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# EXPERT COMMITTEE ON AUXILIARY DENTAL PERSONNEL

## Report

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WORLD HEALTH ORGANIZATION

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## EXPERT COMMITTEE ON AUXILIARY DENTAL PERSONNEL

Geneva, 30 June-6 July 1958

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## EXPERT COMMITTEE ON AUXILIARY DENTAL PERSONNEL

### Report \*

The Expert Committee on Auxiliary Dental Personnel met in Geneva from 30 June to 6 July 1958. Dr J. Llewellyn Saunders was elected Chairman, Dr A. I. Doinikov, Vice-Chairman and Dr Shailer Peterson, Rapporteur.

### INTRODUCTION

The purpose of this report is to provide governments and other organizations responsible for health programmes with information on the use that may be made of auxiliary dental personnel. The nations with relatively advanced programmes of dental care have found that with the help of auxiliaries they can achieve significant gains in rendering dental care to the public. The Committee has considered this fact and makes recommendations to those nations that may be seeking to expand their dental health care. The deliberations of the Committee revealed that its purpose and its obligation were considerably more complex than merely making reference to the wise utilization of auxiliary dental personnel. The Committee appreciates that in those countries which are completely without any semblance of dental health care there is a very special problem, and because it feels that auxiliary personnel such as those who are at present being trained in the highly developed countries cannot be transplanted to areas lacking in dental care and expected to render the kind of service that is needed there, it makes a positive suggestion later in the report concerning the development of a dental health team expressly designed to meet the special needs.<sup>1</sup> In the body of its report, the Committee considers the advisability of extending the use of auxiliary personnel in those countries which already have programmes of dental care.<sup>2</sup>

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\* The Executive Board, at its twenty-third session, adopted the following resolution:

The Executive Board

1. NOTES the first report of the Expert Committee on Auxiliary Dental Personnel;
2. THANKS the members of the Committee for their work; and
3. AUTHORIZES publication of the report.

(Resolution EB23.R32, *Off. Rec. Wld Hlth Org.*, 1959, 91)

<sup>1</sup> See page 23, section 5.

<sup>2</sup> See page 22, section 4.

## 1. BACKGROUND

The health services that are available to the people of different nations have grown and expanded along with cultural development and with the economic progress that has taken place in industry and agriculture. It is recognized that health programmes in different parts of the world have advanced at different rates and have reached different stages of development. Countries can trace such progress through a series of evolutionary changes, and it is readily understood that these changes have come about not only on account of an increase in scientific knowledge but also because of an appreciation of needs and the demands of the populace as a result of education. The development of dental health programmes has also been stimulated by government action and by the efforts made by the dental profession itself to educate the public in the value of dental health.

Within recent years the need has been recognized for increased and extended dental care as an important component of national health programmes. The task of organizing such care and of ensuring that the services and facilities are evenly distributed throughout the community has resulted in a study of the question of its provision. In dentistry it has been found that the improvement and development of professional training courses, while increasing the efficiency of qualified professional personnel, have in turn created problems. These are mainly due to the increase in the time necessary to train dentists and to the increased cost of their employment by private persons or by the community.

In consequence, and within the framework of the profession, it has been found expedient to utilize several different kinds of auxiliary personnel to supplement the services of the highly trained and qualified dentist. Personnel with less training and experience than the professional man have been brought in to assist him and to work under his direction at lower levels of responsibility. A highly trained profession can spread its work over a wider area by the use of assistants, also highly trained but in a limited field.

There are many examples of the auxiliary type of personnel, such as the dental hygienist, the school dental nurse, the dental laboratory technician, and the dental or chairside assistant. Each country in which these various personnel are used has its own accepted definition and description of their functions and responsibilities; and some countries may also have other groups whose activities might represent a combination of the functions of the aforementioned workers.

Because of the need later in the report to delineate the special functions of some of these auxiliaries and in view of the fact that all auxiliaries, including those sometimes referred to as "ancillary personnel", work under

the direction and supervision of a professional man—the licensed or qualified dentist—and all are auxiliary to him, it is proposed to term all such workers “auxiliary personnel”. It is accepted that the dentist who supervises the auxiliary dental personnel will assume responsibility for their work.

The functions and the responsibilities of the auxiliary personnel vary widely. For example, some are not permitted to have contact with patients, while others not only have contact with the patient but may also work in the mouth in rendering some portion of the dental care. The degree to which the various responsibilities can be given to the different personnel depends not only upon the legal requirements and the amount of education and experience that the individual has had, but also upon the amount of responsibility that the dentist wishes or is prepared to assume for the auxiliary's work.

Many studies confirm the fact that auxiliary personnel recruited to the staff of a dental office, clinic or hospital increase the amount of dental service that can be rendered. For this reason, the importance is stressed of rendering dental service through the medium of the “dental health team” (a qualified dental surgeon working with one or more trained auxiliaries). The employment of the “dental health team”, whether in private or public practice, is recommended. This plan can be introduced with advantage in the established dental programmes of advanced countries as well as in the organization of services in countries where little or no dental care is available.

Some countries already appreciate the value of auxiliary dental personnel and have many in employment. This fact indicates that the dental professions as well as the governments of these countries accept the services of auxiliaries in attempting to utilize all methods available to provide an increasing amount of dental service for the maximum number of persons. Where use is now being made of auxiliary personnel, research should be carried out and a study made of the possibility of their useful employment in additional fields. It is further recommended to the dental profession that attention should be given not only to the training of the auxiliary personnel themselves but also to the education of dentists in utilizing their services more effectively and efficiently.

There are many countries and regions of the world where there is a great need for dental care, and yet no provision has been made to meet it, even on an emergency or pain-relieving basis. Special attention has been given by the Committee to the countries or regions in which there is a need for dental care and where no provision for it has been made. Recommendations are presented which it is hoped will be used by governments considering the development of dental health programmes; these recommendations should: (a) make dental care available in the shortest period of time, (b) provide for its rapid expansion, and (c) provide a scheme that is sufficiently

flexible to permit expansion in both the quantity and the quality of dental services. Several different types of dental personnel should be trained and their activities co-ordinated so that a dental team could be produced.

Nomenclature always becomes a problem in preparing a report of this type. Every effort has therefore been made to define the terms employed in describing such personnel and to refrain as much as possible from using titles that might lead to confusion. For example, some of the personnel suggested may have certain functions and responsibilities which are the same as those delegated to the dental hygienist in the USA or to the New Zealand dental nurse, but such designations are not used in this report.

The recommendations for establishing a new programme for dental health care are designed particularly for those countries which have little or no dental health care at the present time. The recommended programme in its primary stage will provide only the basic minimum of treatment urgently needed by persons who have not been receiving any kind of dental health service other than that which might have been given by completely untrained and unskilled individuals. The recommendations do not presume to establish a comprehensive programme of dental health care or one that compares in quality with the kind of service functioning in those countries where dentistry has been developing for many years. In other words, the basic programme in its initial stage will provide for the relief of pain and the removal of infection by the extraction of affected teeth, and at a later stage will include simple restorative procedures.

The programme recommended has an important advantage. It provides for extension in the training of the personnel and hence a continuing improvement in the quality and the quantity of services that are made available. Such a programme in a modified form could also be used in those countries that already have a dental service, but of a limited kind.

## **2. FUNCTIONS OF THE AUXILIARY DENTAL PERSONNEL AS THEY ARE UTILIZED TODAY**

The members of the various dental auxiliary groups will be defined, in the body of this report, as those individuals who are subject to the supervision and direction of trained professional personnel (i.e., dentists); in other words, they are the auxiliary personnel for whose operations and acts their supervisor, the dentist, is responsible. Thus they will have their greatest and optimum usefulness in those areas and regions where there is an adequate number of competently trained members of the dental profession.

In those areas in which there are many dentists, there will be a potential need for many trained auxiliary personnel and, because it is generally recognized that there is no region in which it is not desirable to expand

and extend the type and kind of dental services at present available to the public, it is reasonable to advise that the administrators in these areas should study ways and means of utilizing the services of auxiliary personnel effectively in order that a greater amount of more efficient dental service may be made available.

In those areas in which there are few dentists there will be a need for trained auxiliaries, but their utilization may be limited by the availability of the accepted degree of supervision which is needed in order that the auxiliary personnel can render the permitted service that is expected and required of them.

In those areas in which there are no dentists, it follows by definition that auxiliary personnel cannot be utilized until the time when dental supervisory personnel can be made available.

Trained auxiliary personnel provide the dentist with assistance that will relieve his own hands and his own time so that he may devote himself more fully to performing those professional services which specifically require his special skills and knowledge and which could not be executed safely by one with less experience and education. It is accepted that the addition of one properly trained auxiliary may considerably increase the amount of service which the dentist can provide, and it is likely that combinations of other auxiliary groups would permit a dental health team to provide a much improved dental health service.

The health professions in all countries should be informed of the ample evidence available that the dentist who makes efficient use of auxiliary personnel will be able to care for many more persons and hence render a more valuable service to the public. In many instances the dentist, too, may need to be given some instruction in the effective utilization of auxiliary personnel. In other words, it is as useful and important to train the professional personnel in the use of the dental auxiliaries as it is to train the various dental auxiliaries.

The dentist will select for his own use the particular kind of auxiliary personnel who can best serve his special needs. This selection will depend largely on his ability competently to use auxiliary personnel, the kind of training that these auxiliary personnel have been given, and, of course, the ability of the various kinds of auxiliary personnel.

It is recommended that more studies be instituted to evaluate the benefits of utilizing auxiliary personnel, and it is suggested that these studies should recognize that there are not only different kinds of auxiliary personnel, but also different kinds of dental office practices. It is also recommended that such studies should be limited to quantitative evaluations, but some attention might also be given to the increase in the quality of service which may reasonably be expected to occur.

More attention will be given later in this report to the methods of training auxiliary personnel. While formal instruction is to be desired, it must

be recognized that in many areas training through preceptorship or apprenticeship may need to be used until adequate educational opportunities are available, and until an adequate reservoir of potential candidates for those auxiliary positions is established.

The employment and the training of auxiliary personnel would in all probability need to be graduated in accordance with the requirements of any given area, and would be related to the development of the other trained dental personnel in that area. The functions of dental auxiliaries range in complexity in as much as they reflect the kind of duty and responsibility the auxiliary is expected to accept. The so-called receptionist in a dental office requires less training and accepts less responsibility than the chairside assistant who will be responsible for the care of instruments and the passing of instruments to the operator; in turn, the basic educational needs of the chairside assistant will differ from those of dental assistants who will be required to work in the dental laboratories or to take roentgenograms, while the level of these latter will also differ from assistants who are called upon to scale teeth and apply fluorides. The complex functions required of a dental laboratory technician who fabricates prosthetic and orthodontic appliances according to the prescription of a dentist also necessitate a different basic educational level and system of training.

Some of the specific functions that auxiliary personnel may be expected to perform, as well as details of the training required, are enumerated below.

## **2.1 Chairside assistants**

### *2.1.1 Functions*

The Committee considered the general functions of a chairside assistant and strongly recommends that the employment of such personnel should be regarded as an essential in any dental service, public or private. As an analogy it was stated that the chairside assistant should stand in the same relationship to the dental surgeon as the operating theatre assistant does to a surgeon, and is quite as essential for his full efficiency.

An enumeration of the functions of chairside assistants would include:

- (1) Reception of the patient.
- (2) Preparation of the patient for any treatment he or she may need.
- (3) Preparation and provision of all necessary facilities (such as mouth-washes, napkins, receivers).
- (4) Sterilization, care and preparation of instruments (and in this the assistant should be highly efficient).

(5) The preparation and mixing of restorative materials (this will include filling and impression materials).

(6) The responsibility, on completion of the treatment, for the care of the patient until the latter leaves, when the assistant will clear away the instruments and prepare them for re-use.

(7) The preparation of the surgery for the next patient.

(8) The presentation of documents to the surgeon for his completion, and the filling of these.

(9) Assistance with X-ray work and the processing and mounting of X-rays.

(10) Instruction of the patient, where necessary, in the correct use of the tooth-brush.

(11) The after-care of persons who have had general anaesthetics.

*Note:* Under special circumstances it may be necessary for the assistant to undertake some of the tasks normally performed by a dental technician, but when a technician is available such services will probably not be required.

### 2.1.2 *Training*

The basic principle that the chairside assistant's function is to assist the dentist by providing an extra pair of hands to enable him to work more effectively and speedily must be borne in mind in any course of training for this type of auxiliary.

Because of her contact with patients and professional personnel it is desirable that she be resourceful, have a pleasant personality and be neat and tidy in appearance. These attributes may be regarded as having an importance equal to that of educational achievement.

#### 2.1.2.1 *Length of training*

The educational and other standards required of candidates, as well as the content and length of the training course, will vary considerably according to the complexity of the assistance expected from them, and will doubtless be directly related to the degree of development of the area from which recruits can be drawn as well as of the dental service and the expertness of the dentists.

In well-developed dental services where the dentists have been trained in the efficient use of chairside assistants, and in areas where there is an adequate number of suitable recruits, candidates are expected to have had a secondary education, and a formal course of training of one year's

duration is required. In other areas, for various reasons, no formal course of training may be expected or required.

The dental chairside assistant who has had the benefit of a formal course of training can adapt herself to the varying needs and skills of individual dental surgeons in differing environments, whereas the assistant who has received her training from one person only, in the form of an apprenticeship, is less likely to be able to do this.

Dental surgeons trained in dental schools where formal training schemes for dental chairside assistants are also organized have a greater appreciation of the benefit to be gained from the intelligent use of dental chairside assistants, and those responsible for dental education should consider the desirability of supporting more training courses for dental chairside assistants.

#### 2.1.2.2 *Curriculum*

When a formal course is established it should include:

- (1) The importance of ethical behaviour.
- (2) Principles and methods of sterilization.
- (3) Preparation of filling and impression materials.
- (4) Care and maintenance of instruments and light equipment.
- (5) First aid.
- (6) Basic knowledge of dental nomenclature.
- (7) The use and compilation of appropriate documents and records.

As a course is developed and extended other items such as elements of nursing procedures, developing and mounting of X-rays, operating-theatre procedures, etc. would be incorporated.

## 2.2 **Dental laboratory technicians**

### 2.2.1 *Functions*

The dental technician, whose main function is the fabrication of appliances, should work according to the prescriptions and under the supervision of the fully-qualified dentist.

An enumeration of the functions of a dental technician would include:

- (1) The casting of models from impressions of patients' mouths.
- (2) The construction of appliances based on these models from the dentist's prescription.

(3) The treatment of metals and of the plastic materials used in the construction of these appliances.

(4) The construction of splints used in facio-maxillary surgery.

(5) The construction of orthodontic appliances to the dentist's prescriptions.

(6) The construction of special appliances such as obturators and special prostheses.

(7) The keeping of dental stores.

*Note*: It was suggested that *under certain circumstances*—perhaps, for example, in developing countries—the dental technician might be responsible for the processing of dental X-rays and the maintenance of heavy dental equipment. It was also emphasized by the Expert Committee that the dental technician should not take impressions of the mouth and that he should not have contact with patients.

### 2.2.2 *Training*

It should be pointed out that where the dentist's work includes prosthesis he should be assisted by a dental laboratory technician who is a qualified specialist with theoretical and practical knowledge in this field, and who carries out all the laboratory work as prescribed by the dentist and under his supervision.

Candidates for training should have a standard of basic education sufficient to support their technical study. This basic education should, if possible, include secondary education.

#### 2.2.2.1 *Training period*

This should be not less than two years, and, if possible, should probably be extended over a period of three years.

The formal training should occupy the greater part of the training period, and should take place in a special institution (school for dental laboratory technicians) which may or may not be connected with a dental school. The formal course should be followed by a period of practical work in a laboratory, either in connexion with the school or in the field, before the trainee receives his or her licence.

#### 2.2.2.2 *Curriculum*

It is recommended that the formal training should include theoretical education and practical training as well. Both should be strictly limited

to the needs of the laboratory technician in order to give him the necessary understanding of his professional work.

When a formal course is established, attention should be given to including the following elements in the curriculum:

- (1) Instruction in the basic principles of chemistry and physics that relate to the needs of the dental laboratory technician.
- (2) Instruction in the use and care of tools, implements, and equipment that are important to the dental laboratory technician.
- (3) Instruction in those elementary principles of the biological sciences that will enable the dental laboratory technician to understand his function as an auxiliary to the dentist.
- (4) Instruction in those techniques that are used in the fabrication of:
  - (a) full dentures
  - (b) partial dentures
  - (c) ceramics and porcelain work
  - (d) crown and bridge work
  - (e) orthodontic appliances
  - (f) any other appliances needed by the dentist.
- (5) Instruction in the responsibilities of the dental laboratory technician as a member of the dental health team, including information about ethics and jurisprudence.
- (6) Extensive information about dental materials and experience in the use of these materials in fabricating appliances.
- (7) Information about the role that the dentist plays in providing dental health care, so that the dental laboratory technician may in turn understand the relationship of his responsibilities to those of the dentist.

It is impossible in this description to give adequate attention to the level of training that is needed with regard both to the comprehensiveness of the instruction in the theories and principles that are involved and to the amount of experience that is required. It is suggested that the purposes of the educational programme may be better served if consideration is given to integrating the parts of the course that deal with the principles with the part that deals with the experience and practice.

It seems obvious that the training of laboratory technicians can be arranged in different ways. However, those ways recommended by the Committee in this report have proved practicable in a dental health service.

In those countries where it is not at first possible to institute courses of a formal nature in institutions, it is recognized that dental laboratory

technicians may be trained through the medium of apprenticeships, although this admittedly is not as efficient as formal educational programmes. When apprenticeship methods are used, they should be conducted only by fully qualified dental laboratory technicians.

In some countries, the dental laboratory technician is educated to function in rather specialized fields. For example, a dental laboratory technician may be particularly well trained in fabricating prosthodontic appliances in the one single area of full dentures or in the area of ceramics, etc.

### **2.3 Dental hygienists**

#### *2.3.1 Functions*

Persons in this category should work under the close supervision and direction of a dental practitioner. For certain public health aspects of the work, he or she may have some independence of action provided that this is carried out as part of the public health team work. The Committee was satisfied that dental hygienists are most valuable in the field of preventive dentistry and by virtue of the practice of simple dentistry can extend the benefits of oral health to larger sections of the community. It was also considered by the Committee that recruitment of dental hygienists need not be limited solely to females but that male dental hygienists might also be employed where adjudged necessary.

An enumeration of the functions of a dental hygienist would include:

- (1) The cleaning of teeth.
- (2) The removal of calculus.
- (3) Individual and group instruction in oral hygiene.
- (4) The cleaning of mouths, on the orders of the dentist, before treatment is instituted.
- (5) The topical application of fluorides or other prophylactic solutions.
- (6) The screening or primary examination of groups, such as schoolchildren or factory employees, for dental defects, in order that they may then be referred to qualified dentists for treatment.
- (7) In the case of schoolchildren, liaison with local public health nursing services to ensure effective follow-up of recommendations or treatment. (To make this follow-up truly effective, public health nurses should have some elements of instruction in dental hygiene and the part played by diet in relation to dental disease included officially in their training curriculum.)

### 2.3.2 *Training*

This body of auxiliary workers has been functioning in the USA for many years, and would probably prove useful in other countries that already have an organized dental service and good coverage of the basic dental needs of the population by qualified dentists. The dental hygienist has a dual role, working either as an auxiliary to the dentist in private practice or as a member of the public health team.

#### 2.3.2.1 *Training period*

Although in countries which have been using the services of dental hygienists for a number of years the training now takes two to four years, it is thought that a minimum period of one calendar year would be appropriate for countries willing to introduce this type of personnel into their health services.

#### 2.3.2.2 *Curriculum*

It is recommended that the following subjects should be incorporated in the teaching programme of the dental hygienist:

- (1) Basic information on the structure and functions of the human body, with emphasis on the oral cavity.
- (2) A special study of the masticatory apparatus, including its supporting structures and the macroscopic and microscopic aspects of the teeth.
- (3) Basic principles of chemistry and bacteriology to serve as a foundation for the understanding of the causation of dental caries, and a study of its prevention and control.
- (4) Brief study of the main chemical substances used by the dentist, with reference to their therapeutic and preventive effects.
- (5) The clinical practice of oral prophylaxis, topical application of medicaments, and instruction of the patient at the chair in tooth-brushing techniques and dental health principles. Considerable time should be devoted to this portion of the course.
- (6) A brief study of the most common diseases of the oral cavity, with special emphasis on those which may be prevented or controlled.
- (7) Basic principles of hygiene, public health, nutrition and economics which relate to the problems of community dental health.
- (8) Ethics and jurisprudence.

(9) Dental health education methods and materials used in schools, health centres, factories and private practice; the use of audio-visual aids; records and follow-up procedures; planning and presentation of talks to groups of people with different educational backgrounds.

## 2.4 School dental nurses

### 2.4.1 *Functions*

This type of auxiliary personnel has been used with success in New Zealand for some thirty years, and more recently has been introduced in Malaya, Ceylon, and several other countries. In the United Kingdom, a pilot study on the training and employment of this type of personnel is about to be undertaken. School dental nurses are trained specifically to deal with pre-school- and schoolchildren, and function as members of the dental health team. Through their employment, large numbers of children can be maintained in a state of sound dental health, with a minimum number of dental surgeons directing, controlling, and complementing their work.

The introduction of a school dental nurse system should be co-ordinated with the general development of a dental health service, in order to ensure that there are sufficient dentists both to direct and train the school dental nurses, and to continue the dental care of the children after they have passed out of the hands of the dental nurse on leaving primary school.

An enumeration of the functions of a school dental nurse would include:

#### 2.4.1.1 *General*

(1) Maintaining a specific group of approximately 500 children in sound dental health and free from dental defects by examining and treating them at six-monthly intervals.

(2) Teaching the principles of oral hygiene, using modern teaching and publicity methods, and gaining the interest and co-operation of the children (and their parents) in this matter.

#### 2.4.1.2 *Specific*

- (1) Examining patients and charting the dental condition.
- (2) Performing prophylaxis.
- (3) Placing fillings in both permanent and deciduous teeth.
- (4) Extracting teeth under local anaesthesia. (*Note*: This is rarely necessary after the system has been operating for several years.)
- (5) Making topical application of preventive medicaments.

(6) Recognizing malocclusion and lesions whose treatment is beyond her scope, and referring them to a dentist.

(7) Carrying out routine examinations and treatment of the children in her group.

(8) Giving special attention to teaching the principles of oral hygiene and the prevention of dental disease not only to individual children, but also to school classes, teachers, women's organizations, parent-teacher associations and similar bodies. The dental nurse is given instruction in the principles of teaching and of public speaking.

#### 2.4.2 *Training*

A type of training similar to that for dental licentiates (outlined in sections 5 and 6), but directed particularly to curative and preventive care of children, can well be introduced when the original dental service has been sufficiently developed. The object of the training should be to produce personnel who are capable of maintaining specific groups of pre-school- and schoolchildren in a state of sound dental health by means of treatment in a restricted field given at regular and frequent intervals (normally every six months), and by instruction in the principles of oral hygiene. School dental nurses work under the direction and control of dental surgeons. They are already being used in a number of countries and experience has shown that they can be trained to a high standard of efficiency, and can exercise considerable and beneficial influence over children and their parents in advancing the knowledge and practice of oral hygiene. Their course of training should be directed towards this end.

##### 2.4.2.1 *Training period*

A minimum of two calendar years is suggested.

##### 2.4.2.2 *Curriculum*

In addition to technical training, a school dental nurse should have:

(1) Special instruction in the principles of teaching and public speaking, visual education, and the preparation of models and posters for health education.

(2) The encouragement to develop confidence and initiative in this field of work.

(3) Instruction in the history of dentistry, the history and ethics of nursing, and the role of the various organizations that are concerned with the promotion of child health.

(4) Instruction in the use, care and repair of instruments and equipment.

### 3. THE EVOLUTIONARY PROCESS OF DENTAL HEALTH SERVICES

In any consideration of the use of auxiliary dental personnel in countries throughout the world, it is important to make an analysis of the present global situation and attempt to present a classification of countries according to the predominant patterns of dental practice. This will give a frame of reference for the types or levels of dental service being rendered and help to indicate the particular type of auxiliary dental personnel that may be needed.

Owing to wide differences in status and evolutionary stages of the dental profession in the various countries of the world today, any classification of dental personnel, to be all-inclusive, should allow for the consideration of dental personnel in areas where the practice of dentistry has not attained the level of a true profession as it is now recognized in so many countries.

Dental practice can be considered—*sensu lato*—as “the rendering of services aiming to prevent, alleviate or cure a dental disease, and to repair or correct a dental anomaly or defect”. If one wishes to restrict the definition of dental practice to certain groups of countries, a further limiting statement, such as “by fully qualified practitioners”, should be included. Accepting the broader definition as more adequate for a discussion at the international level, the types of personnel involved directly or indirectly in rendering dental services can be classified into three groups according to the levels of their training:

- (a) professional personnel (qualified practitioners and dental specialists);
- (b) subsidiary, or sub-professional, personnel (auxiliary personnel);
- (c) non-professional (unqualified practitioners, indigenous practitioners).

This classification accepts the fact that dental services in many countries are still being rendered in the main by untrained non-professional workers. The dental profession in the world recognizes the up-grading of this group as one of its most important problems and looks to the day when dental services will be provided only by the first two groups.

Using the historical method as an approach to the study of dental practice, five evolutionary stages are identified below in order to describe the evolutionary process that has taken place and is taking place in the field of dental health care.

*Stage I: Undifferentiated occupation.* At this stage, there are no individuals in the community deriving their means of livelihood entirely from dental practice. Diseases of the teeth are usually abandoned to their own courses. Toothaches and infections are treated with folk medicines. A few individuals may devote some of their time to the performance of simple

dental operations. In primitive communities, persons may have simple methods of performing tooth extractions and tooth mutilations. With the development of public health and missionary services in recent times, physicians, sanitarians, nurses, priests and nuns, working in isolated villages, may have dental forceps and anaesthetics to extract teeth in emergency cases.

*Stage II: Differentiated occupation.* At this stage, some individuals are entirely devoted to the practice of dentistry (indigenous practitioners) without any type of formal training or qualifications. The necessary skills are acquired under an apprenticeship system. There is an increasing diversification of instruments, techniques, materials and equipment utilized in dental practice. Dental prosthesis develops, and advances in the field of metal technology are incorporated within dental practice. There are no restrictions by governmental authority on the practice of dentistry.

*Stage III: Initial professionalization.* Courses of formal training, with a duration of one to two years, are organized by the dental practitioners, who are united as groups or a guild. Before admission to the profession, candidates have to meet the requirements imposed by the guild. The group of persons practising dentistry takes on a formal character and a dental profession comes into being. Restrictive legislation in the interest of the public is enacted.

*Stage IV: Intermediate professionalization.* Independent dental schools are established at the university level. Dental courses are increased in length, being now from three to six years. The minimum requirement for admission is complete secondary education. Professional associations become stronger, owing to the increase in the numbers of their members, their improved standing in the community, and the university standards of education of dentists. Weaknesses in the law or in its enforcement may still permit unqualified persons to practise.

The utilization of certain types of auxiliary personnel, such as the chair-side assistant and laboratory technician, becomes firmly established. Courses of training and regulations are established by the profession for its auxiliaries.

The body of knowledge which constitutes dental science and art increases, and persons who practise specialties in dentistry become established in the larger urban centres. Dental education stresses predominantly the technical aspects of the profession.

*Stage V: Advanced professionalization.* Dentistry acquires full recognition as a health profession. Dental education becomes more balanced, with an increasing emphasis laid on the biological sciences. Post-graduate dental education is developed and the number of dental specialties increases. Dentistry becomes strongly organized and institutionalized. Dental practice by unqualified personnel disappears.

New types of auxiliary personnel such as the dental hygienist and the school dental nurse are trained under the control and supervision of the dentist for tasks specifically delegated. The complexity of the tasks delegated and the degree of freedom to practise vary from one country to another. Countries which train auxiliaries for curative and preventive procedures may restrict such personnel to government employment. Countries which train them only for preventive procedures may allow them to work in private practice.

Those who look back on the development of the dental profession in the countries which are now in the more advanced stage will probably recognize that progress has been made as a continuum and that the break-down into stages may appear somewhat artificial. They will recognize also that transition from one period to another has been gradual, and residual elements of practice in one stage have been maintained through succeeding stages, although with gradually decreasing importance or emphasis. Each stage has had its predominant type of practice, which has given place to others that are more advanced as dentistry has progressed and as the social and economic setting has changed. It must be remembered that co-existence of different types of practice is a necessary consequence of the slow and gradual character of professional evolution.

Some countries now in stage IV, which have not yet developed a post-graduate dental education, already show some early signs of the most advanced type of practice, as represented by dental specialists, in some metropolitan areas. These specialists, whose numbers are very small, have usually been trained in countries now in stage V, and the coverage that they can give to the population of the country as a whole is usually rather limited.

The co-existence of different types of practice can occur not only in countries with various regions at widely different levels of socio-economic development, but also in the same metropolitan area. Several types of practice can be found to exist in one city, being distributed according to an ecological pattern not difficult to interpret. Some of the more advanced types of practice may exist in the commercial centre and in the residential districts of the higher income groups, where the specialists also may practise, whereas the less well-off are inadequately served.

Consideration has been given to what might be called the normal sequence of stages passed through by the dental profession in the countries which are now in the more advanced stages of this evolutionary pattern. No definite gaps can be observed in this developmental process, and the complete replacement of one type of dental personnel by another better qualified has occurred within a few generations. The growth of dental education has also been gradual, and the periods of study have been extended at moderate intervals.

We are now passing through a phase in the world's history when the levels of living of the advanced countries, widely publicized through the mass communication media, have become goals which the less developed countries want to attain in the shortest possible time. Many expedients are being tried in an effort to speed up the evolutionary process.

In dental education, several developing countries in the early stages of dental organization have tried the simplest way to accelerate the establishment of a dental profession. They have transplanted the system of dental education from countries in stages IV and V (intermediate and advanced stages of professionalization) to their countries which are in stage II (stage of differentiated occupation), thereby attempting to bypass stage III (initial stage of professionalization). It is a natural thing that this attempt should be made, although it might be expected that some steps in an evolutionary programme cannot easily be bypassed.

Several countries have started formal dental education in recent years by utilizing complex and comprehensive dental courses from the very beginning.

Such programmes have not been successful from the standpoint of producing a large number of professional personnel and have not provided an extensive dental service for the populace of these countries. The few trained and qualified dental graduates thus produced have remained clustered in the large cities, providing services for the upper-income sections of the population. The unqualified practitioners, distributed throughout the country, continue to provide services for the lower-income groups. No gradual displacement of the unqualified practitioner by the fully qualified dentist is observed, since each one is orientated towards meeting the demand of different population groups.

Some members of the profession in these countries may feel that there is no need to increase the number of dentists and that the demand is being adequately met. The number of graduates in their dental schools is small, reflecting the state of equilibrium between supply and demand in the work market for professional services. In these countries dentistry as a whole is not progressing because the bulk of the work is being performed by unqualified practitioners.

If one attempts to place such countries in one of the stages already described, a difficulty is met with. They are not in stage II because they already have university-level dental schools with a long dental course. They do not fit into stage IV because of the importance, and sometimes even predominance, of practice by unqualified practitioners in the total amount of dental services being rendered to the population. Their present stage can be said to be the equivalent of stage III in the normal pattern, with the disadvantage that a stalemate has apparently been reached, for there is no progression to stage IV, and professional evolution is severely handicapped.

As dentistry has grown in complexity and refinement, along with the increase in level of living and demand for dental services, the size of the population which could be adequately covered by one dentist has gradually decreased. As a general principle, it can be said that the fewer the population per dentist, the more advanced is dental practice.

Although complete and reliable data on the number and distribution of dentists in the whole world do not exist, for purposes of our discussion a table has been compiled, including data from the majority of countries and non-self-governing territories in the world. In the preparation of this table the countries were first classified by continent in five groups according to their population per dentist ratios, then the population of countries falling within each group has been added to show the situation in the different world regions with regard to dental manpower.

To obtain an idea of what these ratios really mean, one must remember that even in countries with less than 2000 persons per dentist adequate dental treatment may still not be available to certain sections of the population. Countries in groups 1 and 2 have proportionately at least 50 times less qualified manpower. Knowing that dental services are provided by unqualified personnel, to a small extent, even in countries which are now in group 5 (less than 3000 persons per dentist), it is not difficult to imagine the amount of dental service that is being rendered by unqualified personnel in countries in all the other groups.

POPULATION, IN THOUSANDS, OF COUNTRIES AND TERRITORIES WHICH FALL WITHIN SPECIFIED RANGES OF POPULATION-PER-DENTIST RATIOS \*

Area	Population per dentist				
	1 000 000 or more (group 1)	100 000 to 999 000 (group 2)	10 000 to 99 000 (group 3)	3000 to 9900 (group 4)	less than 3000 (group 5)
Africa . . . . .	51 002	82 593	68 681	42	—
Asia . . . . .	1 260	485 497	131 620	5 352	89 688
Europe . . . . .	—	—	74 080	189 780	92 144
North America . .	—	—	—	187	183 408
Central and South America . . . . .	—	—	61 103	87 117	21 279
Oceania . . . . .	—	1 572	1 003	88	11 273
Total . . . . .	52 262	569 662	336 487	282 566	397 792

\* Data taken from the United Nations *Statistical Yearbooks, 1955 and 1956*. Information from several countries was not available.

With the information which has been presented up to now, it becomes possible to speak of auxiliary personnel by referring to groups of countries where dentistry has attained different stages of development.

#### **4. RECOMMENDATIONS REGARDING THE USE OF AUXILIARY DENTAL PERSONNEL IN COUNTRIES WITH ORGANIZED DENTAL SERVICES**

An organized dental service may be defined as a dental health service being rendered via private dental practice, group dental practice, voluntary or philanthropic agencies, industrial dental health schemes, and local or central government dental services. The service rendered by any and all of these agencies can be augmented considerably by the maximum and efficient use of the appropriate auxiliary. Dental chairside assistants and laboratory technicians are no doubt used extensively in many of these countries, but information already available from certain areas where specific types of auxiliaries have been employed has demonstrated that certain categories, such as the school dental nurse and the dental hygienist, can be of special value in particular aspects of the over-all dental health service.

Consideration should be given to making available special courses for those qualified dentists who have not been trained in the use of auxiliary personnel.

In any area where there is an established dental service it is recommended that the organized profession and the governmental agencies continue to give attention to an extension of the dental team approach as a means of increasing the availability of dental services and so better meeting the dental health needs of the area.

While the curative aspects of any dental health service can be and would require to be expanded to meet an established need, it is desirable to draw particular attention to the necessity for a greatly extended effort in prevention, and in this special field auxiliaries can make a very considerable contribution. The Committee suggests it is important that any programme for development in the utilization of auxiliary personnel in the dental health service should include methods of evaluation so that an estimation can be made of the value of their employment.

It is recommended that the organized profession should continue to give increased attention to research studies in the field of preventive dentistry, recognizing that the supply of trained personnel cannot alone meet the demands and the needs of the population for dental health services. It is further recommended that the organized profession and government authorities give increased attention to an evaluation of their preventive dentistry programmes as well as their research programmes in the field of educational methods.

Governmental health authorities, in conjunction with the organized dental profession, may consider the advantage of starting pilot studies or pilot programmes and operational research in methods of using auxiliary personnel both in private practice and in public health services.

Some large countries with developed dental services may, however, have areas which are in fact under-developed and in such areas the plan suggested for countries in an early stage of development might have a place.

##### **5. A RECOMMENDED PROGRAMME FOR COUNTRIES WITH LITTLE OR NO DENTAL SERVICE**

The programme described in this section is recommended for use by those nations whose people are receiving very little or no dental health care. The government authorities who study this report should recognize that these recommendations are made in fairly general terms, in recognition of the fact that each government will need to plan a programme that meets its own specific needs and fits into the social and economic framework of the country concerned. The recommendations are sufficiently specific so that the governmental officials who study the programme and plan its implementation will have rather definite guide-lines even though the programme is admittedly not a detailed blueprint with all of the specifications included. For example, those who study this plan should not expect to find recommendations as to the ratio of dental personnel to the population or even the ratio of one kind of dental personnel to another, for one cannot be specific in this matter.

It is expected that, in studying this report, each government will need first of all to give attention to the philosophy that has been outlined as a basis for the programme, and that, in planning the specific structure of the programme, it will need to call upon its own experts, who may in turn wish to call in experts from other governments and international agencies for advice and guidance.

This report recommends that each nation should give proper recognition to the dental health needs of its people and make suitable appraisal of these needs. It is recommended that all governments should give full recognition to the needs of its public by the establishment of a dental administration unit in the framework of its public health organization. It is not the purpose of this report to include all of the background information for the implementation of steps such as these, but section 7, which outlines methods of implementing this programme, will give some assistance, and there are many other sources where assistance can be obtained relative to the establishment of such departments.

In those areas in which no professional dental personnel of any recognized kind is available either for providing a dental service or for supervising the work of dental auxiliary personnel, it is necessary to consider the advisability of making recommendations that steps be taken to develop a group of personnel adequately trained to render some dental service. In this respect, it should be pointed out that initially the dental service which

will be rendered may, of necessity, be something less than full and comprehensive. Such a dental service is likely to be of an emergency and pain-relieving type, and may have to be carried on, for an interim period, by a group of personnel whose training has not been as complete and as extensive as the training of those who are normally described or defined as dentists according to standards in countries where dentistry is far advanced. This suggestion, and the reasons which require it to be made, should encourage those responsible in the regions or countries in question to plan a long-range programme for the development of a more comprehensive dental health service, in which the populace will be served by more adequately trained personnel, and also to envisage the time when the professionally trained personnel in these countries will be in a similar position to that of the dental surgeon and dentist of the other countries today. In this same connexion, it is advised that when planning this initial programme for producing professional personnel for these countries, those responsible should endeavour to arrange for the basic training to be supplemented by additional and continuing education, in order to ensure that the personnel can keep in step with the service as it develops according to increasing demands and the economic ability of the country or area to meet those demands.

It is recommended that in those countries where there is little or no dental service currently available the programme for supplying these dental services should be the responsibility of the government, and supported in a large part, if not wholly, by the government, at least during the early stages of the programme. This cannot be a rigid recommendation, for it is fully agreed that when professional services have become rather fully developed and when the professional personnel have become large in number, different systems of payment for dental health services, such as private practice, group practice, pre-payment and post-payment plans, can be developed in accordance with the pattern for provision of health services prevailing in the country.

With this in mind, and always taking into consideration the evolutionary stages through which programmes of this type pass, it is further recommended that, whatever programme is adopted, it be planned in a flexible fashion that permits modification and improvement through the years.

A programme of dental care should be instituted that will make use of at least two and perhaps three more types of dental personnel. The chief person in this group would be adequately trained to operate on patients, and would be called the dental licentiate. He would probably be immediately responsible to the chief of the local health services. The national or regional directors of dental services would provide the necessary technical orientation and supervision. The other types of personnel (one type of which will be called here the dental aide) in this programme would be trained to provide the dental licentiate with various kinds of assistance that, in turn, would permit him to provide dental care to the maximum number of per-

sons. These dental aides would be true auxiliaries, for they would work under the supervision of the dental licentiates. The first type of dental aide that would need to be provided would be one with a minimum of training, so that persons might be prepared for this work in great numbers and in a short time. These persons, as described in section 6, would be permitted to work on patients and render emergency treatment such as the extraction of teeth and the relief of pain.

Educational programmes should be instituted for training these dental personnel in the numbers in which they will be needed for the foreseeable future. It is recommended that these educational programmes be planned in such a way that one or more of the nation's recognized educational institutions could provide this education for the dental licentiate, and that some suitable programme of certification and recognition be established for each of the various categories of auxiliary personnel.

The educational programme for both the dental licentiate and the auxiliaries should be so planned that the programme over a period of years may be lengthened. In this way, the individuals might look forward to receiving further training, and hence to an advancement in stature and position, and a more comprehensive dental service might be possible when the backlog of emergency dental service has been brought under control.

The new programme should be developed in such a fashion that the dental personnel will work in teams, for it is believed, as has been explained elsewhere in this report, that by team-work the amount of dental service can be greatly increased. For example, it is known that the dental service which can be rendered by a dentist can perhaps be doubled if he is assisted by two or more qualified auxiliary personnel.

It is therefore recommended that none of the dental personnel functions alone, but instead that they work in groups of at least two—i.e., one operator and one who assists him. Ideally, these groups should be larger in order to make the optimum use of the team approach.

It is further recommended that at the outset of this new programme attention be given to the recruitment of the proper persons to enter the field of dental service. This is extremely important, for if the programme is to succeed, one must be assured that those entering it will be competent for their responsibility, and also that they will make a career of this work so that their value to the country may continue over a long period of time. Furthermore, this original group entering the field will eventually become the framework of the dental profession in the country, and they should be worthy of the trust that the nation and its people are placing in them.

## **6. DESCRIPTION OF THE PERSONNEL TO BE UTILIZED IN NEW RECOMMENDED PROGRAMMES, AND SUGGESTED METHODS FOR PROVIDING THEIR EDUCATION**

The previous section included a series of recommendations that in effect describe a programme of dental health care that is proposed for those nations where there is little or no dental health care available to a large proportion of the population. This section will describe the two basic types of personnel which are required for this programme—namely, the dental licentiate and the dental aide. As the dental service in a nation adopting this programme develops, one may well expect that two things will occur: (1) the functions of these two kinds of personnel will change, and (2) additional auxiliary personnel will be added to the members of the dental health team.

### **6.1 Dental licentiates**

In many areas of countries in which a dental service is in the early stage of development, the dental licentiate will of necessity act as the normal dental practitioner. He must therefore receive a technical training which will fit him to work in a health service under possibly remote supervision and control. Candidates for training should therefore have a standard of basic education sufficient to support professional study and equivalent to that required for a similar category of medical personnel.

#### *6.1.1 Training period*

The duration of training for dental licentiates should be not less than two calendar years.

#### *6.1.2 Curriculum*

It is recommended that during the first year sufficient time be devoted to the study of subjects necessary to an understanding of the structure and functions of the body as a whole, and in particular of the teeth and mouth tissues.

It is not intended, however, that basic medical sciences such as anatomy, physiology, histology and microbiology would be presented under such headings as independent subjects in the curriculum of a dental school. However, selected aspects of each of these sciences could be presented to the student in an integrated course of basic medical sciences carefully planned to fit the educational background of the student. Each aspect included in the integrated basic science course should be selected with the object of serving as a biological foundation for the dental operations to be undertaken

later. For example, the study of bacteriology would be limited to those basic concepts necessary to understand the principles of asepsis, use of antiseptics, and the role of bacteria in dental disease.

The special dental aspects of the training in the first year should include: tooth anatomy, including preparation by each student of wax models of the different types of teeth, in order to develop manual dexterity and instil knowledge of tooth shape and form; and also some instruction in the use of dental materials.

A considerable portion of the first year would be devoted to the practice of operative dental procedures on phantom heads in accordance with a carefully graduated plan.

The teaching of fundamentals of oral hygiene and prevention of dental disease would be commenced early and stressed throughout the course.

The clinical work on patients may be commenced as soon as the student has gained manual dexterity and should be continued throughout the remainder of the course.

The bulk of the second year would necessarily be composed of supervised clinical work on patients, including dental prophylaxis, cavity preparation and fillings of primary and permanent teeth, extractions under local anaesthesia, drainage of dental abscesses, treatment of the most prevalent diseases of supporting tissues of the teeth, and the early recognition of the more serious oral conditions. The student should be taught to refer such cases for treatment by senior staff and he should be clearly orientated on the limitations of his field and the scope of the service he will render.

Also in the second year, special instruction would be given on public health subjects that would prepare the individual to function adequately in a dental health team, such as the structure and function of the public health services in the country, the relative importance of the oral diseases, and the fundamental principles of community and school health education.

There should also be included at this stage of the course a series of lectures on the history of the dental profession, its code of ethics, and the high standards of moral conduct that are expected from the dental licentiates.

It is understood and should be stressed at this point that as soon as the most urgent needs of the dental services for this type of personnel have been satisfied, measures should be taken to increase the duration of their training and the educational requirements, which in the above description have been kept at the bare minimum.

## **6.2 Dental auxiliaries**

### *6.2.1 General education*

The standard demanded will have to be related not only to the particular function for which the auxiliary is to be trained, but also to the general

level of education and cultural development of a country. It should be as high as possible, having regard to the number of entrants required, and sufficiently high to assure that those accepted for any particular grade are able to take advantage of the training provided. The social and cultural background should ensure full appreciation of the value and significance of the service rendered to the public.

#### 6.2.2 *Teaching personnel*

The first step in establishing a corps of auxiliaries is the provision of adequately trained teachers to staff the school. In the first instance, potential teachers might receive their training in established schools existing elsewhere. It is important to select persons with an intimate knowledge of the cultural background, reaction to disease, and social environment of the population to be served.

#### 6.2.3 *Plan of training*

In teaching student auxiliaries it is important to adopt methods conforming to the basic idea that rarely can trainees by themselves relate textbook knowledge to field work or to specific problems or actions.

Educational methods should have regard to the basic educational level of the trainees. The lower the level of instruction, the higher should be the proportion of practical work.

#### 6.2.4 *Length of training*

In general, the length of time spent in training courses should be kept as short as is consistent with the needs of the student in relation to his future assignment.

#### 6.2.5 *Curriculum*

The course of training should be essentially practical, and theoretical aspects limited to such as are absolutely essential for the understanding and development of clinical practice. Special emphasis should be placed on the preventive aspect of the work to be performed. Throughout the course every opportunity should be taken to stress the importance of maintaining high ethical standards in professional contacts. The aim should be to create a pride in the work of the group based upon the acceptance and belief in its value to the community as a health measure.

#### 6.2.6 *Supervision*

The imposition of a system of supervision upon any corps of workers means that they form part of an administrative structure of some kind.

The implication is that they will operate within a salaried health organization rather than in private practice. Supervision is an elastic term, and may include anything from constant personal supervision to what might rather be looked upon as consultation. In higher grades supervision may gradually be relaxed as an auxiliary gains experience. It should never be lost sight of that the real object of supervision is to protect the public.

#### 6.2.7 *Conditions of service*

The remuneration and the conditions generally under which an auxiliary works must be good enough to attract persons with the necessary educational and cultural background. They must be equated with those offered by other professions to persons of a similar grade. The conditions under which an auxiliary is trained and works are as important as remuneration.

The creation of a sense of the value and importance of the vocation to the public can be a major factor in attracting a desirable type of entrant.

### 6.3 **Dental aides**

During the period before a sufficient number of dental licentiates can be trained it may be necessary to train dental aides who would, after a much shorter course, be capable of relieving pain by the extraction of affected teeth.

#### 6.3.1 *General training*

This of necessity would have to be of an elementary nature and truly related to the educational status of the trainees. Simple instruction would be given on:

- (1) the function and structures of the oral cavity;
- (2) use of drugs;
- (3) sterilization;
- (4) recognition of disease;
- (5) elementary first-aid procedures;
- (6) technique of local anaesthesia;
- (7) technique of extractions;
- (8) control of haemorrhage.

Teaching of sterilization must be regarded as of great importance, and while extensive theoretical teaching may not be possible because of

the candidate's limited education, stress may be placed upon didactic teaching of practical methods of sterilization.

The use of drugs will be necessary for the relief of pain and the control of infection, and appropriate instruction must be given on this aspect.

It is most important that the trainee should be capable of differentiating between conditions requiring only simple treatment and others where dangerous complications could follow and hence where treatment should be carried out by a more fully trained person working under more satisfactory conditions.

### 6.3.2 *Length of course*

Four to six months should be adequate for the formal part of the course, if it were followed by a period of at least six months' work in the field under direct and constant supervision.

As soon as a sufficient number of dental licentiates have been trained the need for this class of dental aide will disappear, and it is very likely that a new type of auxiliary will be developed as a member of the over-all dental health team.

## 7. SUGGESTED METHODS FOR PROGRAMME IMPLEMENTATION

It is essential that any programme for providing dental services should be included within the framework of the existing public health programme of the country. In order to provide qualified dentists who can best administer the dental programme, especially at the national and, in most cases, at the district level, it is suggested that the candidates receive, where possible, training in public health. It is important that information relating to dental health should be included in the training programme for public health personnel, who would include medical officers, public health nurses, health educators, teachers and others immediately responsible for the health of a people. Where national public health training centres exist, dentists should be admitted as students in the training programmes.

In order to develop a dental programme on sound principles of public health administration it is suggested:

(1) That there should be a dentist directing dental activities within the Ministry of Health. This dentist must be carefully selected, and he should have had formal training in this field.

(2) That there should be careful selection of regional dental staff and others in responsible positions.

- (3) That a study should be made to define:
  - (a) dental morbidity problems;
  - (b) organizational problems;
  - (c) methodological problems.
- (4) That a definite programme plan should be developed in relation to:
  - (a) time;
  - (b) the establishment and the training of staff;
  - (c) provision for equipment;
  - (d) the expansion rate of the programme;
  - (e) the budget;
  - (f) the co-operation with and relationship to international health agencies.
- (5) That where necessary there should be agreement by government in regard to the programme, the approval of the programme plan, and the passage of any legislation which is deemed necessary. The scheme should be announced by the government.
  - (6) That dental health education of the public should commence.
  - (7) That personnel for field training should be selected.
  - (8) That the training programme for the dental personnel should be commenced.
  - (9) That trained staff should be employed in relation to the plan of organization.

## 8. SUMMARY AND CONCLUSIONS

It was the wish of the Committee that these recommendations might serve many nations, and that any countries making use of them might report to other countries on the successes or failures that they experienced in attempting to implement them.

The Committee recognizes that while there is a great need for more dental service in every country, the demand for this service varies tremendously. Dentistry has developed at different rates in the various countries of the world, and this development has followed evolutionary patterns not unlike those of a nation's economic and social growth. Not all populations are equally aware of their own health problems, and this creates a difference in the demand for dental health care, and hence affects the attention that

the governments themselves often give to providing these services for their people.

It is recognized that even in the highly developed nations it is not possible to produce a sufficient number of fully qualified dentists to provide all the dental care that is needed. It is also recognized that a greater quantity of dental service can be rendered by the efficient utilization of auxiliary personnel and by the use of the dental health team.

This report advises the nations with dental health programmes to expand their dental services by the utilization of auxiliary dental personnel and development of dental health teams. It emphasizes the necessity for all auxiliary dental personnel to work only under the supervision of a dentist, who in turn will assume full responsibility for the work that is performed by the auxiliary. Stress is also laid on the importance of ensuring that all auxiliaries are well informed on the responsibilities as well as the limitations of their task.

The report goes into considerable detail in recommending a scheme whereby the countries that have no dental programme can establish a programme incorporating many of the principles that are found effective in other nations, and one that provides for future growth and evolution. This programme introduces two new categories of dental personnel—namely, the dental licentiate and the dental aide.

This report emphasizes the need for the nations which have no dental programme to create dental administration units within the framework of the government service. Such a department would be headed by a qualified dentist with proper training in the field of public health.

The report also emphasizes the importance of conducting research in the field of preventive dentistry so that additional methods may be found and existing ones improved for the purpose of reducing the need for dental care throughout the world.

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