

CHALLENGE AND CHANGE IN OUR HEALTH SYSTEMS

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You do me a great honour in asking me to open a meeting of such importance as this. To have in the chair Dr Ramalingaswamy, one of the world's great scientists, honours us all. The timing of the meeting is auspicious, coming as it does just two years after the formulation of a concept for a unique new institution in India--the Indian Institute of Health Management Research. It comes at a time when the subject of management in health systems throughout the world has begun to assume a new importance.

I am especially pleased that Jaipur is the venue for the meeting because both this city and Rajasthan have held, for me, a special interest and meaning. My acquaintance with this city and State began 25 years ago when one of its distinguished public health leaders and one of our colleagues at this meeting, Dr T.P. Jain, studied with me at Johns Hopkins University. Not until the early 1970's, however, did I have the opportunity to visit--at a time when major epidemics of smallpox were occurring throughout the State. With Drs Jagdev and Gyan Prakash, I was privileged on a number of occasions to travel to many parts of the State as they mounted an extraordinarily successful campaign to eliminate the disease. The programme was a pioneering effort which served to

demonstrate to other States of India the capacity of the health system when provided with inspired leadership. Four years ago, I visited yet again when the University did me the honour of asking me to deliver the first Rameshwar Sharma oration. With the new Institute now located in Jaipur, I hope that I shall have other opportunities to better know this city and those working to improve the quality of life both here and throughout India.

Today, I should like to discuss with you certain problems and opportunities in the management of our health systems, not as a professor but from the viewpoint of a practitioner who only recently has found himself in the academic world. Before assuming direction for smallpox eradication at WHO, I worked at the U.S. Public Health Service's Communicable Disease Center in Atlanta. As Chief of its Surveillance Section, I was responsible for the practical problems in controlling disease and dealing with epidemics wherever they occurred. This was followed by yet another decade of work with WHO, and more travel than I care to remember, working with national and local health authorities in countries on three continents as we endeavoured to deal with the political realities of eliminating just one disease. By 1977, we found ourselves without cases of smallpox and effectively without a job.

Fortunately, Johns Hopkins University, in 1977, invited me to become Dean of the School of Hygiene and Public Health. With the faculty, we made a commitment to become more actively involved in the practical problems of implementing health programmes in the city of

Baltimore, in the state of Maryland and in surrounding states. The objective was to join with our colleagues engaged in the practical realities of delivering health services, in undertaking a collaborative and comprehensive programme of research, education and public health practice. In doing so, it was our belief that we would all learn, that the field of public health would be the stronger for it, and the populace healthier. Indeed, this is what has happened and the effort continues. The School has grown and now has a full-time faculty of nearly 300 persons, making it the largest academic public health centre in the world. This past year, a new Institute for International Programmes was created with specially appropriated funds from our federal government, thus permitting the School to expand its already established international health activities and to involve itself with many more colleagues throughout the world.

With this personal background of experience and interest, it was my thought today to talk with you less about the theory than the practical realities in trying to apply sound management principles to health systems. The task is not an easy one and the problems and solutions which I identify do not always correspond with traditional and current concepts. Thus, whether or not you share my points of view, perhaps you will find certain of the ideas sufficiently provocative to cause you to reexamine your own views.

In thinking about public health and its role today, it is helpful to reflect on the recent history of medicine and the development of health and medical practices. In doing so, I should first like to

reflect briefly on perspectives in the United States before turning to more global concerns.

During the first half of the century, curative medicine was limited in what it had to offer to most of our citizens. Surgery was of help to some, but problems of infection limited what could be done, sometimes proving fatal even when the surgery was successful. Diagnostic procedures were comparatively primitive and available, effective drugs were comparatively few. Even in the early 1950's, when I was a medical student, there were a limited number of curative procedures which were beneficial to the patient and because of this, we didn't hesitate to provide whatever was available with little concern for cost. In the meantime, public health measures brought us clean water, sewerage systems, improved safety measures, pasteurization of milk and immunization against smallpox, diphtheria, pertussis and tetanus. Nutritional deficiencies were recognized and the need for a balanced diet was increasingly accepted. With time, many of these measures became institutionalised. They were increasingly taken for granted but further notable advances were few and what had been a vigorous public health movement gradually lost its momentum.

The past quarter-century, however, has witnessed a bio-medical revolution and a vastly expanded armamentarium of interventions for those who are sick--new drugs ranging from antibiotics to chemotherapeutic agents to hormones; diagnostic procedures, including elaborate radiographic methods, computerized axial tomography and nuclear magnetic resonance imaging; and elaborate surgical procedures

for rehabilitation, cosmetic surgery and organ transplantation. As one miracle agent and procedure followed another, we pursued the objective of making each and all of these accessible to all in need. Government funds were increased to encourage the training of more physicians, the building of more hospitals and the provision of curative care to more people. Prevention of illness, however, received little attention and few funds.

A change has begun to occur as it has become increasingly apparent that the cost of providing curative care to all in need exceeds our resources. Quite simply, not everyone, not even a majority, with faulty kidneys or a failing heart, for example, can expect to receive a transplant. As costs have escalated and it has become apparent that we can no longer offer without concern the ultimate in curative therapy, serious attention has begun to be directed to the identification of measures which can diminish the burden of illness and improve the quality of life of the population as a whole. We are asking questions more insistently as to whether we are employing resources in the best possible manner. Enormous sums of money have been dedicated to curative medicine but have the results been commensurate with the investment? At the same time as we are raising these questions in the United States, these issues are arising in India, as Dr Harcharan Singh has so vividly pointed out.

At Johns Hopkins, we have several centres specifically dedicated to addressing many of these questions: the Health Services Research and Development Center; the Center for Hospital Finance and Management; the

Health Program Alliance; and the Center for Occupational and Environmental Health. Many of their activities parallel those which are intended to be addressed by the Indian Institute for Health Management Research. Thus, it was with enthusiasm that I responded to an invitation to participate in the Institute's activities because the questions which need to be addressed and the consequent agendas have more similarities than might superficially appear. In dealing with these, I believe we have much to learn together and much to communicate to others.

Of the issues of greatest interest, I should like to comment on three. The first relates to the question of whether our health services are optimally organized to provide both curative and preventive care to peoples throughout our countries. The second issue is that of priorities. Where once we had little which we could offer, we have today a vast array of potential interventions both to cure illness and to prevent it. We can't do everything; we must select. Until now, we have not faced up to making the difficult decisions but until we do, it is difficult to know what structures for the delivery of preventive and curative services would be best. The third issue pertains to the information we need and how we obtain it in order to decide on these priorities. Medicine and health today are singularly lacking in current data, even with regard to such basic considerations as the numbers of cases or deaths caused by various conditions, the costs of inpatient and outpatient care and the quality of services provided. In comparison with the industrial sector, we are groping in the dark, all but lacking in tools for measurement, assessment and quality control.

In simple illustration of what I mean, I should like to draw on certain of our experiences in smallpox eradication, which, as Dr Ramalingaswamy has pointed out, are instructive. This is an appropriate time to do so as October 1985 marks the tenth anniversary of the occurrence of the last case of variola major in Asia--and in the world. India's achievement in this effort was especially notable. For 12 years, from 1961 until 1973, a costly, national vaccination campaign had succeeded in controlling smallpox in some areas but not in most. During the summer of 1973, however, the government of India decided to embark upon an intensified programme of an entirely different character than had ever before been implemented. Basically, it called for a programme of search for cases by health service staff throughout the country, a search which, during the course of a week, would include every village in the country. The magnitude of an effort requiring the participation of 120 000 health workers was staggering. And yet within 12 months, to the surprise of India and international staff alike, a scheme was in place in which during 10 days' time more than 90% of all houses, not simply villages, were visited by a health worker--an achievement which was regularly verified by independent assessment. The capacity of the health service structure, their interest and the motivation of workers astonished everyone. The decision was made in June 1973 and less than 24 months later, in May 1975, India recorded its last case of smallpox. It took a number of years before many, even in this country, could believe what had been accomplished. But, quite simply, it was a matter of appropriate management linked with a data system to permit progress to be measured, and quality control, through assessment, of the work in progress.

One may contrast the period 1973-75 with what I found in India during the late 1960's. The findings were little different in most other countries. Vaccination in India was offered through two systems, either through health centres or by vaccinators moving from house to house. Most countries depended primarily, usually exclusively, on vaccination in health centres. For a number of reasons, vaccine coverage was poor. It soon became apparent that comparatively few persons routinely visited health centres even when encouraged to do so. With intensive publicity, perhaps as many as 70% of those living within 2 kilometres of the centre could be persuaded to attend; beyond this distance, the proportion diminished exponentially. Of those who did visit health centres, very few, often none, were vaccinated successfully. There were various reasons for this, including the fact that here, as in most countries, the vaccine did not meet requisite standards; there was no quality control system to ensure that it did. Even the substandard vaccine was frequently not found in health centres because of faulty distribution systems; of those centres which did have vaccine, few had operating refrigerators to preserve what potency it did possess. It was not uncommon for unrefrigerated vaccine which had been reconstituted days or even weeks before to be still in use despite the fact that the reconstituted vaccine was of no value after 24 hours. Many health centre staff elected not to vaccinate those with symptoms of illness despite the fact that there were then no contraindications to vaccination. In assessing this regrettable state of affairs, I should remind you that we were not dealing with a new procedure or a new product but with a vaccine which had been in use for more than 150 years.

The most discouraging experience I had was in western Iran, in an area which was WHO's principal demonstration site for primary health care. Iran at that time was in the midst of a major epidemic with thousands of cases of smallpox. As I visited the health centres, I innocently asked whether it was customary to vaccinate everyone who attended or only those without a vaccination scar. The reply was, "Doctor, we have so many sick persons to treat that we don't have time to vaccinate anyone!" I opened a vial of vaccine and, with a group of patients, we demonstrated that a maximum of only 20 seconds was required to vaccinate a patient. The physician in charge, however, continued to insist that they didn't have time for vaccination. Thus, even in this area of Iran with a model primary health care system, special vaccination teams had to be constituted to control the epidemic. There is an axiom that "curative care always drives out preventive measures" and this certainly was an apt illustration.

The second type of scheme for routine vaccination, one which was employed in many parts of the Indian subcontinent, required specially designated vaccinators to move from house to house. In this country, there was one vaccinator for every 5 000-10 000 persons. In 1967, a joint team from WHO and the Indian government assessed this system. They discovered that supervision at best consisted of determining whether the vaccinator showed up for work at all. Productivity was as high as 25 vaccinations per day in some areas but was often as low as 5 vaccinations each day; in one district it was discovered that each vaccinator averaged one vaccination daily. The costs for a single vaccination in some areas amounted to as much as 5 to 10 rupees. At the

end of this assessment, the findings were reported to the Secretary and Director-General with recommendations to improve the system, the supervision and quality control in order to achieve eradication. Their reply was: "We can't afford an eradication programme." My comment was that I had difficulty in seeing how India could afford the luxury of the costly control system then in operation.

One may contrast this level of productivity with vaccinators in Africa where in even the least well-organized programmes, vaccinators regularly vaccinated an average of 500 persons each day; in one programme, they succeeded in vaccinating 1200 persons daily. Even in Afghanistan, in areas where the population was most sparse and the terrain most difficult, vaccinators consistently averaged more than 100 vaccinations per day in a well-organized programme devised and supervised by Dr A.G. Rangaraj, a WHO adviser from India, and his Afghani counterpart.

Smallpox vaccination, contrasted to others, was perhaps the best-known, most simple and straightforward intervention measure, and yet, as we have seen from these brief illustrations, little attention was given to the system employed for its administration, to effective supervision or to quality control. This was not an experience confined to one or a few countries--it was all but universal. One might assume, at the very least, that the quality of the vaccine in general use would be satisfactory at the point of manufacture but, as of 1967, we discovered that less than 10% of all vaccine met accepted standards. Some of this vaccine, I would note, was being produced in European

centres. Some countries reported each year the vaccination of numbers of people which were equivalent to half or more of their populations and yet exhibited no concern when smallpox cases and epidemics recurred with regularity. And no country exhibited interest in the numbers of cases of smallpox being reported even though this was a disease which was subject to prompt reporting by international convention. As experience eventually showed, less than 1% of all cases of smallpox which occurred in 1967 were then being reported.

One must ask the question as to how many other programmes today have similar characteristics of deficient systems for service delivery, of deficient supervision and of deficient or absent quality control. The answer, I regret to say, is most.

If we are to effect change, I believe it is most likely to occur as a result of better measurement--probably the thing we do least well in medicine--and use of the data obtained to examine and to change programme strategy and implementation. The most obvious data which might help to document progress (or the lack thereof) in improving health care systems are the numbers of deaths which occur and their causes. Yet even in the United States, we must wait 3-4 years to obtain such data. Even when such data are available, they are used more often by research workers than by programme staff. Data regarding disease incidence are indifferently collected and more likely to be consigned to statistical records by clerical staff than to be employed by those operating programmes. Analyses of costs of care and exploration of possible alternatives in order to develop more rational health policies

are exercises which are primitive in all health systems, if employed at all.

Measurement in medicine is in the dark ages. Contrast what we do with what is done in agriculture or industry. Careful measurements are made of yields per acre; the cost advantages of adding more or less fertilizer or insecticide are carefully weighed. Rainfall to millimetre accuracy is monitored by day and by month at innumerable sampling sites. Production in factories and unit-sales of merchandise are followed daily. However, in few countries today do we know how many cases of poliomyelitis occur, for example; how much it costs to treat and rehabilitate a case; or how costly it is to mount a vaccination programme. Such measurements, specific to a given disease, are the simplest of all--far simpler than examining a broad menu of interventions which might be undertaken and ascertaining how and where they might best be administered.

One of the most important steps which was taken in the smallpox eradication programme was to improve the process of measurement, specifically with respect to the occurrence of cases. Our objective was not millions of vaccinations but zero cases of smallpox. If in time we were to achieve this, we had to know more promptly and with greater accuracy, the numbers of cases which were occurring. We regarded each case as, in some manner, a failure of the programme. By collecting certain basic data on each case, we were able to determine which age groups were at highest risk and deserved attention in the vaccination programme, which cases had ostensibly been vaccinated and possibly

represented failures in vaccination and which cases occurred in outbreak areas which presumably had been contained. By counting and characterizing cases, we learned a great deal about the characteristics of smallpox and about the quality and characteristics of different programmes. More important, conclusions were drawn from these data and programme strategy and supervision steadily changed. Is this being done today, even for such obvious problems as tetanus or poliomyelitis or deaths caused by diarrhoea?

When I reflect back on the smallpox programme, the problems of available manpower or resources were not the most important. The problems were fundamentally those of organization, of management and of quality control. As it became apparent that trained manpower was comparatively plentiful, we proposed, in 1974, a programme which could provide throughout the world the most cost-effective intervention known to medicine--immunization. Thus was created the Expanded Programme in Immunization--a programme designed to provide to the world's children 6 effective and inexpensive vaccines to prevent diphtheria, tetanus, pertussis, poliomyelitis, measles and tuberculosis. Since then, it has become apparent that oral rehydration therapy offers comparable benefits and recent studies suggest that Vitamin A, given twice each year, could be comparably effective. Meanwhile, revolutionary advances in biotechnology, many of which have occurred only within the past few years, indicate that, within a decade, we should have available 10-15 additional vaccines which are new or vastly improved. These include vaccines for hepatitis B, malaria, cholera, typhoid, respiratory syncytial virus and rabies.

To provide these many preventive measures, as well as those for family planning, requires, as with smallpox eradication, an effective organization and strategy, management and supervision and measures of quality control to assure that the objectives of the programmes are being met. It requires community involvement and delivery systems of a nature not now provided through traditional health centres dedicated to curative care. Such programmes will require imagination, experimentation, flexibility in approach and leadership. Note, however, that I do not identify the need for vast new resources of manpower.

The past two years have witnessed remarkable changes in interest in public health programmes by governments and agencies throughout the world. The required resources of vaccines, oral rehydration fluids, and family planning measures are now more readily available and plentiful than heretofore imagined. Now as never before is the time for all countries to act with vigour and determination.

In 1983, I attended in Bellagio, Italy, the first meeting of key participants in a new child survival effort--directors of WHO, UNICEF, the World Bank and the UNDP as well as leaders of the principal bilateral agencies. Clearly there was interest, but the response on the part of some was tentative, some arguing that until a broad-based primary health care structure was established, little could be achieved. It was an argument which has been repeated monotonously for nearly 50 years, an argument which fosters inaction. In October 1985, this group met again in Cartagena, Colombia. The change in attitudes and the increase in interest were utterly astounding. A number of countries

were already able to document profound changes in health programmes and improvements in health. In the Region of the Americas, a commitment had been made to the eradication of poliomyelitis throughout the hemisphere. Resources of undreamed magnitude had been given or pledged by countries and international agencies alike. It was apparent that, given requisite national commitment and leadership, we could well realize a revolution in public health such as we have never before witnessed.

At the same time, we must recognize that this effort and its potential could be thwarted if we, as public health leaders, do not respond and grasp the opportunity. Programmes must be designed which are appropriate to a modern health system, not one which is a relic of an age when little could be offered except primitive curative therapy. The education of our physicians must be altered to stimulate them to think of illness throughout the whole of a population and not simply among the handful who seek relief when they are sick. Measurement systems need to be established to determine whether we are achieving what we set out to do and, if not, to correct the programmes.

One clear objective which the United Nations General Assembly has identified this year is develop health systems which, by 1990, are capable of providing vaccine to 90% of the world's children to prevent 6 major diseases. If this is achieved, a structure will have been created which is capable of providing many other highly cost-effective interventions and, in effect, a far more rational and affordable health-care system.

This will require bold and imaginative direction by health ministries and the best of advice and assistance by academic centres, such as the Indian Institute of Health Management Research. The principal constraint now is not a vision nor is it resources. It is ourselves and our capacity to manage.