

careful reading by all persons interested in better dental health for the general population. For the dentally indigent and marginal income families who cannot budget for dental care, government subsidy seems necessary. The estimated cost of adequate dental care for these families is very large, in fact, somewhat staggering, but the authors believe that it is subject to gradual attainment. For that part of the population which is able to pay, the applicability of the insurance principle to dental care is considered and the authors conclude that "insurance cannot be a solution of the initial costs problem" since initial care needs are present and can be determined at any time by examination. They believe that the insurance principle does offer a sound method for spreading the cost of maintenance care since individual costs vary considerably among individuals and from year to year, and "the care needed by any individual cannot be predicted accurately." Actual experience with providing maintenance care to insured persons is needed to answer certain questions. Would annual payments induce the subscribing members to have all needed prophylaxes and other care? If not, what would be the cumulative effect on average costs of failures to receive examinations regularly, and early treatment for dental conditions? If regular care is received, annual maintenance costs over a long period may be more, or less, than the average costs for a four-year period following dental rehabilitation. The authors are aware of these problems and of the need for continuing research. It is emphasized that public education, more research, and experimental efforts in the coordinated use of all available methods to meet costs will be required for a solution of the dental problem.

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## ILLNESS FROM CANCER IN THE UNITED STATES<sup>1</sup>

IN THE past few decades, cancer mortality has increased and cancer has advanced to second place as a cause of death. Consequently, the interest in this illness has become widespread. Harold F. Dorn of the United States Public Health Service has published a series of papers which describe a survey on illness from cancer and discuss age, sex, racial, and regional differences in the illness rates from the disease.

<sup>1</sup> Dorn, Harold F.: Illness from Cancer in the United States. *Public Health Reports*, January 14, 21, 28, 1944, 59, Nos. 2, 3, and 4.

The number of living persons with cancer at a given time is unknown because it is impossible to get information about cases of undiagnosed cancer. In order to keep the number of persons with undiagnosed cancer as small as possible, Dorn has limited his sample to persons with diagnosed cases of cancer under care of hospitals, clinics, and private physicians in urban areas of the North, South, and West during one study year. Urban areas were selected because they have medical and hospital facilities accessible to all persons. The unknown cases of cancer would tend to be less in urban than in rural areas.

The author found that the majority of the diagnoses in all regions were microscopically confirmed. There were disagreements in diagnosis as to the primary site of the neoplasm in about one-fourth of the cases reported by two or more doctors or hospitals. When a comparison was made of the primary site as reported by case records and death certificates, the disagreements were greatest for diagnoses of brain cancer. Almost half of these deaths were diagnosed as due to nonmalignant causes.

Three different illness rates were used in the discussion: the incidence rate which includes only cases first diagnosed during the study year, the prevalence rate which includes cases treated or diagnosed during the year, and the total case rate which includes cases treated, cases diagnosed during the year, and those previously treated but during the study under observation only.

When these rates were determined for the sample studied, Dorn found that out of every 100,000 white persons living in cities in the United States, there are about 380 patients with cancer and 50 patients under observation because of a treated cancer. Among this same population, there are about 230 new cases of cancer diagnosed during a year.

The three different illness rates for the colored population were less than those of the white population. There was considerable difference between white and Negro males; with the exception of incidence, the illness rates of the Negro males were about half as great as those of the white males. The ratios of the rates among white to that among Negro males were 1.72, 1.86, and 1.98 for incidence, prevalence, and for all illness, respectively. When cases of skin cancer, which is relatively rare among Negroes, were excluded, the difference became smaller but was nevertheless large. The illness rates for white females were only from 13 to 21 per cent higher than those of the Negro females.

The illness rates from cancer increase very rapidly with age during

adult life. The rate of increase is less for Negroes than for whites. Although the sickness rate was higher for males than for females for all ages in both white and colored populations, the male rates were higher during childhood and early youth and in old age. This may have been due to the relatively large number of cancers developing in the female genital organs in the middle years of life.

The most frequent primary sites of cancer are the genital system among white females and the digestive system among white males. Fifty-one per cent of all white females with cancer had cancer of the genital system, including the breast, and 36 per cent of all white men with cancer had cancer of the digestive system. Except for cancer of the genital system, the male rate was higher than the female rate for cancer in broad groups of primary sites; namely, digestive system, skin, buccal cavity, urinary system, and respiratory system. With one exception, these same sex differences in the primary site of the cancer applied to the colored population. Among Negroes, there was almost no difference between males and females in the rate for cancer of the skin.

The only form of cancer which developed as frequently among colored as among white persons was cancer of the genital system. However, among white and colored females, the illness rates for cancer of the specific genital organs were different. Cancer of the uterus occurred more frequently among colored than among white females. Cancer of the other genital organs, including the breast, was more frequent among white females.

Prevalence rates of cancer rise rapidly with increasing age. This does not mean that children and young people are entirely free from the disease. Cancers of the brain, bone, urinary system, and glands formed a large proportion of all the cases of cancer among the young population.

There was wide variation in rates according to primary sites of cancer among white women who were being medically treated. About half of the malignant tumors under treatment were those of the breast and uterus. Next in order of frequency of cancer among white females receiving care were cancer of the skin and the digestive system, intestines, stomach, rectum, and anus. The distribution of primary sites among white males was less varied. First in order of rank of cancer being treated was cancer of the skin, which accounted for 17 per cent of all cases of cancer. Second and third in order were cancer of the stomach and pros-

tate. With the exception of cancer of the prostate, cancer of the genital organs is relatively rare among white males.

The male rates for cancer, other than cancer of the genital organs and of the liver, were higher than the female rates. The illness rates for males rose more rapidly with increasing age than they did for females in the white population. As a result, the difference between the two sexes became greater with age. Not all cancers had a continuous increase in the rate of illness with age. For example, rates for cancer of the brain, kidney, lung, and pancreas showed an abrupt decrease after the age of 65.

More persons in the South developed cancer than those in the West or North. The illness rates in the West were higher than those in the North. The incidence rates among white males were about 50 per cent higher in the South than in the North and about 40 per cent higher among white females. The incidence rates among colored females were also higher in the South, but the rates among colored males were lower. The author has suggested that the lower Negro male rates for cancer may be due to failure to seek medical care. Cancer of the skin occurs more frequently in the South than in other regions and has a more favorable prognosis than other cancers. When cases of skin cancer were excluded, the incidence rates were about equal for white males in the three regions and 10 per cent higher in the South than in the North among white females.

There was no difference between white males and females in the mortality from cancer. The death rate standardized for age was 136 per 100,000. The death rate for Negro females (134 per 100,000) was almost 50 per cent greater than the rate (94) for Negro males. According to Dorn, this difference may result from the failure of many Negro males to receive a diagnosis of illness from cancer and consequently the real cause of death may not be noted. There was less difference in the mortality rates than in the illness rates between the white and colored populations. This may have been due to the more frequent incidence of nonfatal skin cancer among the white than among the colored population.

The death rate from cancer of the genital system was about four times greater for females than for males in the white population. On the other hand, more males than females died from cancer of the buccal cavity, digestive tract, urinary system, respiratory system, skin, and bones.

The death rate from cancer of all sites was highest in the North and lowest in the South for the white population. The urinary system was the

only group of sites for which the death rate from cancer was higher in the South than in the North.

About half of the deaths from cancer among males in the total population were due to cancer of the digestive organs. A similar proportion of cancer deaths among females was attributed to cancer of the genital organs including the breast. The most fatal malignant tumors were those of the digestive tract and respiratory system; 59 and 54 per cent of these patients died within one year after diagnosis. The least fatal was cancer of the skin with a mortality of only 4 per cent.

It has been found that mortality records are an incomplete source of information about the prevalence of cancer, especially of cancer which is relatively nonfatal. There was considerable difference between mortality rates from cancer and illness rates.

This is the first comprehensive investigation of morbidity from cancer in the United States. Because of the importance of cancer as a cause of illness and death, this study is of great value.

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