Cancer in Old Age

Edward A. Lew, F.S.A.

In the last decade, new information concerning mortality patterns in the aged population of the United States has become available. Most published death rates at the older ages have usually been either for all ages 75 years and older combined, or for all ages 85 years and older combined. In the relatively few instances where mortality rates for these advanced ages were presented in finer subdivisions, some form of disclaimer was usually made as to their accuracy. The difficulties of deriving reliable death rates at the advanced ages stem primarily from:

- Misstatements of age (in the main, overstatements of age by the less educated segments of the population);
- Incompleteness or inaccuracies in the registration of deaths and in the enumeration of the population at these ages;
- A lack of comparability between the population figures drawn from the census and the mortality statistics for the death registration area.

The serious doubt that attaches to the quality of the death rates at the advanced ages has been such that most life tables have been artificially ended at the upper ages by a mathematical formula.

More Accurate Mortality Rates

More accurate information about mortality at ages 65 and older became available for almost the entire population residing in the United States after Medicare had been in operation for several years. An analysis of the mortality experience among Medicare recipients over the period 1968-1972 indicates that the estimates of death rates made by the National Center for Health Statistics (NCHS) were not really inaccurate up to about age 80; in the age range of 65-79 years, the death rates among Medicare recipients did not exceed the death rates estimated by the NCHS by more than 7.5 percent. However, the discrepancies at ages 85 and older increased greatly, ranging from approximately 10 percent in excess of the NCHS figures at age 85 to more than 25 percent at ages above 100. The most remarkable feature of the death rates among Medicare recipients at ages 100 and older was that, from a peak at age 100, they decreased gradually, with rates at age 110 approximating those of the early 90's. It is possible that this decline in mortality is at least partly an artifact reflecting inaccuracies in the reporting of age at the extreme of life.

If the death rates estimated by the NCHS are accepted at face value, then the corresponding death rates among white males attributed to all forms of cancer continue to increase past age 65 (although at a diminishing rate), up to approximately 90 years of age. However, among white females, they continue to rise at a roughly

Mr. Lew is Consultant to the Department of Epidemiology and Statistics, American Cancer Society, Inc.
constant rate (nearly 25 percent for each five year advance) up to age 85. The death rates reported from all forms of cancer beyond age 90 appear to decline in both sexes. The corresponding mortality rates in England and Wales decrease after age 85. In Sweden the death rates reported from all forms of cancer begin dropping among males after age 70.

In contrast to corresponding cancer death rates, white males in the United States experience death rates from the major diseases of the heart that rise at a rate of nearly 50 percent for each five year advance with age from 65 to 84 years. White females in the same age range exhibit death rates from these causes that increase at a rate exceeding 75 percent for each five year advance.

**Incidence Rates from the TNCS**

In the selected areas of the United States
covered by the Third National Cancer Survey (1969-1971), the incidence rates for all forms of cancer increase after 65 years until the late 80's. Figure 1 presents these findings for ages 75 and older, not only for all forms of cancer, but also for cancers of the digestive and respiratory systems, and cancers of the prostate and breast. In both white males and white females, the incidence of cancers of the digestive system increases into the late 80's; for males and females of this age, they account for 30 percent and 40 percent of all cancers respectively. The incidence of cancers of the prostate and breast also rises up to age 90. Cancers of the prostate are responsible for approximately 25 percent of all male cancers between 75 and 79 years of age; this figure increases to more than 33 percent of all male cancers in the late 90's. Cancers of the breast account for about 20 percent of all female cancers in the age range 75-99. The incidence of cancer of the respiratory system declines sharply among white males past age 75, from over 20 percent of all cancers at ages 70-74 to about five percent in the late 90's.

Figure 2 presents the death rates at ages 75 and older in the white population of the United States, for all forms of cancer, for cancers of the digestive and respiratory systems, and for cancers of the prostate and breast, as reported by the NCHS for the period 1969-1971. The decline in white male death rates from all forms of cancer beyond age 90 reflects the decreases in death rates from cancer of the digestive and respiratory systems, and from cancer of the prostate. The corresponding decline in white female death rates from all forms of cancer reflects mainly the decreasing death rate from cancer of the digestive system. Death rates from cancer of the buccal cavity and pharynx, bone and connective tissue (excluding cancer of the breast) and bladder continue to rise into the 90's in both sexes.

Intercurrent Disease
There is evidence that elderly patients are frequently reported as dying from intercurrent disease (for example, various heart conditions and pneumonia), especially when the symptoms of cancer are silent and metastasis is not apparent. The continued pronounced rise in death rates from heart and cerebrovascular diseases indicates that these diseases are given preference over cancer as causes of death when both cancer and either of these diseases are present. Consequently, it would appear that the incidence rates of cancer at the older ages provide a better measure of the frequency of cancer at these ages than do cancer death rates derived from mortality statistics by cause. In their early stages, cancer of the prostate, thyroid, colon and kidney are not infrequently missed on clinical examination of older patients and this affects the reported cancer incidence rates no less than cancer death rates.

It must furthermore be kept in mind that the elderly represent disparate cohorts of individuals whose life experiences and environmental exposures may have been quite different from those of younger people. It is also possible that they may constitute a biologically select group which may not be relatively as susceptible to cancer, at least insofar as a high proportion of cancer-prone individuals might be expected to have died by age 85.

A Unique Study
The American Cancer Society is currently engaged in a unique study that focuses attention on the mortality experience of a cohort of 13,500 persons who, in 1975, would have attained age 88 or older (men) or age 90 or older (women), providing they had survived since the launching of the Cancer Prevention Study in the late fall of 1959. The subjects of this study have been followed from July 1, 1960 to June 30, 1972. The study comprises valuable information from which it would be possible to calculate death rates from cancer and other causes among elderly persons for whom significant data is available on such factors as family history, personal history of disease and physical complaints, occupational exposures, personal habits, diet, etc. This study can bring to light the special characteristics of individuals who survived to old age without having contracted cancer.