

Evaluation in the health field has had a relatively long history. Nearly 150 years ago a French statistician and physician, Dr. Pierre Ch. A. Louis, coaxed his colleagues to "demonstrate, rigorously, the influence and the degree of influence of any therapeutic agent on the duration, progress, and termination of a particular disease."<sup>1</sup> Demonstrating the effectiveness of medical care was an ideal gradually followed by others. In the late 1850s Florence Nightingale conducted a number of studies evaluating the efficacy of hospital care of British Army casualties during the Crimean War. Using such indicators as the number of hospital deaths per diagnostic category to document the poor conditions in army hospitals, Nightingale asserted that changes in sanitation could result in substantial decreases in care-fatality rates.<sup>2</sup>

In the beginning of the 20th century, Dr. Edward M. Codman attempted to institute a follow-up system for the purpose of monitoring patient outcomes at Massachusetts General Hospital. The system was designed to examine all patients for post operative progress. Unfortunately, Dr. Codman's ideas on evaluation at that time were too advanced for the Massachusetts General administration to adopt, and Codman had to wait several years before implementing the system at a private institution which he himself founded.

The medical community's interest was centered more at this time on issues surrounding the licensing and training of physicians than the assessment of the outcomes of medical care. The Flexner Report, published in 1910, for example, called for major changes in the structure and organization of medical education. The report advised medical institutions to do away with poorly prepared and unlicensed medical practitioners. The report, however, gave little attention to the assessment of the medical care provided, or the outcomes of care.

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<sup>1</sup>Quoted in Christoffel and Loventhal (36), p. 877.

<sup>2</sup>Quoted in Brock and Avery (24).

The College of Surgeons shortly afterwards undertook a survey of nearly 700 hospitals and concluded that few institutions were equipped to provide a minimum level of quality care to patients. In 1919 the College instituted a program of minimum standards for all hospitals to follow. Eventually this program evolved into the accreditation process employed by the Joint Commission on Accreditation of Hospitals (JCAH) which was founded in 1951.

During World War II and throughout the post-war period evaluators of medical care shifted attention from standard setting to a review of the care giving process. Information about what was happening to patients, rather than the qualifications of the care givers, became the key consideration. The medical audit of the patient's record, rather than the certification of the institutional process, became central to the new technology which emerged to support the evaluation process.

The basic assumption underlying the use of the medical audit was that information on the patient's chart reflected the actual performance of the medical team. While the shift in emphasis to the care giving process was an important one, the use of the medical record alone to support the process proved to be a major obstacle. Medical evaluators soon discovered that the data provided by the audit process was often an inadequate basis for decision making.

With the passage of the 1972 Amendments to the Social Security Act (P.L. 92-603), the Professional Standards Review Organization program (PSRO) was officially mandated to monitor the quality of care provided at the regional and local levels. While the medical audit remained a key component of the PSRO review process, a variety of new evaluation techniques emerged to complement and strengthen this approach. Patients were certified for admission based on information collected on patients prior to hospitalization; a concurrent as well as retrospective review process was installed at all facilities which were receiving Medicare and Medicaid funds. The review process also emphasized the appropriateness, as well as the quality of the care provided. Throughout the process, evalua-

tors were encouraged to utilize explicit review criteria based on quantitative data.

The evaluation process itself became more formalized as the peer review committee developed into the control element for judging the quality and appropriateness of medical care. Increasingly medical facilities came under the review of outside evaluators and review committees sponsored by third party payors, as well as federal, state, and private accreditation bodies.

During the 1970s and early 1980s there was also renewed interest in the assessment of the outcomes of medical care as earlier advocated by Dr. Codman and Florence Nightingale. A variety of studies incorporated the use of sophisticated outcome measures based on such concepts as the patient's health status, level of functioning, and severity of the disability. Williamson, for example, in the Health Accounting Project assessed both the diagnostic and therapeutic outcomes of care (155).<sup>3</sup> Shapiro's study of the Health Insurance Program of Greater New York's group practice system compared infant mortality rates of HIP subscribers with the general population. Outcome was defined as "some measurable aspect of health status influenced by a particular element or array of those elements of medical care" (127). Kane, et al., developed a method for determining the functional outcome status of patients in an ambulatory setting. The health status of patients was compared at three points in time: usual status, status at the initial visit, and status at time of telephone follow-up after care (88).

More recently interest has shifted to reviewing the outcomes of health care in relation to costs. In 1975, the major portion of an issue of the New England Journal of Medicine was devoted to a discussion of cost benefit analysis. Two years later, another issue

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<sup>3</sup>Therapeutic outcomes were assessed by predicting the percentage of patients treated which fall into several categories of functional impairment.

of the New England Journal of Medicine included further discussion and a sophisticated application in relation to the management of hypertension (151). Many observers consider these articles, and the volume by Weinstein and Stason (152), to be landmarks in the application of cost effectiveness analysis in the health field.

Recent years have reflected significant growth in the number of articles in the health care cost benefit and effectiveness literature. Since 1970 the number of publications were never less than 25 (132). Clearly, the rate of growth of these studies vastly exceeds that of the medical literature in general. Yet, the above analysis of the existing literature points to several major shortcomings and gaps in the present state of the art. Among the shortcomings are: failure to consider how environmental factors might alter program inputs and outputs; failure to account for program effects which might vary in relation to the size of the program; ignoring increases over time in the efficiency of a program's operation; the problem of using "proxy" goals and measures to estimate program effects and benefits; the problem of uncertainty about the future, and how to estimate long-term benefits.

One of the concerns we have had in developing the ideas for this volume was to provide an evaluation approach which focused on the diverse processes, structures, and impacts of health programs in the context of costs. We felt that looking at the health inputs, structures, standards of practices, outcomes, or even costs in isolation would not lead to a comprehensive view of a health program's cost effectiveness. While we recognize that the relationships between impacts, structure, and processes of care are far from clear, the attempt to make the connections can lead to a better understanding of the health program.

It is our position, therefore, that impact analysis can be applied even in situations where the benefits are not precisely known, nor the monetary value of the benefits agreed upon by various decision makers. Yet, as Hellinger points out, "the relevant question is not

whether the costs and benefits of various projects can be measured precisely," but "whether decisions regarding which projects are to be funded should be made using information on the perceived costs and benefits of each project."<sup>4</sup>

In the approach proposed in this volume we recognize that the specification of relevant health costs and impacts depends to a great extent on the values of the health officials, the public, the government officials, and the consumer about health and health care. For this reason we are proposing an approach which identifies as many health impacts as possible and allows the various users to set their own priorities in the decision-making process.

We also wish to point out that with decreasing federal support for health and health-related social programs, it is becoming increasingly incumbent on state, city, and county officials to make decisions about the continuance of public health programs and services in their jurisdictions. It is our belief, therefore, that such decisions should be made in the context of sound evaluation data. Decision makers also should be able to compare the cost and benefits anticipated from health investments in relation to those anticipated from other types of public investments, such as for highway construction, employment programs, and economic development efforts. This volume, therefore, suggests a methodology which allows for the translating of many health benefits into monetary values which will contribute toward such comparisons.

Finally, we wish to remind the reader that while this volume is program focused, much of the methodology discussed is also appropriate for the assessment of medical interventions or technologies as well as health programs. We have chosen the health program to be the primary concern of this volume, however, since it represents the administrative facility and planning unit at the community level through which most public

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<sup>4</sup>Hellinger (78), pp. 205.

ambulatory health care services are provided in this country. While there remains considerable confusion in the literature between health program evaluation and the assessment of medical interventions, we hold that sharp lines need not be drawn between the two at the present time. Future research endeavors may well be directed toward amplifying distinctions and providing evaluation approaches most suited to the assessment of new and emerging health technologies.

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# Evaluating the Impact of Health Programs

