

# SYMPOSIUM ON WORLD MEDICINE

*At the Symposium on World Medicine, held March 17-18, 1961, at New Haven, Conn., to celebrate the 150th anniversary of Yale University School of Medicine, the speakers outlined some of the major challenges facing the world's epidemiologists, immunologists, and virologists. Public Health Reports is printing, on the following pages, papers based on the addresses of six symposium participants. Proceedings of the conference will not be published.*

## Epidemiology and World Medicine

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I SHALL NOT attempt any precise definition of epidemiology either in its old or in its modern sense. I shall consider epidemiology as the study of the distribution of disease in large or small populations. It may, at one extreme, measure the broad prevalence of disease, nationally or internationally; at the other, it may examine small numbers of cases that present common features, such as blood dyscrasias caused by ionizing radiation. Between these extremes of mass statistics and small group studies lies a wide range of field and laboratory studies of many kinds, which, by epidemiologic methods and epidemiologic thinking, contribute to our knowledge of the etiology and mechanism of disease.

Epidemiology has achieved many important advances in recent years; it has broadened its scope and has extended its fundamental ideas. Its boundaries are now wider than its original territory of communicable disease, and its concern with noncommunicable disease, considered as a phenomenon of population, is progressively expanding. Epidemiology was formerly conceived of as primarily a concern with a specific infective agent; it now takes into account man's whole environment and his own reactions to that environment. In this way proper weight can be given to multiple causation, to the multiple

interactions of innate characteristics and factors in the environment. This we might call the ecological approach, and it appears that it will be the most fruitful strategy for the future.

World medicine, the other half of the subject I am considering, is also a term with many possible meanings. It has been said that peace is indivisible, so also is medicine, and, as all physicians must feel, indivisible in a more immediate and practical meaning. All medicine is in a sense world medicine, for there is scarcely any advance in medical knowledge that does not affect the practice of medicine throughout the world. I am principally interested in the part played in world medicine by the World Health Organization.

The Organization is primarily an intergovernmental public health body and, in that capacity, carries on the traditional epidemiologic functions that it inherited from its predecessors. The foundation of any scientific work is a proper knowledge of the facts; the first step in the discharge of world epidemiologic functions is the collection of health statistics. WHO now receives regular statistical information on a substantially larger scale than that supplied to the League of Nations. For example, in 1938 causes of deaths were reported by 35 countries and territories; in 1959, by 108. The number of countries sending in reports on infectious diseases has also greatly increased; moreover, we now receive regular information

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about vaccinations and immunizations of various kinds from 160 countries and territories.

These reports are published monthly in the *Epidemiological and Vital Statistics Report* and, with further contributions from the United Nations and national statistical offices, in the *Annual Epidemiological and Vital Statistics*.

In order that the information received from the various countries may be as comparable as possible, WHO offers advice to countries as to the optimum methods of collecting and publishing their national statistics and encourages the use by all countries of uniform methods for these purposes.

International epidemiology had its origin in efforts to control the spread of the quarantinable diseases. Those pestilences now present less of a danger to world communications and world health, but improved control of an infectious disease does not necessarily reduce the responsibilities of the World Health Organization in regard to communicable diseases. When a disease is as widespread, for example, as measles still is, international or even national reporting is of relatively small immediate practical consequence. When the incidence of a given disease is reduced to a small compass, such as that of smallpox in many areas of the world, it becomes more than ever necessary to obtain and disseminate information about its occurrence so that international preventive measures can be taken quickly. A parallel is the great care that is necessary in tracing and dealing with the last few cases of a disease that is being eradicated from a country or region.

The control of influenza illustrates some special features. WHO obtains early information on any new outbreak of influenza and the number of cases; it also undertakes the important task of ascertaining what strains of virus are prevalent in each outbreak and of disseminating this information widely, so that an effective prophylactic may be prepared before the wave arrives. The work of Dr. A. M.-M. Payne at headquarters and of the influenza centers in many parts of the world showed clearly in 1957-58 the value of this system. In the near future we shall have to increase the work we are doing in the collection and dissemi-

nation of information on the prevalence of strains of other pathogenic viruses, such as poliomyelitis and the other enteroviruses.

Besides running this intelligence service, the Organization often aids the practical work of prophylaxis by assisting and coordinating vaccination campaigns and by encouraging the acceptance of uniform international standards of potency and safety for vaccines used in those campaigns.

A special interest in malnutrition is inevitable and immediate in a world health organization, and since the Organization was founded, we have done much work on this problem, usually in collaboration with other international organizations. In particular I mention our joint epidemiologic work with the Food and Agriculture Organization on kwashiorkor in Africa, Latin America, and India, which has led to the encouragement of research into ways of locally producing sufficient supplies of good quality vegetable protein.

More recently, WHO has turned its attention to the chronic diseases and particularly to cancer and cardiovascular diseases. Here its principal task, for the present at least, is to promote the standardization of nomenclature and techniques and to stimulate the study of differences in the incidences of cancer and cardiovascular diseases in different countries and ethnic groups, in the hope that such studies may provide a key to the better understanding of their etiology.

The World Health Organization has set up reference centers for mammary tumors, soft tissue tumors, and lung tumors, and plans are being worked out for a comparative study of the geographic pathology of several cancerous disorders. An example of this work is the study in Finland and Norway of the differences in the prevalence of lung cancer in urban and in rural areas.

Differences among certain countries in the prevalence of atherosclerosis were the origin of WHO's interest in cardiovascular diseases. This has already given rise to an international study, in several countries of the Americas and Europe, the object of which is to arrive at agreed uniform methods of grading pathological lesions. The Organization desires also to promote studies on the prevalence of ischemic

heart disease and arterial hypertension in different environments, with particular attention to comparisons between technically developed areas and areas, such as may be found in Africa, that are now undergoing rapid changes. Chronic cor pulmonale and the cardiomyopathies are other heart diseases for which WHO might usefully coordinate research. The multiple causes of cardiovascular diseases provide one of the best examples of the multiple interactions for which it will be necessary to work out the methods and techniques of identification. Similar international research is required in the study of psychosocial problems in areas that are disrupted by rapid urbanization and industrial development and in the study of mental disorders in general.

The Eleventh World Health Assembly in 1958 voted to intensify the Organization's program of medical research, and various groups of eminent scientists have given us valuable help in organizing that program. One of its main objectives will be to promote conditions in which knowledge and experience acquired by scientists in different parts of the world may be more readily compared and correlated by standardizing nomenclature, definitions, and techniques, and by using standardized reagents. In particular, we are examining what can be done to provide standard serums and reagents for use in virus research. In a rather different direction, we are assisting applied research by arrangements under which the manufacturers of promising new insecticides may have their products assayed and tested in laboratories designated by WHO. With the help of the National Institutes of Health, Public Health Service, some progress has been made with this scheme, which should materially reduce the interval between the discovery of a new insecticide and its use in the field.

Basic to the work of the World Health Organization in international public health, epidemiology, and medical research is its special role in relation to the "International Classification of Diseases." WHO has responsibility for arranging the successive revisions of this publication and for insuring that it remains continuously up to date and ready to serve the needs of its many users in almost every branch of health activity. I cannot emphasize too

strongly that without an internationally established classification of diseases the interchange of health information between countries would be greatly impeded and international cooperation in epidemiologic research would be much less effective.

The Organization does not neglect the more traditional methods of insuring that medical progress may be extended to all parts of the world. It encourages the exchange of scientific information in publications, at meetings of scientists engaged in similar or related work, and by any other suitable means. It may be found that one of the most successful methods of aiding research is to bring men with special skills or experience to the places where those qualifications may be usefully applied to the local problems. In 1956, for example, a Tuberculosis Chemotherapy Center was set up in Madras, as a joint enterprise by the Madras State Government, the Indian Council for Medical Research, the British Medical Research Council, and the World Health Organization. Fourteen scientific papers have been published as a result of this enterprise, and nine more have been approved for release. It has been shown that, in communities where the living conditions are similar to those of Madras, domiciliary chemotherapy holds great possibilities for the successful treatment of tuberculosis. Fortunately the collaboration of those organizations is likely to continue for some years.

A special and important side of WHO's assistance to research is to help in the training of research workers. Its fellowship schemes have already given the Organization a good understanding of what developing countries need in the way of assistance to training, and of the resources available in developed countries from which those needs can be met. Training for research work is a special task and it still calls for careful study, but it is quite possible that this kind of assistance to training may prove to be the World Health Organization's most effective and material contribution to the advancement of medicine.

My purpose has been to show that in epidemiology and world medicine the World Health Organization has a definite part to play. I have sketched briefly the main lines of that part: col-

lecting and disseminating information (a process that often brings to light problems that require study), getting together research workers from different countries to work on common problems, providing services that will assist research, attacking research problems that are basically of international rather than national significance, and, possibly the most important of all, helping to train workers for research.

I believe that the Organization is in a good position to carry out those tasks. Its very structure allows it to obtain information from any part of the world in which there are medical

problems that require investigation. Its staff represents a great diversity of cultures, inspired by a real international esprit de corps. But the main strength of the World Health Organization lies in the good will and collaboration of medical workers throughout the world. On this it has learned it can depend more than its most enthusiastic champions would have thought possible when the Organization came into being some 13 years ago. I am sure that WHO, in collaboration with medical workers in all countries, will continue to be worthy of this support.

### **Tine Test for Tuberculosis**

The tine test for tuberculosis, which uses a new device for injecting tuberculin, appears to be superior to the patch test, according to Dr. Michael L. Furcolow, chief of the Kansas City Field Station of the Public Health Service Communicable Disease Center. He believes, however, that further work on the test will be necessary before it will be a satisfactory substitute for the Mantoux interdermal test.

Dr. Furcolow and his colleagues were one of four groups reporting studies of the new test at the annual meeting of the National Tuberculosis Association in Cincinnati, Ohio, May 21-25, 1961.

The new device is a stainless steel disk with four triangular stainless steel tines, all fitted into an inch-long, cylindrical plastic plug. The tines are coated with a concentrated filtrate of heat-killed tubercle bacillus and then dried. To make the test, the unit is pressed firmly against the skin allowing the tines to perforate it. After use the unit is discarded.

Since it eliminates the need for freshly sterilized needles and syringes, the new

technique is faster and easier to administer than the Mantoux test. It is also possibly less frightening to children than use of the needle.

In a study of the accuracy of the new test, Dr. Furcolow and his colleagues found that 97 percent of 4,048 school children who were negative to the Mantoux test were also negative to the tine test using single-strength tuberculin. Only 77 percent of those positive to the Mantoux test were positive to the single-strength tine test, but agreement was increased to 92.3 percent when the standard double-strength tuberculin was used.

A clinical study of 800 sanatorium patients by Dr. D. C. Capobres and co-workers at Mount Vernon, Mo., found that the tine test yielded less than 5 percent false negatives and false positives compared with 22 percent false negatives on the patch test. Two other clinical studies, one by Dr. Sol R. Rosenthal of Chicago, who designed the steel disk, and the other by Dr. Edith M. Lincoln of New York City, indicate a correlation of 86 to 97 percent between the tine test and the Mantoux test.