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NCI Notes to Reporters and Science Writers

A new reference on trends for cancer deaths by county shows that overall cancer death rates would have declined over the years 1950-1979 for most of the male population of the United States, if it weren't for increases in lung and other smoking-related cancers. Overall rates for females decreased in spite of a large increase in lung cancer, because of decreasing death rates for other types of cancer.

Over the three decades, lung cancer death rates for white males rose 116 percent; for white females the rate went up 199 percent; for nonwhite males, up 185 percent; and for nonwhite females, up 188 percent. There were also increases in death rates for other smoking-related cancers such as esophageal and laryngeal cancers.

Excluding lung cancer, death rates for all other cancers decreased for white males 5 percent; for white females the rate went down 12 percent; and for nonwhite females, down 13 percent. The rate for nonwhite males increased 15 percent.

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These trends are consistent with other statistical analyses on cancer death rates.

The data appear in U.S. Cancer Mortality Rates and Trends: 1950-1979, published by the Environmental Protection Agency (EPA) in collaboration with the National Cancer Institute (NCI). Under an interagency agreement with EPA for collaborative research, NCI provided funds to print the reference book.

The three-volume reference provides researchers with data that should help to design studies exploring environmental factors that may contribute to cancer causation.

The data were obtained from EHS' National Center for Health Statistics, and are based on death certificates. Death rates (deaths per 100,000 population) were computed separately for whites and nonwhites by sex. Average annual death rates were calculated for all cancers combined and separately for each of 34 cancer sites for the three decades: 1950-1959, 1960-1969, and 1970-1979. Rates were computed for 3,065 counties in 49 states. Rates for Alaska are given for the entire state but not by county. Data were adjusted to correspond with the age distribution of the U.S. population in 1970, to provide for comparability with NCI's network of population-based cancer registries.

The new publication also gives the percent changes in death rates between each decade, and the percentile ranking of the counties according to rates for the latest decade, 1970-1979. The statistical significance of the number of deaths reported in a given decade is noted in the tables.

Dr. Thomas Mason, of the NCI's Environmental Epidemiology Branch and a co-author of the reference, emphasized, "the data need to be interpreted cautiously. The summary statistics such as percent changes or percentile rankings do not, by themselves, tell scientists or the public what is happen-

ing to a cancer rate. Changes in death rates over time as well as rates for
counties are influenced by many factors. Regional differences in diagnostic
accuracy and reporting practices as well as changes in incidence rates (number
of newly diagnosed cases per 100,000 population), earlier detection, and
improved treatment and survival all affect death rates for cancer."

For example, death rates at the national level for pancreatic cancer increased for whites and nonwhites of both sexes, but the increases occurred mainly between the 1950s and 1960s, suggesting that the upward trend may at least partly reflect underdiagnosis of the cancer in earlier years. Death rates increased 17 percent for white males between the 1950s and 1960s, but did not change between the 1960s and 1970s. For nonwhite males, rates increased 38 percent between the 1950s and 1960s, and dropped 1 percent between the 1960s and 1970s.

Female breast cancer affords another example. "The incidence of breast cancer increased over the three decades," he said, "but death rates remained fairly level, probably reflecting earlier diagnosis and improved treatment."

"Even greater caution must be exercised," Dr. Mason said, "when one
attempts to interpret data for an individual county or a group of counti s. A
number of counties are identified as having an above-average number of
reported deaths that is statistically significant but nevertheless could be
due to chance alone. In this reference volume, 5 percent of all counties
could fall into this category."

"Nevertheless," Dr. Mason said, "the tabulations should serve to identify counties or groups of counties with unusual cancer mortality patterns, which may in turn provide etiologic clues. However, simply identifying a cancer death rate in the 90th percentile (a rate greater than 90 percent of all counties) is not sufficient to identify it as an area warranting additional

study. The number of persons affected, the change in the rate over time, and the consistency with other observations must all be considered. Similarities between the patterns of cancer and the distribution of suspected risk factors for large groups of counties are particularly helpful in designating high-risk communities where epidemiologic investigations may help in the detection of carcinogenic hazards."

It should also be emphasized, he said, that an association between patterns of cancer and some environment or other factor does not prove causation. "Whether changing characteristics of the United States population such as in diet, occupation, and residence, are leading to increasing or decreasing rates of cancer can be evaluated only through epidemiologic studies that collect information on individuals."

Earlier research by NCI, which showed differences in the geographic distributions of specific cancers, has prompted a number of field studies in high-risk areas which in some cases identified the causes for these excesses, he said. "Often these studies simply confirm what we already know about cancer risks; in a few cases, these studies pinpointed local factors. It is hoped that the careful use of the data presented in this three-volume work will result in a number of comparable studies that will improve our understanding of the causes of cancer."

Cancers for which death rates increased between the 1950s and 1970s include:

Colon—increased 17 percent for white males, up 61 percent for nonwhite males, and up 24 percent for nonwhite females. However, the rate dropped 9 percent for white females.

Melanoma—increased 88 percent among white males, up 51 percent among white females, up 49 percent among nonwhite males, and up 15 percent among nonwhite females.

Multiple myeloma—increased 85 percent for white males, up 78 percent for white females, up 141 percent for nonwhite males, and up 140 percent for nonwhite females.

Ovarian—increased 3 percent for white females and 6 percent for nonwhite females.

Prostate—increased 30 percent for nonwhite males, but it decreased 2 percent for white males.

Esophageal—increased 53 percent for nonwhite males and 65 percent for nonwhite females. However, rates for white males remained fairly level, decreasing 1 percent, and they decreased 38 percent for females.

Laryngeal—increased 5 percent for white males, up 53 percent for white females, up 68 percent for nonwhite males, and up 54 percent for nonwhite females.

Rates decreased for:

Stomach—decreased 56 percent for white males, down 60 percent for white females, down 44 percent for nonwhite males, and down 48 percent for nonwhite females.

Rectum—decreased 36 percent for white males, down 44 percent for white females, down 19 percent for nonwhite males, and down 38 percent for nonwhite females.

Bladder—decreased 1 percent among white males, down 27 percent among white females, and down 14 percent among nonwhite women. However, the rate increased 7 percent for nonwhite males.

Uterine corpus (endometrium)—decreased 46 percent for white females and decreased 57 percent for nonwhite females.

Uterine cervix—decreased 54 percent for white females and 52 percent for nonwhite females.

Bone—decreased 41 percent for white males, down 43 percent for white females, down 32 percent for nonwhite males, and 46 percent for nonwhite females.

When the publication is released, a limited number of copies will be available for the news media from NCI's Office of Cancer Communications, Bldg. 31, Room 10A19, Bethesda, Maryland 20205.

The publication may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Order number: 055-000-00234-7. Cost: \$45, payable in advance by check or money order.

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