

The Burden of Cancer in North Dakota - 2010

Cancer is the second leading cause of death in the United States, accounting for one-fourth of all mortality. Each year in the U.S., about 1.48 million persons are diagnosed with cancer and 562,000 persons (about 1,500 persons a day) die of the disease (American Cancer Society, 2009). Approximately 11.1 million Americans were currently living with cancer in 2005 (American Cancer Society, 2009). The financial costs of cancer are enormous. In 2008, the overall cost for cancer in the U.S. was \$228.1 billion: \$93.2 billion for direct medical care, \$18.8 billion for indirect morbidity costs and \$116.1 billion for indirect mortality costs (American Cancer Society, 2009).

Cancer is defined as a group of cells characterized by uncontrolled growth and spread of abnormal cells. If the growth and spread are not controlled, mortality can result. Cancer is caused by internal factors, external factors, or a combination of the two. It is not uncommon for many years to transpire between exposure to external factors and detectable cancer. Cancer is treated by one or a combination of the following interventions: surgery, radiation, chemotherapy, hormones, and immunotherapy (American Cancer Society, 2009).

Although people of all ages contract cancer, it is primarily an older person's disease. About three-quarters of all cancers are diagnosed in persons 55 years and older. By gender, U.S. males have a 1 in 2 risk of developing cancer in their lifetime; for females it is slightly more than 1 in 3 (American Cancer Society, 2009). Some research had indicated that some racial minorities

(e.g., African Americans) have higher age-adjusted rates of some cancers and cancer-related health risk factors (American Cancer Society, 2009).

North Dakota

Between 1990 and 2000, North Dakota's population grew by only 0.5 percent to 642,200 persons, the smallest growth rate in the country. It is believed there are three principal factors that underlie the state's current and projected low growth rate: rural depopulation, out-migration of young adults and young families, and an increasing proportion of elderly (Rathge et al., 2002). In 2000, more than one-half (57%) of the state's residents lived in urban areas, 10 percent lived in semi-urban areas and 33 percent lived in rural areas (ND Department of Health; U.S. Census Bureau). By and large, urban areas possessed the highest percent of younger state residents and rural areas possessed higher percentage of elderly individuals.

Causes of Death and Cancer

In 2008, the leading causes of death for North Dakota residents were heart disease (29.2%), cancer (28.7%), Alzheimer's disease (7.7%), chronic obstructive pulmonary disease (7.3%), accidental (7.0%), stroke (6.4%), diabetes (4.3%), influenza/pneumonia (3.1%) and other causes (6.2%) (North Dakota Division of Vital Records, 2009). Regarding North Dakota mortality rates (age-adjusted), heart disease has steadily declined over the past twenty years and, for the first time in 2006, it fell below cancer. Over the years, cancer has declined (but at a much slower rate than heart disease) from 206 cases per 100,000

persons in 1984 to 188 cases per 100,000 persons in 2008 (North Dakota Division of Vital Records, 2009).

Each year, approximately 3,400 North Dakotans are diagnosed with a new cancer, and approximately 1,400 state residents die from the disease. In 2005, there were approximately 23,812 state residents (3.7%) living with cancer. In general, North Dakota males are substantially more likely than North Dakota females to contract and die from cancer (North Dakota Division of Vital Records, 2009). This trend is true even after accounting for age. Overall cancer incidence and mortality rates rise dramatically after age 54 for both sexes, but particularly for males. Four cancer sites--lung, colorectal, breast, and prostate--account for 56 percent of cancer cases in North Dakota (ND Cancer Registry, 2010). These same four cancers account for 49 percent of cancer deaths in the state (ND Division of Vital Records, 2009).

In 1998-2007, there were 18,058 new cancers diagnosed among North Dakota males and 16,189 new cancers among North Dakota females. The frequently-diagnosed cancers among North Dakota males in this period were prostate (32%), colorectal (13%), lung/bronchus (13%), urinary bladder (7%) and Non-Hodgkin lymphoma (4%). For North Dakota females, the most frequently-diagnosed cancers in 1998-2007 were breast (32%), colorectal (12%), lung/bronchus (10%), corpus/uterus (6%) and Non-Hodgkin lymphoma (4%) (North Dakota Cancer Registry, 2010).

In 2004-2008, 3,459 North Dakota males and 3,114 North Dakota females died from cancer. For males, the most common causes of cancer mortality were

lung/bronchus (29%), prostate (12%), colorectal (11%), pancreas (6%) and leukemia (5%). For North Dakota females, the most frequent causes of cancer mortality included lung/bronchus (23%), breast (15%), colorectal (11%), pancreas (7%) and ovary (6%) (North Dakota Division of Vital Records, 2009).

Cancer survival rates for the U.S. have steadily increased over the past several decades; this is believed to be the result of a number of factors including higher rates of cancer screening, fewer late-stage diagnoses, and improvements in health care treatment and technology (American Cancer Society, 2009). Based on 1996-2004 data, the U.S. overall 5-year cancer survival rates were highest for prostate (99%), breast (89%), and cervix (71%), and lowest for colorectal (64%) and lung (15%). The survival rates for all cancer types are highest when the diagnoses are made at earlier stages of the disease (American Cancer Society, 2009).

For North Dakotans, the highest percent of late-stage cancer diagnoses in the period 1997-2006 occurred with lung cancer patients (80%), followed by colorectal (57%), cervical (42%), female breast (30%), prostate (15%) and urinary bladder (11%). By gender, females were slightly more likely than males to have been diagnosed at late-stage for all-site and colorectal cancers and males were slightly more likely than females to have been diagnosed at late-stage for urinary bladder and lung cancers (ND Cancer Registry, 2010).

Lung Cancer

There are approximately 403 new cases of lung cancer each year in North Dakota. Lung cancer incidence and mortality rates for North Dakotans are

generally lower than figures for the nation, although incidence rates for 2003 and 2005 had risen to being roughly equal to national rates. Lung cancer mortality rates for North Dakotans have slightly increased from 30 persons per 100,000 in 1980 to 49 persons per 100,000 in 2006. In comparison, the national rates rose from 49 deaths per 100,000 in 1980 to 59 deaths per 100,000 the early 1990s; these rates declined to 52 deaths per 100,000 in 2006. By gender, North Dakota males have consistently had higher lung cancer mortality rates than their female counterparts (ND Cancer Registry, 2010; CDC, 2010).

It is believed that the majority of lung cancer deaths are attributable to tobacco (primarily cigarette) smoking (American Cancer Society, 2009). In the period, 1990-2008, North Dakota's rate of cigarette smoking had been very comparable to the nation rate and has remained stable (18-23% of adults said they smoked). By gender, adult males smoked cigarettes at slightly higher rates than females over the years. Among racial groups in North Dakota, Native American adults smoked at a higher rate (48.9%) than Caucasian adults (20.1%) in the period 1997-2006 (ND Department of Health, 2008). Among North Dakotans, high school-aged (i.e., grades 9-12) children smoked cigarettes (i.e., smoked one or more cigarettes in the past month) at slightly higher rates than adults (CDC, YRBSS, 2009). The prevalence of smoking among school-aged children was approximately 41 percent in 1999 and declined to approximately 22 percent in 2009. By gender, North Dakota high school girls and boys had equal smoking prevalence (22 versus 23%, respectively) in 2009. Also, prevalence of cigarette smoking increased with each impending grade (CDC, 2009).

Prostate Cancer

There are approximately 572 new cases of prostate cancer each year in North Dakota. In 2005, there were approximately 4,576 men in North Dakota that were living with prostate cancer. Incidence and mortality rates for this disease among North Dakotans are similar to the rates for all Americans as a whole (ND Cancer Registry, 2010; CDC, 2010). On the national level, incidence rates jumped markedly in the early 1990 due in part to large increases in screening rates. Prostate-specific antigen (PSA) test prevalence for North Dakota men aged 40+ in the past two years was approximately 55%, a figure that is equivalent to the national prevalence rate. As North Dakota men age, they are more likely to have the PSA test performed within the past two years (U.S. DHHS, 2009).

Breast Cancer

Breast cancer is the most commonly diagnosed cancer (about 525 new cases per year) and the second leading cancer-related cause of death among North Dakota women. In 2005, there were approximately 5,102 women living with breast cancer in North Dakota. Compared to national rates, North Dakota's breast cancer incidence and mortality rates are roughly equal (ND Cancer Registry, 2010; CDC, 2010). Mammography is an important breast cancer screening device for women (American Cancer Society, 2009). Prevalence of recent (i.e., within the past two years) mammography for North Dakota women have steadily increased since 1990; by age, mammography rates among North Dakota women have risen with increased age up to 64 years (U.S. DHHS, 2009).

Colorectal Cancer

In North Dakota, there are approximately 432 new cases of colorectal cancer per year. In 2005, about 2,356 North Dakotans were living with colorectal cancer. Compared to the nation, North Dakota's mortality rates were comparable and incidence rates were slightly higher in the time period, 1980-2007. North Dakota males generally have higher rates of colorectal cancer, compared in females in North Dakota (ND Cancer Registry, 2010; CDC, 2010). Prevalence rates for having had colorectal screening tests, such as colonoscopies and sigmoidoscopies, have steadily increased for North Dakotans in recent years. Also, older North Dakotans are more likely to have these tests performed, compared to their younger counterparts (U.S. DHHS, 2009).

Oral and Pharynx Cancer

Oral and pharynx cancer is a group of neoplasms that affect any part of the oral cavity, including the lip, tongue, mouth and throat. There are approximately 75 new cases of oral/pharynx cancer each year in North Dakota. From 1997 to 2006, incidence of oral cavity and pharynx cancer occurred among North Dakotans at rates that were roughly similar to figures for the nation. Similarly, oral/pharyngeal cancer mortality rates in North Dakota have approximated the rates for the nation over the past 25 years,. By gender, males are more likely than females to contract this type of cancer in North Dakota (ND Cancer Registry, 2010; CDC, 2010).

Skin Cancer

There are approximately 112 new cases of skin cancer each year in North Dakota. Melanoma (skin) incidence rates for North Dakotans were lower than national rates for years 1998 through 2002 and equivalent in years 2003 through 2006. North Dakota melanoma incidence rates appear to be slightly higher for males than females. North Dakota melanoma mortality rates (overall and by gender) were suppressed by the NCI due to insufficient counts (ND Cancer Registry, 2010; CDC, 2010). One of the prominent risk factors for skin cancer is overexposure to the sun. In 2004, 43.6 percent of North Dakota adults said they had one or more sunburns in the past 12 months, a risk factor for cancer of the skin. By age, the likelihood of recent sunburn among North Dakota adults decreased with increasing age (U.S. DHHS, 2009).

Cervical Cancer

There are approximately 19 new invasive cases of cervical cancer each year in North Dakota. From 1997 to 2001, new cervical cancer diagnoses occurred among North Dakota women at rates that were somewhat lower than figures for the nation. However, in 2002, the state incidence rates equaled the national rates. Cervical mortality rates for North Dakota were suppressed by the CDC due to insufficient counts (ND Cancer Registry, 2010; CDC, 2010). Behavioral Risk Factor Surveillance System data indicated the percent of North Dakota women who have not had a recent (i.e., past three years) Pap test has declined from 22 percent in 1996 to 17 percent in 2008. By age, North Dakota women aged 65 and older (30.5%) were most likely to have delayed/avoided Pap

testing in 2008. Conversely, North Dakota women aged 25-34 years (3.0%) and 35-44 years (12.7%) were least likely to have delayed or avoided Pap testing in 2008 (U.S. DHHS, 2009).

Cancer Disparities

Cancer disparities are believed to exist by race/ethnicity, socioeconomic status, geography, gender, and insurance status. Possible explanations for the existence of these disparities include differences in health behavior, beliefs and attitudes, access to health care, quality of health care and genetics (American Cancer Society, 2009). American Indians have higher prevalence rates of some cancer-related risk factors, including smoking, physical inactivity and obesity (CDC, 2005).

While overall cancer incidence rates have been decreasing in recent years among U.S. whites and American Indians (Espey et al., 2007; CDC, 2010), high rates remain among American Indians residing in certain geographic regions including the Northern Plains, Southern Plains and Alaska (Espey et al., 2007). Regarding cancer mortality, Northern Plains Indians, including North Dakota tribes, have higher rates than the U.S. for prostate, lung, colorectal and cervical cancers (Haverkamp et al., 2008). Moreover, rates vary among different American Indian populations; Northern Plains Indians have higher cancer mortality rates than all other IHS regions for all-site, prostate, lung and cervical cancers and are second-highest to Alaska for female breast cancer mortality (Haverkamp et al., 2008).

American Indians are the largest racial minority group in North Dakota, comprising approximately five percent (N=31,329) of the population. Analysis of the state's BRFSS data indicated a number of adverse health-related risk factors among North Dakota's Native American adults. Compared to their Caucasian counterparts, Natives possessed higher percentages of current smokers, obesity, and delays in mammography, colonoscopy/sigmoidoscopy, blood stool testing and PSA testing (ND Department of Health, 2008).

Conclusion

Approximately one-third of the annual cancer deaths in the U.S. are related to the following mutable factors: poor nutrition, sedentary lifestyle and excessive body weight (American Cancer Society, 2009). Thus, many cancers can be prevented; in fact, all cancers caused by tobacco smoking and heavy alcohol consumption are entirely preventable. Timely screening can detect cancer of the prostate, breast, colon, rectum, cervix, mouth, and skin at early stages when medical interventions are much more successful (American Cancer Society, 2009).

The full burden of cancer upon the lives of North Dakotans cannot be measured. However, analysis of available secondary data has indicated that cancer levies a substantial burden on North Dakotans and, consequently, on their friends, families, loved ones and caregivers. The principal, most problematic cancers facing North Dakotans are the same ones that profoundly, adversely affect all U.S. residents: lung cancer; prostate cancer; breast cancer; and colorectal cancer. Increased efforts are needed within the state to develop and

implement interventions which seek to promote healthy lifestyles and increase utilization of cancer screening tests among residents, particularly our American Indian residents that dwell primarily in rural-based Reservation areas.

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