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**Toward Quantifying the Health of the Elderly**

Health status of the elderly, its measurement, and predictability are the subjects of two competent and thoughtful articles in this issue of the *Journal*.<sup>1,2</sup> The simultaneous appearance of these articles is a reflection of a unique historical occurrence, the tumbling up of the size and proportion of the elderly segment of our population. At present in the United States, more than 70 percent of all deaths occur in people ages 65 and over and 30–35 percent occur in those age 80 and older.<sup>3</sup> At the same time that more people are dying at older ages, the elderly themselves are experiencing an increase in life expectancy and at a rate faster than the rest of the population.<sup>4,5</sup>

This vast demographic shift has occurred within the past century, leaving medical and social responses struggling to catch up. A great deal of our health resources and social investments are expended during the last years of life.<sup>6</sup> Obviously, these factors are increasingly occupied by a rapidly aging portion of the population. We do not have facile laboratory or clinical instruments to determine the health status of the elderly or the idiosyncratic needs and strengths of individuals in this large and diverse population.<sup>7</sup> Thus the methodology used in the articles in this issue of the *Journal* relies on arbitrary and seemingly gross measurements of functional abilities. We are still groping with complex phenomena and using conventional descriptives as we sort out the most useful measures for predicting and determining the variety of needs of the elderly population.

Guralnik and Kaplan<sup>1</sup> found that “high levels of physical functioning” were associated with higher incomes, the absence of hypertension, arthritis and back pain, never smoking, normal weight and consuming only a moderate amount of alcohol. Harris, *et al*,<sup>2</sup> observed that one-third of people age 80 and over were “physically able” and that maintaining “continued physical ability” over time was related to the absence of cardiovascular disease, arthritis, a body mass index less than the 75th percentile, a younger age, and higher education. With my colleagues, Benfante and Reed,<sup>8</sup> we found that the cohort of people who had no incidence of chronic disease over time, had lower blood pressure, were not obese, did not smoke, consumed little or no alcohol, and tended to have normal serum glucose, uric acid and triglycerides, and high forced vital capacity scores. We stated, “it is possible that no single methodological approach or simple set of assumptions will provide definitive health predictors. We emphasize the need for a series of imaginative studies in a variety of populations, done in diverse ways so that the more robust predictors will emerge. Accumulations of such data would create a realistic background for determining the most efficient methods for reducing the burden of morbidity and mortality in the rapidly increasing elderly population.”<sup>8</sup>

Patterns are emerging over which we have some control, and we have reason to be optimistic that intervention and mediation are possible. Most promising are control of hypertension, emphasizing known lifestyles which avoid risk factors for cardiovascular disease and cancer, and maintaining normal weight. During this century, we have markedly improved the average educational level and through social policies have alleviated some of the economic factors related to unhealthy outcomes. There are other important considerations, however, such as social isolation, depression, mental deterioration, and widowhood which were not really within the purview of any of these studies.

Several concepts we have started to address<sup>9,10</sup> highlight the necessity for

improved definitions of health in the elderly and focus increased attention on health promotion in this population. Society is approaching what arbitrarily could be called the end of Phase I of the increase in life expectancy when we not only have reduced infant and childhood deaths, but mid-life mortality becomes rare.<sup>11</sup> In Sweden more than 80 percent of all deaths are now occurring in those ages 65 and over. Data from all developed countries indicate that between the year 2010 and 2020 this pattern will be observed universally.<sup>12</sup> In addition, assuming no scientific breakthroughs, 80 percent of all deaths among those age 65 and over will be from cancer, heart disease, and cerebrovascular disease with some variation in their relative importance. Finally, 20 percent of the population of the developed world will be age 65 and over by the year 2020. The developing world is gaining ground very rapidly; this shift in population distribution will be even more evident by the middle of the next century.<sup>13</sup>

We need to recognize that improvements in preventing deaths before age 65 will alter the overall pattern and distribution of illness and health needs to a diminishing extent. Increases in life expectancy will occur because we postpone the age at death for cancer, heart disease, and cerebrovascular disease. There is some evidence that this is already happening<sup>14,15</sup> and vigorous research efforts should produce even greater effects.

It is certainly possible that we will pass Phase I of life expectancy and continue to witness a further increase in life expectancy almost exclusively related to increased longevity within the elderly population. Regardless of whether we are at Phase I or beyond, we must address the central theme of the articles under discussion and learn how better to measure and predict the health status of the elderly.

Active life expectancy,<sup>16</sup> an increasingly useful concept, refers to the years lived independently, without functional limitations. Beyond active life expectancy lie years of compromised health and well-being. The prevalence of physical and social deficits accumulate with age. A large segment of these deficits have been called the non-fatal age-dependent diseases and conditions.<sup>17</sup> Among the most prominent factors which compromise active life expectancy and detract from healthy aging are arthritis, diminished hearing and visual acuity, dementia, hip fracture, incontinence, widowhood, social isolation, symptoms of depression, and reliance on institutionalization.

A driving force in health policy is health expectations. We cannot promise a golden pond, the age equivalent of a rose garden. We must learn how much improvement is possible and how much we should expect. We know that adding 25 years to female life expectancy this century has had little or no impact on the age at menopause. We also know we have postponed or prevented heart attacks and strokes. But what do we know about the age at onset during this century of presbyopia, presbyophrenia, and presbycusis? The specter of not being able to postpone or prevent Alzheimer's disease and related disorders with 2.5 million current cases and an aging population is sobering.

I commend Drs. Guralnik, Harris, and their co-authors. They are in the forefront in developing the measures for "high levels of physical functioning" and "continued physical ability." In future studies, we must learn the age-specific incidence of physical conditions and social events in order to determine the health status of our aging population and to measure health status over time. Unless we delay the age of onset of these and other physical, functional, and social deficits at a rate faster than we add years to life, the net increase in compromised years will continue to exceed the increase in active life expectancy.

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