

health in adulthood and through to the end of the childbearing years. Physical health may once again be more important later on.

In this context, physical and emotional impairments set limits to what can be expected of an individual. We have a problem with impairment, because the social definition of appropriate behavior for impairment has changed, so that in fact, for many impairments—blindness, for example—ideologies and patterns of expectation have emerged that urge and even require maximum independence and social participation. How does one define the health status of the blind person whose adjustment to his condition and social-role functioning are at optimal levels? Should a blind person be considered less healthy than a sighted person? In terms of the physical health component of the index, yes; because the individual does have a physical handicap and may have some disability, even if minor, resulting from it, and his life expectancy, especially his expectancy of disability-free years, may be substantially less. In terms of the social adjustment component of the index, however, it is primarily subjective considerations that determine whether an individual with an impairment such as blindness should be considered less healthy than others.

In summary, we mustn't look on health in the narrow terms that we have been accustomed to and that many of the papers for this conference do. Health is more than just a biomedical phenomenon; it involves a social human being functioning in a social environment with social roles he must fulfill. In addition to that, I think we have to consider the social human being as also a moral being, and this has obvious ties to his conception of himself and his society's conception of him as an emotionally healthy person. I think we have to construct an index that includes all these components.

—Monroe Lerner

Health Index and Utility Models: Some Thorny Issues

The utility model for the evaluation of health care programs may be considered an extension and generalization of the cost-effectiveness approach. The original concept for this model was developed simultaneously and independently by two groups at two locations: Bush's group, formerly in New York, now in San Diego [1-3]; and our group at Hamilton and Buffalo [4,5]. Central to this model is a health index that assigns a value of 1 to good health, 0 to death, and a value between 0 and 1 to all possible intermediate health states.

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The health index can be considered a type of seriousness index: the more serious the disability, the lower the score.

Given such an index, one can view the index day as a general measure of health, independent of any particular disease or program. In this way, health care programs of any type can be compared on the amount of health improvement they create for their target population, as measured in index days, as well as on the amount of resources they consume.

A central problem with this model is the determination of the appropriate index values for each health state. One approach [4] is to use utility measurement techniques on a sample of the general population, so that the index for a particular health state will represent the utility of that state as perceived by society. The objective of such an approach is to use the model to allocate limited resources to alternative health programs in a manner that will maximize the perceived social utility.

The question of how to determine the health index values for particular health states has two levels: the philosophical and the methodological. At the philosophical level is the question of what the index should represent. Should the index value for a particular health state represent the seriousness of the disability from the physician's viewpoint, like Kisch's index [6]? Should it represent the seriousness of the disability from the viewpoint of public representatives, as Bush suggests [3]? Or should it represent the utility of the disability as perceived by society, as our work proposes [4,5]? Obviously these questions relate closely to the larger problem of clearly defining the objectives of the health service system.

At the methodological level, there are many questions concerning how the index values should be measured. For example, where the index is intended to measure the value system of a society, some of the outstanding issues are the following:

- Is the value system, and therefore the index, significantly different for different socioeconomic groups in the society?
- Is it different between well people and people with particular disabilities?
- If differences like these exist, whose value system should be used?
- Is the utility or index for a particular health state, on the 0-1 scale, a function of time?
- Are health states specific to a disease and a program, or can a small number of general health states be defined that cover all possibilities?
- Does the measurement technique have any validity? That is, can you measure important subjective values with hypothetical questions in an interview?

Besides measurement problems, other issues arise:

- Is the linearity of the model appropriate? Is it equally good, as the model assumes, to extend one life for a thousand days or a thousand lives for one day?
- Is it reasonable to assume that every person in society is equivalent regardless of age, sex, color, education, and employment? This assumption suggests, for

example, that society would be indifferent between a five-year life extension for a 20-year-old and a five-year life extension for a 70-year-old.

- What is the appropriate discount rate for future health benefits? Perhaps value measurement techniques can be applied to determine how much health benefit society would forgo now in order to receive greater benefits in the future.

—George W. Torrance

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Health Service Indicators as Components of a Health Status Index

Continuing interest in the development of health status indexes is noteworthy for the innovative methods proposed and the numerous disciplines involved. It is also noteworthy because of the limited attention that has been given to health service indicators as components of such indexes.

The primary objective of a health status index is purported to be the utilitarian one of providing a useful management tool for the health service planner and administrator, for example in comparing health status among different populations and in the same population over time. Qualitatively, the ideal index should have the capability of identifying the nature and magnitude of the various health problems that contribute to health status. This potential is desired because of the need to assess the relative effectiveness of service programs for reducing specific health problems, to identify service priorities, and to make the

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