

FUTURE HEALTH NEEDS OF THE AMERICAS: THE OUTLOOK IN 1972

The Fiftieth Anniversary of the Boletín is a convenient time to assess past and future health services in the Americas. What trends can we expect in the future, what sorts of changes? Will health improve, or will it fall prey to worsening afflictions of our age? Nobody has perfect answers to these questions. But partial answers are available, and getting the best ones possible is obviously vital. The articles that follow, written by two distinguished health officials of this Hemisphere, aim to provide new insight into these matters.

PUBLIC HEALTH IN THE YEAR 2000¹

Dr. Bogoslav Juricic²

Nothing is riskier than trying to predict what will happen in the future, even if that future is not far away. And such a prediction is even more difficult for a person who has specialized in a discipline which, like medicine, tends to orient one's reasoning around the framework of science and technology. The free flight of the imagination of a Jules Verne or an H. G. Wells could perhaps bring us nearer to what the reality of the next century will be.

Nevertheless, we believe that the application of scientific reasoning can enable us to make an approximate sketch of what public health will probably be within about 30 years, if we abide by certain premises.

In our opinion, these should be as follows:

1) The present state of medical knowledge should be analyzed, together with past progress, especially in the last 30 or 40 years.

2) Our projection should assume utilization of new knowledge to benefit mankind, although this is closely linked to the importance which peoples and their leaders wish to give health. We all agree that the health sciences are not being fully used to benefit man; that is, much more is known than existing health services hope to deliver or can deliver to the community.

3) Considerations involving economic devel-

opment are closely linked with the preceding point. In general terms, we may say that the more developed a country, the better its quality of health. However, those who think that economic progress automatically brings a higher level of health are mistaken. It is true that the richer country can allot more resources for training the quantity and quality of health personnel required for research, and for equipping them with the material means and organization needed to attain greater efficiency. Education is another factor that has a very important bearing on health, and which is closely connected with economic development. But what needs to be emphasized is that an improved level of health does not passively result from economic development. Let us not forget that the country with the highest income in the world is far from having the lowest infant mortality rates, and that these rates are lower in several countries with substantially lower incomes. Various other factors clearly play an important role here, among which we wish to emphasize the redistribution of income; that is to say the social development of the country, and community and government attitudes toward health care.

4) Our projection should recognize that accelerated technological progress poses correspondingly higher risks for man's health and the ecological balance. Deplorably, these higher risks—almost without exception—are appraised after the fact. Health experts are not included in technological research groups, nor are they consulted on the consequences that application of new scientific developments for man's well-being may have on health.

With these things in mind we may venture to

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²Chief, Office of International Affairs, Chilean Ministry of Public Health.

begin our task. It is impossible to precisely date when medicine acquired the basic attributes of a science; that is, when empiricism and magic—of which it is still not entirely free—ceased to predominate. Important milestones in this transformation were the affirmation and recognition of several emerging sciences: anatomy; histology (a result of the discovery of the microscope); and their inevitable sequels—physiology, physiopathology, pathological anatomy, and pathological histology. But there is no doubt that the discoveries of Pasteur and the many who continued his work made it possible for the first time to scientifically establish the etiological cause of some diseases (disregarding certain conditions produced by physical agents—animal and chemical poisons—the causality of which was obvious). These discoveries unequivocally mark the entrance of medicine into the group of scientific disciplines.

Since then, there has been an ever-accelerating succession of advances in the fields of etiology, pathogeny, diagnosis, etiologic and pathogenic therapeutics, epidemiology, and prevention of some diseases. However, it must be accepted that we are still far from knowing the underlying nature of most of these phenomena.

In a paper presented at the Medical Society of Santiago's Seventh Annual Session on Internal Medicine³ an interesting analysis relating to this subject of medical knowledge was presented.

According to the author's analysis, 100 per cent of the etiology of nutritional diseases and those produced by chemical agents is known; the etiology of a high percentage of communicable diseases (96.4%), diseases produced by environmental and physical factors (91.7%), and hereditary disorders (89.3%) is also known. On the other hand, the etiology of collagen diseases is 100 per cent unknown; similarly, the etiology of many cardiovascular diseases (85.2%), articular conditions (81.8%), endo-

crine diseases (80.8%), diseases of the digestive system (72.9%), kidney diseases (71.5%), metabolic diseases (63.6%), and diseases of the nervous and muscular systems (65.0%) are also unknown.

Knowledge of each disease becomes more and more complex as the multiplicity of its etiological agents is discovered. Actually, very few diseases have only one cause. Most admit simultaneously of genetic, physical, and chemical deficiencies and infectious agents, which interact in a way that is not always well understood.

The discovery of microbiologic disease agents opened the way for etiological (chemical and biological) and pathogenic (serums) treatment, and for preventive measures (vaccines and intervention in the epidemiologic chain). On the other hand, in some instances ignorance of etiology does not impede decisive action to keep the patient in good health; this is true, for example, in dealing with certain metabolic diseases and diseases of the endocrine system, where we know how to intervene in the pathogenic mechanism. Diabetes is perhaps the most dramatic case of this type. We know that this disease is the result of an insulin deficiency, but we do not know its underlying cause. However, a diabetic can keep in good health simply by supplying the absent or deficient insulin.

Examination of principal causes of death in the developed countries, and in quite a few of those in the process of development, shows how communicable diseases have been gradually diminishing in importance, giving way to diseases of the circulatory system and malignant tumors. Arteriosclerosis, linked to the aging process, is by far the leading circulatory disease. We must admit that our knowledge of it has not advanced very much. It is strongly suspected that certain nutritional factors, not yet well pinpointed, play an important role in its etiopathogeny. Lately, sound statistical arguments have incriminated the smoking habit as an important factor. Perhaps the rise in atmospheric pollution will contribute somewhat to future knowledge about this ailment's increase. But at present we are largely defense-

³Goie, R., A.; U. Florenzano; and E. Pereda. "Research on Etiology and Etiological Treatment of Diseases." Presented at the Seventh Annual Session on Internal Medicine, Medical Society of Santiago, Viña del Mar, Chile.

less against the progressively growing risk of falling ill or dying from circulatory diseases, and the means available for preventing or retarding disability and death have not been able to stop this progressive growth.

Similar observations can be made regarding malignant tumors. Their etiology is in dispute; it has not been possible to prove their viral origin, despite the arguments brandished in favor of such a hypothesis. We know various predisposing causes. Tobacco has been incriminated in cancer of certain sites, and numerous individual, exogenous carcinogenic agents are known; but we do not know how or why they act. Early diagnosis and treatment can save many lives, but there are no notable new facts in research or therapeutics which might allow us to view the prospects with optimism in 1972.⁴

With regard to frequently occurring chronic diseases, we must again confess that our understanding—and hence prevention and treatment—have not made great progress. We should also point out mental disturbances. Factors involving environment, genetics, maladjustment, aging, and emotional tension contribute to their increase; but we are unable to properly understand how these factors interact or even come to agreement on their classification. We must attribute a good portion of accidents and deaths by homicide and suicide to these emotional disturbances. Yet we cannot here overlook the ever-greater importance of alcohol's role in many countries as a cause of disease, acts of violence, and accidents.

At the beginning it was noted how socioeconomic development and education have a bearing on health. Two-thirds of humanity is seriously affected by a disease whose causes, prevention, and treatment are perfectly well known. We are referring to protein-calorie malnutrition. Here, again, we do not have much reason to contemplate the future with optimism. Everybody has formulas for putting an end to situations of socioeconomic and educational backwardness in the world, which we

have euphemistically termed "developing" situations.

The progress of the human race's technological and scientific knowledge is prodigious. Regrettably, we cannot say the same for its moral motivations. Fabulous sums continue to be spent on armament and research to increase the great powers' offensive strength. They all state that they are guided by no purpose other than that of guarding themselves against aggression. The fact is that if these sums had been appropriated for the purpose of developing the world's immense unused resources and placing them at the disposal of all humanity, this ever-widening breach between rich countries and poor countries would have disappeared long ago, along with the present tensions which serve as a basis for justifying this wild race which will take us nobody can foresee where.

But we want to be optimistic, and although we are so near the year 2000, we wish to believe that men will really work in the near future toward the well-being of humanity, and that the world's immense resources, today so sadly wasted, will be used to apply the knowledge we possess, which is benefiting only a third of humanity to any extent. Malnutrition and the communicable diseases, including those of such importance as malaria, should then disappear by the end of this century.

We believe that if adequate sums are invested in research on the etiology of malignant tumors and circulatory diseases, it is very possible that we shall have effective means of conquering them. It has been asserted that the first cell could have had all the characteristics which we today attribute to the cancerous cell. Investigation of the origins of life, which might be brought to light by space exploration, will perhaps help us to understand the underlying nature of this ailment.

Although the idea is far from new, many place great hopes on replacing irreparably damaged vital organs with human or artificial organs. Yet daring organ transplant operations do not appear to have furnished any remedies which will change the health scene. Such operations today do not present any insurmountable difficulties. However, with the

⁴World Health Organization. *Fourth Report on the World Health Situation, 1965-1968*. WHO Official Records, No. 192; Geneva, 1971.

exception of kidney transplants, results have been poor and do not justify continuing along this road until the immunological problem has been solved. So far, immunology has principally sought identity between donor and recipient, but the challenge lies in managing to avoid rejection of the transplanted human or animal organs without altering any other protective mechanism. It is possible that this will be achieved toward the year 2000, and we shall then have taken a great step forward in conquering disease. But we should consider this advance only as a substitute for our real goal, which is knowledge of the etiology of diseases which disable vital organs, along with corresponding preventive and curative measures.

Perhaps the day will come when we can almost totally dispense with surgery, which will be limited to treatment and correction of injuries caused by accidents and external violence. It is very risky to presume that this stage will be reached in the year 2000, but we can certainly hope that it will be one of the triumphs of the twenty-first century.

We do not wish to delve into the possibilities opened up by recent advances in knowledge about genetics. If some day we become capable of managing genes and ending hereditary conditions and malformations—or genetically influenced changes in diseases where multiple etiological factors are operating—man and medicine will be confronted with one of the most tremendous moral problems in their history.

Another problem has already awakened deep concern among scientific circles, governments, and international agencies. We refer to pollution and destruction of the environment through human activities. Nothing escapes from this devastation: neither atmosphere, ground, water courses, oceans, nor even Antarctica. To this we must add man's want of respect for animal and plant species. All of this has had the final consequence of detrimentally upsetting the ecological relationships of our planet.

The actions already taken by some govern-

ments, but especially the United Nations and its specialized agencies, make us look upon the future with optimism; we believe that this environmental problem can be resolved toward the end of the present century. Our fear, the fear of the World Health Organization, and that of the Pan American Health Organization, is that the health sector will be subordinated on this occasion, as has occurred on so many previous ones. We think, however, that the Ministers of Health are sufficiently alert and aware to make their voices heard and their weight felt within their own governments and at forthcoming international meetings.

We cannot separate the environmental problem from that of world overpopulation. The danger of overpopulation is real, but we are not sure that the problem is being approached in a rational manner. Although overpopulation and underdevelopment coexist, the cause-and-effect relationship between them has not been proved. History would seem to show that underdevelopment is the cause of overpopulation, rather than vice versa.

The fact is that as the countries of Western Europe developed, their birthrates began to decline rapidly without any directed action. Furthermore, those who have worked in very low-culture, low-income areas of developing countries know how difficult it is to create concern and positive action for birth control in such environments. Without joint, simultaneous efforts for socioeconomic improvement and education at the family level, definitive results cannot be expected.

Finally, we wish to point out that atomic energy—which we are accustomed to regard as the greatest danger to humanity because of the ways its possessor nations may use it—may hold unsuspected surprises for progress in medical research, which is already benefitting to a limited extent. Atomic energy seems adaptable to many other uses besides diagnosis and therapeutics; when we better know its potentialities, it is possible that it will become an irreplaceable element in medical fields where today its use is only a subject for speculation.