

Before any symptom terms were added to the symptom list, they were first checked against the diagnoses listed in the fourth edition of *Current Medical Information and Terminology* (Burgess L. Gordon, ed., American Medical Association, Chicago, 1971). Symptoms that were identified as diagnoses in *CMIT* were dropped from further consideration as potential entries to our symptom list. Terms dropped from the symptom class in our system are included in one of the other classes (e.g., signs, diagnoses, general problems of living).

All these changes have made the symptom classification system originally devised by Hurtado and Greenlick more usable for recording data in an ambulatory care setting. We are moving ahead to develop other classification systems for signs and for problems of living as recorded on the problem-oriented record. These, too, will enhance the ability of a family physician to collect information and will create a data base that should prove invaluable for providing quality medical care and for conducting useful research in ambulatory care.

A final comment concerns the continued utility of this symptom classification. There will be ongoing review and revision as necessary. Space for expansion should be adequate for many years. As new symptoms are added and old ones modified or deleted, the symptom list and associated code numbers will be updated. Updates will preserve the original coding scheme, and revised versions will always be compatible with previous versions—a necessary guarantee for users who are interested in long-term applied medical research. The Family Practice Program intends to maintain this revised list as long as it is useful and practical to do so.

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## **Weighted Life Expectancy as a Health Status Index**

Relative to the discussions of health status indexes by Lerner, Torrance, and Gentry [*HSR Viewpoints*, Spring 1973, p. 6 ff.], I should like to call attention to another proposed index.

Much of the clamor about the health care system in the United States is based on our low comparative ranking in male life expectancy (18th among European and North American countries) and in infant mortality (14th). While there is little clear evidence that health status is a product of the health delivery system, such measures will doubtless continue to be used in comparative studies.

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A disadvantage of life expectancy and mortality as proxy measures of health status is that they are all-or-nothing measures—a person either lives or dies—allowing for no gradations in the *quality* of life during the years lived. A 1969 DHEW document, *Toward a Social Report*, suggests a more meaningful measure: expectancy of life free of bed disability and institutionalization. This measure, like other indexes, is not without its limitations, as the document recognizes:

It does not deal with the disability which does not force people to bed. Though it weighs the serious disease more heavily than the lesser disease, since the serious disease more often results in death or in longer bed disability than the minor disease, it makes no allowance for the difference in pain and discomfort per day among various diseases. Finally, it ranks death and permanent bed disability equally, which may not be in accord with our values.

In spite of these limitations, this is an interesting approach, representing a kind of weighted life expectancy.

If some prorated value could be assigned, on the basis of survey findings, to less healthy years or to years with less than full function, a weighted life expectancy could be determined. For example, if it were determined that the average value in the target population for life in bed was one-quarter of the value of a fully healthy life, then for such a year in bed one would assign a value of one-quarter of a healthy life-year. Such values for each age class could then be added together to obtain a weighted estimate of life expectancy, as shown in the accompanying weighted life-expectancy table (using hypothetical but plausible values).

Weighted Life-expectancy Table

Ages	Hypothetical average value of life	Weighted life-years
0- 4	0.91	3.64
5-14	0.94	9.40
15-24	0.93	9.30
25-44	0.90	18.00
45-64	0.88	17.60
65-74	0.85	8.50
75+	0.80	...
		66.44

The total of 66.44 weighted life-years represents the value of life expectancy for an individual with a 75-year life expectancy at birth. It is equivalent to saying that the value of 74 years of life with the average amount of infirmities and disabilities is roughly equal to 66.4 years of a fully healthy life. Similarly, a life expectancy of, say, 24 years under these circumstances would be equal to  $(.91 \times 4) + (.94 \times 10) + (.93 \times 10)$ , or 22.34 years of fully healthy life.

Such a weighted life expectancy is based on current experience. That is, life and disability tables are created from the current death and disability rates in given age ranges.

This leaves unanswered the question: Is life expectancy or weighted life expectancy the best indicator of the health of a population? Consider that if the life expectancy in Ceylon had been based in 1945 on the then-current experience of the population and the age distribution, the figures would have been deceptive, for within the following few years, with the virtual elimination of malaria, people in every age class lived longer. Another example is the experience in West Africa: with the elimination of smallpox, estimates of life expectancy made prior to the campaign would have been misleadingly low.

On the other hand there are always risks in prognostication. Life tables made for the years after 1965 based on the average rate of previous decline of mortality in the United States would have led to a highly erroneous estimate of male mortality, in view of the recent increase in mortality of younger males. For the planning of health services it is important to estimate changes in health care, way of life, or incidence of certain disorders that will alter life expectancy. But it is likely that there will always be a need for estimates of the current health status of the population, as well as estimates of how life expectancy will be altered by future changes.

Weighted life expectancy is useful in relation to the individual as well as for a population. In estimating the benefits of a program of therapy, it is necessary to measure, in graded terms other than life-or-death terms, the improvement due to the therapy. A health status index is a way of quantitatively distinguishing among patients by degree of improvement following therapy. The value a patient (or society) assigns to a given condition of health will allow an estimate of the net benefit of a therapeutic program. If patients with a given disorder who are treated with a new medication return to a fully healthy status, while those not receiving the therapy are unable to get out of bed, a health status index will allow values to be assigned to these conditions of life that will differentiate quantitatively between the two effects.

We may also look at an individual at any point in time and estimate his weighted life expectancy. We have long had tables of life expectancy for different ages, but if these are transformed into weighted estimates of life expectancy based on the *condition* of life throughout the remaining estimated years, a more meaningful prediction can be made of the benefits that can be expected. In this sense we can describe the functional capacity of an individual at a point in time, or we can estimate a weighted life expectancy that will be based on the experience of a population. For example, so-called "prospective medicine," or health-hazard appraisal, assigns to the individual certain risks of dying or falling ill on the basis of the past experience of others suffering from the same disorder. It is in this sense only a further specification of the kind of calculation that is made for the weighted life expectancy of a population. That is, the predicted life expectancy is based on current experience and cannot attempt to estimate what the impact of an intervention such as a new therapy might be.

In the Framingham study it was found that the presence of hypertension, left ventricular hypertrophy, and elevated blood cholesterol gave a 50-50 chance of a coronary within the following six years, based on the experience of the

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population of individuals with that set of disorders. The subpopulation from which the patient comes is thus defined in a fashion similar to our estimation of the life expectancy or weighted life expectancy of any member of the population. The essential feature of the scale is that it allows us to assign social values or utilities to various conditions of life between a fully healthy functional status and death.

Weighted life expectancy, then, offers interesting advantages both as an indicator of current health status and as a way of predicting future status. In other words, it can represent a description of health status at a given point in time, either for individuals or for populations, and also a basis for estimating the social value of advances or gains made in health status because of medical or other interventions.

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