ADDRESS BY THE GENERAL CHAIRMAN AT THE OPENING OF THE TECHNICAL DISCUSSIONS AT THE TWENTY-FOURTH WORLD HEALTH ASSEMBLY

"MASS HEALTH EXAMINATIONS AS A PUBLIC HEALTH TOOL"

by

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INTRODUCTION

The Executive Board of the World Health Organization at its forty-fourth session in 1970 chose as the subject for the Technical Discussions to be held during the Twenty-fourth World Health Assembly in May 1971: "Mass Health Examinations as a Public Health Tool". It was hoped that the discussions would encompass (1) the broad field of mass health examinations (MHE) under different epidemiological and socio-economic conditions and (2) the many questions related to the value and limitations of MHE as a tool for the planning and administration of health services and also for the provision of health care.

The Secretariat prepared an excellent document to serve as an outline for use by Member countries in their national discussions. It was sent out in October 1970 with the request that summary reports on topics in the outline would be gratefully received by December 1970, to allow time for the preparation of further papers for distribution in advance of the Assembly in May 1971.

Dr J. M. G. Wilson, Principal Medical Officer, Ministry of Health, London, England, served as the consultant to prepare the background document. This document, which is based on summary reports received from countries, and on other material, is truly remarkable in the breadth of coverage and the depth of understanding of the medical, social and economic aspects of MHE as a public health tool. The document was sent to Member countries in March 1971 to enable prospective participants of the Technical Discussions to review the materials prior to the Assembly in May 1971. The references encompass the major publications on the subject, when one includes those in the monograph recently published by Dr Wilson and Dr Jungner. For those persons who wish to consult additional references, especially from the United States of America, the United States Public Health Services published an annotated bibliography of 463 items in 1970 on Automated Multiphasic Health Testing.

Nothing would be contributed to the Technical Discussions if the Chairman were to cover the same ground in this address that has been presented so clearly and concisely in the background document. However, some remarks, both general and specific, might be offered to challenge the thinking and stimulate recommendations from the participants in the discussions.


By way of introduction, the variety of terms used to describe different types of MHE is already causing considerable confusion throughout the world. The English like the term MHE and the Americans prefer the term Automated Multiphasic Health Testing or Screening. Others use "screening" and "detection" interchangeably: still others insist on their differentiation. Prescriptive screening has some currency in England; in America, the term case-finding surveys is popular. Confusion exists between early detection of serious disease and the detection of early stages of any disease.

The background document wisely does not give definitions of these various terms but does state what is meant when the terms are used. Saying what you mean when you use words or phrases is quite different from attempting to impose a definition on others who may have quite different ideas of the connotative and dictionary meanings of defined words and phrases.

The participants to the Technical Discussions would make a useful contribution if they could agree on the meanings to be assigned to the various types of examinations-screening, testing, and detecting-for human ailments. The primary use of these medical activities is to discover indicators of the health status of individuals or population groups as a first step in a chain of events to achieve the goals of improved health and social functioning. Secondary uses can generally be sub-divided as follows: (1) epidemiological surveys and surveillance for communicable and non-communicable diseases, (2) provision of health services to suspects, including: diagnosis, treatment, rehabilitation and prevention, (3) planning of health care delivery systems, both general and categorical, and the evaluation of these systems. Prevention has been greatly emphasized without always a clear understanding of its meaning, value or limitations.

Prevention can be conveniently divided into (1) prevention of occurrence of disease, defects or injuries, and (2) prevention of progress of a pathological process, including minimizing ill effects and avoiding recurrences. No other sub-headings of prevention are necessary and these two have the added advantage of being self-explanatory terms. This is not true of the terms primary, and secondary and tertiary prevention. When we speak of types of prevention in the use of MHE, we should state explicitly which one we mean.

Determining the health status of individuals by screening, testing and detection of abnormal structure or function can lead to accurate diagnosis and prompt treatment and thereby, to prevention of progression. Prevention of occurrence, except in epidemiological surveys and surveillance of communicable diseases is much more difficult and often impossible to accomplish, especially among older individuals - those most susceptible to degenerative diseases.

The term MHE will be used throughout this presentation, in order to be consistent with the background document, but it should be understood that this term has different meanings to different persons in different countries.

MHE and the delivery of health services

In recent years a great upsurge of interest and application has occurred in the use of one form of MHE, Automated Multiphasic Health Testing (AMHT) in both developed and developing countries. Both public and private organizations have become fascinated with the automation of tests, procedures, records and reports. Governments have looked upon AMHT as a means of augmenting basic health services, of improving the quality and uniformity of standards of health care and of conserving the time and energies of physicians and other professional workers. Private industry has seized upon AMHT as a process that will provide profitable outlets for their products-tests, procedures, equipment, supplies, and facilities. Even private entrepreneurs have entered the field-investment houses, architects, systems designers and engineers - hoping to reap both quick and hopefully lasting profits.
Unfortunately, many of these groups have not done their homework in preparation for entering the field. Their planning and evaluation of the role of AMHT in a variety of health care delivery systems leave much to be desired. Many of the important links in the chain of events in successful AMHT have been overlooked or minimized in the rush to get projects started.

A sample of neglected questions follow. What are the health problems you are trying to attack? Can you get the right persons in sufficient numbers to come in for examinations? What are the operational problems you will face - selection of relevant tests, of criteria for range of normal values of both screening and diagnostic tests, of measures of adequate treatment, of provisions for follow-up of individuals in need of preventive and curative services? What are the costs in relation to benefits and to priority expenditures for other activities in public health?

These are only a few of the questions facing the planners of projects to employ AMHT in their health delivery systems or in the provisions of one form or another of health services both general or categorical, to various population groups.

An innovative system of delivery of health care of which AMHT is an integral part has been described by Garfield of the Kaiser-Permanente programme in the United States of America (see Fig. I). This system is not yet fully functional, but the tests, procedures, records, and reports have been automated and are in operation in a programme of medical care for two million employees in several states. The development of Dr Garfield’s proposal represents many years of planning, experimentation and evaluation in the complex field of MHE.

MHE and health planning

Before starting or investing scarce resources in any type of MHE, whatever the needs or demands may be, it is essential to do some careful health planning. Too often projects of MHE are initiated without appropriate preparation of plans - including assessment of relative needs, costs or potential benefits - just for the purpose of getting something in operation.

The health administrator responsible for the development and application of MHE would be well advised to follow a systematic planning process. Some basic concepts will be briefly presented for those health administrators who have not yet formulated their own systems of health planning. The application of these concepts has proved to be useful to your Chairman in both developed and developing countries in which he has had the privilege of participating in health planning, both comprehensive and categorical.

Planning processes can be simple or complex, depending upon the knowledge, skills and experiences of the planner and the material resources and time available for planning. Several WHO references on planning are available in the background document for those who wish to pursue the subject.

Health planning should be viewed against the background of a particular society's problems and priorities. The main purpose of health planning is to achieve optimum social well-being, not just good health. Defining health planning to the satisfaction of all defies resolution; a conceptual approach may help to clarify its meaning and lay the foundation for the practical application of these concepts. Health planning may be conceptualized as the interrelation and interaction of four triads and their principal elements as depicted in Fig. II.

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The primary triad embraces health problems and their associated objectives and priorities. It is essential to assess problems before setting priority goals or objectives. The principal elements of this triad are: (1) social components of health, (2) personal health, and (3) environmental hazards to health. After determining the extent and characteristics of health problems troubling the consumers and providers of services - both their needs and demands the planner is in the best position to set forth programme objectives and their priorities in the total health service system or in its major sub-divisions.

To help solve health problems and to achieve programme objectives a variety of resources are necessary. Both available and potential resources should be inventoried, for later matching with priority objectives. Among the more important community or national resources in this second triad are: (1) finances, (2) manpower, and (3) facilities, equipment and supplies. Without resources available for allocation and application, planning becomes largely a futile exercise. The needs and demands of people remain unmet while plans gather dust on administrators' shelves.

In the development of alternate operational activities for the most efficient and effective allocation and use of resources, the planner should identify and make use of the third triad of community constraints and initiatives. First, legal authority is necessary before the administrator can proceed with the execution of plans. Authority can be either a hindrance or a help. Second, standards and norms of health care and public health services affect the quality and quantity of the output planned. They are also essential in relating results to objectives - an integral part of both planning and implementation. Third, the attitudes of community members - policy makers, consumers and providers of services - are intrinsic to the constraints and initiatives confronting the planner and implementor. The attitudes of persons affected by a plan for health services may stand in the way of implementation or, on the other hand, may ensure successful results. These constraints and initiatives of the community have political, administrative and technical aspects that require careful consideration in every step of the planning process.

Health education techniques are essential also in every phase of health planning but especially in overcoming constraints and taking advantage of initiatives.

The fourth triad embodies the planning processes themselves. These are the elements of administration that bring together the resources with the constraints and initiatives for the purpose of achieving the priority objectives derived from an assessment of health problems. The methodology of planning stems from modern knowledge and skills in administration, enriched by continuing contributions from science and technology. The planning processes derive their strengths from three main elements: (1) organization and management, (2) science and technology, and (3) programme information systems. The collection, analysis and use of data on health problems themselves are essential, e.g., heart disease, malaria or malnutrition, and also on operational activities, e.g., fiscal control, personnel administration, screening or detection of disease. Health and operational problems each have their own associated objectives and priorities. It is necessary to guard against confusion between these two types of problems in health planning.

Political and economic factors may be decisive in the choice of priority objectives in programmes and projects and in the objectives of associated operational activities. Yet the health administrator should do his planning in the first instance on a sound conceptual basis. Later on, adjustment can be made according to the exigencies of the situation at a particular time and place. However, at each annual or interval review of the parts or the whole of a health care delivery system, efforts should be made to conform to original, well-formulated plans.

The planning process enables the health professional to prepare systematically for rational action, whether the task is a national health services system, a categorical programme to control a human ailment or an environmental hazard or to alleviate the social components of a health
problem. The concept of health planning is also applicable to operational activities such as MHE projects or to the specialized activities of different types of health workers, e.g., public health nurses, sanitarians, auxiliary personnel or voluntary health aides.

MHE and evaluation of programmes, projects and operational activities

Evaluation in the successive steps of the planning processes is, of course, necessary to determine the soundness of each of the elements. Like planning itself, the process of evaluation can be relatively simple, embodying mainly judgements of value and relative worth, or highly complex involving systems analysis, operations research, mathematical models and computer technology.

The health administrator also has the task of evaluating the relations of expected results to proposed goals of programmes, projects and operational activities that come within his sphere of responsibility. This task involves decision-making by the administrator that cannot be delegated to scientific experts, clinicians or technologists. He can obtain expert advice, but the final decision rests upon the person who is responsible for development and allocation of limited resources.

The background document has presented exceedingly well the factors involved in various types of MHE - the populations served, the tests employed, the operational procedures for applying the tests, the manpower needs, the facilities, equipment and supplies required, the follow-up medical services essential to give the care indicated. Of fundamental importance is the clinical and epidemiological basis for making the examinations in the first place.

When the health administrator faces the questions of: (1) validity, (including sensitivity and specificity), (2) reliability, (3) cost-efficiency and effectiveness in relation to time expended and yield, (4) acceptability by consumers, providers and policy-makers, (5) accessibility to those most in need, (6) coverage of population at risk, (7) ease or discomfort of examinees - to mention the principal attributes of tests and procedures requiring evaluation - he begins to think he has found himself in a hornet's nest. Similar criteria for evaluation are required for diagnostic ranges of normality, treatment modalities of measurable value and end-results in terms of improved quality of care and social functioning. Indeed, the administrator's frustration is equalled in intensity only by the grandiose claims of the unsophisticated proponents of MHE of all types.

Some guiding concepts are needed in the evaluation of MHE just as they are in the planning of programmes and projects that include these operational activities.

The evaluation proposed should be precisely identified as to whether it applies to a comprehensive health service, a categorical programme, a special project, an operational activity - such as AMHT - or a particular test or examination procedure. Comprehensive health services are exceedingly difficult to evaluate because of their complexity, lack of quantitative goals and lack of criteria for measurement. The same is true of projects such as family planning or education and training of professional personnel. Operational activities, e.g., screening examinations, diagnostic and treatment clinics, fiscal control of expenditures, are the least difficult, but still may present many difficulties because of the lack of quantitative data and acceptable criteria for measuring results against goals.

Administratively, it is desirable to differentiate between efficiency of operational activities, i.e., has maximum use been made of resources in achieving an operational goal, and effectiveness, i.e., have the accomplishments of the operational activities contributed measurably to the programme or project objectives. Efforts expended and effects produced are not the same thing. The number of women screened for cervical cancer is effort; the number of women promptly diagnosed and adequately treated is effect. A screening activity may have been efficiently performed at minimum cost per person, but the effectiveness of the activity will be negligible if only a small percentage of the examinees are adequately followed up.
The health administrator needs to conceptualize the broad aspects of the health and administrative problems he faces before he gets down to the difficult task of evaluating the operational activities and associated procedures and tests of MHE. Some of the questions demanding answers are:

1. What will different types of MHE contribute to accomplishing programme and project goals?

2. What is the relative need for MHE compared to other operational activities such as basic public health services?

3. Will the MHE be a part of a medical care system or a separate enterprise?

4. Should a comprehensive or just a limited MHE activity be planned (because of scarcity of resources for investment and operational costs or lack of professional personnel to give adequate follow-up care)?

5. Are trained personnel and other resources available to mount a campaign of health education among special groups in the community, to help assure the success of the enterprise?

6. Are there sound epidemiological reasons for proceeding with a particular type of MHE; is it suited to the population at risk?

7. Has a plan for a health delivery system, a programme or project been designed, of which the MHE will be an integral contributor to pre-determined and quantitative goals?

These are examples of the kinds of questions that have to be answered before the health administrator begins to evaluate, with the help of his colleagues and expert consultants, the several elements of the MHE process and their components parts.

The following steps may serve as a guide for health administrators who for the first time, must make evaluative studies of operational activities, including procedures and tests of bodily structure and functions. These are not complex steps nor do they require a mathematical or computer background. Neither do they require intimate acquaintance with the latest scientific and technological developments in the medical and biological sciences. They do require, however, common sense and the ability to make value judgements and firm decisions - the latter sometimes on the basis of insufficient data. These steps may help the uninitiated in their evaluative studies of operational activities.

1. Specify operational goals in quantitative and qualitative terms that lend themselves to mensuration.

2. State what results are expected in achieving these goals within a certain time period.

3. Describe in detail the criteria to be used in measuring results in relation to operational goals. These may be epidemiological, administrative, social or biological; they should have relevance to both the operational and programme or project objectives.

4. Collect data needed to make use of criteria.

5. Analyse data, using criteria in measuring results against goals; include efficiency and effectiveness of operational activities and their associated tests and procedures.

6. Summarize findings, showing relationships of results of operational activities to the goals of the programme or projects of which the activities are a part.

7. Make recommendations for changes in the operational activities being evaluated so that subsequent changes can be made in associated programmes or projects.
It is not easy for the health administrator to make such evaluations, even with the help of able advisers and expert associates, but they must be done if decision-making in the use of MHE is to be on a sound foundation. The administrator has the difficult task of reconciling the social, medical and economic values of policy-makers and of the people, with his own professional values. Realistic evaluation, systematically carried out, can provide a strong point of departure for the compromises that so often are necessary in decision-making in the health field.

The cornerstone upon which sound evaluations can be built is a record and reports system designed to serve the purposes of a particular programme or project. It is not possible for every health organization to have a fully-automated and computerized information system or data bank. But it is possible for these organizations to include a records and reports system in the planning process when programmes or projects are being developed. Planning, implementation of plans and evaluative studies all require accurate and current data if they are to be expeditiously and successfully carried out. Programme and management information systems also can supply data for a variety of research activities especially in the administrative aspects of MHE.

MHE and research in public health

The background document provides ample evidence and numerous examples of the need for research in the public health aspects of MHE. What are the ranges of normal findings of tests employed - by age, sex, location, culture and other factors? What is the human error in the interpretation of chest X-ray films and electrocardiograms, for example, under field conditions with both medical and non-medical interpreters? What is the machine error in automated biochemical, haematological and functional tests under field conditions? What does the clinician do with "borderline" levels of blood pressure, blood cholesterol, uric acid or blood sugar? Does he treat these asymptomatic individuals with these borderline findings or just watch and wait to see what develops?

It is quite apparent to anyone familiar with the literature on MHE that we are still working with a crude public health tool, with some values, of course, but also with many limitations. It is equally apparent that a significant proportion of the funds to be used for MHE should be allocated to research. A balanced approach would include a variety of research activities:

1. **Administrative**, to improve the efficiency and effectiveness of several types of arrangements for MHE.

2. **Epidemiological**, to improve surveys and surveillance and also to provide a scientific basis for doing MHE.

3. **Social science**, how to gain the understanding, acceptance and support of the people served, how to motivate them to participate in MHE.

4. **Technical**, how to improve the instrumentation, the automation of every conceivable aspect of MHE, the computerization of records and reports within the limits of economic feasibility.

5. **Biological**, to discover new tests of bodily structure and function, to improve the specificity, sensitivity and reliability of existing tests and to determine more precise ranges of normality.

In the area of public health research the World Health Organization can contribute significantly to the development of MHE as a public health tool. So much needs to be done, that unnecessary duplication of studies and lack of information of what others have already discovered should be avoided whenever possible. The World Health Organization is unique in
its potential ability to serve as a clearing-house, as a co-ordinator of planning of research activities, as a conjoiner of research requiring participants from different parts of the world. The results of the deliberations of the Technical Discussions you are initiating today would provide valuable background material for such studies.

CONCLUSIONS

Like relatives who have come for an indeterminate visit to your home, MHE is here to stay. Let us make the most of it. There are values and limitations to MHE as a public health tool; however, it is possible to increase the values and to decrease the limitations. In this brief presentation, some remedies are suggested from the point of view of a health administrator. First, the use of modern planning processes is indispensable in developing the role of MHE in projects, programmes and delivery systems. Secondly, evaluation, which relates results to goals, is essential both in planning and implementation of MHE. Thirdly, research on a broad basis in the public health aspects of MHE is the key to unlocking the mysteries that still baffle us as we extend and diversify the use of this public health tool with the hope of improving human health and social well-being.
NEW DELIVERY SYSTEM proposed by the author would separate the sick from the well. It would do this by establishing a new method of entry, the health-testing service, to perform the regulating function that was performed, more crudely, by the fee for service. After health testing the patient would be referred for sick care, health care or preventive maintenance as required and would be transferred among the services as his condition changed. The computer center would regulate the flow of patients and information among the units, coordinating the entire system, which would depend heavily on paramedical personnel to save doctors' time.

**Fig. 1**

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Health-testing and referral service
- Paramedical staff (medical supervision)
  - Automated history tests:
    - CLINICAL LABORATORY
    - X RAY
    - ELECTROCARDIOGRAM
    - PHYSIOLOGICAL

Health-care center
- Paramedical staff (medical supervision)
  - Health education
  - Health exhibits
  - Immunization
  - Posture and exercise
  - Counseling
  - Psychosocial
  - Drug-abuse
  - Clinics
  - Nutrition
  - Adolescents
  - Family-planning
  - Prenatal
  - Well-baby

Sick-care center
- Medical staff (paramedical assistance)
  - Doctors
  - Group practice
  - Integrated facilities:
    - Clinics and hospitals
    - Special laboratories
    - Radiotherapy
    - Intensive and acute care
    - Extended care

Preventive-maintenance service
- Paramedical staff (medical supervision)
  - Clinics:
    - OBESITY
    - DIABETES
    - HYPERTENSION
    - ARTHRITIS
    - BACK
    - MENTAL HEALTH
    - GERIATRIC
    - REHABILITATION

Courtesy of Scientific American, April 1970, 222 #4 p. 21
Fig. 2

Concept of Comprehensive Health Planning, viewed against the background of Society's Problems, Objectives and Priorities.