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HEALTH LABORATORY SERVICES : THEIR ROLE
IN THE EDUCATION AND TRAINING OF HEALTH PERSONNEL

by

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The importance of health to nations is axiomatic and needs no justification. Many developing countries are becoming increasingly interested in expanding their health services. However, there are many problems to be solved and many obstacles to be surmounted before this goal can be achieved. Much depends on the economic status of the country concerned and a serious problem in all developing countries is the lack of qualified personnel in general, and of health personnel in particular.

It is evident that, in planning health services, an attempt should be made to reach goals with the minimum possible expense and plans made should be practical and realistic, as well as satisfactory and suitable to the country concerned.

Since adequately trained personnel are needed to attain the goals of all health services, the education and training of personnel must receive high priority and the planning for such becomes of great importance.

Special educational centres can be, and are, established for the training of the various categories of health personnel, with each centre having its own and independent administration, staff, premises, facilities, equipment and supplies. The writer considers that the shortage of teaching staff and the lack of funds make for completely independent training centres being undesirable and impractical in developing countries. He considers

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it imperative to develop and utilize training schemes that will be relatively inexpensive, will ensure economy in the use of technically qualified teaching personnel and will employ all resources to the best advantage. This means that all existing resources, that will facilitate the education and training of health personnel, should be utilized as much as possible for shared learning experiences.

The education and training of all health personnel have many things in common and lend themselves to this sharing of the facilities available and to cooperation between the technical staffs. Hence the choice of training areas should be based on the availability of:

- teachers who can ensure the quality of the training;
- adequate working space in a healthy environment;
- the necessary equipment and supplies;
- reference books, library facilities and teaching aids.

Also, the training areas should be easily accessible to both staff and students. In addition to these material needs, spirit of close cooperation between the various members of the teaching staffs and between teaching staffs and students is required. Further, the overall programmes for the education of all health personnel must be well planned and balanced.

The participation of the students of various categories in common learning experiences for parts of their curricula will be, then, cheaper to finance and will result in the economical use of available personnel and facilities.

The health laboratory services in many of the developing countries are fortunate in having the human and physical resources required to establish such shared training experiences and so can play a major role in the education of health personnel. The specific educational role of these services is to provide facilities for the training laboratory technicians, at various levels, but they do contribute most valuably to the education of medical students and can, and should, so contribute to the training of other health personnel such as nurses, midwives, sanitarians etc.

As the process of health laboratory development as a whole is a dynamic one, not static; with laboratory techniques and procedures being changed continuously to ones which are more reliable and less time-

consuming, the health laboratory services have a responsibility not only for the education of trainees but also for that of trained health workers so that the latter may keep up-to-date with developments. This means the provision of in-service training, the purposes of which have been well summarized by Palmer¹:

1. To make up for deficiencies in technical and scientific information;
2. To increase outlook and understanding in relation to specific tasks;
3. To acquaint the staff with the fundamentals of health personnel and public relationships in order to encourage the smoother functioning of the day-to-day work;
4. To keep the staff abreast of new technical procedures and administrative arrangements.

There are top level health laboratory teaching personnel in all of the countries of this Region, especially in the Central Public Health Laboratories. Whether these be national or international workers, they have acquired the specialized knowledge and skills which make them highly qualified to participate in the training programmes offered to the various categories of students being prepared for work in the health services.

The Training of Laboratory Technicians

As the specific educational role of the health laboratory services is to provide training for laboratory workers, the writer considers that it is of importance to take a look at the needs in relation to this training and to the services required of the trained personnel.

As has been noted already, the top-level laboratory personnel in the countries of this Region are well prepared for their responsibilities, most having been prepared abroad. The lowest level of laboratory workers the laboratory aides - does not require extensive training and such as is required can be made available without much difficulty. Difficulty arises

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¹Palmer, O.T. as quoted by Bearg, Phillips A. in the American Journal of Public Health, 36, 130, 4 November 1946

when consideration is given to the training of the laboratory technicians, and the assistant laboratory technicians, which categories form the backbone of the services as they actually perform the tests and bridge the gap between the top and lowest levels of laboratory workers.

These technicians could be trained abroad but this is costly and also it separates the trainees from the local milieu in which they are going to work. As their work will require a good understanding of local problems, a training programme carried out in their home country can be adjusted to the needs and resources of this country. Further, local training is also beneficial to the instructors because it requires of them up-to-date knowledge of their specialities and preparedness in the skills of their work. Local training, then, is beneficial to the students and staff and to the economy of the country.

For the most part, polyvalent laboratory technicians are needed in the central and the peripheral laboratories. For specialization, post-basic training must be provided, according to the interest and aptitude of the individual technician. Included in this further education must be training for selected technicians which will enable them to participate in the training programme, to supervise the work of their sections, and to assist adequately the laboratory scientist in the operation of the centre.

To produce polyvalent laboratory technicians, a course of not less than two years is required, with the entrance prerequisites adapted to the country concerned but with the goal of requiring completion of secondary school, science section, when possible.

A balanced, well organized curriculum which covers the different aspects of laboratory work is required and should be adhered to strictly. The ratio of formal teaching and demonstrations to practical work under supervision will be determined by the relative importance of same in the specific country but training programme should include the teaching of, and practice in, bacteriology, parasitology, serology, haematology and blood bank techniques, introduction to histopathology, and clinical pathology.

The Training Provided for Other Health Personnel

The health laboratory services can contribute to the programme of nursing and midwifery students, and to the in-service education of the trained personnel in these fields, in respect to microbiology, parasitology and other laboratory specialties. Included among the contribution which these services can make are to provide theoretical and practical experiences which lead to:

1. An appreciation of the micro-organisms which are a menace to health, of how they live and multiply, of the ways in which their characteristics and habits differ;
2. A working knowledge of the best ways to prevent the growth of, and to destroy, these pathogens;
3. An understanding of the sources and modes of infection;
4. A knowledge of natural body defences and immunity; of the concepts and procedures of immunization;
5. An appreciation of the role of nurses and midwives in the fight against communicable diseases; of their function to educate the public in this respect;
6. An understanding of the importance of laboratory tests and of the nurse's (midwife's) role in the collection and handling of specimens.

For the sanitarian, the health laboratory services can provide the learning experiences - both theoretical and practical - which will lead to an understanding of the concept of contagion, for most of his work is concerned with attempts to make the environment cleaner and safer and to reduce the hazards of infection by natural or artificial means. As for nursing and midwifery students, there can be presented basic information on the existence and activities of micro-organisms, of their relation to health and disease. Also to be acquired by the sanitarian is a knowledge of the need for sanitary practice in daily life, as well as some understanding of the relation between microbiology and diagnosis, treatment and prevention. The sanitarian requires good background information on bacteria in the air, water, milk, foodstuffs, sewage and soil and to understand the significant bacterial tests relevant to the those bacteria that are hazardous to man.

He should also have working knowledge of parasites of public health importance : the malaria parasite, amoeba, haematodes, cestodes, trematodes and others.

He should be well versed on the collection and examination of water specimens from taps, wells, surface drains, stool and suspected food specimens.

Lectures should be accompanied by demonstrations and practical work; microscopic forms of different kinds should be shown; cough plates, finger prints, plates exposed to air should be of practical value. Demonstration of the different methods of exterminating micro-organisms should be given: for example, the process of killing micro-organisms by boiling, autoclaving, by the use of disinfectants, etc.

Summary

The chief purpose of the activities of public health personnel in developing countries is to raise the standard of health, thus contributing to the general effort to raise the standard of living. Presented in this paper are aspects of training for health personnel which can be provided by the health laboratory services and which are geared to the economic status of, and the availability of well qualified technical personnel in, these countries.

The value of the ideas presented can be best judged by subjecting them to the fundamental test of whether they are "capital cheap" or not. Economists use the term "capital cheap" to designate any activity which makes practical use of resources at hand and which does not consume capital but rather contributes to its accumulation.

Training activities are consumers of capital, but can be "capital cheap" if they release productive forces leading to a real accumulation of capital in the sense that the effects are permanent and are directed to socially useful ends.