Abstract

Multiphasic health testing (MHT) has a long history of irregular development and sporadic diffusion as it has attempted to satisfy a variety of objectives in preventive medicine and in health care delivery. MHT systems have problems of interfacing with people, both patients and health professionals; while most patients find it very acceptable, yet many physicians are reluctant to adopt it. Some national governments have a policy of actively supporting MHT and others discourage it. Industry has not found it profitable to market, yet many companies make MHT available to their employees. With increasing occupational health hazard monitoring and public support of health promotion, it is likely there will always be a place for some form of MHT.

Introduction

A patient obtains the usual traditional health evaluation, assessment or checkup by seeing a primary care physician who takes a medical history, provides a physical examination, and then arranges for diagnostic tests and procedures that in the physician's judgement are necessary to complete the health evaluation. His physician then makes a diagnosis and recommends appropriate care.

MHT is a systemized approach employing specially trained allied health personnel to collect data on patients' medical histories, clinical laboratory, X-ray, and other physiological test measurements in an integrated program. A "multiphasic health checkup" is a health evaluation provided by using MHT followed by a physical examination by a physician who makes a diagnosis and recommends appropriate care. "Automated multiphasic health testing" (AMHT) additionally employs automated equipment and computerized decision rules to sort out those who have test abnormalities. "Multiphasic health testing services" (MHTS) is the use of MHT to also integrate into the MHT program additional services such as health counseling, health education, preventive health maintenance, and entry triage to medical care.

Historical Review

Over the past 35 years, MHT evolved as an integrated programmatic approach to provide health evaluations more efficiently to large groups. In 1948, Breslow first introduced the concept of "multiphasic screening" as an extension of mass screening.

In 1951, the first multiphasic screening program within a prepaid health plan was initiated in Kaiser-Permanente's Oakland medical center.4-9 It was conducted by the same physicians who furnished the physical examinations, treatment, and followup care as an integral part of group practice, prepaid medical care; and this MHT program has continued to the present time.

A great impetus to MHT resulted from a series of joint meetings of physicians and engineers arranged by the Engineering Foundation in the late 1960s and early 1970s. They were followed by conferences sponsored by the then Society for Advanced Medical Systems (SAMs), now the American Association for Medical Systems and Informatics (AAMSI), by the International Health Evaluation Association (IHEA), and the annual Technicon symposia.5

MHT programs then diffused throughout the developed countries of the world. As of the late 1970s, there were estimated to be about 300 in the United States, about 40 in Japan, about 30 in Europe, and a few in Australia, Canada, the Middle East, and in Latin America. Although there is no current registry of MHTs, Suzuki13 has recently reported 73 officially designated programs in Japan. At the same time, it is apparent in the U.S.A. that there has been a decrease in interest in MHT in the past few years. Oldfield12 provided a very perceptive industry insight into this changing trend by reviewing the experiences of MHT programs in some hospitals, clinics and MHT centers, and the business activities of some MHT vendors during the 1970s.

As early as 1971, there were published "guidelines" for a successful MHT2, which advocated criteria for high quality and comprehensive testing; and which urged integrating the MHT into community physicians' practices, providing and reporting services to save physicians' time, and providing cost-effective testing by flexible test selection tailored to individual patient's needs and physician's requirements, with special combinations of tests for appropriately selected higher risk patients. When a MHT program has not been cost-effective, it is because it has failed to satisfy these
requirements for quality, service and costs.

It is difficult to conceive a systemized, integrated, programmed approach not being more cost-effective than the traditional physicians' method for providing routine health evaluations. Within an HMO, a study found that, for patient groups comparable by age, sex and health status, a multiphasic health checkup compared to a traditional checkup had a 42 percent saving in physicians' time and showed a 20 percent lower cost including all physician time and testing costs. Furthermore, when a comprehensive multiphasic health checkup served as the initial entry visit to primary care in the HMO, the total cost of care over 12 months was only 80 percent of that for a comparable group of patients entering care by a traditional office visit. The Future of MHT

Oldfield12 proposed: (a) that government should recognize the value of MHT for health care cost containment and should support this technology. (b) Health care insurers should include MHT as a reimbursed benefit since lack of third party payment for "health" testing is a serious deterrent to the financial success of an MHT and motivates more expensive modes of obtaining these needed procedures. (c) Physicians should support and refer patients to an MHT even though it may have some technical deficiencies because it can decrease costs of care to the patients. (d) Industry should improve the flexibility of the MHT testing system to permit individual selective testing and improve the self-administered history to better satisfy patients and doctors. (e) Hospitals, clinics and HMOs should use MHT as an efficient "point of entry" into the local health care system. (f) MHTs should support the current public interest in health promotion by including physical fitness testing, health risk appraisals and health education (as long has been advocated for MHTs). Since trends often cycle and history repeats itself, it is not surprising to read that again WHO is promoting multiple disease detection, and control and maintenance of good health through "integrated programmes."10

In evaluating MHT, it is important to separate the process of providing care to a patient from the patient's outcome from the care. Part of the MHT literature is directed to the selection of tests which are sensitive, specific, have a high predictive value for disease and an acceptable cost per positive test. Another part of the literature is directed to the effect of the detection of the abnormalities upon the natural course of disease. In some instances, a test may be very sensitive and be associated with a very acceptable cost per positive test for a disease which as yet has no successful treatment. On the other hand, there may be available effective treatment for a disease which does not have an acceptable cost-effective screening test. When the evaluation of the multiphasic's systems approach for providing tests is clearly distinguished from the outcome effects upon patients from the selected tests provided, then the cost-effectiveness of the MHT's systemized process will be better appreciated.

Conclusions

With the increasing interest in health promotion and self-care, public health policy makers are reactivating mass screening as "health fairs" and multiphasic screening as "integrated programs." Concurrently, HMOs motivated by cost containment and industries obligated by OSHA regulations are modifying the MHT approach to include health risk appraisal, health education, and occupational hazard assessment. Any increased use of "health" checkups (in contrast to "diagnostic workups") by physicians will depend upon whether the expenses of the former will be covered by third party payers. It is certain that patients will always want periodic health evaluations, and that some systemized, integrated, programmed, multiphasic approach will be most cost-effective for providing these evaluations.

References