assistance for Under-developed Countries.

## 2. Election of Officers

Dr Sand was unanimously elected Chairman and took the chair. Dr Anderson was elected Vice-Chairman and Dr Mackintosh, Rapporteur, both of them unanimously.

## 3. Terms of Reference

The committee noted that its terms of reference were :

### 3.1 *General*

“Competence and Functions of Expert Advisory Panels and Committees”<sup>2</sup>

“2.1 The purposes and functions of expert advisory panels and committees, in their respective technical fields and in accordance with their terms of reference, are :

“2.1.1 to take stock of the latest available knowledge and expert information and make it available to WHO, i.e., its Assembly, Executive Board, committees and Director-General, and to Member States ;

“2.1.2 to formulate, on the basis of such knowledge, technical recommendations which take into account opinions and practices in different countries ;

“2.1.3 to make recommendations with a view to initiating, stimulating and co-ordinating research, in order to increase and supplement existing knowledge, as may be necessary for complying with the terms of reference.

“2.2 Expert committees, unless so requested, shall not advise WHO on questions of its internal administrative policy.

“2.3 Expert committees have no administrative or executive authority, unless such authority is formally and explicitly entrusted to them by the World Health Assembly or by the Executive Board.”

### 3.2 *Specific*

3.2.1 To express an opinion about the world's situation and needs with regard to various aspects of the training of medical and other health personnel.

<sup>2</sup> *Off. Rec. World Hlth Org.* 25, 41, amended by resolution WHA3.47 (*Off. Rec. World Hlth Org.* 28, 33)

3.2.2 To comment on the existing WHO programmes in professional and technical education, and to make its own recommendations concerning programmes and technical measures and activities for their implementation.

3.2.3 To advise on specific problems within its competence referred to the committee by the World Health Assembly, the Executive Board, the Director-General, or by other expert committees.

#### **4. General Discussion on International Aspects of the Problem of Training of Medical and Other Health Personnel**

In opening its proceedings, the committee accepted the view that it should concentrate its attention on the definition of basic principles and come to general conclusions about the international aspects of the problem of training medical and other health personnel. This was necessary to establish a broad basis of discussion since conditions varied so much from country to country. Consideration had to be given, for example, to the role of the physician in modern society and to his responsibilities from the sociological as well as from the medical point of view. It had become evident to all observers that the factors necessary for building up a healthy society included economic and social security, nutrition, housing, and general public-health education. The present training of the physician in most countries gave little instruction with regard to such matters; and, by the end of their medical education, students had learnt at once too much and too little. The committee agreed that there should be more collaboration with veterinary surgeons, agriculturists, sanitary engineers, etc., that there was today too much teaching in artificial surroundings, such as hospitals and laboratories, and that students should be brought more into contact with the realities of the lives of their patients. When the idea of every man's right to health had been developed throughout the world, the role of the physician in society would be entirely changed. It was therefore agreed that the committee should devote much of its time and study to consideration of the wider international problems and advise on specific WHO programmes in professional and technical education. As a starting point for its discussion, the committee considered in some detail the tentative outline for a long-period programme<sup>3</sup> and commented on a number of points, while approving the programme in general.

##### *4.1 General aims*

One of the first functions of an international health organization should be to establish basic standards of training for the practice of public health.

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<sup>3</sup> See Annex 1, page 27.

With this objective in mind the committee recommended two methods of assessment :

(a) A schedule of assessment should be instituted to ensure that any school of training satisfied certain basic requirements, without which no recognizable standard of training could be achieved. Suggestions with regard to a basic schedule are given in Annex 2.<sup>4</sup>

(b) Institutions which desired to have further assistance by direct personal assessment of the courses of training given in their schools should have an opportunity of securing expert advice by voluntary arrangements. This could best be done by the institutions themselves in collaboration with a panel of experts, set up under the aegis of WHO, who would be prepared to give disinterested advice in consultation, after personally visiting the schools.

The committee agreed that in these discussions any standards above the basic minima ought to be related to local needs and possibilities, to local traditions and ways of life, and, above all, to the realities of the situation rather than to rigid norms established elsewhere.

Any general establishment of standards served another function of great importance : that of making the various institutions aware—perhaps for the first time—of gaps in their services and of the methods by which these could be filled. Training in hospital administration and the unification of hospital records were quoted as examples.

Once an institution had become aware of deficiencies in its services, it would the more readily seek advice in order to put its own house in order.

#### 4.1.1 *General undergraduate training*

In examining topics for discussion, the committee was fully aware of the need to concentrate its attention upon the training of medical, nursing, and auxiliary personnel in public health. Nevertheless, it felt obliged to point out that much of the content of postgraduate training in public health was determined in advance by the compass and quality of undergraduate instruction. It had therefore to go beyond the scope of its main discussion in order to emphasize its view that the undergraduate medical curriculum was in most areas inadequate and ill-balanced and no longer in step with modern ideas. Furthermore, there was need for defining the requirements as regards the size of classes and staff and the physical facilities needed for adequate instruction.

The committee had in mind, in particular, the well-recognized fact that undergraduate teaching was already heavily overloaded by the accretion

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<sup>4</sup> See page 31.

of new subjects brought into being by the advances of science and hoped that special consideration would be given to the abridgement of subjects of the curriculum which had either become completely out of harmony with modern conditions of practice or had come to occupy a disproportionate amount of time in the curriculum of the student.

The committee noted that the Expert Committee on Mental Health<sup>5</sup> had drawn attention to a similar lack of balance in the teaching in mental health to undergraduates, and it resolved to include an examination of the position of mental health in the curriculum in its proposed terms of reference.

It also approved of the suggestion that any survey of undergraduate teaching should take into account the place of the nurse in the overall medical and public-health team since, unless that place was ascertained, her general education would be difficult to plan. In general, the references made to the deficiencies in the training of medical students applied with equal force to that of nurses. The committee therefore recommended that the undergraduate training of nurses be re-examined with the object of introducing specific instruction on the social, mental, and industrial aspects of nursing and expressed the hope that the Expert Committee on Nursing would take up such matters.

The committee suggested that the Director-General be requested to convene a meeting of experts in undergraduate medical education but felt that the terms of reference of such a committee should be drawn in such a way as to indicate broad objectives rather than detailed consideration of curricula. It agreed to put forward the following suggestions :

4.1.2 *Suggested terms of reference for a subcommittee on the modification of medical undergraduate instruction*

The objective of medical education is to produce a body of medical men who can practise diagnosis and prevention, social as well as clinical pathology, and psychosomatic medicine. The present curriculum is much unbalanced, particularly in terms of this objective. The main emphasis in undergraduate teaching should be on the principles and methods which will enable the student to learn for himself, to think, observe, and draw correct conclusions. In the past, disproportionate emphasis has been given to curative medicine in the undergraduate curriculum. In too many instances the social aspect has been completely neglected and the psychosomatic has been submerged by the physico-chemical. This neglect of the social aspect of medicine has been evident in premedical as well as the medical training.

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<sup>5</sup> *World Hlth Org. techn. Rep. Ser.* 1950, 9, 10

The suggested subcommittee on the undergraduate curriculum should review the course of training, both preclinical and clinical. The preclinical should be reviewed from two aspects :

- (a) where the period of instruction is unduly long in certain subjects in terms of ultimate purposes of training ;
- (b) where it does not include training which would be orientated to community aspects of the subject.

The clinical training should prepare the physician to deal with the entire family and community situation rather than with merely a sick individual. It should include adequate instruction in normal psychological development and the origin and nature of common psychological disorders. The clinical training of the student should be organized in such a way that he gets an insight into social health problems by contacts with home and community life. In order to give him confidence and experience, his clerkship, particularly in medicine, obstetrics, and paediatrics, should include contact with general practitioners of the community. His clinical training should enable him to develop a comprehensive programme of health protection for all persons and families under his care.

In order to carry out its studies, it is suggested that the subcommittee inquire into :

- (a) premedical training content, particularly as to social studies ;
- (b) incorporation of social and preventive concepts early in the medical curriculum ;
- (c) opportunities for personal observation and study, in the clinical period of social components of disease ;
- (d) opportunities to apply preventive measures to patients and their families as a part of the clinical training ;
- (e) integration of preventive and social concepts throughout all clinical teaching ;
- (f) opportunities for student participation in community programmes of health protection ; and
- (g) teaching of certain special subjects, such as physical and mental rehabilitation and care of the aged.

##### **5. Technical Training of Medical and Auxiliary Personnel in Public Health**

The committee noted the various documents which had been submitted for its guidance, including, in particular, the programme of the Organization

for 1950<sup>6</sup> and 1951<sup>7</sup> and the summary of activities of WHO in professional and technical education in 1949.<sup>8</sup>

The general view of the committee, after studying relevant documents, was that particular emphasis should be laid on the social aspects of public-health training and the study of economic, social, and working conditions as they affected health. These aspects affected the education of public-health personnel in three main ways: first, the training of undergraduate medical students; second, the postgraduate training of public-health officers; third, the training of auxiliary personnel in public health. At this point the committee observed that items 5.1 and 5.2 (below) applied to the training of nurses as well as medical practitioners.

#### 5.1 *Undergraduate training in preventive and social medicine*

The committee first examined the undergraduate training of medical students and nurses, and it felt that a higher place should be given to preventive and social medicine. Stress was laid on the principle that such training could not be effectively given in a single term; it was essential that it should permeate the whole period of undergraduate instruction. The committee did not desire to specify too closely the methods by which these ideals could be achieved, but it was suggested that the undergraduate should, in his preclinical instruction, be given a general outline of the meaning and content of preventive and social medicine, and that during each of his clinical years he should receive specific instruction in the various aspects of this subject. In addition, it was agreed that every effort should be made to instil the idea of prevention in all clinical teaching and especially to give undergraduate students practical instruction in the social aspects of sickness.

As regards training material and opportunities for teaching social medicine, it was pointed out that little equipment was necessary; every medical school in every part of the world presented a wealth of material for social study in its own environment. The essential point was that the teacher should have the right approach, and that there should be on the staff a qualified social worker able to develop the practical aspects of teaching. Only after study of local conditions could a medical student be expected to profit by a study of the conditions of other countries. In general terms, therefore, the committee put forward a plea for redressing the balance of undergraduate teaching in medicine and nursing in such a way as to lay more emphasis on the social aspects of health and sickness and, further,

<sup>6</sup> *Off. Rec. World Hlth Org.* 18, 118, 163, 167

<sup>7</sup> *Off. Rec. World Hlth Org.* 23, 156

<sup>8</sup> Restricted working document

that the medical student should be brought into personal contact with sick persons against the background of their home and industrial environment.

The attention of the committee was drawn to the danger of trying to teach undergraduate medical and nursing students too much—too many subjects in too little time. This left no room for the study of life, for thinking or reading. The cause of this excessive pressure on undergraduates was not far to seek: each teacher was anxious to retain as much time as possible for his own subject; and, at the same time, new discoveries and new applications of knowledge were constantly increasing the amount of knowledge that the student was expected to acquire.

### 5.2 *Postgraduate training in public health*

The committee then gave consideration to certain aspects of postgraduate training of doctors and nurses. In the study of the training of public-health officers it was important to know the state of existing training institutions, what help could be given through voluntary sources, such as the great voluntary foundations, and how far WHO could supplement those training facilities. Many countries, it was pointed out, lacked the basic material and personal services for training. It was therefore important to establish basic standards of more or less universal applicability. One of the difficulties with which most postgraduate training schools were faced was the problem of interesting the young physician in public health as a career. Even where adequate facilities for training had been provided, there was often a shortage of men and women who wished to take such training. The problem of postgraduate teaching therefore came back to the primary need to interest undergraduates in the health problems of the community as well as of the individual.

The committee also laid stress on the need for co-ordinating all the specialized studies which made up the field of public health, for example, engineering, social work, chemistry, statistics, nutrition, etc. There was too often a tendency to what might be called educational isolationism. The medical man or a public-health nurse, even after having received highly specialized training, might enter upon a public-health career without any appreciation of the contribution which other specialists had to make in this field; the same, of course, was true of other specialists, such as engineers, who often had little understanding of the medical and nursing aspects of public health.

It was clear to the committee that the concept of social medicine would help to broaden the outlook of public-health workers of every kind. The subject was clearly not the prerogative of doctors alone and, even in countries with few facilities for specialized training, much could be done

by intelligent use of partially trained personnel. It was felt that the importance of teamwork could not be over-estimated.

### 5.3 *Nursing education*

The committee has observed already that the undergraduate and postgraduate education of nurses follows very closely the pattern of training for medical students and postgraduate health officers, respectively. Indeed, the pattern is so close that the committee dealt with these two groups by implication as a single problem. With regard to nursing education, however, it was pointed out that the curriculum tended to be even more overloaded at both undergraduate and postgraduate levels than that of the doctor. It was essential, therefore, to re-balance nursing education with the twofold object of cutting out the dead wood of older traditions and grafting specific practical teaching in social and preventive nursing. In discussion it was clear that nursing education no less than medical was overloaded with what might be called the morphological and structural training, which ought to give place to the physiological and functional.

In the training of public-health nurses, the committee accepted as a general principle the view that this should be closely co-ordinated with the public-health training of medical and engineering postgraduate students. It was of vital importance that each should understand the scope and limitations of the other's work.

### 5.4 *Sanitary engineering*

Public-health engineers should possess basic education and training in engineering followed by at least an academic year's specialized education and training. The latter should include the sciences of bacteriology, chemistry, and human physiology as related to problems of public-health-engineering interest. Also, the principles and practices of engineering analysis, design, and operation as applied to works of water-supply purification, sewerage and sewage treatment, the collection and disposal of municipal, rural, and industrial wastes, insect and rodent control, the engineering and administrative phases of food and milk sanitation, the sanitation of buildings, including ventilation, air conditioning, heating, plumbing and illumination, housing, industrial sanitation with particular reference to those industrial hazards the correction of which is an engineering problem should be considered. This specialized engineering instruction should follow the general background instruction requisite for the training of all senior health personnel. The postgraduate training of the engineer should also include adequate instruction in public health, including public-health practice, epidemiology, health statistics, and health education of the public.

### 5.5 *Psychiatric social workers*

The attention of the committee was drawn to the methods of training men and women for psychiatric social work and the standards which should be reached. Ideally, these workers should have taken a university course in social science or a normal college degree with specialization in sociology followed by two or three years of practical social work in the community. At the end of this period the student desiring to specialize in psychiatric social work would be required to take a further course in mental health, including practical teamwork with psychiatrists and educational psychologists and work at child-guidance centres.

### 5.6 *Medical social workers*

The committee did not specifically consider general training in social work nor the specialized courses of instruction and practical case-work required for the "medical social worker". It was, however, impressed by the need for what might be called general practice in social work reached through a course of training without specialization. The social worker so trained would be able to give assistance in the public-health service as a very important auxiliary in home visiting, in the care of children deprived of normal family life, and in many other social services. As "general practitioners" they would look to specially trained officers as consultants, e.g., the health officer, the medical social worker, and the psychiatric social worker.

### 5.7 *Industrial health workers*

The committee then gave special consideration to industrial health. This was logically consistent with the view that not only the background of living conditions, the family, and the home should be studied, but also the working conditions. It was agreed that every general practitioner and every nurse should have some knowledge of industrial health. At the present time very few had sufficient training in this aspect of social medicine. The committee noted with approval that important advances had taken place in recent years in many countries. A special diploma in industrial health had been established in Great Britain and in France for some years, and special courses of training were now widely given to nurses who wished to take up industrial health as a career. The view was expressed that industrial health should be regarded as an essential part of public health and that isolated courses of training in the industrial branch for persons without prior public-health training should be discouraged. It was evident that industrial health had become in recent years a much more important subject, and industrial managements were becoming acutely aware of the need for medical, nursing, and social work in this field.

### 5.8 *Training of other professional health personnel*

The committee took further cognizance of the value of, and need for, many other ancillary workers who constitute important and, at times, essential members of a comprehensive public-health team. These include, among others, the public-health dentist, public-health veterinarian, sanitarian, statistician, hospital administrator, nutritionist, laboratory worker, health educator, dental hygienist, and physiotherapist and occupational therapist. It was the belief of the committee that an adequate background in public health should be incorporated into the basic training for each of these professions and that those students who were contemplating employment in organized public-health programmes should have special advanced training, not only in the community applications of their respective specialities but also in the broad phases of public health including public-health administration, epidemiology, statistics, sanitation, and health education of the public. Only through such broad training could such workers, when employed, fully understand the relation of their respective specialities to the entire community programme.

### 5.9 *Training of subprofessional auxiliary personnel*

The committee further recognized that in many countries it is still imperative that use be made of semi-trained workers and that these, when properly supervised, may make an invaluable contribution to public health. The committee felt that use of such workers should be encouraged as a stepping-stone toward development of more adequately trained personnel, and that provision should be made for training of such subprofessional workers.

In considering the training of auxiliary workers, however, the committee was impressed by one obvious need in any community—that facilities for the instruction of trained staff, particularly teachers and administrators, should be established before approaching the question of auxiliary workers. If this were not done, it would be impossible to retain reasonable standards of competence or to ensure the proper supervision of auxiliary staff.

## 6. Fellowships

The committee divided the possible holders of fellowships into two main categories :

(a) Men and women already qualified and of some seniority who receive fellowships in order that they may study improved methods of teaching or research and make contact with their colleagues in other countries. It was anticipated that, in the award of fellowships of this

kind, special consideration would be given to senior specialists who would be likely, as a result of their experience, to make substantial contribution to teaching, research, and the development of health services on their return.

(b) Younger students who had completed their general professional studies and were receiving training in public health proper.

It was felt that, apart from exceptional circumstances, fellowships should not be given to undergraduates. As regards graduates, the suggestion was approved that, in general, they should have completed a postgraduate course of training in their own countries before being eligible to visit the countries in which their fellowships would operate. It was agreed that Fellows in the second group should not be encouraged to visit a large number of institutions but should take a real part in the life of the institute in which they were studying so as to observe its methods and enter into the spirit of its work. These junior fellowships would, in general, be of long duration, e.g., for not less than an academic year, to enable the holder of the award to get the greatest possible benefit from his work in the institution to which he had been sent. In addition, special fellowships should be awarded for courses of shorter duration, particularly in subjects included in special programmes of WHO. Senior Fellows, on the other hand, belonging to the first group, would be encouraged to visit a number of institutions or take part in seminars, study-groups, or symposia over a comparatively short period. They would, by their seniority, be in a position to benefit by comparative studies and to make some judgements about the relative values of the teaching programme of the schools they visited as compared with their own circumstances.

The following is a summary of the main points on which the committee made recommendations :

The fellowship programme, whereby selected students are given an opportunity for study and training in other countries, is rightly considered one of the most valuable means of promoting international understanding and of developing improved medical and health standards of all nations. The committee affirms its belief in the great value of such fellowships and recommends that the programme be given a high priority in the allocation of funds.

In the development of a fellowship programme the committee believes that special attention should be given to the following points :

6.1 Allocation of fellowships to various countries should be on the basis of evidence of local needs as well as capacity and desire of the respective country to apply the benefits to be obtained from the respective fellowships.

6.2 Selection of individuals to receive fellowships should be made by a properly designated national committee. In the selection of such a committee, the government should be urged to provide for broad representation from the various groups concerned with the promotion and care of the health of the people.

6.3 The respective national committees should be urged to give serious attention not only to training in general public-health, but also to institutional administration. They should have regard to the need for adequate recognition of the non-medical aspects of health protection and more particularly of those concerned with community nursing, environmental sanitation, education of the public, and the social aspects of medicine.

6.4 The respective national committees should be urged to give preference to persons who, upon return from fellowship training, will assume positions of responsibility in teaching, and especially in teaching subjects that are currently inadequately developed within the respective curricula.

6.5 The respective national committees should be urged to give preference to applicants who have completed the opportunities for study locally available. The fellowship should be considered as a means of supplementing rather than supplanting local postgraduate educational facilities.

6.6 In countries where suitable facilities for undergraduate education are lacking, a limited number of fellowships for undergraduate training may suitably be provided, but high priority should be given to graduate fellowships to persons who may potentially serve as a nucleus for the development of local undergraduate facilities.

6.7 In the selection of candidates for fellowships, careful attention should be given to assurance that the Fellow will, upon return to his country, have the necessary facilities, equipment, and opportunity to work along the lines of his fellowship study.

## **7. Exchange of Scientific Information**

The committee considered the information presented to it on this subject and was advised that, while WHO could not establish libraries, it could give assistance where a nucleus of material existed so as to ensure that such material might become available to a large area. In this way various centres where libraries had been established could serve as focal points for the collection and distribution of scientific information. It was also agreed that every effort should be made to make the best use of modern methods of reproducing documents; microfilms provided a rapid and convenient way of dealing with the reproduction of teaching material and were of great value because of convenience of travel and storage. The

main disadvantage consisted in the provision of apparatus for reading the films and the inevitable difficulties inherent in screen reproduction. Where enlargement of films proved to be inconvenient, and especially when a scientific worker desired to have a copy of a rare article or reprint or a quotation from a relatively inaccessible book, photographic reproductions of the original text at full size were easy to prepare and convenient in use. These reproductions had the advantage of avoiding the risk involved in the transmission of valuable books or documents. WHO could readily organize services of this kind and have a programme for the supply of medical literature and teaching equipment to governments. Hitherto such literature had been confined to material which was not available locally and which could not be purchased with the currency of the country in question. Some time ago WHO had decided that the royalty rights for the translation of important books could be purchased. They could then be translated into the language of the country which required the book and distributed, under the authority of the government; in this way many copies could be distributed. The committee agreed that the collection and distribution of scientific information was a matter of urgent importance and that all modern methods should be used to secure this end because of difficulties in securing books or articles for translation. It was agreed that certain centres might be of special value in distributing literature of this kind; for example, the library at Prague could be a centre for abstracting scientific articles, etc., in the Slavonic languages. It was agreed that WHO could not be expected to set up an abstracting organization of its own but that it could render a great service to the world by co-ordinating existing organizations which published abstracts of one kind or another.

The committee took note of the collaboration with UNESCO on this subject.

WHO should also establish contact with existing libraries in the regions to find out what they required and what they could contribute. Highly specialized libraries, for example, could sometimes give information of use to the rest of the scientific world more easily than some of the large well-known general libraries.

There also arose the question of translating complete works from English and French into the Slavonic languages, and vice versa. This would obviously have to be done on a very selective basis on account of the great expense involved, but it was held to be none the less a very necessary service. It was further pointed out that one of the difficulties that had arisen in recent years in distributing scientific material was due to the fact that the methods of distribution in various countries were themselves faulty. For example, material published by WHO itself, when non-confidential in character, was sent to various governments but might

not reach institutions within the countries who would profit most by receiving them. Again, in some cases, health-teaching institutes came under the jurisdiction of one ministry, and scientific papers, etc., were sent to another ministry. Too often, the mechanism of distribution failed. In one country a school of hygiene had overcome some of the difficulties of distributing scientific literature by publishing a monthly newspaper dealing with the principal developments in the various fields of medicine. This newspaper was distributed free of charge to institutions and medical men who wished to receive it. The committee felt that it was of great importance to correct maldistribution wherever possible in order to economize in time and material. The committee realized that much of the information prepared by WHO was confidential in nature ; but, nevertheless, there were many documents which would be of great value to scientific institutions throughout the world. They therefore recommended that efforts should be made to increase distribution and to direct it along most suitable channels.

The committee endorsed, and recommended the continued development of, the work of WHO in organizing highly specialized teams to take part in study-groups and seminars, as a means of exchanging scientific information to promote research and further diffusion of recently acquired knowledge.

The committee agreed to recommend to the World Health Assembly the establishment of a subcommittee for the exchange of scientific information. It made this recommendation, in the first place, because of the continuing confusion which existed and the urgent need for a detailed examination of methods by which this exchange could be improved. In the second place, the committee felt that a difficult question of this kind required the detailed supervision of a small body which was devoting itself to the subject in all its aspects. And thirdly, the committee appreciated that many of the matters dealt with under this heading were highly technical and required the assistance and constant advice of the specialized officers of WHO who must inevitably receive a large amount of material for consideration.

#### **8. References to Training in Reports of Expert Committees of WHO**

The committee took cognizance of the various points raised in relation to the programmes of other expert committees. It desired to draw particular attention to its view that specialists in the various fields of preventive and social medicine should have passed through a basic training in public health. It was necessary, the committee believed, that they should be thoroughly acquainted with the social aspects of the diseases in which they specialized. Without this they would not be able to co-operate with

other public-health workers as a team. It was felt that there was a real danger of over-specialization in subjects that belonged fundamentally to public health, and the committee expressed the unanimous opinion that fellowships in special subjects should be given on the understanding that they were part of a general public-health training. In particular, the committee was strongly of the opinion that, just as a basic uniform education is indispensable for the qualification of a student in general medicine, so there should be a basic education for the public-health officer on which he builds up a sound knowledge of preventive and social medicine before proceeding along the narrow path of any speciality in public health. It was pointed out also that, while the more fully developed countries had been faced with very difficult problems of over-specialization, the risk was even greater in the underdeveloped countries where specialities might arise without any basic training at all. There was just as much need for a balanced postgraduate training in public health as for balance in the undergraduate curriculum. The committee, while fully recognizing the importance of special fields in public health, desired to underline its belief that such special subjects as mental health and industrial health ought to be based firmly on a general postgraduate training in preventive and social medicine.

In discussing the question of the training of the public-health officer in mental hygiene, the committee took the view that an adequate training in general mental hygiene should be part of the basic training in public health in all schools. It was further recommended that certain schools develop specialized advanced training in mental hygiene for health officers and nurses on an elective system.

In considering the report of the Expert Committee on Environmental Sanitation,<sup>9</sup> the committee agreed that a high priority should be given to the training of sanitary engineers, especially for service in the less developed countries. Stress was also laid on the need for the closest possible co-ordination between schools of public health and schools of engineering in the postgraduate training of sanitary engineers.

#### 9. Assistance to Educational Institutions

The committee agreed that great importance should be attached to the training of health personnel in their own countries, and against the background of their own problems—medical, nursing, social, engineering, etc.

Nevertheless, it was clear that in some countries a nucleus of personnel trained abroad would have to be created. From that point onwards the

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<sup>9</sup> *World Hlth Org. techn. Rep. Ser.* 1950. 10

training at home could get under way. The committee strongly recommended that assistance to educational institutions should also be included in the Technical Assistance Programme, because it would not be possible otherwise to raise the economic standards of living and the public health in a country. The provision of fellowships abroad was only a first step (although an indispensable one) towards the establishment and support of educational institutions in the underdeveloped areas themselves. Economic development goes hand in hand with the progress of a health programme.

#### **10. Provision of Additional Accommodation**

It was pointed out to the committee that in certain areas teaching institutions could render immense service to areas outside their own limits (e.g., by admitting students who would in their turn spread the benefits of education) if they could receive assistance from WHO in extending their teaching accommodation. It was appreciated that grants for buildings could not readily be made under the regular budget, but the committee felt that special consideration might be given to requests of this kind under the programme for technical assistance.

#### **11. Hospital Administration**

The committee was informed that fellowships in hospital administration were available but that the demand had been small. It was agreed that this type of award should be encouraged and specifically included in the fellowship programme.

#### **12. Programme of Technical Assistance for Economic Development**

The committee next considered the principal features of a programme for developing professional and technical education, with especial regard to the underdeveloped areas. The committee examined in some detail the means of offering technical assistance. It was agreed that this form of assistance should include the training of basic personnel in these areas. It was of great importance that schools in such areas should make the right start and develop along the right lines. Otherwise the lack of balance already noted in the medical and nursing curricula might become even more marked in areas in which proper teaching traditions were not well established.

##### *12.1 Instruction in administration*

For similar reasons it was urged that, when fellowships were awarded to promising students from these areas who were destined to undertake

specialized work (e.g., parasitology, malariology, etc.) on their return, the course of training during the fellowship should always include practical instruction in administration. It had happened not infrequently in the past that the holder of a fellowship had taken a highly specialized course in a scientific subject only to find, on his return to his native country, that he was expected to undertake administrative duties for which he was completely unprepared.

### 12.2 *Teaching of social medicine*

The committee further recommended that WHO should make special efforts to ensure that the teaching of social medicine be accorded major departmental status in the less developed areas, and that in the award of fellowships this should be constantly borne in mind, and not left to chance. However, as prevention and treatment of social pathology were generally effective in proportion to the existence of welfare agencies, it was essential that the importance of adequate welfare legislation, generally lacking in underdeveloped areas, should be brought to the attention of the appropriate organ of the United Nations in order that social medicine could be practised. It was relatively easy to award fellowships in the specific branches of science but hard to select men who had a progressive social outlook and were eager to do pioneer work in that field.

### 12.3 *"Team" fellowships*

The attention of the committee was drawn to difficulties encountered in some areas by specialists who had just completed a period of fellowship training. They were apt to become discouraged because they felt themselves alone and unsupported in promoting the new ideas and new methods they had brought back with them. For this reason it was recommended that in suitable cases—and especially in the less fully developed areas—a team of workers rather than an individual should be sent under a fellowship grant. This would ensure a sufficient nucleus of trained personnel for the development of a programme on sound lines from the start.

### 12.4 *Training of health students from underdeveloped areas*

In order that candidates for training should be able to take the best advantage of fellowship awards, it was essential that they should have a good basic education. It sometimes happened that a Fellow lost time to a serious extent by having to learn a language before being able to profit by his award. The committee was particularly anxious about the position of young nurses in training from relatively backward areas who were

bewildered by lack of basic education. It accordingly recommended that joint action be taken with UNESCO to provide :

(a) an appropriate period of language training for Fellows who would otherwise lose valuable time ;

(b) an intensive short course of general education to enable candidates for training whose basic education was defective to profit to the full from their fellowships.

It was suggested that these propositions should be made to the Technical Assistance Board jointly with UNESCO.

### **13. Draft Programmes for 1950 and 1951**

The committee then endorsed the draft programmes for 1950 and 1951 as a whole, laying special emphasis on the matters referred to above.

### **14. Co-operation with other International Organizations**

In the course of its discussions, the committee welcomed the opportunities provided for exchanging views with representatives of ILO, UNESCO, and the World Medical Association. With regard to the former, it was impressed by the need for joint action in many fields of endeavour, but especially in giving technical assistance to underdeveloped areas. The committee was further interested in collaboration for the production and distribution of teaching material, including books, films, scientific preparations, and instruments and equipment of various kinds. General approval was expressed regarding the work which WHO had already accomplished, and regarding the committee's proposals for further joint action with UNESCO and with the International Bureau of Universities, now in the course of formation.

### **15. Exchange of Personnel and Appointment of Visiting Consultants**

The committee considered terms for the exchange of scientific personnel and agreed that it would be desirable to start this as soon as possible, at least on an experimental basis. It was pointed out that visits of very senior consultant officers conferred great benefits on districts which they visited, especially when they were men who had already offered outstanding contributions to teaching or research. It was equally clear that no matter how senior the individual appointed might be, he had much to learn from the special characteristics and background of the areas which he visited.

### **16. Instruction in Teaching**

The committee considered the proposals for giving instruction in teaching methods but decided that no general recommendation should be made. They did, however, recommend that instruction in teaching methods should be considered, especially in underdeveloped areas where in new schools there was no body of teaching traditions. It was agreed that in the granting of fellowships not only the scientific accomplishments of the institutions to which a student might be sent should be taken into consideration but also its teaching methods.

### **17. Evaluation of Standard Designations for Personnel**

The committee felt that it would be impossible to present a schedule of standards applicable to every designation of the various groups of health personnel in one country and another. Difficult questions relating to levels of training of physicians, medical attendants, dressers, nurses, and nursing auxiliaries on the one hand, and sanitary engineers, sanitarians, sanitary inspectors, and many grades of technicians made the establishment of an international nomenclature virtually impossible. The committee, however, came to the conclusion that it would be both possible and desirable for a central organization like WHO to arrange for the compilation of a dictionary of nomenclature with a simple description of each kind of appointment in the health services in order that some reasonable comparisons could be made.

### **18. Recognition of Foreign Qualifications**

The committee agreed that it would not be possible to establish any universal standards for medical, nursing, engineering, or other technical diplomas. After discussion, however, it recommended that a distinction should be drawn between the recognition of a qualification for study purposes and the adoption of a qualification for remunerative practice. There was, in fact, in many countries a recognized distinction between the diploma conferring a scientific title and a diploma giving the right to practise. The committee felt that, in considering the qualifications of a candidate, the personality, ability, and experience of the individual should be regarded as more important than the formal status of the school at which he had received his primary training. In this connexion it was further recommended that objective descriptions of each and every school might be prepared as a document so that institutions making inquiries

could have some information on which to base their own conclusions. It was pointed out that descriptive directories of a similar kind had already been successfully published for many years in connexion with hospitals and other institutes. Such publications supplied a great deal of information and in relation to the committee's proposal a directory of teaching schools could at least give a simple description of the institution, the number of students and of full-time faculty, the subjects dealt with, and other material of this kind. It was agreed to recommend that such directories should be made available.

#### **19. Exchange of Information and Teaching Material among Institutes and Schools of Public Health**

In this relation several points were considered by the committee :

(a) Establishment of a clearing-house for the exchange of information among schools relating to teaching methods, general organization, numbers of students, and administrative matters generally.

(b) Exchange of up-to-date information on scientific matters such as publications, research findings, and the like.

(c) Establishment of a clearing-house for the distribution of scientific and other material which might be regarded as of value for teaching purposes. The committee had especially in mind the fact that at no great additional expense an institution that had published a scientific paper in a journal could distribute to a central clearing-house additional copies for schools in various parts of the world ; and further that when a scientific department was preparing specimens, e.g., valuable microscopic sections, it was virtually just as easy to prepare a considerable number of duplicates for distribution to other schools. The committee realized that direct transmission from institute to institute was undertaken in many areas, but it was of the opinion that the distribution was very irregular, and that frequently the less developed institutions (which were, therefore, in the greatest need of scientific material) were the least likely to benefit by exchanges and distributions. The committee accordingly recommended that consideration should be given to the establishment of a central clearing-house which, combined with a regional system, could arrange for a wide-spread distribution of such material as is referred to above, with special regard to the less developed institutions and schools.

Reference was made to the work of the Health Organization of the League of Nations in making it possible for teachers of public health the world over to have the same information and documentation on certain subjects, for instance, international epidemiology.

## **20. International Action on Increase of Production and Distribution of Teaching Material**

The committee considered it desirable and practicable for WHO to collaborate with international economic machinery in increasing production and improving distribution of teaching material. This would be done through collection and dissemination of information on availability and potential production capacities, by matching of requirements and availabilities of raw materials and equipment, through provision of technical information on production processes, and by overcoming of obstacles to circulation of goods.

## **21. Special Discussion at World Health Assembly**

The committee felt that it would be valuable to hold a special discussion on professional and technical education during the World Health Assembly. The presence of expert advisers at this time would be of general value also, as selected specialized and technical problems could receive more detailed consideration during this period.

## **22. Summary of Conclusions and Recommendations**

The committee approved in general the tentative outline for a long-term programme (Annex 1) (section 4).

The committee recommended the institution of standard methods for the assessment of schools of public health (section 4.1).

The committee suggested that a meeting of experts in undergraduate medical education be convened by the Director-General, with a view to examining the balance of the curriculum and defining the requirements as regards numbers of students and staff and the physical facilities for instruction (sections 4.1.1 and 4.1.2).

The committee agreed that preventive and social medicine should be a major subject in the undergraduate curriculum and that there should be a qualified social worker on the teaching staff (section 5.1).

The committee stressed the need for co-ordination of all the specialized disciplines that make up the field of public health (e.g., sanitary engineering, social work, chemistry, nutrition, statistics) (section 5.2).

The committee accepted as a general principle the view that training courses for public-health nurses should be co-ordinated with those provided for medical and engineering postgraduate students (section 5.3).

The committee agreed that adequate instruction in public health should be included in the postgraduate training of the engineer (section 5.4).

The committee agreed that the instruction of physicians and nurses in industrial health should be founded upon basic training in public health (section 5.7).

The committee recommended that a fellowship programme should be considered as one of the most valuable means of promoting international understanding and of improving health standards among the nations (section 6).

The committee agreed that the collection and distribution of scientific information was of great importance and that the work of WHO should be extended (section 7).

The committee recommended that the work of WHO in organizing highly specialized teams to take part in study-groups and seminars should be developed and extended (section 7).

The committee recommended that a subcommittee for the exchange of scientific information be established (section 7).

The committee expressed the opinion that persons intending to specialize in one of the branches of preventive and social medicine (e.g., mental health, industrial health) should first pass through a basic graduate course in public health, and that fellowships in special subjects should be given on the understanding that they were part of public-health training (section 8).

The committee concluded that adequate training in mental hygiene should be part of the basic training in public health, and that certain schools should develop specialized, advanced training in mental hygiene on an elective system (section 8).

The committee strongly recommended that the Technical Assistance Programme should include assistance to educational institutions (section 9).

It was pointed out to the committee that in certain areas teaching institutions could render valuable services outside their own areas if they could receive financial help under the Technical Assistance Programme to extend their accommodation (section 10).

The committee agreed that fellowships in hospital administration should be promoted (section 11).

The committee urged that courses of training provided under fellowship awards should, where appropriate, include practical instruction in administration (section 12.1).

The committee recommended that efforts should be made to ensure that, in the less fully developed areas, the teaching of social medicine was accorded full departmental status (section 12.2).

The committee recommended that in suitable cases—especially in the less developed areas—a team of students rather than an individual should be sent under a fellowship grant (section 12.3).

The committee recommended that joint action be taken with UNESCO to provide (a) language training for Fellows who would otherwise lose valuable time; (b) an intensive course of basic education for candidates who could not otherwise profit fully from the fellowships (section 12.4).

The committee endorsed the WHO programmes in professional and technical education for 1950 and 1951, including programmes for technical assistance (section 13).

The committee agreed that the exchange of scientific personnel be developed (section 15).

The committee recommended that instruction in teaching methods be considered in relation to fellowship students from underdeveloped areas (section 16).

The committee concluded that arrangements could be made for the compilation of a “dictionary” describing the functions of personnel in the health services (section 17).

The committee agreed to recommend that a directory of public-health schools and medical schools be prepared, giving short factual descriptions of each institute (section 18).

The committee considered it desirable that WHO should promote increased production and improved distribution of teaching material by various methods available on an international scale (section 20).

The committee felt that it would be valuable to hold a special discussion on professional and technical education during the World Health Assembly (section 21).

**Annex 1****A TENTATIVE OUTLINE FOR A LONG-TERM PROGRAMME  
IN PROFESSIONAL AND TECHNICAL EDUCATION****General Aims**

1. Attainment of highest possible standards of training of health personnel in all areas of the world.
2. Increase in number of medical, nursing, and other health personnel and of training institutions in countries and areas where necessary.
3. Increase in understanding of the public-health and social responsibilities in training of medical and auxiliary personnel.
4. Increase in understanding of internationally important aspects in training of public-health personnel.

**Anticipated Achievements Over Five-Year Period***Increased knowledge concerning :*

1. Standards and values of training in most countries and institutions of the world.
2. The estimated needs in various areas for types and numbers of necessary personnel.
3. Possibilities of meeting these needs by means of developing national training resources and pooling international efforts.
4. Best methods of training under different conditions.
5. Best standards of minimal teaching equipment.

*Projects such as :*

1. Working out international minimal standards of training. (Preparation of an international convention may be envisaged in the future.)
2. Setting up lists of international consultants available for advisory services and working out a system of arranging for such services.
3. Preparing national programmes for the development of training resources, with the assistance of WHO upon request.
4. Establishing, with the assistance of WHO, of a group of model schools for nurses and of training facilities for auxiliary personnel, par-

ticularly in less developed regions. At the end of the five-year period, such model schools should function in several areas where health progress is at present handicapped because of lack of training resources. (WHO will, in principle, assist national or regional schemes and not establish its own schools.)

5. Preparing, with WHO assistance when necessary, national programmes for the development of a network of collaborating institutions for training public-health personnel, in order to ascertain an amount of resources sufficient for training an adequate number of such personnel for all countries with insufficient training facilities. This network would consist of:

(a) national institutions set up with assistance of WHO;

(b) national institutions accepting foreign students (or researchers) for regular training;

(c) international departments of national institutions, or departments connected with them, especially adapted to the needs of foreign students;

(d) institutions set up by groups of countries or by non-governmental agencies;

(e) institutions established by intergovernmental agencies, e.g., the United Nations.

6. Developing machinery for contacts and exchange of experiences among training institutions, public authorities, international organizations, etc., by means of a clearing-house for information, periodic conferences of leaders of the training institutions, seminars, and publication of an international bulletin.

7. Developing an international system for advanced training in public health and in public-health aspects of medical work; periodic courses, study tours, seminars.

8. Developing a scheme for regular exchange of persons for teaching and training purposes. Such action, co-ordinated with that of other agencies—public and private—should provide, within a five- to ten-year period, for basic groups of teaching personnel for the development of model training institutions in all countries which need them. (The normal fellowships programme will continue.)

9. Assisting by granting of supplies, or aid in procuring them, of teaching material to countries in need, at least to model institutions set up with WHO collaboration and with reference to standards of minimal equipment.

### Working Means

1. Assistance to countries in the development of their own training resources (including exchange of personnel).
2. Utilization of training resources in some countries by foreign students and assistance in the expansion of these resources.
3. Assistance in establishment of training institutions of regional or international importance where necessary.
4. Sponsorship (or, occasionally, the organization) of conferences and other meetings.
5. Setting-up of corresponding working parties on methodology of training in each subject.
6. Encouragement of, or assistance in, the publication of a series of studies illustrating the world situation with regard to education and training of medical and other personnel.
7. Setting-up of a central clearing-house for information on technical training.
8. Co-ordination of surveys, or carrying out own surveys when necessary, to cover gradually all areas of the world in five years.

#### A. Suggested topics for surveys

##### 1. Medical education

- (a) Training resources of the world—data and description
- (b) Teaching curriculum and trends toward its reform
- (c) Analysis of scope and methods of instruction and of material covered in selected subjects
- (d) Postgraduate training, and training of specialists
- (e) Preparation of personnel for teaching and research
- (f) Medical licensure
- (g) Equipment and material used for teaching and training

##### 2. Studies of a similar nature on training of public-health officers, nurses, sanitary engineers, sanitarians, etc.

#### B. Role of WHO in such surveys

1. To indicate the necessity for such material and to invite all qualified agencies to take part in co-ordinated action ;

2. To work out a co-ordinated programme, to organize collaboration, to assign the topics to proper agencies or to ad hoc-created study-groups ;
3. To furnish, where appropriate, technical and material assistance ;
4. To carry out some surveys directly.

## Annex 2

**SUGGESTED BASIC REQUIREMENTS FOR A SCHOOL  
OF PUBLIC HEALTH**

1. Physical facilities should be adequate to provide suitable space for both staff and student body. Such facilities should include adequate space for class and laboratory instruction, as well as for research.

2. Laboratories should be suitably equipped with apparatus to permit each student to carry out appropriate essential procedures, and for research.

3. The student body should be limited to a number consonant with available instructional facilities and equipment.

4. The staff should be adequate in number and experience to provide instruction in each of the major subjects of the curriculum.

5. While full utilization should be made of staff of organized health agencies, there should be a nucleus of full-time teaching staff responsible for the basic curricular material.

6. The school should possess an adequate library of current periodicals as well as books of reference.

7. There should be adequate practice facilities in which the student can obtain practical experience under qualified supervision.

8. The programme of instruction should be adequate to provide the student with a comprehensive understanding of the broad programme of public health as well as with his particular field of professional interest. Experience has shown that such training should include basic instruction in public-health practices, epidemiology, statistics, sanitation, microbiology, and health education of the public, and should be supplemented by adequate instruction in the mental and sociological aspects of health maintenance.

As a supplement to these criteria, which are considered essential for any school of public health in any part of the world, the committee would call more specific attention to the criteria for accreditation of schools of public health adopted by the American Public Health Association and to those of the National Organization for Public Health Nursing for the accreditation of programmes of study in public-health nursing, to the statutory requirements for the Diploma in Public Health in Great Britain and France, and to the requirements for public-health officers in several

other countries. The health departments of several countries also lay down standards for various categories of health workers, including health visitors and sanitary inspectors. The committee would also direct attention to the proposed standards adopted by the American Public Health Association for the desirable training for health officers, public-health engineers, public-health nurses, public-health dentists, health educators, laboratory workers, industrial hygienists, nutritionists, and others. While it is realized that these various standards are not always immediately attainable, even in the country of their origin, or suitable for all countries, they are presented as desirable goals toward which training programmes may be directed.

**Annex 3****MEDICAL PERSONNEL : ESTIMATED RATIOS**

There are only a few countries in which the qualifications and registration of each type of auxiliary medical worker are as well controlled as in the practice of medicine and dentistry. Many countries regulate one or more categories, but not all, and in several countries some categories are entirely lacking.

Nursing is so far the only profession in which numerical requirements have been determined from job analyses. The estimates for other groups are determined to a greater or lesser extent on an empirical basis. Those for pharmacists, physical and occupational therapists (except in the mental field), medical record librarians, and practical nurses have not been determined even empirically. A considerable bibliography has developed for the other professions, particularly for physicians.

The following figures with the exception of English <sup>5, 9, 11, 12</sup> and Australian <sup>4</sup> estimates on physicians, are from United States sources <sup>1, 2, 3, 7, 8</sup>. The figures presented are no more than an approximate mean of available empirical estimates. The general purpose is to draw attention to the need of basing legislative planning on estimates of personnel requirements. These figures are not to be taken as recommendations. Also, it is obvious that personnel requirements must vary considerably from country to country, depending upon such factors as the economic level, whether medicine is practised on an organized or an individual basis, the quality of medicine being practised, etc. The important point to be borne in mind in formulating requirements for personnel is that increasing co-ordination of services and group practice, made possible through growth of prepayment for medical care, will result in a decrease of the present requirements because of the greater efficiency which follows planned and co-ordinated services.

**Medical Personnel Requirements**

General practitioners . . . . .	1 per	1,500 population	
Surgeons . . . . .	1 ,,	10,000	,,
Eye, ear, nose, and throat specialists . . . . .	1 ,,	15,000	,,
Gynaecologists and obstetricians . . . . .	1 ,,	20,000	,,
Internists . . . . .	1 ,,	30,000	,,
Paediatricians . . . . .	1 ,,	30,000	,,
Roentgenologists . . . . .	1 ,,	60,000	,,
Urologists . . . . .	1 ,,	65,000	,,
Pathologists . . . . .	1 ,,	100,000	,,
Orthopaedists . . . . .	1 ,,	100,000	,,
Dermatologists . . . . .	1 ,,	100,000	,,
Psychiatrists . . . . .	1 ,,	100,000	,,

*Note* : Services are calculated at the rate of 2,000 hours per annum.

**Dental Personnel Requirements**

	<i>Number per 100,000 population</i>
Dentists . . . . .	99*
Hygienists . . . . .	45
X-ray technicians . . . . .	27
Laboratory technicians . . . . .	18

\* Provided there is an auxiliary staff. (This estimate is based on data taken from reports of the Committee on the Costs of Medical Care 6, 10).

The type of patients admitted influences the nursing ratio. Hospitals caring for ambulant, convalescent, and chronic patients may give adequate care on the basis of a ratio as low as one nurse to 60 patients, although this is exceptional. In the extremely active hospital, a ratio of 1 nurse to 1, 1½, or 2 patients may be necessary.

**Ancillary Personnel Requirements**

Medical social workers . . . . .	1 per 200 general hospital admissions or 2,000 outpatients (per annum)
Psychiatric social workers . . . . .	2 or 3 to each psychiatrist or 1 per 500 outpatients (per annum)
Dietitians . . . . .	1 to each 100 occupied beds
Clinical laboratory and x-ray technicians . . . . .	1 to each 100 beds

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