

THE CONTRIBUTION OF THE NATIONAL INSTITUTE OF HEALTH FOR THE DEVELOPMENT OF PUBLIC HEALTH IN PORTUGAL

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Mr. Chairman, Ladies and gentlemen, may I start by stating how pleased and honoured I feel for the opportunity of participating in this festive occasion. It is a great privilege, indeed, to join this distinguished assembly to commemorate the fiftieth anniversary of such a prestigious Institution as the Istituto Superiore di Sanità. As a representative of a sister institution I would like to offer the Director of the Istituto and his staff my sincere felicitations for the achievements they and their predecessors have accomplished in the past while wishing them the best success for the years to come.

My presentation will be divided into three parts:

- 1) The position of the National Institute of Health (NIH) in the context of the Portuguese Health Services.
- 2) The main attributions of the NIH and a brief outline of its structure.
- 3) Some examples of the contributions which the NIH has given for the development of public health in Portugal.

The Portuguese National Institute of Health (NIH) was created in 1898 (*i.e.*, 84 years ago) under the designation of Central Institute of Hygiene, in the Directorate-General for Health, which, until quite recently, has been responsible for Preventive Medicine and Environmental Health.

In 1971 there was a major reorganization of the health services in the country which profoundly affected the Institute on what concerns its institutional objectives, its structure, its scope and activities and also its location in the organizational set up of the Ministry of Health.

With its new designation of National Institute of Health it became independent from the Directorate-General for Health and it was brought directly under the Minister of Health, having been assigned a much more important role: the one of becoming one of the central organs of the Ministry responsible for defining the national health policy and for the plann-

ing, programming, execution and evaluation of the health activities in the country.

In order to provide its input into this process, it was thought that the Institute should develop its activities along three main lines:

- a) applied research in the health field, aiming at knowing the health status of the population;
- b) education and training of some health professions;
- c) laboratory support to the health services.

In very general terms I may say that the *research* work which is carried out by NIH is mainly of laboratory and epidemiological nature and it aims at a better knowledge of the health status of the population and of its trends along the time in order to help the health services to plan their activities according to realistic and objective data. This research work is developed in different areas, first priority being currently given to communicable diseases, food and nutrition, and environmental health. Clinical chemistry, hematology, human genetics, drug control, occupational health, cardio-vascular diseases and health administration are also areas of particular concern.

In relation to its *educational activities*, the NIH provides basic, postgraduate and continuing education to laboratory and environmental health personnel. It is also responsible for the orientation, coordination and supervision of the nursing education which is delivered by the existing 30 nursing schools.

On what concerns the *public health laboratories*, the NIH, besides operating as a national reference laboratory, also provides support for the activities of those laboratories through the training of the personnel, the standardization of reagents and methods, the coordination of a national quality control programme and the provision of general guidelines for their administrative, technical and scientific management.

All these activities are carried out at the headquarters of the Institute, in Lisbon, and at its Delegation, in Oporto, through a set of departments and research centres.

The permanent staff of the Institute is around 550 people, some 20% of it corresponding to scientific personnel with different sorts of background (Medicine, Pharmacy, Biology, Chemistry, Engineering, etc).

Coming now to the third part of this presentation, I will try to give you an idea of some of the contributions which our Institute has given to the development of the health sector in Portugal.

Having in mind its long history and the vast spectrum of its activities — as implied in its organizational chart — this will be, indeed, a difficult task. I will try to summarize and emphasize only a few of the more significant aspects, focusing my attention mainly in the period which elapsed since the reorganization of the Institute, 13 years ago.

Perhaps it will be appropriate to start by saying a few words about the role of the NIH in the *definition of national health policies*. This role has been quite important since the early days of the Institute and in recent years, as a consequence of studies conducted by my direct predecessor, Prof. Ferreira, we had in 1971 a thorough reorganization of the health services which paved the way to the creation of a National Health Service and will remain as a landmark in the history of public health in Portugal. In fact, seven years before Alma-Ata, an organized system of primary health care was implemented based on a network of local health centres, scattered all over the country and covering the most peripheral areas, which were made responsible for health promotion, prevention of disease and basic medical care. This system has been of great importance for the improvement of the situation in relation to health education, environmental health, mother and child health, including family planning, and the control of communicable diseases.

Still in the field of national policies, the Institute also plays a role in the definition of *health research policies* through participation in the National Research Board for Science and Technology. For several years we have also been a member of the Advisory Committee for the Health Sciences of the National Institute for Scientific Research — an agency of the Ministry of Education which is responsible for the research which is done in universities.

Now let me present you some examples of the work which is or has been actually carried out by my Institute in the field of applied research. From these examples you will easily infer the importance of our work for the development of public health in the country.

Historically, *Communicable Diseases*, including parasitic infections, represent one of the most traditional areas of our work — what is explained by

the still relatively high prevalence of these conditions in the country.

In this field 3 sorts of studies are or have been conducted:

a) microbiological and epidemiological studies aiming at the collection of data on the situation of the Portuguese population, as communicable diseases are concerned, in order to gather information regarding their natural history, etiology, mortality and sequelae, diagnosis, treatment and control;

b) surveillance studies and programmes;

c) development of research and diagnostic laboratory methodologies and techniques.

Microbiological and epidemiological studies. — Before 1971, *i.e.*, before the reorganization of the Institute, a few subjects were of particular concern to us, namely: sexually transmitted diseases (specially syphilis), brucellosis, rickettsioses, trachoma, influenza and poliomyelitis.

The work done on syphilis in the fifties was fundamental for the introduction and spreading of the new concepts regarding the diagnosis and treatment of the disease.

On what concerns brucellosis a lot of work was done which permitted to define the epidemiological situation in relation to human infection and eventually lead to the development of official regulations on the production and sale of fresh cheese — the main vehicle of propagation of the disease.

Many studies were also done in the field of rickettsioses which were of great importance to clarify the evolution of the infection in the ticks and also to identify new reservoirs and vectors, thus allowing a better control of these diseases.

Still in the fifties and early sixties an important contribution was given in relation to trachoma which led to its eradication.

A word should be said about cholera. The huge amount of work carried out by our Bacteriology Laboratories during the two epidemic outbreaks of 1971 and 1974 was the basis for the quick eradication of the disease. Since 1975 not one single case has been detected nor the agent isolated through the surveillance programme which is still pursued.

It was also in the early sixties that periodic serological surveys for poliomyelitis and other preventable infections were started. These studies helped to plan, evaluate and follow up the National Programme for Immunization which began in 1964. These surveys have been extended all along the years and the last one, in 1980, included 19 different bacterial, viral and parasitic infections. Because of the growing interest in congenital malformations particular attention was given to rubella: the first immunological survey for this infection was done in 2 districts only (Lisbon and Oporto) in 1972, a second one covered 8 districts in 1974 and all the 18 districts of the Continent were studied in 1980. As a

result of these studies rubella is now included in the National Programme of Immunization.

In the field of parasitic infections a programme is being developed for the study of intestinal parasitoses. Several projects have been included in this programme and some 6,000 people have been studied in order to get information on the prevalence of the infection, species association and parasitic load. This programme was jointly planned with the primary health care services so that adequate control measures could be implemented.

In the late years many projects have been developed in the fields of enteric infections, respiratory infections, sexually transmitted diseases, viral infections of the central nervous system, arbovirus infections, parasitic infections and congenital malformations.

Surveillance studies and programmes. — Studies are currently done on the resistance of several bacterial strains to antibiotics (namely *S. typhi*, *N. gonorrhoeae* and *H. influenzae*) — a work which provides useful information for the establishment of sound policies for the use of antibiotics; a systematic search for *V. cholerae* is done on wastewaters of the areas which were affected by the 1971 and 1974 epidemics; periodic surveys are made on influenza and other viral respiratory infections; and a National Register for Congenital Malformations related to uterine infections is now being implemented.

Also a National Centre for the Epidemiological Surveillance of Communicable Diseases is now in the process of being mounted in cooperation with the World Health Organization.

Development of laboratory methodologies and techniques. — Besides all the work which is continuously done in our laboratories in the field of standardization and also with the aim of finding the technologies which are the most appropriate to our needs (comparative studies for sensitivity, specificity, accuracy, precision, economy, etc.) I would like to make a special mention to the developments we achieved in the immunological diagnosis of two parasitic infections — namely schistosomiasis and fascioliasis — as a result of biological research.

In the case of schistosomiasis and thanks to the pioneering studies which were conducted in the sixties, our Parasitology Laboratory in Oporto succeeded in developing a method for maintaining the whole cycle of the different species of *Schistosoma* (*hematobium*, *mansoni* and *bovis*) through successive passages in the hamster and in the snails. A new technique was devised in 1974 which made it possible to obtain large amounts of live worms which were then used for the preparation of purified antigens. The availability of large quantities of antigen enabled the Laboratory to perform a great number of immunobiological studies which eventually led to the conclusion that for the immunological diagnosis of

the human infection by *S. hematobium* it is preferable to use a heterologous antigen (*S. bovis*) than the homologous one since there is cross-reactivity between the two and the first is much more difficult to keep in the laboratory. The strain of *S. bovis* is kept in our laboratory since 1974 and is now in its 34th passage without interruption of the cycle.

A similar situation occurred with fascioliasis. After basic research work on the biology and ecology of *F. hepatica* it was also possible to keep both human and animal strains of the parasite in the laboratory and to obtain large amounts of antigenic mass which has been used for several purposes. Among other things, it was proved for the first time that man can also act as a reservoir and large epidemiological surveys were carried out which detected more than 20 foci of human fascioliasis (a disease which was considered rare in the country) in the north and centre of Portugal. Two of these foci have been thoroughly studied and more than 600 cases are now under control.

These studies not only demonstrated the importance of human fascioliasis as a significant public health problem but they also contributed for the development of laboratory methodology which is now being used for more sophisticated work (the relationship between immune complexes and the parasitic load; application of the ELISA technique to the diagnosis of the human infection; the role of IgE antibodies in human fascioliasis, etc).

Although the basic work which led to these results was done in our laboratories, I must stress that some of its developments were only possible through cooperative work with other centres, specially from Spain, France and the U.K. And it is only fair to say a word of appreciation to Prof. André Capron, from Lille, whose cooperation in these last few years has been fundamental for much of the progress which was achieved.

Let us now have a quick look at the contributions of the NIH in the field of *Food and Nutrition*. This area has been of great concern to us for many years so much so that a special research centre was created in the Institute in 1976 for the study of nutrition problems. The main activities in this area, which are developed in close connection with the Laboratory of Food Hygiene, may be summarized as follows:

- studies related with the production and importation of foodstuffs and the nutritional habits and requirements of the population, which lead to the establishment of the *Dietary Goals for the Portuguese Population* and the definition of a *National Food and Nutrition Policy*;

- production and updating of the *Portuguese Food Composition Table*;

- elaboration of the *Recommended Dietary Allowances* for the Portuguese population;

- evaluation of the nutritional status of the Portuguese population through nutritional surveys, the most important one being the *National Nutrition Survey*, which covered 2% of the population (18,000 people) in urban and rural areas. In this survey, the individual and familial daily food intake as well as the food and cooking habits were studied. Clinical and laboratory data also were collected;

- development, in collaboration with the National Council for Food and Nutrition, of a national food and nutrition education programme for schools of all levels (starting at primary school) and for the public in general;

- professional education and training for nutritionists, dietists, physicians, nurses, food inspectors, etc.;

- development of a data bank in cooperation with Eurofoods;

- publication of a quarterly journal in which more than 250 papers have appeared in the last 4 or 5 years.

As you can imagine all these activities had a great impact in the development of a modern and scientific approach to the nutrition problems in the country.

Our Institute has also been instrumental in the creation, in 1980, of the aforementioned National Council for Food and Nutrition, an interministerial advisory body in which every Ministry connected with food and nutrition is represented. The chairman of this Council is the Director of the NIH, in his capacity of representative of the Minister of Health.

On what concerns our third priority area, *Environmental Health*, I may summarize our activities in the following areas:

- studies related with the professional exposure to toxic and otherwise dangerous elements with particular attention to carcinogens;

- studies related with air pollution (in working places and in the open air);

- studies related with water pollution.

Many studies have been done in relation with fluoridation of drinking water and salt. In the field of industrial effluents we have done pioneering work in the country through an exhaustive study published in 1972, in which more than 600 hundred samples from 33 different types of industry were examined.

In this field we are also participating in several international cooperative projects, namely:

- a) the UNESCO project on "Environmental Studies and Related Activities in the Tagus Estuary" - which aims at the establishment of cause and effect relationships which can be directly incorporated into the estuary water management development programme;

- b) a cooperative study with WHO on the "Sanitary Protection of the Water Use in the Tagus Estuary Area", with the objective of evaluating in a public health perspective all the impacts that the population living in the area may suffer due to the water uses;

- c) the WHO/UNDP project on "Air Pollution in urban and industrialized areas" and

- d) the WHO/UNEP Global Environmental Monitoring System (GEMS) project.

Leaving now aside the other areas of work of the Institute I would like to state that, besides the studies which are actually carried out by its own services, the NIH has still the possibility of promoting health and biomedical research in the country through the creation of extra-mural research centres and through the financement of research projects done in other institutions. This practice has proved to be very successful and it is, indeed, a pity that our current economic restrictions do not allow us to further develop it. Just to mention two examples the Centre for Preventive Cardiology is producing very useful studies on the epidemiology of cardio-vascular diseases, acting as a true methodological centre for the organization of adequate systems for the delivery of preventive care in this important field; and the Centre for Paramyloidosis, which operates in Oporto, has done — and keeps on doing — a very remarkable work on what concerns the study of Familial Amyloidotic Polyneuropathy, a very serious hereditary disease which, because of its genetic and clinical characteristics, represents a very serious public health problem, more than 300 families being currently under control of our Research Centre. This disease, which was first described by the present director of the Centre, Dr. Andrade, some 30 years ago, in families living in a northern area of Portugal, is a peripheral neuropathy with progressive and invariably fatal outcome. Ever since the initial reports the disease has been the subject of intensive research efforts and very recently the research workers of our Centre have shown that the major constituent of the fibrils of amyloid which becomes deposited along the nerves replacing destroyed myelin, is a variant of human plasma pre-albumin which resulted from the substitution of valine for methionine at position 30. Since this abnormal protein can also be found in the plasma of the patients' children much before the disease becomes apparent, a biochemical marker has thus been found which may be used to screen the people who are at high risk and can then be submitted to "objective" genetic counselling before the age of procreation. This is another example of a practical application of fundamental biomedical research.

Coming now to the 2nd main type of attributions of the NIH — I mean, educational activities — I should like to add to what I have already said in the

beginning of this presentation that the Institute has for many years performed an important role in the development of health manpower, particularly in relation to the medical profession. We started the formal training of public health doctors as far back as 1903 and it was through the efforts of the Institute that the National School of Public Health — which is now responsible for that training — was created in the late sixties. We keep on very much involved in this process thanks to our intimate association with the School. We also have close connections with the University and the Institute has played a determining role in the modernization and promotion of public health education in the undergraduate medical curriculum. We have organized, in 1976, and are still running the first Community Health Department in the Portuguese University, in a new medical school in Oporto, and the Department of Public Health of the new Faculty of Medicine in Lisbon was also organized and is currently headed by a member of our staff. We feel that in this way we are giving an important contribution for the development of the health sector in the country.

Finally a few words about the contributions we have given for the improvement of health laboratory services and practice in Portugal.

In 1971, we were assigned the task of planning and organizing a network of public health laboratories which should give support to the primary health care services and also develop epidemiological studies and research work aiming at the identification of the health problems of their respective areas. We have done it and keep on providing permanent technical guidance and support to these laboratories.

In 1973 we started our efforts to introduce and implement the concepts and practice of laboratory management which, I am afraid, were practically ignored among us. Such matters as the measurement of laboratory productivity and workload, cost-containment, laboratory safety, quality assurance, etc., were for the first time in our country taken into consideration and we are now spreading the message to the public health laboratories, the hospital laboratories and all other laboratories at large.

We are also running for some years a national programme for quality control which is progressively being extended to more and more laboratories every year.

In parallel with these initiatives we always try to develop continuing education activities for physicians and other laboratory personnel thus contributing for the improvement of professional practice and for a more correct utilization of the laboratory potentialities.

To conclude this presentation I would like to stress the fundamental role that our National Institute of Health is playing on what concerns the study of the health problems of our population and the development of our health services, thus contributing for the progress of the health sector in general. From the examples which were mentioned one can infer the national scope and significance of many of our activities, which, in a small country like Portugal, may be of the utmost importance to provide information for policy makers as well as for the public, regarding the existing problems and the ways in which they can or should be tackled.

Having in mind the different sorts of studies or activities our Institutes perform, the utilization of the results and information they produce — in terms of identification of needs, planning of corrective actions and definition of intra and intersectorial policies—having also in mind their capacity for coordinating research — including the setting of priorities and the promotion and fostering of extra-mural research — and above all, considering their capacity for innovation and pedagogical influence in a conservative, although, at the same time, ever changing-environment, I strongly believe that institutions like ours have a most definite and prominent place in the framework of the health structures of any modern society.

That is why in this anniversary celebration, after congratulating the Istituto Superiore di Sanità for its brilliant past I renew my best wishes for its promising future, hoping that it will be able to further develop its well-established capabilities, for the benefit of the Italian people.

Thank you.