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**RECOMMENDED REQUIREMENTS  
FOR SCHOOLS OF PUBLIC HEALTH**

**Tenth Report of the Expert Committee  
on Professional and Technical Education of  
Medical and Auxiliary Personnel**

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**WORLD HEALTH ORGANIZATION**

**PALAIS DES NATIONS**

**GENEVA**

1961

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

*Geneva, 12-16 December 1960*

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\* In the course of the discussion of special topics, contributions were also made by Secretariat members for Communicable Diseases, Public Health, Environmental Sanitation, Nursing, and Health Statistics.

## **RECOMMENDED REQUIREMENTS FOR SCHOOLS OF PUBLIC HEALTH**

### **Tenth Report of the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel**

The WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel met in Geneva from 12 to 16 December 1960. Dr E. L. Stebbins was elected Chairman; Dr V. V. Ermakov, Vice-Chairman; and Dr N. Jungalwalla, Rapporteur.

Dr P. M. Kaul, on behalf of the Director-General, opened the meeting. He referred to the long-standing interest of the World Health Organization in the teaching of preventive medicine and public health, both during and after the completion of the studies in medicine, as exemplified by a number of meetings which were regional in character. The present meeting is world-wide in coverage, but it is to be limited to a much more specific subject: the post-graduate education given by schools of public health.

It is hoped that the material prepared for the Committee and the confrontation of its own experience will permit it to conclude that certain elements are common to most schools of public health, and to make recommendations on what might be considered as requirements for such institutions. These recommended requirements should not aim at achieving uniformity, but rather at securing a solid foundation and framework for schools of public health, where distinctive features and characteristics can nevertheless find expression as required by local conditions. These recommendations would be of great value also to the World Health Organization in its assistance to countries both for the development of their own institutions and for the training of their personnel abroad.

#### **1. BACKGROUND**

An earlier Committee, discussing the "Foreign Student and the Post-graduate Public Health Courses", had made recommendations on "Developing World-Wide Minimum Requirements or General Guide Lines for

Post-graduate Public Health Training".<sup>1</sup> They included the following:

"... the Committee suggests that WHO undertake, with the co-operation of the schools and national health administrations, to study the present development of the schools of public health and the degree to which they are meeting the world needs for health personnel.

Following such a study the Committee recommends that detailed proposed standards of minimum requirements for schools of public health be prepared and discussed at an appropriate meeting. These, if agreed, will be of undoubted value in assessing the present schools and in providing guidance for the establishment of new ones."

In the two-year interval, a questionnaire was prepared, which was tested by three schools of public health—one in Europe, one in North America and one in Asia. It was then distributed to some fifty schools of public health and institutions fulfilling a similar purpose, in 32 countries. The material received from 44 institutions was then grouped and tabulated, and permitted the drawing-up, in rough lines, of a picture of the schools of public health as background information for the Committee.

## 2. DEFINITION OF A SCHOOL OF PUBLIC HEALTH AND GENERAL CONSIDERATIONS

### 2.1 Definition

Before discussing the various considerations about public health training and the institutions in which such training is usually undertaken, it appeared necessary to agree on a working definition of a "school of public health".

While it was recognized that a number of institutions undertook training courses leading to a post-graduate diploma in public health, as well as non-graduate teaching courses, the Committee agreed to limit its discussion to those institutions which primarily offered a post-graduate training programme in the field of public health usually of a minimum period of one academic year. The student body might include not only members of the medical profession, but also those of the different professions concerned in the field of public health.

After discussion, the Committee accepted the following working definition for a school of public health: "an institution with adequate resources which, in addition to research in public health and service to the community, provides a full-time course lasting not less than one academic year, or its

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<sup>1</sup> Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (1959) The foreign student and post-graduate public health courses. *Wld Hlth Org. techn. Rep. Ser.*, 159, 19.

equivalent, covering the subjects essential to the understanding of the various problems of public health and the concepts, organization and techniques required for dealing with them, and which is open to members of the medical and allied professions seeking qualifications in public health”.

## 2.2 Objectives

### 2.2.1 *Training*

The main objective of a school of public health is the preparation of medical, and possibly a variety of paramedical, personnel required to work in public health programmes of the country in which the school is located. Many schools, however, have the additional responsibility of serving as training centres on a regional and even wider, international level.

Many factors may have an influence on the programme of the school, such as the public health setting, the concept of health care, the organization of health services, the socio-economic conditions of the country, and the level of previous education and training of potential candidates. If other professional workers, in addition to medical personnel, were to be trained, it would be of definite advantage if the different groups undertook their training together as often as feasible, even though their programmes might be different. The bringing together of various groups during the training period leads to a mutual understanding of the role of each participant in the public health programme, and the promotion of the “ team ” approach in public health.

The training of persons qualified in medicine to work in public health is, however, the main function and common denominator of schools of public health. For these persons public health should be regarded as a specialty and the requirements for a specialist in public health should be comparable to those established for clinical subjects. The academic training of one year is an indispensable part for recognition as a specialist, but additional training and experience in public health is necessary. This is similar to requirements in the clinical specialties, where an academic qualification and suitable experience under competent guidance of varying duration are required before an individual can be accepted for recognition as a specialist.

The Committee noted the trend in a number of countries all over the world to equate the status and remuneration of specialists in public health services with those in other fields. It also noted that training in the administrative aspects of medicine are now being increasingly desired by individuals of experience in varying specialties (e.g., internal medicine, paediatrics, psychiatry), who are called upon to undertake administrative responsibilities.

Whether it is desirable that experience in public health should be obtained before admission to the school of public health, or after, or both, is a matter of circumstances. In view of the need to draw suitable candidates to public health, and the general experience in a number of countries of the difficulties in attracting young medical graduates, it is not possible to stipulate that previous experience must be an essential requirement before undertaking an academic course. Prior experience in public health, however, is beneficial and, wherever circumstances permit, candidates with such experience should be given preference for admission to courses in public health.

The criteria and method of selection of students by various schools were reviewed and the recommendations of an earlier Committee were noted.<sup>1</sup> The academic background and record of the student, as well as experience and previous training in the field, were some of the main criteria for selection. For a mixed class, medical and paramedical, selection was usually among individual candidates from the same group in order to obtain a judicious distribution.

The student body in many schools has varying proportions of foreign students, and different criteria for their selection were discussed, including a good knowledge of the language of instruction. Steps taken by agencies sponsoring studies abroad with regard to language tests and special language courses were noted. Special attention should be paid to train teachers for countries where new schools are developing.

The faculty should be actively concerned in the selection of all categories of students admitted to schools of public health whatever the origin of the candidates, foreign or nationals, either seeking admission as individuals or designated officially, and should not relinquish its authority for weighing and deciding their acceptance in the best interests of the whole student body.

Reference was made to possible contributions of the school of public health to the training of medical students—a matter of great importance at least until such time as the medical studies have been adequately orientated towards preventive medicine in all schools. This, however, was outside the terms of reference of the Committee. There is no doubt, nevertheless, that the school of public health should, whenever occasion arises, contribute to the teaching of preventive medicine, hygiene and public health not only to students of medicine, but also to those in related schools—dental, veterinary, nursing, midwifery, engineering, etc., and teachers colleges.

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<sup>1</sup> Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (1959) The foreign student and post-graduate public health courses. *Wld Hlth Org. techn. Rep. Ser.*, 159.

The Committee then explored what personnel, other than medical graduates, a school of public health is often called upon to train. Various schools of public health provide for meeting the needs for post-graduate public health training of more than one of the following categories of personnel, this list not being all inclusive :

Physicians	Medical administrators
Engineers	(including hospital administrators)
Dentists	Sociologists
Chemists and pharmacists	Health educators
Veterinarians	Statisticians
Nurses	Sanitarians

It was agreed that although a requirement for admission of other than medical personnel should be prior university qualification or its equivalent, this may not be possible with all categories of paramedical personnel. It should not preclude their admission to courses organized by the schools of public health, if this is in the best interests of public health. If students have entrance qualifications acceptable to the school and satisfactorily complete the prescribed course in public health, the general one or a special programme for their group, they should be awarded the appropriate diploma or degree.

The Committee then made recommendations with particular reference to the training of a few of these groups.

#### 2.2.1.1 *Public health engineers*

There are varying practices in fulfilling the training requirements for public health engineers. Some schools of engineering have courses leading to a degree in sanitary or public health engineering. In some schools of public health the degree awarded to engineers is one in public health engineering rather than in public health.

While an engineer may be adequately prepared for some of the courses in a public health curriculum such as, for example, statistics, it may be necessary to undertake special teaching arrangements for other subjects, such as microbiology, epidemiology.

In general, post-graduate training for engineers in schools of public health should aim mainly at orientation in public health rather than engineering practice.

#### 2.2.1.2 *Public health nurses*

The Committee noted the recommendations of the Expert Committee on Public Health Nursing (1958)<sup>1</sup> that the public health nurse should

<sup>1</sup> *Wld Hlth Org. techn. Rep. Ser.*, 1959, 167.

be prepared in basic schools of nursing, and that many schools of nursing were giving public health training to nurses.

Schools of public health have a definite role in the advanced training of this important category of public health workers. The selection of candidates for entrance to schools of public health should be limited mainly to those requiring further preparation for leadership in teaching, supervision or administration.

#### 2.2.1.3 *Dentists*

A course leading to a diploma in public health or in public health dentistry would be useful for a number of dentists with administrative responsibilities, for example, a director of a public health or dental hygiene programme, and for those concerned with epidemiology of dental disease.

#### 2.2.1.4 *Veterinarians*

The veterinarians' educational preparation is especially useful in grasping principles of public health and for contributions in such fields as the production of vaccines, immunization and other measures of communicable disease control, morbidity surveys, etc.

There is definite indication for admitting veterinarians to schools of public health, especially those responsible for the administration of veterinary programmes on a national or more restricted level, the control of zoonoses, etc. Their participation in seminars, refresher courses, etc., together with other members of the public health "team" of workers, would have an additional advantage.

#### 2.2.1.5 *Hospital administrators*

With the changing concept of public health in various countries, and the development of medical care programmes for the entire population or for special groups (such as the low-income group, the chronically ill, the aged, etc.), hospitals, nursing homes and rehabilitation centres are becoming increasingly important in public health programmes. A well trained hospital administrator, whether medical or non-medical, has an important role to play in developing adequate health services for a community.

Schools of public health have a responsibility to provide training for such individuals, so that an adequate balance may be achieved in medical care and health programmes.

#### 2.2.1.6 *Health statisticians*

Since reliable statistical information constitutes an important basis for sound health activity, schools of public health should train qualified

personnel to serve as health statisticians in local and national health services. They should be prepared specifically for the following tasks: (a) administration of statistical services; (b) analysis and interpretation of data; (c) presentation and utilization of data.

#### 2.2.1.7 *Teachers of preventive medicine and of related subjects*

Schools of public health may assist in the teaching of preventive and social medicine in the medical schools, both directly and through the development of training programmes for teachers of preventive and social medicine. The latter is especially valuable for those countries where the rapid development of medical educational institutions has resulted in a general shortage of trained teaching staff. Schools also have a contribution to make in the preparation of teachers for other professions in which prevention and public health are important elements.

#### 2.2.2 *Research*

The Committee was of the unqualified opinion that a school of public health which does not carry out research does not meet its obligations. It discussed the particular significance research has for schools of public health and for attracting high-calibre staff. A previous Committee has already emphasized the role of community and administrative research as a method of post-graduate education in public health.<sup>1</sup> The Committee was informed of the conclusion reached by a special scientific group on various areas of research in public health practice that would be highly desirable, and could best be carried out in conjunction with medical schools and schools of public health.

In addition to the usual type of laboratory research, schools of public health are particularly suited for the promotion of operational research in matters pertaining to efficiency of organization and administration, cost of health services to the community, most appropriate staff and its training for various functions, etc. Adequate financial support is urgently needed for both types of research.

Attention to research should not be pushed so far as to affect unfavourably the teaching and service responsibilities of the school. One time-study indicated that one-third of the total time of the staff was devoted to research, but the involvement of individual members of the staff may range from nil to complete.

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<sup>1</sup> Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (1959) The foreign student and post-graduate public health courses. *Wld Hlth Org. techn. Rep. Ser.*, **159**, 18.

### 2.2.3 *Service to the community*

An important function of a school of public health is service to the community. There are many examples of services rendered by schools of public health in various parts of the world, some of which have led to nation-wide programmes. These have ranged over a wide field of public health activities, such as : malaria control programmes leading to a national organization for malaria control ; model health centres leading to the establishment of such centres by law, or as part of a national health plan ; epidemiological services ; consultation on industrial waste disposal ; serving as reference centres for the country in certain fields ; consultative services to local and national authorities, etc.

In some countries, there are other arrangements for obtaining such services. Nevertheless, the Committee agreed that this was an important responsibility of a school of public health, with due caution that participation in such activities does not restrict the teaching and research programme of the school.

### 2.3 **Estimating the need**

The Committee discussed the elements entering into an estimate of a country's needs for a school of public health. These include the size of population ; linguistic and cultural characteristics ; the number of those qualified in the medical and allied professions from whom candidates for post-graduate training would be forthcoming ; the present plan and future trends of organization of health services.

Further, the number of suitable candidates to be attracted to such post-graduate training depends on the career opportunities offered, salary level, prospects of promotion, study leave, etc. It also depends on the output of existing schools of public health, in the country or abroad, because successful alumni themselves create a realization of the needs for such personnel and thereby further demands for post-graduate education. All these are elements tending towards a consistent demand for training, as is offered by schools of public health—not to mention the research and service needs.

There are probably about 60 schools of public health in the world. The 41 schools from which data were available have an enrolment of almost 2500 students in all the courses leading to diplomas, degrees or certificates. The number of both schools and students seems inadequate for the needs.

Wherever human and material resources exist, every effort should be made by countries to develop the number of schools necessary to meet the needs for post-graduate education in public health. The optimum number of candidates for the public health degree or diploma which a well established

institution could properly train is one of the criteria determining whether a new or additional school should be established.

It is difficult to define the optimum number of students per school. The range of candidates admitted annually to different schools for the post-graduate course leading to a degree or diploma in public health is wide and varies from 6 to over 100 per year. After consideration of all relevant factors, it was agreed that 30-50 candidates per year, for a course leading to a degree or diploma, constitutes an optimum range of admissions for a well equipped school of public health. Where the number of students is consistently more than 50 per year, and provided other circumstances justify it, consideration should be given to the development of additional schools of public health.

Under certain conditions, countries may pool their resources to develop a training institution to serve their collective needs. Examples of such a multi-country effort, in this and in other fields of training, exist in different parts of the world.

### **3. ORGANIZATION AND ADMINISTRATION**

Schools of public health have been established on a different basis in different countries and occupy various positions in the educational and governmental structure. A variety of structural and administrative patterns have been evolved to ensure effective co-ordination between the academic, governmental and other responsible agencies. The Committee recognized this diversity of organizational patterns, which were appropriate to national conditions. The essential is that the pattern should be such as to provide an adequate framework for the operation of sound educational programmes, as well as the undertaking of the other responsibilities of the institution.

The Committee considered some elements in the organizational pattern which were found important in many situations. These are: (1) the legal status of the school; (2) the existence of a governing board; (3) the existence of a technical council or faculty; and (4) the function of the chief executive officer (director or dean). The role of each one of these, as well as the organizational structure, finance and some other considerations, is discussed below.

#### **3.1 Legal status of schools of public health**

A school may be founded in various ways: through legislative action or governmental decree, a university charter or statute; as an autonomous body or as a department of a medical school; through the joint effort of a number of provinces or countries to serve regional requirements; or as a development of a research or other national institute.

A statute for the school, however it may be established, provides the necessary authority for the functions the school is to perform. It outlines its general organization and functioning, including the method of appointment of the chief executive officer (director or dean) and staff of the school. It clarifies the school's relations with other authorities concerned (ministries, universities, etc.), defines the sources of its income and provides authority for subsidies. The statute should not aim, however, to prescribe in detail organizational, administrative, financial and educational matters.

### **3.2 Governing board**

Although it is necessary for a school of public health to have an adequate degree of administrative, financial and technical autonomy, it may not be advisable to place all the responsibility in the hands of an individual—the chief executive officer of the school—even though assisted by an able faculty. Some schools have met this need by having recourse to a governing board.

Besides, it is often desirable to associate in the policies of the school those authorities who have a direct concern in it, such as the ministry of health and the university. These authorities have a very valuable and important contribution to offer, even in the development of the educational programmes, and it is essential that their participation be ensured. Most schools have achieved satisfactory collaboration through various formal committees and councils.

The constitution and the terms of reference of the Governing Board vary according to circumstances and find expression in the statutes.

### **3.3 Faculty council**

The Committee discussed the extent of authority desirable in schools of public health to develop the educational requirements for a degree or diploma. It was generally agreed that in the development of such programmes, the faculty of the school should have the maximum authority and flexibility to develop the curriculum and introduce new courses to meet developing needs.

### **3.4 The function of chief executive (director or dean)**

An important consideration for any institution is the manner of selection and appointment of its director or dean and the authority vested in him. Within certain limitations set by the statute and the governing board, the director or dean, with the advice and assistance of the faculty, should decide on all organizational administrative, financial and educational matters. His methods of selection and appointment should, as far as

possible, be such as to permit action independent of irrelevant considerations and personal relations.

The selection is made by the governing body, the faculty council, the head of the medical faculty, or by a civil service commission, etc., and usually follows the pattern of selection of heads of similar institutions of the country in which the school is located. The appointment is usually made by the university or government. The duration of the appointment also varies. In some cases this may be a fixed term of varying duration, while in others no time limitation is set.

The dean or director should, of course, be selected on the basis of experience and competence in the field of public health, preferably with some teaching experience, and his appointment should be for a period of duration sufficient to ensure the planning and execution of long-range programmes of the school.

### **3.5 Organizational structure**

The Committee discussed the essential organizational requirements of a school of public health, in order that it may adequately undertake its responsibility of training, research and service to the community. It recognized that the division of the school into units varies, that the staffing pattern of departments, even in the same institution, may vary widely, and that the facilities in subdivisions of some departments may be greater than those in actual departments in the same institution.

The Committee nevertheless concluded that a school of public health should be organized to provide teaching, research and service in at least five major areas of public health, namely : (1) public health administration : principles and practice ; (2) health statistics ; (3) epidemiology ; (4) environmental health ; and (5) microbiology.

### **3.6 Finances**

There are various sources from which schools of public health obtain financial support. They include governmental or university appropriations, funds from local councils and other similar bodies, tuition fees obtained from students or authorities sponsoring them, grants from international and other agencies, and funds received for specific research.

The relative importance of each of the sources of funds varies, of course, from school to school and may also change with time. The Committee heard with interest of the increasing support from government funds for schools of public health, even for long-established ones. In some instances, the aid has increased very substantially over the last decade. Since a large number of students are employed by national and other

governmental agencies, governments have a direct interest in ensuring the adequacy of training programmes.

It was generally agreed that governmental support for schools of public health, in order to provide sound education, research and service programmes, was essential. Such assistance should not preclude the receiving and utilization of funds by the school from private and other sources, such as endowments, donations and gifts.

While the Committee was not able to indicate any average costs of financing schools of public health, it appeared that such training facilities are as costly as those for other forms of professional education, and may even be higher. This is not surprising in view of the high faculty to student ratio required for adequate teaching and supervising duties, and the necessity for limiting the number of students admitted annually in order to obtain the highest effective level of teaching.

#### 4. FACILITIES AND TEACHING STAFF

Apart from an adequate and experienced faculty, facilities which are essential for a school of public health are obviously classrooms, laboratories, library and, also, field areas where students may observe and participate in practical work—as well as administrative offices.

Other facilities which are at times necessary, or simply desirable because of opportunities for informal group education, are residential accommodation for students and staff, students' common-rooms and eating facilities. Transport facilities for students and staff (especially for field training programmes) are also desirable.

##### 4.1 Buildings and equipment

While the Committee recognized that where the establishment of new schools is concerned, it is desirable to use maximum economy and even to start on a modest basis, yet the necessity for a school of public health to be provided with adequate accommodation of its own cannot be over-emphasized. The utilization of facilities of neighbouring institutions, where circumstances necessitate, may be useful, but is at best a temporary expedient.

A school of public health should be self-sufficient with regard to adequate accommodation for its own requirements. In the planning of buildings and equipment, and the organization of the work, however, every effort should be made for the maximum use of facilities, as, for instance, laboratories for combined subjects.

A well equipped library is essential. While this may be shared with the medical school or other medical institution, it is desirable that an adequate and complete collection of reference works, journals and textbooks be available for students and faculty alike.

#### **4.2 Faculty**

The Committee discussed the most important element in any educational institution—an adequate and competent staff. In an attempt to limit itself to the minimum, it agreed on the necessity for schools of public health to have full-time staff for at least the five major areas enumerated previously. It appreciated that, in some instances, and specifically in the field of public health practice, there may be a need for and an advantage in having the same person combine the function of administrator of a health service (not necessarily the head of it) with that of faculty member. Where, however, this is the practice, a more junior but academically qualified full-time staff should be added. The minimum professional full-time staff is assisted and supplemented as required by other full-time personnel or part-time teachers (lecturers, etc.), for the five major areas of study and any additional subjects.

The Committee reviewed the information available and noted that in most schools of public health a high ratio of teachers to students was achieved. Apart from the requirements for research and service, this is necessitated by the introduction of various modes of teaching, other than lectures, such as joint faculty courses, seminar type of instruction, tutorials, supervised practical training, etc. The general ratio of three students per full-time staff member or equivalent may be taken as a basis for calculations.

There is no need to stress that teachers in schools of public health should meet the highest educational standards required of teachers in other subjects in the university or equivalent institution of higher education. Selection for appointments may be made after open advertisement, or by invitation and after the faculty or other body has reviewed the best available candidates in the specialty.

The Committee discussed the qualities necessary and the preparation for academic teaching and, in this connexion, noted that it usually includes acquisition of competence through a succession of progressively higher appointments which, in some countries, is based on a system of requirements for specific academic titles.

#### **4.3 Field training areas**

The Committee's discussion emphasized the value of field training areas as part of the facilities available to the school. It noted the attention

paid to the matter by an earlier Committee<sup>1</sup> and the importance given to such training by most schools of public health. Some schools have made suitable adjustments in curriculum—a few extending the duration of the academic year—to permit an adequate exposure of the student, on an elective or required basis, to suit the requirements of candidates with varying prior practical experience.

Unless the training area is administered by the school, the relation between the operating agency and the teaching institution requires to be close, and is often delicate; the basic responsibility of the government or local authority for medical and health services for the area cannot be ignored. The school should be prepared to assume financial responsibility for the teaching component of such service, as a joint development of such areas is highly desirable in the interest of both service and teaching programmes.

In many cases, staff of the training area, including the chief medical officer or director, might be appointed jointly by the two authorities, and suitable service personnel may also hold part-time paid academic appointments at the school of public health.

The training itself may be limited and mainly observational, or gradually lead to active participation, either during the academic or in the post-academic phase. Whatever it is, it is essential that such training be well planned and organized, with provision for adequate supervision of the students by competent staff responsible to the educational institution.

The Committee noted with interest the plans for a “residency” type of training programme in public health in one country, and a similar pilot programme by certain local authorities in another.

In view of the increasing importance of effective practical training programmes, the Committee recommended the topic for a further confrontation of opinions, after a study of the developments in this field.

## 5. ORGANIZATION OF THE CURRICULUM; CONTENT AND METHODS OF TEACHING

### 5.1 General considerations

In order to determine the content of the curriculum, the methods by which the needs of students, as well as those of the health services of the country, could be ascertained, were discussed. It was also recognized that one of the responsibilities of schools is to be aware of evolving and

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<sup>1</sup> Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (1959) The foreign student and post-graduate public health courses. *Wld Hlth Org. techn. Rep. Ser.*, 159, 15.

possible future needs, and to take the initiative in incorporating into the curriculum the newer concepts and developments in the field of public health.

Methods of ascertaining the needs of students (and some reference to organization of the curriculum content and methods of teaching) have been discussed in more detail by an earlier Committee.<sup>1</sup>

The faculties should evaluate their curricula systematically. Many of the schools have developed their own mechanism in which the faculty review and recommend changes in curriculum for approval by the respective administrative body concerned with academic matters.

## 5.2 Organization of the curriculum

In recent years the scope of public health has expanded and there is often need for specialization in certain areas within the broader specialty of public health, as, for example, in maternal and child health, mental health, international health, venereal disease and tuberculosis control.

The Committee discussed whether it is desirable and possible, within the course lasting one academic year, to provide for a student to pursue special studies in an elected field in which he desires further training. It noted that a number of schools provide such facilities by allowing the students to choose from among some elective subjects in the course. The time allowed for electives varies according to schools, reaching up to 72% of the total, but the most prevailing proportion is about one-third, the major part of the course consisting of "core" subjects. These latter are the subjects of study required for all students enrolled to take the degree or diploma in public health.

It was the Committee's opinion that the academic and practical training lasting one academic year should be mainly for basic training in public health. Nevertheless, in a general course of public health, time should be allowed for meeting, to a certain extent, the particular interest of students—who may have had training or experience in some special field. This does not provide, however, for real specialization; to achieve the latter additional training beyond the one academic year is necessary.

## 5.3 Content of the curriculum

While local considerations may require in some schools of public health the inclusion of subjects of regional and local importance, or subjects of universal importance, but which have only recently developed in

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<sup>1</sup> Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (1959) The foreign student and post-graduate public health courses. *Wld Hlth Org. techn. Rep. Ser.*, 159, 10.

response to public health needs and problems, the Committee made the following recommendations on the content of the five major areas of study mentioned previously, which should include :

### 5.3.1 *Public health administration : principles and practice*

(1) Orientation in public health ; its evolution and philosophy ; principles of preventive and social medicine (including the social environment).

(2) Public administration, budgeting and finance ; elements of sociology.

(3) Methodology in medical administration and economics ; planning and evaluation.

(4) General organization in public health, with reference to efficiency and experience from comparative international data.

(5) The country's organization of health services ; public health laws.

(6) The health team ; the role of each member in the various disciplines, including that of auxiliaries ; supervision.

(7) The major public health problems and organization to meet them, actual as well as potential.

Various factors influence the development of health practice and the concepts of public health in various parts of the world. The administrative organization and the political, cultural, socio-economic and demographic patterns have a marked effect on the health programmes of a country. Material from sociological and other studies of conditions that have influenced the development of health services in different parts of the world would be valuable for a foreign student studying in various countries, as well as for those responsible in his country for international health and other similar programmes. Attention needs to be paid also to international conventions and regulations.

### 5.3.2 *Health statistics*

A course in health statistics should aim primarily at giving the student an orientation towards a population as the unit of public health, a concept of quantification and some skills in elementary statistical techniques.

The material included in this course should cover :

(1) The " why " and " how " to assemble the needed statistical information, touching upon various circumstances (legal, administrative and social) which affect the collection and comparability of data in different countries.

(2) Interpretation of data, stressing comparability and adjustment of rates and ratios, and concepts of variability, correlation and sampling.

(3) Presentation of data, including the use of charts, diagrams, graphs and tables.

(4) Description of modern developments in methods of data collection, analysis and presentation.

#### 5.3.3 *Epidemiology*

(1) The concept of biological environment.

(2) Methods of studying epidemiology.

(3) The application of these methods to the study of the natural history of disease and disability in a population group.

(4) Applications in the control of disease.

Quantitative methods are also now being successfully employed in the epidemiological study of many problems of public health importance other than communicable diseases. These vary widely and may include, for example, the study of accidents, the psychoses and other mental health problems, the acceptance or otherwise of immunization procedures, motivation for family limitation, etc.

#### 5.3.4 *Environmental health*

(1) Applied physiology.

(2) Water supply ; sewage and waste disposal.

(3) Food sanitation.

(4) Rodent and vector control.

(5) Air hygiene.

(6) Housing ; principles of town planning.

(7) Accident prevention.

(8) Occupational health.

(9) Radiation protection.

#### 5.3.5 *Microbiology*

This course should emphasize preventive rather than disease aspects and the interpretation of laboratory procedures, and should cover :

(1) Organisms, including viruses concerned in the communicable diseases.

(2) Body responses to microbial infections, including principles of immunology and serology and their application in public health.

(3) Public health applications in the practice of bacteriological laboratory procedures.

(4) Public health applications in the examination of food, milk and water.

(5) Parasitology.

#### 5.4 Teaching methods

As with other features of schools of public health, educational practices in various institutions differ.

There is a wide range of time spent in various forms of teaching. An analysis of information provided by 28 schools indicated that the time spent in lectures varied from 35% to 65%, with an average of 45%; in discussions, seminars and visits from 6% to 28%, with an average of 20%; in laboratory work from 11% to 29%, with an average of 21%; and in field work from 3% to 26%, with an average of 14%.

There was general agreement that all the above methods of teaching have a place in the schools of public health, and that the choice of methods used depends on several factors, such as the background and previous preparation of the student, the subject-matter and the faculty experience and preference.

A point was made of the difficulties experienced when a faculty attempts to use certain methods without adequate preparation. It was recognized that a great deal of planning and joint conferences are essential in the adoption of techniques in which there is little previous experience.

Reference was also made to the use of the museum and audio-visual aids, such as films, television, etc., in teaching.

It was generally agreed that the presentation by students of a study of a problem in the form of a written or oral thesis or dissertation is of definite value. The participation of a student in a phase of research, however small, and the presentation of results, are valuable and should preferably be done on an individual basis wherever possible.

#### 5.5 Assessment and evaluation of the student

The use of examinations in the evaluation of the student was discussed. Examinations, for that purpose, are necessary and are useful as a teaching aid. They provide a valuable indication of the effectiveness of the teaching programme, as well as of the student's progress.

Most schools of public health use various methods of assessing the progress of students throughout the course. The multiple-choice form of examination being used in some medical and other schools was noted. While this method has advantages for testing a wide range of knowledge, and for its easiness and consistency in marking, it was noted that it has not been generally accepted.

The proportion of marks allotted for the theoretical examination, oral and written, the written thesis or dissertation, the practical laboratory examination, the student's performance during the course, and the practical laboratory and field work during the term varied with the schools. It was the general view that, while all elements should be taken into consi-

deration, no uniform procedure could be recommended. The role of the external examiner in the final examination was discussed and was found to be of value in some schools.

#### **6. TRAINING OTHER THAN THE ONE-YEAR FULL-TIME POST-GRADUATE PUBLIC HEALTH COURSE**

In a number of countries systems other than the one-year full-time post-graduate course in public health exist, either in lieu of the latter or in addition to it. Some of these are briefly mentioned below :

(1) Medical education provides for a specialization in public health before graduation in medicine, by allowing part of the medical students to take a separate course, with special concentration on hygiene and sanitation, during the last three years of medical studies.

(2) Short full-time courses in general public health are organized, which may be taken in succession. To these may be added courses in specialized fields of public health and research in specialized institutes, leading to more advanced academic qualifications.

(3) One of a series of three 3-month courses, each devoted to a specified area of knowledge, is organized yearly, giving post-graduate training in public health in three years.

(4) A part-time course (two days a week) is organized, covering the full post-graduate public health curriculum in two years.

(5) Two correspondence courses of eight months' to two years' duration, requiring independent study by the student of recommended bibliography, are arranged. Homework is assigned and checked five times a year by the responsible teacher. The student stays at home, trying to apply what he is being taught. A visit to the teaching institute is necessary for a month during each of the two consecutive periods, ending by examinations.

(6) A course, lasting at least one academic year, of special studies in a subject of health is organized for holders of degrees or diplomas in public health, leading to a doctorate in public health.

More than one year of full-time studies, leading to more advanced post-graduate academic qualification, is very important, especially for teaching and research staff. Candidates for such training are, however, recruited from an older age-group with increased personal responsibilities. The number of applicants is, therefore, favourably influenced when adequate financial provisions are made, or when the training is regarded as part of the service conditions.

In some cases suitable candidates experience difficulties in obtaining the necessary time even for the one-year full-time post-graduate studies. The

Committee noted, therefore, with interest the various methods of public health training which do not require such a long interruption of service.

The Committee was in favour of the organization of refresher courses of varying duration for all types of public health workers by schools of public health as part of the general community service of the school. In this connexion, mention was made of the newer techniques, such as closed-circuit television, tape recordings, and other means whereby the contributions of specialists are made available to wide groups of physicians and others from a central source.

## 7. CONCLUSIONS AND MAJOR RECOMMENDATIONS

Post-graduate education in public health is a major element in the preparation and maintenance of cadres for rapidly developing health services, and for the indispensable concomitant of such development, research in public health, which requires knowledge of methods of community studies in addition to usual scientific methods.

The system of such post-graduate education cannot be expressed in a single formula. More than one pattern exists to meet the circumstances and traditions of various countries. One is impressed, however, by the wide growth, during the last forty years, of schools of public health which the Committee was called to study. These institutions, as defined in this report, have many features in common, in spite of the variation of socio-economic conditions and cultural traditions. In fact, from the data collected a consistent picture of this type of institution seems to emerge.

A review was made of the important elements in schools of public health, especially their organization and administration, faculty and facilities, curriculum and methods of teaching. It has permitted agreement on requirements which, when fulfilled, are more apt to secure the satisfactory functioning of such institutions and the adequate training of key public health personnel.

Some of the major recommendations are summarized below :

1. That schools of public health be established in those areas where needs for qualified public health workers are not being met by institutions already in existence. In addition to actual needs, as expressed by morbidity and mortality information, human and material resources and opportunities for careers in public health are important in determining whether the creation of a school of public health is feasible.

2. That schools of public health give suitable attention, in addition to their education and training functions, to research—not only research on basic scientific problems, but also field or community health studies and operational or administrative research. Another function of such insti-

tutions relates to local, national, or international health services, which has potentials for benefiting the community served and the school as well.

3. That, wherever possible, the school of public health be affiliated with a university, in order to receive therefrom the advantages which exist in other faculties, and to reciprocate by exerting its influence on these faculties in public health subjects.

4. That the school of public health be established, according to the customs of its own country, in such a manner as to permit it to exercise its functions most effectively. Whatever method of organization is adopted, it is important for the director or dean of the institution to be given such authority as would permit action independent of irrelevant considerations, and for his appointment to be for a period of time sufficient to make long-range programme planning and implementation possible.

5. That the school of public health be organized in such units (teaching departments) as would permit the most effective delegation of authority and responsibility to members of the faculty.

6. That adequate financial support be assured, in accordance with patterns existing in that country, so that schools of public health will be enabled to carry on an effective programme.

7. That the school of public health has available to it adequate space, equipment, supplies, field practice areas, library and other facilities to enable the faculty to exercise its functions to the highest possible level and to permit students to benefit most effectively from their period of study in the school.

8. That a faculty, superior in quality and adequate in quantity, be recognized as the most important single element in the eventual success of a school of public health and that every effort be made to achieve the highest standards in this respect.

9. That the curriculum be constructed around five major subjects—public health administration: principles and practice; health statistics; epidemiology; environmental health; and microbiology—and that the director or dean, together with the faculty, has complete autonomy in the determination of course content.

10. That schools of public health adopt such methods of teaching and examinations as will provide the best instruction for, and evaluation of, the students, depending on subject-matter, stage of learning, and cultural concepts of education.

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## Annex

**QUESTIONNAIRE ON SCHOOLS OF PUBLIC HEALTH;  
SELECTIVE SUMMARY OF INFORMATION**

1. The 44 institutions responding were distributed as follows: Europe (excluding the United Kingdom) 5; Latin America 5; United Kingdom 8 and Commonwealth 9; United States of America 10; other countries 7.

2. Thirty-three of the 44 schools operate under university auspices; 10 are not separate institutions but operate as a department of a medical school. In 38 schools out of 43 replying, the chief executive officer (director or dean) is appointed by the university or ministry authorities, in 34 of them without a fixed term of appointment.

3. Of the 44 schools, 13 obtain their funds entirely from government or university sources, 8 obtain more than 75% and 7 more than 50% from such sources, and 16 either obtain less than 50% from such sources or did not specify the percentage. Out of 37 schools replying, 6 have a yearly budget of more than a million dollars, whilst only 13 have \$100 000 or less (average, \$527 000; median, \$177 500). Out of 38 schools reporting, 5 devote less than 40% of their budget to salaries, and 4 spend 90% or more on salaries, while the majority of the schools in the intermediate group fall into the 70-79% category; 18 of the 37 schools replying can expend budgeted funds without obtaining outside authority, 9 can spend only up to a specified amount without such authority, and 10 need to obtain outside authority for any expenditure of budgeted funds.

4. Of the schools which are not departments of a medical school, 32 are organized into departments, the schools having from 3 to 12 major subsidiary units. Of the 44 schools, 34 have laboratory facilities of their own, up to 13 in one case. All schools have arrangements with health services whereby their students may obtain some practical training, while 13 schools have such services under their direct authority; 26 of the schools have rules for accrediting such health services not depending on them, the most frequently mentioned criterion being that of the qualifications of the director and staff of the service. The 44 schools have, on the average, 24.5 full-time teaching staff (with professorial or other titles) and 27.2 part-time.

5. The total number of hours of instruction during the academic year is less than 800 in 12 schools and 1000 or more in 7, while in 13 it is between these two figures, the average being 861 and the median 855 hours.