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OPERATIONAL RESEARCH ON HEALTH ECONOMICS AND MEDICAL CARE*

The subject was discussed in the first and second meetings of the Advisory Committee on Medical Research and on those occasions it was stated that in view of the great social importance of medical care and also considering its ever increasing costs, applied research in this field was of the utmost importance in order to facilitate the application of available scientific knowledge to the care of patients.

It is a fact that a great number of the population of countries in the process of development have no access to the present medical knowledge and, at the same time, there are medical services being utilized only at a fraction of their full capacity.

The problem is to find ways and means by which good quality medical services are provided to the whole population at a reasonable cost and without financial barriers. People have become more knowledgeable and better informed and they can recognize what is a good service. Quality becomes, therefore, the key element and the problem is to balance good quality versus high costs.

From a social point of view, it is desirable to extend the services to the whole population. The implication is that the quantity of services has to be increased. The total health expenditure is the result of multiplying the price per unit of service by the quantity of services provided. If the unit price is too high due to the need to preserve quality, the result is an increase in the total expenditure that may become unbearable to the national economy.

The answer to these contradictory factors is to improve utilization and to increase productivity of services with the additional

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advantage that since general productivity has gone up tremendously during the last years, an increase in the productivity of health services will keep the costs of these services proportionately within the range of the costs of other services and goods. This is not the case at present, since health costs, and especially, hospital costs have risen two and three fold the relative increase of consumer's prices. An improvement in productivity of health services is, therefore, indispensable to recover the balance between general consumer's prices and health services' prices. The goal of research should be to reconcile costs, quality and quantity of health services.

Health economics becomes in this framework essential to collect data and information which is fundamental for the formulation of national public policy on health and medical care services and to establish the relationships of investments and expenditures in health as compared with national economic growth and investments and expenditures in other areas of the economic and social sectors.

I. Health Statistics, Epidemiology and Health Economics

These three disciplines are closely related and it could even be said that they represent different stages in the development of knowledge of health and social problems. Health statistics were started in the XVII Century in Great Britain with the idea of recording and analyzing the facts related to health and disease and their trend in a given period of time. Epidemiology was initiated in the USA in the XIX Century as a means to study the spread of diseases, especially communicable ones, in a dynamic approach to illness from a collective point of view. Health economics were

introduced almost simultaneously in Great Britain and USA in the early XX Century with a view towards the economic and financial impact of the provision of medical care to large groups of the population unable or partially able to defray the costs of hospital care services. Soon after, it became obvious that the approach had to be comprehensive to total health, including medical care and hospital care, from the epidemiological, economic and social points of view.

II. Operational Research and Systems Analysis

Operational research and systems analysis, recently in the process of improvement by the use of computers, are the tools to carry out studies on Organization and Methods, and on Health Economics. The importance of such studies cannot be over emphasized. They are the basis to improve utilization and raise the productivity of the health services financed and administered by public institutions.

The need for operational research in health services should not be confined to the internal operations of hospitals and other health facilities, but should rather reach out to the community in order to observe the reactions of the people in front of the health services provided and to acknowledge their wishes and aspirations as to the more urgent needs to promote and restore the health of individual members of the community.

Of parallel importance is research relating to hospital and medical care administration which refers mainly to studies in planning, organizing, implementing, coordinating, and evaluating health, hospital and medical care programs, facilities and services.

It has been demonstrated that the provision of beds alone does not go far in supplying adequate hospital and medical services to all

the people. If hospitals are to develop their total potential for leadership in providing health services to the community, continuing studies and applied research related to needs, resources and methods are essential. This will provide an opportunity not only for the attainment of new knowledge, but also for its utilization by methods demonstrating the usefulness of newly found information. This furnishes a link between research findings and their practical application.

III. Identification of Some Areas of Research

A. Studies of the demand for services

Usually studies of demand are limited to an assessment of the number of patients admitted to hospitals and the number of consultations in the out-patient departments. However, this demand is far from representing the actual needs of the population. In fact, the demand is limited sometimes by the absence of services and on other occasions, because the services are not accessible to certain members of the community due to either geographical reasons or economic ones. What is important as a basis for eventual extension of services, is the study of the potential demand that exists, but is not met by the present health facilities. It can only become evident by community research trying to find out in a door to door survey the number of times in which each member of the population has been ill during a given period of time and the type of medical care received and more important than that, the reasons why they have not received any kind of health care.

The absence of such studies are very often the reason for failure in the services to meet the demand when they are in operation. To predict future demands for health services in a dynamic society we must be able to measure the impact of demographic change. Illness patterns and hospital utilization rates usually vary according to age, economic status, education, and other factors. As these demographic factors change, so will the total demand for medical care. Research methods for measurement of the effects of demographic variables on the use of health services should be established.

B. Studies of utilization of services

Length of stay in hospitals and the occupational index of hospital beds have been traditionally the main elements to judge on the utilization of hospital services. The turnover rate of hospital beds is the result of these indexes and is also used to estimate utilization. However, more recently health administrators are more interested in the measurement of utilization of an integrated health service in terms of the number of times that each member of the community uses the services, whether preventive or curative, within a given period of time. Insofar as hospital beds are concerned, what is of interest is the rate per 1,000 population admitted to a hospital in a year, as a true aspiration of the use of the hospital beds by community folks.

C. Health manpower and productivity

This is an element of the utmost importance. In fact, doctors and health workers in general are the key elements to provide health care services to the community. A proper use of their skills and working capacity is therefore of outstanding importance in the output of medical services.

Manpower studies will never be realistic unless they consider very carefully this element of productivity that is essential to establish the number of doctors, nurses, dieticians and other health personnel needed to meet the demand of a given population.

D. Studies on costs

The study of the relation cost-benefit in health services is extremely difficult, because the output of these services is health and welfare, which are invaluable for the individual concerned and for the society as a whole, but cannot be very well expressed in objective measurements. A more logical way to express the importance of costs is to establish a relation between the unit price and the resources available. The amount of resources available will determine the number of units of services than can be provided. This in the understanding that previously utilization of services and the productivity of the resources have been properly established.

The result of this is that cost accountancy should be established in such a way that the health services should be able to set unit prices for each kind of different services provided as well as the price of integrated health care for one individual per year.

When the answers to these questions are found, health administrators will be in a much better position to discuss their budgets with economists and Parliamentary Commissions. Much research is needed to reach this point.

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E. Comparative studies of different health systems

In some countries, health care is mostly in the hands of the private enterprise. In others, the whole responsibility has been entrusted to the Ministry of Health and the financing of the health care services comes from the national budget. In between these two extremes, there are a number of different systems by which social security, social assistance, private services and governmental institutions combine their efforts to offer coverage to certain groups of population. The output of these different systems and their comparative unit costs might be analyzed through careful research and the result might be of great importance to health planners in recommending the election of a particular system for a given country.

F. Studies on the quality of services

The quality of medical care cannot be measured without due consideration to costs. Special studies are needed to find standards of measuring the quality of physician services based on elements more objective and reliable than the mere judgement of well informed observers about the accuracy of diagnostic and treatment methods employed. The findings of such studies might be related to the administrative and financial systems of providing health care to the population concerned and a comparative study of these variables might produce an objective assessment of the medical care policy.

The Medical Care field is more than ever aware of the association between: use of drugs, hospital costs, and quality of care.

The same is valid for the relationships between number of beds, average length of stay, number of residency programs, and quality of care.

Research directed towards the elements conditioning these associations is desirable.

G. Operational research in hospital work

The modern hospital is viewed by social scientists as a highly complex system based on the mutual cooperation of a large and heterogeneous group of interdependent professional and semi-professional personnel who represent different values and orientations, but who constantly deal with human problems. In such a social system, organizational coordination, effective integration of member attitudes and motives, and good human relations are of great importance. In addition, the continuous modernization of hospitals has a strong impact on these areas, reshaping them and creating new difficulties in the process.

Through research it is possible to identify and evaluate the major problems and to ascertain their organizational and educational implications for hospital administrators, for hospital community relationship, for the internal social structure including the doctor patient relationship, and for the status at the different groups in the system. Research is needed in the following basic problem areas, not only separately, but in relation to one another:

- Organizational and member goal attainment
- Availability and allocation of organizational resources
- Organizational coordination
- Social integration
- Intra-organizational strain
- Organizational adaptation

In the context of open system theory, hospital effectiveness is viewed as a joint function of the relative success with which the organization handles its problems in these six key areas.

The application of social research methodology to the problem of evaluating patient care, considered not only as a curative process but as a communication one between the professionals and the patients, emphasize the effects of inter-personal communication on patient behavior.

Patient care can be rationally planned, controlled and improved only if we have methods for comparing the relative effectiveness of various practices.

H. Automation and data processing

The field of Automation and Data Processing deserves special mention. The potential of automation holds promise for increasing the efficiency of hospitals, preventing further rise in the cost of patient care, and maximum use of professional and technical personnel.

This potential will not be realized, however, unless appropriate research projects are activated covering segments of total hospital operations. Research studies should be made to explore the feasibility of various applications of automation including the use of computers for procedures in many departments of the existing health and hospital facilities. Such applications include use of computers in collection, storage and retrieval of medical information relating to patient care, management and teaching. While much of the work supported in this field today is limited to specific applications, the knowledge gained will contribute to the eventuality of total intra and inter hospital

information system that should enhance efficiency and improve patient care.

IV. Latin American Center for Medical Administration (CLAM)

The Pan American Health Organization in cooperation with the Government of Argentina and the University of Buenos Aires, and also with the technical assistance of the School of Public Health, University of Columbia, have established a Center in Buenos Aires, Argentina, to be devoted primarily to operational research in medical administration. The CLAM is still too new to make an appraisal of its results, but it can be hoped that in the near future they will be able to explore different areas of operational research both in medical care administration and in hospital administration. Its physical vicinity with the Computer Center of the "Secretaría de Salud" (Ministry of Health) of Argentina is an element that should be considered extremely favorable to carry out the kind of research the Center intends to undertake.