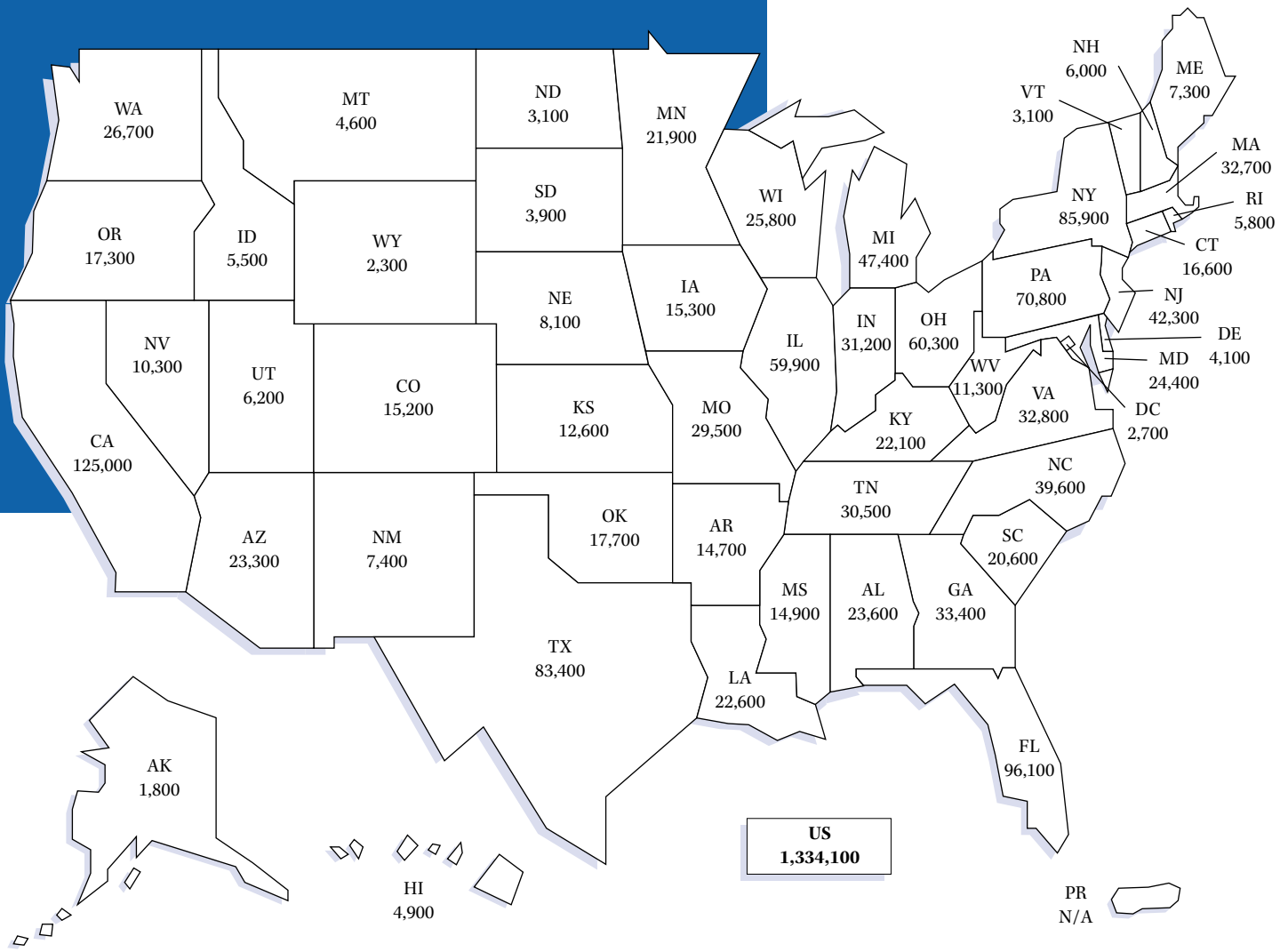
Cancer Facts & Figures 2003



Rates are age-adjusted to the 2000 US standard population.

Estimated number of new cancer cases for 2003, excluding basal and squamous cell skin cancers and in situ carcinomas except urinary bladder.
Note: These estimates are offered as a rough guide and should be interpreted with caution. They are calculated according to the distribution of estimated cancer deaths in 2003 by state. State estimates may not add to US total due to rounding.

American Cancer Society®

Special Section:
Smoking Cessation
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Cancer: Basic Facts

What Is Cancer?

Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by both external factors (tobacco, chemicals, radiation, and infectious organisms) and internal factors (inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). Causal factors may act together or in sequence to initiate or promote carcinogenesis. Ten or more years often pass between exposures or mutations and detectable cancer. Cancer is treated by surgery, radiation, chemotherapy, hormones, and immunotherapy.

Can Cancer Be Prevented?

All cancers caused by cigarette smoking and heavy use of alcohol could be prevented completely. The American Cancer Society estimates that in 2003 more than 180,000 cancer deaths are expected to be caused by tobacco use.

Scientific evidence suggests that about one-third of the 556,500 cancer deaths expected to occur in 2003 will be related to nutrition, physical inactivity, obesity, and other lifestyle factors and could also be prevented. Certain cancers are related to infectious exposures, e.g., hepatitis B virus (HBV), human papillomavirus (HPV), human immunodeficiency virus (HIV), helicobacter, and others, and could be prevented through behavioral changes, vaccines, or antibiotics. In addition, many of the more than 1 million skin cancers that are expected to be diagnosed in 2003 could have been prevented by protection from the sun's rays.

Regular screening examinations by a health care professional can result in the detection of cancers of the breast, colon, rectum, cervix, prostate, testis, oral cavity, and skin at earlier stages, when treatment is more likely to be successful. Self-examinations for cancers of the breast and skin may also result in detection of tumors at earlier stages. Cancers that can be detected by screening account for about half of all new cancer cases. The 5-year relative survival rate for these cancers is about 82%. If all of these cancers were diagnosed at a localized stage through regular cancer screenings, 5-year survival would increase to about 95%.

Who Is at Risk of Developing Cancer?

Anyone. Since the occurrence of cancer increases as individuals age, most cases affect adults beginning in middle age. About 77% of all cancers are diagnosed at ages 55 and older. Cancer researchers use the word *risk* in different ways. *Lifetime risk* refers to the probability that an individual, over the course of a lifetime, will develop cancer or die from it. In the US, men have a little less than 1 in 2 lifetime risk of developing cancer; for women the risk is a little more than 1 in 3.

Relative risk is a measure of the strength of the relationship between risk factors and the particular cancer. It compares the risk of developing cancer in persons with a certain exposure or trait to the risk in persons who do not have this exposure or trait. For example, male smokers have a 20-fold relative risk of developing lung cancer compared with nonsmokers. This means that they are about 20 times more likely to develop lung cancer than nonsmokers. Most relative risks are not this large. For example, women who have a first-degree (mother, sister, or daughter) family history of breast cancer have about a 2-fold increased risk of developing breast cancer compared with women who do not have a family history. This means that women with a first-degree family history are about two times more likely to develop breast cancer than women who do not have a family history of the disease.

All cancers involve the malfunction of genes that control cell growth and division. About 5% to 10% of cancers are clearly hereditary, in that an inherited faulty gene predisposes the person to a very high risk of particular cancers. The remainder of cancers are not hereditary, but result from damage to genes (mutations) that occurs throughout our lifetime, either due to internal factors, such as hormones or the digestion of nutrients within cells, or external factors, such as tobacco, chemicals, and sunlight.

How Many People Alive Today Have Ever Had Cancer?

The National Cancer Institute estimates that approximately 8.9 million Americans with a history of cancer were alive in January, 1999. Some of these individuals were cancer-free, while others still had evidence of cancer and may have been undergoing treatment.

How Many New Cases Are Expected to Occur This Year?

About 1,334,100 new cancer cases are expected to be diagnosed in 2003. Since 1990, over 17 million new cancer cases have been diagnosed. These estimates do not include carcinoma in situ (noninvasive cancer) of any site except urinary bladder, and do not include basal and squamous cell skin cancers. More than 1 million

cases of basal and squamous cell skin cancers are expected to be diagnosed this year.

How Many People Are Expected to Die of Cancer This Year?

This year about 556,500 Americans are expected to die of cancer, more than 1,500 people a day. Cancer is the second leading cause of death in the US, exceeded only by heart disease. In the US, 1 of every 4 deaths is from cancer.

What Percentage of People Survive Cancer?

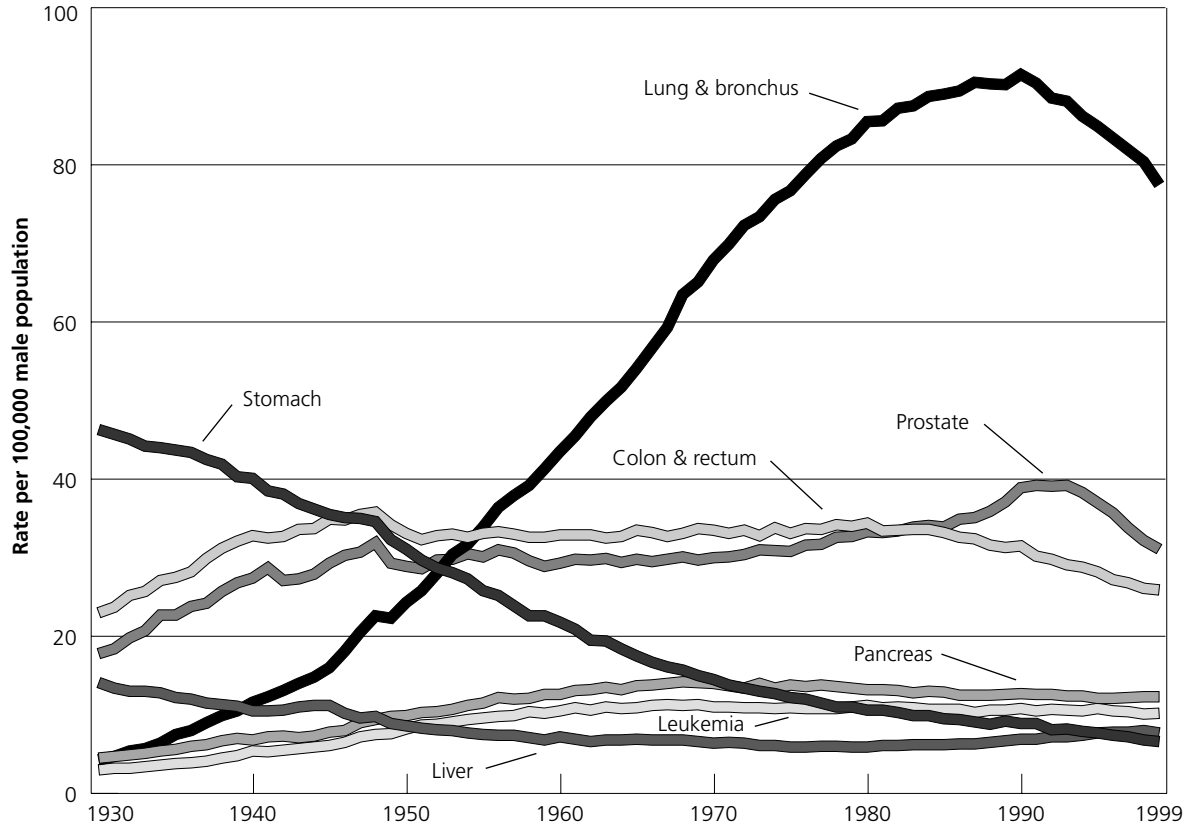
The 5-year relative survival rate for all cancers combined is 62%. After adjusting for normal life expectancy (factors such as dying of heart disease, accidents, and diseases of old age), the 5-year relative survival rate represents persons who are living five years after diagnosis, whether disease-free, in remission, or under treatment with evidence of cancer. While 5-year relative survival rates are useful in monitoring progress in the early detection and treatment of cancer, they do not represent the proportion of people who are cured permanently, since cancer can affect survival beyond five years after diagnosis.

Although these rates provide some indication about the average survival experience of cancer patients in a given population, they are less informative when used to predict individual prognosis and should be interpreted with caution. First, 5-year relative survival rates are based on patients who were diagnosed and treated at least five years ago and do not reflect recent advances in treatment. Second, information about detection methods, treatment protocols, additional illnesses, tumor spread at diagnosis, and behaviors that influence survival are not taken into account in the estimation of survival rates. (For more information about survival rates, see Sources of Statistics on page 46.)

How Is Cancer Staged?

Staging is the process of describing the extent or spread of the disease from the site of origin. It is essential in

Age-Adjusted Cancer Death Rates,* Males by Site, US, 1930-1999



*Per 100,000, age-adjusted to the 2000 US standard population.

Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancers of the liver, lung & bronchus, and colon & rectum are affected by these coding changes.

Source: US Mortality Public Use Data Tapes 1960-1999, US Mortality Volumes 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2002.

American Cancer Society, Surveillance Research, 2003

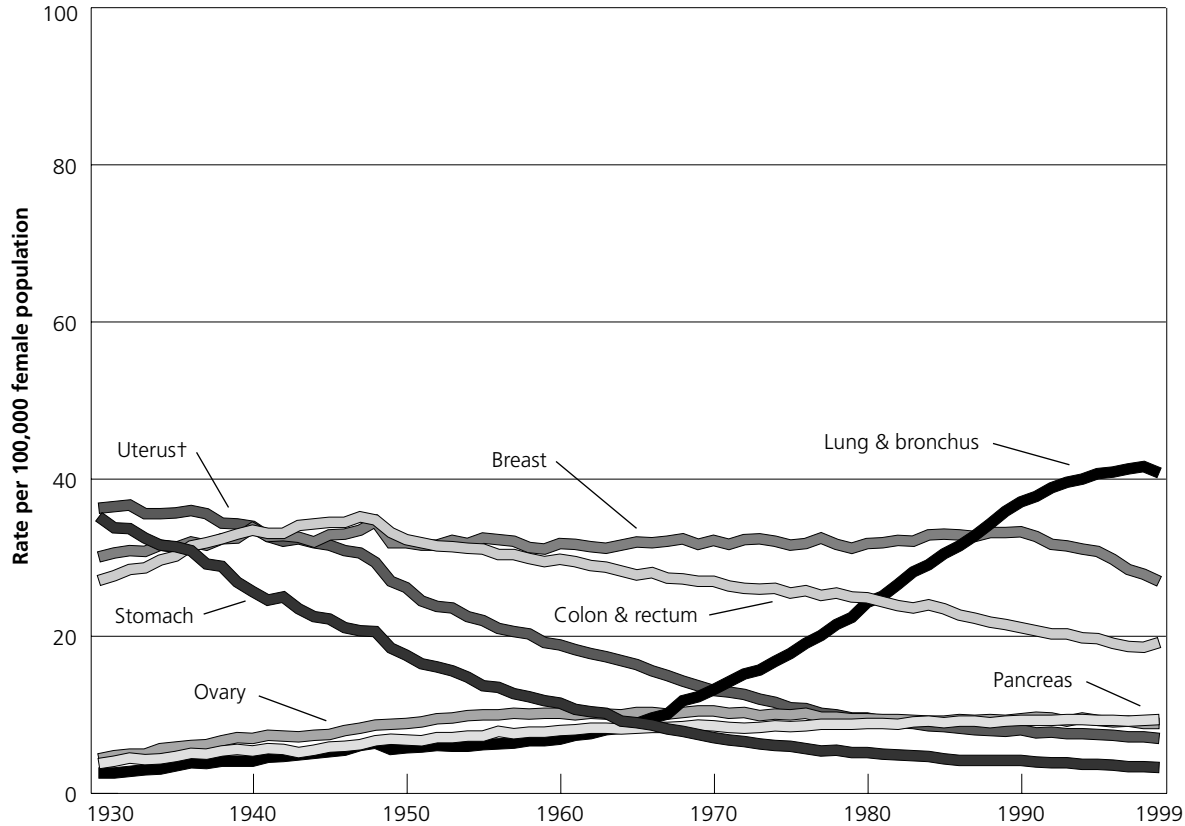
determining the choice of therapy and assessing prognosis. A cancer's stage is based on the primary tumor's size and location in the body and whether it has spread to other areas of the body. A number of different staging systems are used to classify tumors. The TNM staging system assesses tumors in three ways: extent of the primary tumor (T), absence or presence of regional lymph node involvement (N), and absence or presence of distant metastases (M). Once the T, N, and M are determined, a "stage" of I, II, III, or IV is assigned, with stage I being early stage and IV being advanced. Summary staging (in situ, local, regional, and distant) is useful for descriptive and statistical analysis of tumor registry data. If cancer cells are present only in the layer of cells where they developed and they have not spread, the stage is in situ. If cancer cells have spread beyond the original layer of tissue, the cancer is invasive. See Five-Year Relative Survival Rates by Stage at Diagnosis, 1992-1998, page 17, for a description of the other summary stage categories.

What Are the Costs of Cancer?

The National Institutes of Health estimate overall costs for cancer in the year 2002 at $171.6 billion: $60.9 billion for direct medical costs (total of all health expenditures); $15.5 billion for indirect morbidity costs (cost of lost productivity due to illness); and $95.2 billion for indirect mortality costs (cost of lost productivity due to premature death). Lack of health insurance and other barriers to health care prevent many Americans from receiving optimal health care.

According to 2000 National Health Interview Survey data, about 17% of Americans under age 65 have no health insurance, and about 27% of persons 65 and over have only Medicare coverage. During 1999 and 2000, almost 18% of Americans aged 18 to 64 years reported not having a regular source of health care. Additionally, about 6% of 18- to 64-year-old adults say cost was a barrier to obtaining needed health care in the previous year.

Age-Adjusted Cancer Death Rates,* Females by Site, US, 1930-1999



*Per 100,000, age-adjusted to the 2000 US standard population. †Uterus cancer death rates are for uterine cervix and uterine corpus combined.
Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancers of the liver, lung & bronchus, colon & rectum, and ovary are affected by these coding changes.
Source: US Mortality Public Use Data Tapes 1960-1999, US Mortality Volumes 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2002.

American Cancer Society, Surveillance Research, 2003

Estimated New Cancer Cases and Deaths by Sex, US, 2003*

	Estimated New Cases			Estimated Deaths		
	Both Sexes	**Male**	**Female**	**Both Sexes**	**Male**	**Female**
All sites	1,334,100	675,300	658,800	556,500	285,900	270,600
Oral cavity & pharynx	27,700	18,200	9,500	7,200	4,800	2,400
Tongue	7,100	4,700	2,400	1,700	1,100	600
Mouth	9,200	4,800	4,400	1,900	1,100	800
Pharynx	8,300	6,300	2,000	2,000	1,400	600
Other oral cavity	3,100	2,400	700	1,600	1,200	400
Digestive system	252,400	132,300	120,100	133,600	71,900	61,700
Esophagus	13,900	10,600	3,300	13,000	9,900	3,100
Stomach	22,400	13,400	9,000	12,100	7,000	5,100
Small intestine	5,300	2,700	2,600	1,100	600	500
Colon	105,500	49,000	56,500			
Rectum	42,000	23,800	18,200	57,100†	28,300†	28,800†
Anus, anal canal, & anorectum	4,000	1,700	2,300	500	200	300
Liver & intrahepatic bile duct	17,300	11,700	5,600	14,400	9,200	5,200
Gallbladder & other biliary	6,800	3,100	3,700	3,500	1,300	2,200
Pancreas	30,700	14,900	15,800	30,000	14,700	15,300
Other digestive organs	4,500	1,400	3,100	1,900	700	1,200
Respiratory system	185,800	102,200	83,600	163,700	93,400	70,300
Larynx	9,500	7,100	2,400	3,800	3,000	800
Lung & bronchus	171,900	91,800	80,100	157,200	88,400	68,800
Other respiratory organs	4,400	3,300	1,100	2,700	2,000	700
Bones & joints	2,400	1,300	1,100	1,300	700	600
Soft tissue (including heart)	8,300	4,500	3,800	3,900	2,000	1,900
Skin (excluding basal & squamous)	58,800	32,300	26,500	9,800	6,200	3,600
Melanoma-skin	54,200	29,900	24,300	7,600	4,700	2,900
Other non-epithelial skin	4,600	2,400	2,200	2,200	1,500	700
Breast	212,600	1,300	211,300	40,200	400	39,800
Genital system	313,600	229,900	83,700	56,300	29,500	26,800
Uterine cervix	12,200		12,200	4,100		4,100
Uterine corpus	40,100		40,100	6,800		6,800
Ovary	25,400		25,400	14,300		14,300
Vulva	4,000		4,000	800		800
Vagina & other genital, female	2,000		2,000	800		800
Prostate	220,900	220,900		28,900	28,900	
Testis	7,600	7,600		400	400	
Penis & other genital, male	1,400	1,400		200	200	
Urinary system	91,700	63,300	28,400	25,100	16,400	8,700
Urinary bladder	57,400	42,200	15,200	12,500	8,600	3,900
Kidney & renal pelvis	31,900	19,500	12,400	11,900	7,400	4,500
Ureter & other urinary organs	2,400	1,600	800	700	400	300
Eye & orbit	2,200	1,100	1,100	200	100	100
Brain & other nervous system	18,300	10,200	8,100	13,100	7,300	5,800
Endocrine system	23,800	6,600	17,200	2,300	1,100	1,200
Thyroid	22,000	5,700	16,300	1,400	600	800
Other endocrine	1,800	900	900	900	500	400
Lymphoma	61,000	32,300	28,700	24,700	12,900	11,800
Hodgkin disease	7,600	4,000	3,600	1,300	700	600
Non-Hodgkin lymphoma	53,400	28,300	25,100	23,400	12,200	11,200
Multiple myeloma	14,600	7,800	6,800	10,900	5,400	5,500
Leukemia	30,600	17,900	12,700	21,900	12,100	9,800
Acute lymphocytic leukemia	3,600	2,100	1,500	1,400	800	600
Chronic lymphocytic leukemia	7,300	4,600	2,700	4,400	2,500	1,900
Acute myeloid leukemia	10,500	5,800	4,700	7,800	4,200	3,600
Chronic myeloid leukemia	4,300	2,500	1,800	1,700	1,000	700
Other leukemia‡	4,900	2,900	2,000	6,600	3,600	3,000
Other & unspecified primary sites‡	30,300	14,100	16,200	42,300	21,700	20,600

*Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. Carcinoma in situ of the breast accounts for about 55,700 new cases annually, and melanoma in situ accounts for about 37,700 new cases annually. †Estimated deaths for colon & rectum cancers are combined.
‡More deaths than cases suggests lack of specificity in recording underlying causes of death on death certificate.

Estimates of new cases are based on incidence rates from the NCI SEER program, 1979 to 1999.

Estimated New Cancer Cases by Site and State, US, 2003*

State	All Sites	Female Breast	Uterine Cervix	Colon & Rectum	Uterine Corpus	Leukemia	Lung & Bronchus	Melanoma	Non-Hodgkin Lymphoma	Prostate	Urinary Bladder
Alabama	23,600	3,400	200	2,200	600	500	3,300	900	800	4,700	800
Alaska	1,800	300	†	200	†	†	200	100	100	200	100
Arizona	23,300	3,900	200	2,500	500	500	3,000	1,200	1,000	4,300	1,000
Arkansas	14,700	2,000	100	1,500	300	300	2,200	500	600	2,600	500
California	125,000	21,100	1,400	13,000	3,800	3,000	14,400	5,200	5,200	20,500	5,500
Colorado	15,200	2,500	100	1,600	400	400	1,600	800	700	2,600	600
Connecticut	16,600	2,600	100	1,900	500	400	2,000	600	700	2,800	800
Delaware	4,100	700	100	400	100	100	600	200	200	600	300
Dist. of Columbia	2,700	500	†	300	200	†	300	†	†	600	100
Florida	96,100	13,500	900	10,200	2,500	2,200	13,200	4,100	3,900	15,800	4,500
Georgia	33,400	5,400	400	3,300	1,000	700	4,600	1,300	1,100	5,700	1,200
Hawaii	4,900	700	†	500	200	100	600	100	200	900	200
Idaho	5,500	1,000	†	600	100	100	600	300	200	1,100	300
Illinois	59,900	10,200	600	6,800	1,900	1,400	7,400	2,100	2,400	10,100	2,600
Indiana	31,200	4,700	300	3,500	900	700	4,400	1,400	1,300	5,000	1,300
Iowa	15,300	2,300	100	1,900	500	400	1,900	600	600	2,700	600
Kansas	12,600	2,100	100	1,300	300	300	1,700	600	500	2,100	500
Kentucky	22,100	3,200	200	2,400	500	400	3,500	1,000	800	3,300	900
Louisiana	22,600	3,800	200	2,600	600	500	3,000	700	800	3,600	800
Maine	7,300	1,000	†	800	200	100	1,000	300	300	900	400
Maryland	24,400	4,200	200	2,900	700	600	3,200	800	900	3,900	1,000
Massachusetts	32,700	4,700	200	3,700	900	700	4,100	1,500	1,300	5,500	1,700
Michigan	47,400	7,500	300	5,100	1,400	1,100	6,100	1,800	2,000	7,800	2,200
Minnesota	21,900	3,400	100	2,300	600	600	2,500	900	1,100	4,000	900
Mississippi	14,900	2,500	200	1,700	300	300	2,200	500	500	2,900	500
Missouri	29,500	4,100	200	3,300	900	700	4,200	1,300	1,100	4,500	1,100
Montana	4,600	600	†	500	100	100	600	200	200	800	200
Nebraska	8,100	1,100	100	1,100	300	200	1,000	300	400	1,400	300
Nevada	10,300	1,400	100	1,300	200	200	1,500	400	300	1,600	400
New Hampshire	6,000	800	†	700	100	100	800	300	300	900	300
New Jersey	42,300	7,400	400	4,800	1,600	1,000	5,000	1,700	1,800	6,600	2,200
New Mexico	7,400	1,300	100	800	200	200	800	300	300	1,400	300
New York	85,900	14,800	900	10,300	3,400	2,000	10,000	2,900	3,300	14,000	4,200
North Carolina	39,600	6,000	400	4,100	1,200	900	5,600	1,600	1,400	6,800	1,500
North Dakota	3,100	500	†	300	100	100	300	100	100	500	200
Ohio	60,300	9,900	500	6,900	1,900	1,400	8,000	2,300	2,600	9,400	2,800
Oklahoma	17,700	2,700	200	2,000	400	400	2,600	1,000	700	2,600	700
Oregon	17,300	2,600	100	1,700	500	400	2,300	800	700	3,200	800
Pennsylvania	70,800	11,100	600	8,600	2,300	1,600	8,700	2,700	3,000	12,000	3,400
Rhode Island	5,800	800	100	700	100	100	800	200	200	900	300
South Carolina	20,600	3,400	200	2,300	500	400	2,800	700	700	3,800	700
South Dakota	3,900	600	†	500	100	100	400	100	200	700	100
Tennessee	30,500	4,500	300	3,200	800	700	4,500	1,400	1,200	4,700	1,000
Texas	83,400	13,700	1,000	9,200	2,500	1,900	10,900	3,500	3,300	13,200	3,000
Utah	6,200	1,100	†	700	200	200	500	400	300	1,400	300
Vermont	3,100	500	†	400	100	100	400	200	100	300	100
Virginia	32,800	5,400	300	3,600	1,100	700	4,300	1,400	1,300	5,500	1,200
Washington	26,700	3,800	200	2,700	800	700	3,500	1,200	1,100	3,900	1,200
West Virginia	11,300	1,600	100	1,200	400	300	1,700	400	400	1,700	500
Wisconsin	25,800	3,900	200	2,900	800	700	3,000	1,100	1,200	4,500	1,200
Wyoming	2,300	300	†	300	100	100	300	100	100	400	100
United States	1,334,100	211,300	12,200	147,500	40,100	30,600	171,900	54,200	53,400	220,900	57,400

*Rounded to nearest 100. Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. †Estimate is 50 or fewer cases.

Note: These estimates are offered as a rough guide and should be interpreted with caution. They are calculated according to the distribution of estimated cancer deaths by state in 2003. State estimates may not add to US total due to rounding.

Estimated Cancer Deaths for Selected Cancer Sites by State, US, 2003*

State	All Sites	Brain/ Nervous System	Female Breast	Colon & Rectum	Leukemia	Liver	Lung & Bronchus	Non-Hodgkin Lymphoma	Ovary	Pancreas	Prostate
Alabama	9,800	200	600	900	300	300	3,000	400	200	500	600
Alaska	700	†	100	100	†	†	200	†	†	†	†
Arizona	9,700	200	700	1,000	400	300	2,700	400	200	500	600
Arkansas	6,100	200	400	600	200	200	2,000	300	200	300	300
California	52,200	1,500	4,000	5,000	2,100	1,900	13,200	2,300	1,500	2,900	2,700
Colorado	6,300	200	500	600	300	100	1,500	300	200	300	300
Connecticut	6,900	200	500	700	300	200	1,800	300	200	400	400
Delaware	1,700	†	100	200	100	†	500	100	†	100	100
Dist. of Columbia	1,100	†	100	100	†	†	300	†	†	100	100
Florida	40,100	900	2,500	3,900	1,600	1,000	12,100	1,700	1,000	2,200	2,100
Georgia	13,900	300	1,000	1,300	500	300	4,200	500	400	700	700
Hawaii	2,000	†	100	200	100	100	500	100	†	100	100
Idaho	2,300	100	200	200	100	†	600	100	100	100	100
Illinois	25,000	500	1,900	2,600	1,000	700	6,800	1,000	600	1,400	1,300
Indiana	13,000	300	900	1,300	500	300	4,000	600	400	600	700
Iowa	6,400	200	400	800	300	100	1,700	300	200	300	400
Kansas	5,200	100	400	500	200	100	1,500	200	100	300	300
Kentucky	9,200	200	600	900	300	200	3,200	400	200	400	400
Louisiana	9,400	200	700	1,000	400	300	2,700	400	200	500	500
Maine	3,000	100	200	300	100	100	900	100	100	200	100
Maryland	10,200	200	800	1,100	400	200	2,900	400	300	600	500
Massachusetts	13,600	300	900	1,400	500	300	3,700	600	300	800	700
Michigan	19,800	500	1,400	2,000	800	500	5,600	900	500	1,100	1,100
Minnesota	9,100	300	600	900	400	200	2,300	500	200	500	500
Mississippi	6,200	200	500	600	200	200	2,000	200	200	300	400
Missouri	12,300	300	800	1,300	500	300	3,900	500	300	600	600
Montana	1,900	100	100	200	100	†	500	100	100	100	100
Nebraska	3,400	100	200	400	200	100	900	200	100	200	200
Nevada	4,300	100	300	500	200	100	1,300	100	100	200	200
New Hampshire	2,500	100	200	300	100	100	700	100	100	200	100
New Jersey	17,600	400	1,400	1,900	700	500	4,500	800	500	1,000	900
New Mexico	3,100	100	200	300	100	100	700	100	100	200	200
New York	35,800	800	2,800	4,000	1,400	1,000	9,200	1,400	1,000	2,200	1,800
North Carolina	16,500	400	1,100	1,600	600	400	5,100	600	400	900	900
North Dakota	1,300	†	100	100	100	†	300	100	†	100	100
Ohio	25,200	600	1,900	2,700	1,000	500	7,400	1,100	600	1,300	1,200
Oklahoma	7,400	200	500	800	300	200	2,400	300	200	300	300
Oregon	7,200	200	500	700	300	100	2,100	300	200	400	400
Pennsylvania	29,600	600	2,100	3,300	1,100	700	8,000	1,300	700	1,600	1,600
Rhode Island	2,400	100	200	300	100	100	700	100	100	100	100
South Carolina	8,600	200	600	900	300	200	2,500	300	200	500	500
South Dakota	1,600	100	100	200	100	†	400	100	100	100	100
Tennessee	12,700	300	900	1,200	500	300	4,100	500	300	600	600
Texas	34,800	900	2,600	3,600	1,300	1,200	9,900	1,400	900	1,800	1,700
Utah	2,600	100	200	300	100	100	400	200	100	100	200
Vermont	1,300	†	100	200	†	†	400	100	†	100	†
Virginia	13,700	300	1,000	1,400	500	300	3,900	500	300	700	700
Washington	11,200	300	700	1,000	500	300	3,200	500	300	600	500
West Virginia	4,700	100	300	500	200	100	1,600	200	100	200	200
Wisconsin	10,800	300	700	1,100	500	300	2,800	500	300	600	600
Wyoming	900	†	100	100	†	†	300	†	†	†	100
United States	556,500	13,100	39,800	57,100	21,900	14,400	157,200	23,400	14,300	30,000	28,900

*Rounded to nearest 100. Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. †Estimate is 50 or fewer deaths.

Note: State estimates may not add up to US total due to rounding.

Source: US Mortality Public Use Data Tapes, 1960-2000, National Center for Health Statistics.

Cancer Incidence Rates by Site and State, US, 1995-1999*

	All Sites		Breast	Colon & Rectum		Lung & Bronchus		Non-Hodgkin Lymphoma		Prostate	Urinary Bladder	
State	**Male**	**Female**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Male**	**Female**
Alabama (1999)	418.5	313.7	105.2	51.6	35.3	96.3	40.7	15.1	11.1	93.1	24.1	6.0
Alaska (1996-99)	527.2	443.6	135.9	61.2	51.0	87.4	65.3	22.1	17.2	152.2	38.8	10.2
Arizona‡	—	—	—	—	—	—	—	—	—	—	—	—
Arkansas (1996-99)	488.8	347.8	113.2	55.5	41.2	110.4	50.9	18.8	13.7	130.5	31.1	6.9
California†	526.3	411.4	133.2	59.4	43.5	77.0	50.6	22.9	14.9	154.3	34.0	8.6
Colorado†	512.3	395.0	132.6	56.3	41.9	69.3	41.6	20.7	16.1	156.9	34.2	9.1
Connecticut†	592.1	457.1	145.6	71.5	52.8	90.0	57.1	25.3	17.7	165.6	45.4	12.8
Delaware†	597.4	458.7	140.0	70.9	55.1	112.0	66.2	20.7	15.9	172.5	39.4	12.0
Dist. of Columbia	705.5	438.3	144.1	71.7	57.3	111.9	51.6	23.4	12.1	256.6	24.4	9.5
Florida‡	—	—	—	—	—	—	—	—	—	—	—	—
Georgia	447.4	319.3	104.5	47.3	35.1	88.7	40.4	16.3	11.0	130.1	25.5	6.7
Hawaii†	476.8	384.2	130.0	67.0	44.5	72.1	37.5	19.4	12.9	124.1	21.6	6.0
Idaho†	503.6	391.1	127.7	54.3	41.4	70.9	43.1	20.7	16.2	152.0	37.4	8.2
Illinois†	566.1	426.4	133.1	71.0	51.7	100.5	54.6	22.7	15.8	154.2	38.0	10.0
Indiana	498.4	391.4	124.3	66.1	48.3	102.1	52.1	19.8	14.8	120.3	35.6	9.5
Iowa†	557.5	420.7	130.7	75.8	55.3	95.8	47.3	22.6	17.0	152.1	38.3	8.4
Kansas‡	—	—	—	—	—	—	—	—	—	—	—	—
Kentucky†	593.7	425.6	122.2	70.7	53.2	141.3	68.5	21.9	15.3	141.5	36.2	9.3
Louisiana†	597.9	391.7	120.2	71.1	47.8	119.4	54.0	20.7	14.9	170.4	33.4	8.5
Maine	572.8	434.0	126.9	68.4	50.9	103.5	62.9	22.8	15.4	147.2	45.5	12.5
Maryland	608.9	442.4	141.7	69.6	51.9	102.7	59.7	21.7	14.8	188.2	37.1	11.0
Massachusetts	591.6	444.5	144.1	72.5	51.1	90.3	57.1	23.0	16.4	174.6	45.2	12.9
Michigan†	594.4	427.2	129.8	66.0	47.2	100.3	56.5	22.0	16.4	183.3	40.3	10.4
Minnesota†	544.1	409.6	136.6	62.9	46.7	74.1	43.6	25.2	17.4	174.0	37.1	9.7
Mississippi‡	—	—	—	—	—	—	—	—	—	—	—	—
Missouri (1996-99)	561.6	422.0	129.0	71.0	50.0	113.0	60.2	22.6	15.4	141.2	35.9	8.7
Montana	527.5	402.0	131.4	62.1	44.2	87.6	54.0	21.2	15.6	164.3	35.7	9.3
Nebraska†	546.6	405.2	129.7	70.8	48.9	89.2	43.9	23.1	16.3	161.5	34.6	8.1
Nevada	464.0	387.6	106.2	60.6	44.4	100.8	72.2	16.6	11.5	99.2	35.9	9.7
New Hampshire	551.8	428.4	137.7	68.2	49.2	90.3	59.1	20.3	14.4	150.2	45.3	12.5
New Jersey†	622.4	455.9	139.4	78.6	55.2	93.1	55.4	25.8	18.4	188.8	44.8	11.7
New Mexico†	473.2	363.3	120.3	51.7	36.0	63.7	37.2	17.8	12.3	147.0	27.0	8.2
New York†	557.5	434.0	132.4	73.3	53.6	88.8	53.0	24.0	16.3	150.1	39.8	11.2
North Carolina†	522.4	369.7	122.0	57.5	42.0	106.8	47.6	18.7	13.2	146.5	33.2	8.2
North Dakota (1997-99)	537.7	369.6	123.8	69.8	46.4	73.6	38.5	22.8	12.9	179.5	39.9	8.9
Ohio (1996-99)	535.8	415.9	130.6	68.6	49.9	102.2	56.1	22.0	15.9	139.1	39.6	10.1
Oklahoma‡	—	—	—	—	—	—	—	—	—	—	—	—
Oregon (1996-99)	530.0	424.9	142.5	56.9	43.1	87.1	58.4	21.2	15.4	154.8	40.8	10.4
Pennsylvania†	591.1	430.0	131.3	76.2	53.9	98.3	51.5	23.9	16.7	167.0	44.5	11.5
Rhode Island†	640.9	470.3	136.6	76.1	57.3	108.7	63.6	26.4	19.3	172.2	51.8	13.5
South Carolina (1997-99)	580.9	385.7	124.4	66.3	44.9	107.3	47.4	18.5	13.1	177.5	33.9	7.8
South Dakota‡	—	—	—	—	—	—	—	—	—	—	—	—
Tennessee (1997)	461.1	354.0	114.4	58.9	40.5	106.0	49.7	17.4	14.1	106.6	28.6	7.1
Texas (1995-98)	536.7	380.0	117.2	61.4	43.1	102.7	51.1	20.7	14.4	148.9	30.0	7.5
Utah†	468.3	344.6	116.9	48.6	37.2	42.6	22.5	22.2	14.2	172.8	31.0	7.1
Vermont‡	—	—	—	—	—	—	—	—	—	—	—	—
Virginia	496.4	365.6	123.1	59.4	43.7	90.5	46.1	18.7	13.1	145.4	31.1	8.3
Washington	561.1	445.7	144.7	61.1	44.7	87.4	59.2	24.4	16.9	165.2	41.0	9.6
West Virginia†	569.2	424.0	118.1	69.5	51.4	126.8	65.5	21.2	16.4	138.0	40.3	11.6
Wisconsin†	557.9	419.1	131.7	72.0	52.1	87.3	49.3	23.2	16.3	160.3	38.6	10.5
Wyoming†	527.6	388.8	120.9	60.2	43.4	74.2	46.9	18.1	14.8	168.0	38.1	10.1
United States	562.6	424.1	136.7	65.1	47.6	86.0	51.4	23.9	15.8	168.9	36.6	9.6

*Per 100,000, age-adjusted to the 2000 US standard population. Not all states submitted data for all years. † This state's registry has submitted five years of data and passed rigorous criteria for each year's data including completeness of reporting, non-duplication of records, percent unknown in critical data fields, percent of cases registered with information from death certificates only, and internal consistency among data items. ‡This state's registry did not submit incidence data to the North American Association of Central Cancer Registries (NAACCR) for 1995-1999.

Sources: Cancer in North America: 1995-1999, Volume One: Incidence, North American Association of Central Cancer Registries. US Incidence: SEER Cancer Statistics Review, 1973-1999, Division of Cancer Control and Population Sciences, National Cancer Institute, 2002.

American Cancer Society, Surveillance Research, 2003

Cancer Death Rates by Site and State, US, 1995-1999*

	All Sites		Breast	Colon & Rectum		Lung & Bronchus		Non-Hodgkin Lymphoma		Pancreas		Prostate
State	**Male**	**Female**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**
Alabama	298.0	169.6	26.7	24.1	16.9	101.8	38.1	9.9	6.3	13.0	9.4	41.9
Alaska	229.2	173.1	24.8	21.3	18.6	71.2	46.2	10.4	6.3	13.6	10.2	22.6
Arizona	229.0	157.0	25.8	22.4	15.6	68.5	39.0	10.3	7.1	11.1	8.4	29.9
Arkansas	291.0	172.0	26.7	25.2	18.5	109.4	43.5	11.5	7.1	13.1	9.5	37.4
California	224.5	161.7	27.1	22.3	15.7	63.3	39.2	10.0	6.6	11.3	8.9	29.3
Colorado	215.5	148.8	24.6	22.3	15.8	56.2	31.1	9.4	7.2	11.7	8.8	30.8
Connecticut	244.9	171.0	29.7	25.3	17.8	69.3	40.6	10.6	7.7	12.8	10.2	31.0
Delaware	290.4	197.8	32.6	28.4	20.8	94.6	51.1	9.7	7.1	12.8	9.5	38.8
Dist. of Columbia	322.7	199.1	39.1	30.7	22.8	87.0	40.4	9.6	4.7	15.7	10.7	53.7
Florida	249.6	165.6	27.4	24.1	17.2	81.1	43.3	10.8	6.8	11.8	8.9	30.1
Georgia	284.8	167.3	28.3	23.5	17.0	98.9	39.0	9.7	6.1	12.4	9.3	41.6
Hawaii	198.5	130.9	20.4	19.7	13.1	55.0	28.3	9.3	6.2	11.4	9.1	22.7
Idaho	229.1	154.1	26.7	23.4	15.5	62.2	33.1	11.1	7.1	10.9	7.5	35.0
Illinois	268.3	177.9	31.0	29.1	19.8	82.9	41.3	11.4	7.3	12.5	9.6	34.9
Indiana	278.3	180.9	29.2	28.3	20.9	95.2	45.5	11.5	7.7	12.5	9.0	35.9
Iowa	244.8	160.4	27.5	27.6	19.6	77.1	36.1	10.8	7.9	11.4	8.6	33.1
Kansas	243.3	160.0	26.5	24.6	17.1	78.8	37.7	10.4	7.3	12.1	9.1	31.6
Kentucky	304.3	183.6	28.1	29.7	20.1	116.1	51.4	11.3	7.4	12.6	8.8	35.2
Louisiana	314.7	187.5	30.8	30.3	19.9	104.9	44.1	11.1	7.6	15.1	10.5	42.1
Maine	280.4	189.4	28.8	28.5	21.4	88.3	49.5	12.1	7.9	13.2	10.0	33.4
Maryland	278.5	184.9	31.4	29.5	20.7	86.4	46.1	10.7	6.6	13.2	10.0	38.2
Massachusetts	267.9	179.7	30.4	29.6	20.4	76.8	43.5	11.5	7.4	12.6	9.9	33.0
Michigan	259.5	173.8	29.5	27.1	18.3	81.6	42.3	11.1	7.8	12.0	9.5	34.7
Minnesota	239.0	162.3	27.8	24.4	17.3	64.8	35.3	12.1	8.2	12.1	9.2	35.3
Mississippi	315.4	171.6	28.5	26.0	18.2	112.6	40.3	9.9	6.5	14.4	9.7	46.0
Missouri	270.7	176.6	28.4	26.8	19.6	93.8	45.2	11.2	7.5	11.4	9.2	32.2
Montana	242.0	163.8	26.6	23.7	15.6	69.9	41.0	10.3	7.8	12.0	8.1	36.0
Nebraska	237.5	157.2	27.1	28.4	19.2	73.6	34.0	10.8	7.1	11.5	7.9	29.2
Nevada	263.1	187.6	27.9	28.0	18.6	82.6	56.0	10.2	6.3	11.9	9.7	32.8
New Hampshire	270.2	187.0	29.7	28.2	21.8	79.7	47.4	11.7	7.5	13.4	9.6	32.9
New Jersey	265.7	186.2	32.2	30.2	20.9	76.1	42.1	11.8	7.8	12.7	10.2	34.2
New Mexico	219.0	156.3	27.2	22.1	15.6	54.7	31.4	8.1	6.3	10.8	9.1	33.4
New York	248.1	174.2	31.5	28.7	20.0	70.6	38.6	11.0	7.1	13.1	10.0	32.2
North Carolina	283.7	167.9	28.7	25.8	18.2	98.5	38.4	10.0	6.6	12.9	9.3	39.9
North Dakota	236.8	156.8	27.2	26.8	17.5	65.1	31.3	10.6	7.6	10.8	8.8	35.5
Ohio	275.3	182.9	30.7	29.5	20.8	89.2	44.9	12.0	7.9	11.8	9.3	34.6
Oklahoma	267.9	169.1	27.7	25.0	17.9	96.9	44.0	10.8	7.5	11.5	8.6	31.2
Oregon	245.5	174.1	27.7	23.7	17.0	74.9	46.2	10.9	7.4	10.9	10.1	35.1
Pennsylvania	271.8	179.0	30.9	30.0	21.0	82.8	40.0	11.4	7.7	12.5	9.3	34.6
Rhode Island	279.3	184.1	31.0	30.8	20.4	89.5	46.2	11.9	8.0	13.8	9.7	33.9
South Carolina	286.9	170.4	28.6	27.1	18.2	94.9	37.7	9.6	6.5	13.2	10.6	43.2
South Dakota	249.1	158.4	25.2	27.4	19.7	73.6	31.7	12.2	7.7	11.9	8.9	34.9
Tennessee	296.7	175.7	28.5	26.6	18.7	109.2	42.7	11.4	7.5	13.6	9.4	37.1
Texas	260.9	165.0	26.8	25.5	17.2	84.7	40.1	10.5	7.0	12.1	8.9	34.3
Utah	188.3	128.8	24.5	18.8	15.1	35.9	17.6	10.0	6.6	9.4	6.5	37.0
Vermont	268.1	177.9	28.6	28.9	22.6	80.3	41.2	12.5	7.7	14.3	8.6	36.0
Virginia	277.3	175.6	29.5	25.9	19.2	90.9	41.9	10.0	7.0	12.4	9.0	39.1
Washington	239.2	171.1	27.1	22.8	16.5	72.2	45.7	10.7	7.4	12.0	9.6	30.4
West Virginia	289.1	186.0	27.6	28.3	20.8	104.7	50.1	10.7	7.4	11.6	7.5	31.9
Wisconsin	252.0	166.2	27.8	26.4	17.9	69.6	36.4	11.9	7.6	12.2	9.3	35.5
Wyoming	240.6	171.0	27.3	25.9	21.1	66.1	38.5	8.0	6.9	11.3	9.1	37.3
United States	259.1	171.4	28.8	26.3	18.5	81.2	41.0	10.8	7.2	12.2	9.3	33.9

*Per 100,000, age-adjusted to the 2000 US standard population.

Source: US Mortality Public Use Data Tapes 1960-1999, National Center for Health Statistics, Centers for Disease Control and Prevention, 2002.

American Cancer Society, Surveillance Research, 2003

Selected Cancers

Breast

New cases: An estimated 211,300 new cases of invasive breast cancer are expected to occur among women in the United States during 2003. It is the most frequently diagnosed non-skin cancer in women. Breast cancer incidence rates have continued to increase since 1980, although the rate of increase slowed in the 1990s, compared to the 1980s. Furthermore, in the more recent time period, breast cancer incidence rates have increased only in those age 50 and over. About 1,300 new cases of breast cancer are expected in men in 2003.

In addition to invasive breast cancer, 55,700 new cases of in situ breast cancer are expected to occur among women during 2003. Of these, approximately 85% will be ductal carcinoma in situ (DCIS). The increase in detection of DCIS cases is a direct result of increased use of screening with mammography, which detects invasive breast cancers before they are palpable, that is, before they can be felt.

Deaths: An estimated 40,200 deaths (39,800 women, 400 men) are anticipated from breast cancer in 2003. Breast cancer ranks second among cancer deaths in women. According to the most recent data, mortality rates declined by 1.4% per year during 1989-1995 and by 3.2% afterwards, with the largest decreases in younger women in both whites and African Americans. These decreases are probably the result of both earlier detection and improved treatment.

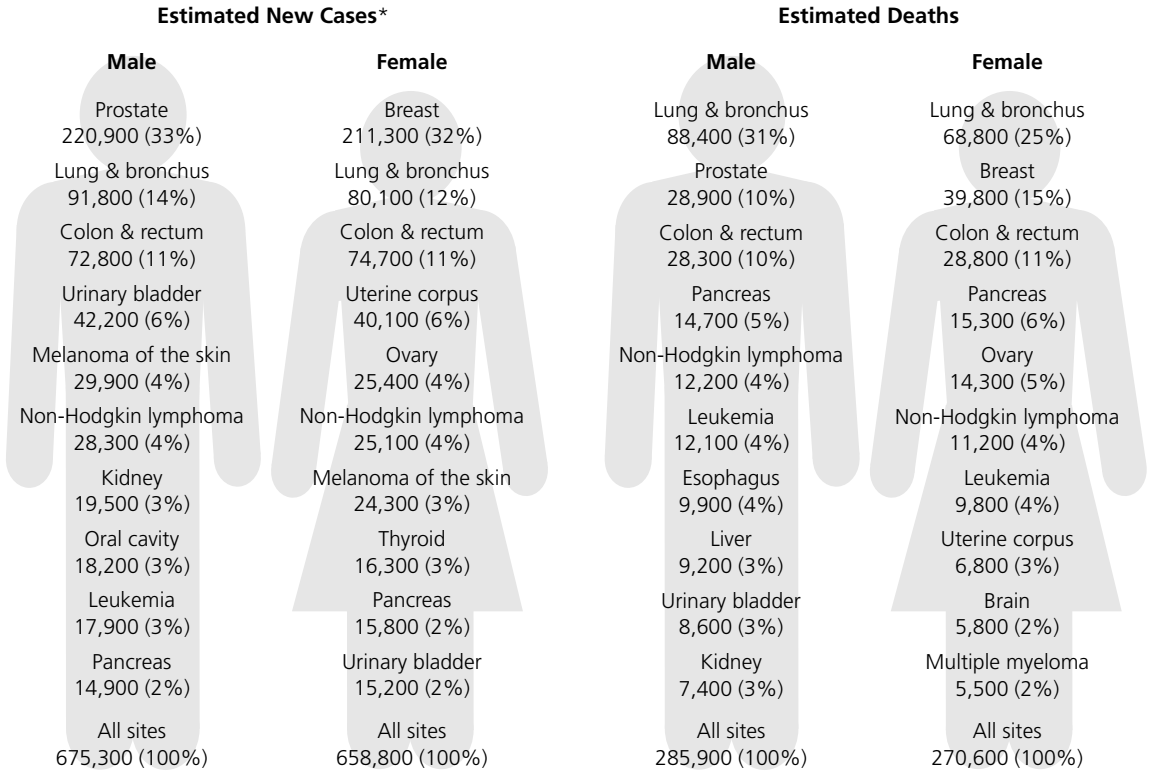
Signs and symptoms: The earliest sign of breast cancer is usually an abnormality that shows up on a mammogram before it can be felt by the woman or her health care provider. When breast cancer has grown to the point where physical signs and symptoms exist, these may include a breast lump, thickening, swelling, distortion, or tenderness; skin irritation or dimpling; and nipple pain, scaliness, ulceration, or retraction. Breast pain is commonly due to benign conditions and is not usually the first symptom of breast cancer.

Risk factors: The risk of being diagnosed with breast cancer increases with age. Risk is higher in women who have a personal or family history of breast cancer, biopsy-confirmed atypical hyperplasia, increased breast density, a long menstrual history (menstrual periods that started early and ended late in life), obesity after menopause, recent use of oral contraceptives or postmenopausal estrogens and progestin, who have never had children or had their first child after age 30, or who consume one or more alcoholic beverages per day. Vigorous physical activity and maintaining a healthy body weight are associated with lower risk. Most data indicate tamoxifen decreases breast cancer risk in women at increased risk, and preliminary data suggest another selective estrogen-receptor modulator, raloxifene, does also. The inherited susceptibility genes, BRCA1 and BRCA2, account for approximately 5% of all cases. General screening of the population for mutations of these genes is not recommended. However, screening of women with a strong family history is recommended when adequate counseling is available. Recent findings suggest that prophylactic removal of the breasts in BRCA1 and BRCA2 carriers decreases the risk of breast cancer considerably. Recent studies also show that preventive surgery to remove the ovaries and fallopian tubes in premenopausal BRCA1 and BRCA2 carriers reduces the risk of breast cancer.

Early detection: Mammography is especially valuable as an early detection tool because it can identify breast cancer at an early stage, usually before physical symptoms develop. Numerous studies have shown that early detection saves lives and increases treatment options. The declines in breast cancer mortality have been attributed, in large part, to the regular use of screening mammography. The American Cancer Society recommends that women age 40 and older have an annual mammogram, an annual clinical breast examination by a health care professional (close to and preferably before the scheduled mammogram), and perform monthly breast self-examination. Women ages 20-39 should have a clinical breast examination by a health care professional every three years and should perform breast self-examination monthly. When a woman has a suspicious lump or other abnormality on an initial mammogram, further mammographic testing can help determine whether additional tests are needed. Mammography alone does not provide a sufficient assessment. All suspicious lumps should be biopsied for a definitive diagnosis.

Treatment: Taking into account the medical circumstances and the patient's preferences, treatment may involve lumpectomy (local removal of the tumor), with removal of the lymph nodes under the arm if biopsy indicates cancer has spread to the nodes; mastectomy (surgical removal of the breast) and removal of the lymph nodes under the arm if cancer has spread to the nodes; radiation therapy; chemotherapy; or hormone

Leading Sites of New Cancer Cases and Deaths – 2003 Estimates*



*Excludes basal and squamous cell skin cancers and in situ carcinoma except urinary bladder.
Percentages may not total 100% due to rounding.

therapy. Often, two or more methods are used in combination. Numerous studies have shown that, for early-stage disease, long-term survival rates after lumpectomy plus radiotherapy are similar to survival rates after modified radical mastectomy. Patients should discuss possible options for the best management of their breast cancer with their physicians. Significant advances in reconstruction techniques provide several options for breast reconstruction immediately after mastectomy.

While it is controversial as to whether ductal carcinoma in situ (DCIS) will progress and need to be treated, treatment options include lumpectomy and radiation therapy, with or without tamoxifen, and mastectomy with or without tamoxifen. Since doctors can't yet distinguish DCIS cancers that will progress from those that won't, treatment of DCIS is recommended to prevent tumor progression. Future studies using DNA microarrays will probably allow these distinctions.

Survival: The 5-year relative survival rate for localized breast cancer has increased from 72% in the 1940s to 97% today. If the cancer has spread regionally, however, the rate is 78%, and for women with distant metastases the rate is 23%. Survival after a diagnosis of breast cancer continues to decline beyond five years. Survival at 10 years or more is also stage-dependent, with the best survival observed in women diagnosed with early-stage disease.

For more information about breast cancer, please inquire about the American Cancer Society's *Breast Cancer Facts & Figures 2001-2002* (8610.01) publication and Web site posting.

Childhood Cancer

New cases: An estimated 9,000 new cases are expected to occur among children aged 0-14 in 2003. Childhood cancers are rare.

Deaths: An estimated 1,500 deaths are expected to occur among children aged 0-14 in 2003, about one-third of them from leukemia. Despite its rarity, cancer is the chief cause of death by disease in children between ages 1 and 14. Mortality rates have declined by about 47% since 1975.

Early detection: Cancers in children often are difficult to recognize. Parents should make sure their children have regular medical checkups and should be alert to any unusual symptoms that persist. These include an unusual mass or swelling; unexplained paleness and loss of energy; sudden tendency to bruise; a persistent, localized pain or limping; prolonged, unexplained fever or illness; frequent headaches, often with vomiting; sudden eye or vision changes; and excessive, rapid weight loss. Childhood cancers include:

- Leukemia, which accounts for about 30% of cases in children ages 0-14 (see Leukemia).
- Brain and spinal cord cancers (21%), which in early stages may cause headaches, nausea, vomiting, blurred or double vision, dizziness, and difficulty in walking or handling objects.
- Neuroblastoma (7.3%), a cancer of the sympathetic nervous system which can appear anywhere but usually occurs in the abdomen as a swelling.
- Wilms tumor (5.9%), a kidney cancer which may be recognized by a swelling or lump in the abdomen.
- Hodgkin disease (4.4%) and non-Hodgkin lymphoma (4.0%) involve the lymph nodes, but also may spread to bone marrow and other organs. These may cause swelling of lymph nodes in the neck, armpit, or groin. Other symptoms may include general weakness and fever.
- Rhabdomyosarcoma (3.4%), the most common childhood soft tissue sarcoma, can occur in the head and neck area, genitourinary area, trunk, and extremities.
- Retinoblastoma (2.8%), an eye cancer, usually occurs in children under age 4. When detected early, cure is possible with appropriate treatment.
- Osteosarcoma (2.7%), a bone cancer which may cause no pain at first, in which local swelling is often the first sign.
- Ewing sarcoma (1.8%), another type of cancer that usually arises in bone.

Treatment: Childhood cancers can be treated by a combination of therapies chosen based on the specific type and stage of the cancer. Treatment is coordinated by a team of experts including pediatric oncologists, pediatric nurses, social workers, psychologists, and others who assist children and their families.

Survival: Five-year survival rates vary considerably, depending on the site: all sites, 77%; neuroblastoma, 69%; brain and central nervous system, 70%; bone and joint, 73%; acute lymphocytic leukemia, 85%; Wilms tumor (kidney), 90%; and Hodgkin disease, 94%.

Colon and Rectum

New cases: An estimated 105,500 colon and 42,000 rectal cancer cases are expected to occur in 2003. Colorectal cancer is the third most common cancer in men and women. Incidence rates declined by 1.8% per year during 1985-1995, but stabilized during 1995-99. Research suggests that these declines may in part be due to increased screening and polyp removal, preventing progression of polyps to invasive cancers.

Deaths: An estimated 57,100 deaths are expected to occur in 2003, accounting for about 10% of cancer deaths. In contrast to incidence rates, which stabilized in the most recent time period, mortality rates continued to decline for both men and women over the past 15 years, at an average of 1.7% per year. This decrease reflects the decreasing incidence rates from the mid-1980s to the mid-1990s and improvements in survival.

Signs and symptoms: In its early stages, colorectal cancer usually causes no symptoms. Rectal bleeding, blood in the stool, a change in bowel habits, and cramping pain in the lower abdomen may signal advanced disease.

Risk factors: The primary risk factor for colorectal cancer is age, with more than 90% of cases diagnosed in individuals over the age of 50. A personal or family history of colorectal cancer or polyps or of inflammatory bowel disease increases colorectal cancer risk. Other risk factors include smoking, alcohol consumption, obesity, physical inactivity, high-fat and/or low-fiber diet, as well as inadequate intake of fruits and vegetables. Recent studies have suggested that estrogen (with or without progestin) replacement therapy and nonsteroidal anti-inflammatory drugs, such as aspirin, may reduce colorectal cancer risk.

Early detection: Beginning at age 50, men and women who are at average risk for developing colorectal cancer should have one of the following: fecal occult blood test (FOBT) annually; or flexible sigmoidoscopy every 5 years; or the combination of annual FOBT and flexible sigmoidoscopy every 5 years (this combination is preferred over either method alone); colonoscopy (if normal, repeat every 10 years), or double-contrast barium enema (if normal, repeat every 5 years). A digital rectal examination should be done at the same time as sigmoidoscopy, colonoscopy, or double-contrast barium

enema. These tests offer the best opportunity to detect colorectal cancer at an early stage when successful treatment is likely, and to prevent some cancers by detection and removal of polyps. People should begin colorectal cancer screening earlier and/or undergo screening more often if they have a personal history of colorectal cancer or adenomatous polyps, a strong family history of colorectal cancer or polyps, a personal history of chronic inflammatory bowel disease, or if they are a member of a family with hereditary colorectal cancer syndromes.

Treatment: Surgery is the most common form of treatment for colorectal cancer. For cancers that have not spread, it is frequently curative. Chemotherapy or chemotherapy plus radiation is given before or after surgery to most patients whose cancer has deeply perforated the bowel wall or has spread to the lymph nodes. A permanent colostomy (creation of an abdominal opening for elimination of body wastes) is very rarely needed for colon cancer and is infrequently required for rectal cancer. Among chemotherapy options, oxaliplatin in combination with 5-fluorouracil (5-FU) followed by leucovorin (LV) is a new treatment regimen for patients with metastatic carcinoma of the colon or rectum whose disease has recurred or progressed during or within six months of completion of first-line therapy with the combination of 5-FU/LV and irinotecan. Adjuvant chemotherapy for colon cancer is equally effective and no more toxic in otherwise healthy patients age 70 and older than in younger patients.

Survival: The 1- and 5-year relative survival rates for patients with colon and rectum cancer are 83% and 62%, respectively. When colorectal cancers are detected at an early, localized stage, the 5-year relative survival rate is 90%; however, only 37% of colorectal cancers are discovered at that stage. After the cancer has spread regionally to involve adjacent organs or lymph nodes, the rate drops to 65%. The 5-year survival rate for persons with distant metastases is 9%. Survival continues to decline beyond five years to 55% relative survival at 10 years after diagnosis.

Leukemia

New cases: An estimated 30,600 new cases are expected in 2003, approximately evenly divided between acute and chronic leukemia. Although often thought of as primarily a childhood disease, leukemia is diagnosed 10 times more often in adults than in children. Acute lymphocytic leukemia accounts for approximately 2,200 of the leukemia cases among children. In adults, the most common types are acute myeloid leukemia (approximately 10,500 cases) and chronic lymphocytic leukemia (approximately 7,300 cases). Incidence of leukemias decreased by 3.0% per year in males and 4.3% in females after the mid-1990s.

Deaths: An estimated 21,900 deaths in 2003. Death rates from leukemias also decreased in the 1990s, though at a slower rate.

Signs and symptoms: Fatigue, paleness, weight loss, repeated infections, bruising easily, and nosebleeds or other hemorrhages. In children, these signs can appear suddenly. Chronic leukemia can progress slowly with few symptoms.

Risk factors: Leukemia affects both sexes and all ages. However, it more commonly occurs in males than in females. Causes of most leukemias are unknown. Persons with Down syndrome and certain other genetic abnormalities have higher incidence rates of leukemia. Myeloid leukemia is caused by cigarette smoking and by certain chemicals such as benzene, a chemical present in gasoline and cigarette smoke. Several types of leukemia are caused by excessive exposure to ionizing radiation. Leukemia also may occur as a side effect of cancer treatment. Certain leukemias and lymphomas are caused by a retrovirus, human T-cell leukemia/lymphoma virus-I (HTLV-I).

Early detection: Because symptoms often resemble those of other, less serious conditions, leukemia can be difficult to diagnose early. When a physician does suspect leukemia, diagnosis can be made using blood tests and bone marrow biopsy.

Treatment: Chemotherapy is the most effective method of treating leukemia. Various anticancer drugs are used, either in combinations or as single agents. Gleevec (imatinib mesylate, formerly known as STI-571) is a highly specific new drug that has been approved by the FDA for the treatment of chronic myeloid (or myelogenous) leukemia, which affects about 4,300 people each year. Antibiotics and transfusions of blood components are used as supportive treatments. Under appropriate conditions, bone marrow transplantation may be useful in treating certain leukemias.

Survival: Survival rates in leukemia vary by type, ranging from 5-year survival rates of 18.7% for patients with acute myeloid leukemia to 73.1% for patients with chronic lymphocytic leukemia. Overall, the 1-year relative survival rate for patients with leukemia is 64%.

How to Estimate Cancer Statistics Locally, 2003

To obtain the estimated number of...	Multiply community population by: All Sites	Female Breast*	Colon & Rectum	Lung	Prostate*
New cancer cases	0.0047	0.0015	0.0005	0.0006	0.0016
Cancer deaths	0.0020	0.0003	0.0002	0.0006	0.0002
People who will eventually develop cancer	0.4085	0.1333	0.0580	0.0671	0.1661
People who will eventually die of cancer	0.2126	0.0309	0.0232	0.0542	0.0320

*For female breast cancer multiply by female population, and for prostate cancer multiply by male population.

Note: These calculations provide only a rough approximation of the number of people in a specific community who may develop or die of cancer. These estimates should be used with caution because they do not reflect the age or racial characteristics of the population, access to detection and treatment, or exposure to risk factors. State cancer registries count the number of cancers that occur in localities throughout the state. The American Cancer Society recommends using data from these registries, when it is available, to more accurately estimate local cancer statistics.

Data source: DEVCAN Software, Version 4.2; NCI, Surveillance, Epidemiology, and End Results Program, 1973-1999, Division of Cancer Control and Population Sciences, National Cancer Institute, 2002.

American Cancer Society, Surveillance Research, 2003

There has been a dramatic improvement in survival for patients with acute lymphocytic leukemia from a 5-year relative survival rate of 38% in the mid-1970s to 63% in the mid-1990s. Survival rates for children with acute lymphocytic leukemia have increased from 53% to 85% over the same time period.

Lung and Bronchus

New cases: An estimated 171,900 new cases are expected in 2003, accounting for about 13% of cancer diagnoses. The incidence rate is declining significantly in men, from a high of 102.1 per 100,000 in 1984 to 81.1 in 1999. In the 1990s, the increase among women reached a plateau, with incidence at 52.4 per 100,000 in 1997 and 1998.

Deaths: An estimated 157,200 deaths in 2003, accounting for 28% of all cancer deaths. Lung cancer is the leading cause of cancer death in men and women. Death rates have continued to decline significantly in men since 1990 by about 1.5% to 2.8% per year. After several decades of continuous increase, female lung cancer death rates have leveled off among white women during 1995-1999, but not among African American women. Since 1987, however, more women have died each year of lung cancer than breast cancer, which for the previous 40 years had been the major cause of cancer death in women. Decreasing lung cancer incidence and mortality rates most likely result from decreased smoking rates over the past 30 years. However, decreasing smoking patterns among women lag behind those of men. Declines in adult tobacco use have slowed, as have declines in lung cancer mortality in those under 45 years old. Tobacco use among youth increased considerably during the 1990s, although it declined after 1997.

Signs and symptoms: Persistent cough, sputum streaked with blood, chest pain, and recurring pneumonia or bronchitis.

Risk factors: Cigarette smoking is by far the most important risk factor in the development of lung cancer. Other risk factors include occupational or environmental exposures to substances such as arsenic; some organic chemicals; radon and asbestos (particularly among smokers); radiation exposure from occupational, medical, and environmental sources; air pollution; tuberculosis; and for nonsmokers, environmental tobacco smoke.

Early detection: Early detection has not yet been proven to improve survival. Chest x-ray, analysis of cells in sputum, and fiberoptic examination of the bronchial passages have shown limited effectiveness in early lung cancer detection. Newer tests, such as low-dose helical CT scans and molecular markers in sputum, can detect lung cancer earlier. The impact of these screening tests on survival is being evaluated.

Treatment: Treatment options are determined by the type and stage of the cancer and include surgery, radiation therapy, and chemotherapy. For many localized cancers, surgery is usually the treatment of choice. Because the disease has usually spread by the time it is discovered, radiation therapy and chemotherapy are often needed in combination with surgery. Chemotherapy alone or combined with radiation is the treatment of choice for small cell lung cancer; on this regimen, a large percentage of patients experience remission, which in some cases is long lasting.

Survival: The 1-year relative survival rate for lung cancer has increased from 34% in 1975 to 42% in 1998,

Probability of Developing Invasive Cancers Over Selected Age Intervals, by Sex, US, 1997-1999*

		Birth to 39 (%)	40 to 59 (%)	60 to 79 (%)	Birth to Death (%)
All sites†	Male	1.39 (1 in 72)	8.33 (1 in 12)	32.26 (1 in 3)	43.48 (1 in 2)
	Female	1.96 (1 in 51)	9.09 (1 in 11)	22.22 (1 in 5)	38.46 (1 in 3)
Bladder‡	Male	.02 (1 in 4,165)	.41 (1 in 241)	2.33 (1 in 43)	3.45 (1 in 29)
	Female	.01 (1 in 9,367)	.13 (1 in 769)	.65 (1 in 154)	1.14 (1 in 88)
Breast	Female	0.44 (1 in 228)	4.17 (1 in 24)	7.14 (1 in 14)	13.3 (1 in 8)
Colon & rectum	Male	0.06 (1 in 1,617)	.88 (1 in 114)	4.00 (1 in 25)	5.88 (1 in 17)
	Female	0.06 (1 in 1,630)	.69 (1 in 145)	3.03 (1 in 33)	5.56 (1 in 18)
Leukemia	Male	0.16 (1 in 639)	.20 (1 in 496)	.83 (1 in 121)	1.45 (1 in 69)
	Female	0.13 (1 in 794)	.15 (1 in 687)	.45 (1 in 224)	1.02 (1 in 98)
Lung & bronchus	Male	.03 (1 in 3,347)	1.09 (1 in 92)	5.88 (1 in 17)	7.69 (1 in 13)
	Female	.03 (1 in 3,187)	.83 (1 in 120)	4.00 (1 in 25)	5.88 (1 in 17)
Melanoma of skin	Male	.13 (1 in 791)	.50 (1 in 202)	.98 (1 in 102)	1.75 (1 in 57)
	Female	.20 (1 in 512)	.39 (1 in 256)	.51 (1 in 198)	1.23 (1 in 81)
Non-Hodgkin lymphoma	Male	.15 (1 in 658)	.46 (1 in 218)	1.25 (1 in 80)	2.13 (1 in 47)
	Female	.08 (1 in 1,250)	.32 (1 in 316)	.99 (1 in 101)	1.79 (1 in 56)
Prostate	Male	.005 (1 in 19,299)	2.22 (1 in 45)	13.70 (1 in 7)	16.67 (1 in 6)
Uterine cervix	Female	.17 (1 in 584)	.32 (1 in 314)	.28 (1 in 363)	.81 (1 in 123)
Uterine corpus	Female	.05 (1 in 1,881)	.73 (1 in 137)	1.59 (1 in 63)	2.70 (1 in 37)

*For those free of cancer at beginning of age interval. Based on cancer cases diagnosed during 1997-1999.
The "1 in" statistic and the inverse of the percentage may not be equivalent due to rounding.
†All sites exclude basal and squamous cell skin cancers and in situ carcinomas except urinary bladder.
‡Includes invasive and in situ cancer cases.
Source: DEVCAN, Probability of Developing or Dying of Cancer Software, Version 4.2. Feuer EJ, Wun LM, National Cancer Institute, 2002.

American Cancer Society, Surveillance Research, 2003

largely due to improvements in surgical techniques. However, the 5-year relative survival rate for all stages combined is only 15%. The survival rate is 49% for cases detected when the disease is still localized. Only 15% of lung cancers are diagnosed at this early stage.

Lymphoma

New cases: An estimated 61,000 new cases will occur in 2003, including 7,600 cases of Hodgkin disease and 53,400 cases of non-Hodgkin lymphoma. Since the early 1970s, incidence rates for non-Hodgkin lymphoma (NHL) have nearly doubled. However, incidence rates stabilized in the 1990s due primarily to the decline in AIDS-related NHL. Overall, incidence rates for Hodgkin disease have declined significantly since the late 1980s at a rate of 0.9% per year.

Deaths: An estimated 24,700 deaths will occur in 2003 (non-Hodgkin lymphoma, 23,400; Hodgkin disease, 1,300).

Signs and symptoms: Enlarged lymph nodes, itching, fever, night sweats, fatigue, and weight loss. Intermittent fever can last for several days or weeks.

Risk factors: Risk factors are largely unknown but in part involve reduced immune function and exposure to certain infectious agents, as well as age. Persons with organ transplants are at higher risk due to altered immune function. Human immunodeficiency virus (HIV) and human T-cell leukemia/lymphoma virus-I (HTLV-I) are associated with increased risk of non-Hodgkin lymphoma. Other possible risk factors include occupational exposures to herbicides and perhaps other chemicals. In Africa, Burkitt lymphoma is partly caused by the Epstein-Barr virus.

Treatment: Hodgkin disease: Chemotherapy alone or with radiotherapy is useful for most patients. Non-Hodgkin lymphoma: In the early stage, localized lymph node disease can be treated with radiotherapy. Patients with later-stage disease are treated with chemotherapy or with chemotherapy plus radiation depending on the specific type of non-Hodgkin lymphoma. New treatment programs using highly specific monoclonal antibodies directed at lymphoma cells and high-dose chemotherapy with bone marrow transplantation are being tested in selected patients who relapsed after standard treatment.

Survival: Survival rates vary widely by cell type and stage of disease. The 1-year relative survival rates for Hodgkin disease and non-Hodgkin lymphoma are 95% and 77%, respectively; the 5-year rates are 84% and 55%. Ten years after diagnosis, the relative survival rates for Hodgkin and non-Hodgkin disease decline to 75% and 40%, and the 15-year survival rates are 68% and 38%, respectively.

Oral Cavity and Pharynx

New cases: An estimated 27,700 new cases are expected in 2003. Incidence rates are more than twice as high in men as in women and are greatest in men who are over age 50. Incidence rates for cancer of the oral cavity and pharynx continued to decline in the 1990s in both African American and white males and females.

Deaths: An estimated 7,200 deaths in 2003. Death rates have been decreasing since the late 1970s.

Signs and symptoms: A sore that bleeds easily and does not heal; a lump or thickening; a red or white patch that persists. Difficulties in chewing, swallowing, or moving tongue or jaws are often late symptoms.

Risk factors: Cigarette, cigar, or pipe smoking; use of smokeless tobacco; excessive consumption of alcohol.

Early detection: Cancer can affect any part of the oral cavity, including the lip, tongue, mouth, and throat. Dentists and primary care physicians can identify abnormal changes in oral tissues and detect cancer at an early, curable stage.

Treatment: Radiation therapy and surgery are standard treatments. In advanced disease, chemotherapy may be useful as an adjunct to surgery and/or radiation.

Survival: For all stages combined, about 81% of oral cavity and pharynx cancer patients survive 1 year after diagnosis. The 5-year and 10-year relative survival rates are 56% and 41%, respectively.

Ovary

New cases: An estimated 25,400 new cases are expected in the United States in 2003. It accounts for nearly 4% of all cancers among women and ranks second among gynecologic cancers, following cancer of the uterine corpus. During 1989-1999, ovarian cancer incidence declined at a rate of 0.7% per year.

Deaths: An estimated 14,300 deaths are expected in 2003. Ovarian cancer causes more deaths than any other cancer of the female reproductive system.

Signs and symptoms: The most common sign is enlargement of the abdomen, which is caused by accumulation of fluid. Abnormal vaginal bleeding is rarely a symptom. In women over 40, vague digestive disturbances (stomach discomfort, gas, distention) that persist and cannot be explained by any other cause may indicate the need for an evaluation for ovarian cancer, including a thorough pelvic examination.

Risk factors: Risk for ovarian cancer increases with age and peaks in the late 70s. Women who have never had children are more likely to develop ovarian cancer than those who have. Pregnancy, tubal ligation, and the use of oral contraceptives appear to reduce the risk of developing ovarian cancer, while the use of fertility drugs and hormone replacement therapy increases risk. Women who have had breast cancer or have a family history of breast or ovarian cancer are at increased risk. Mutations in BRCA1 or BRCA2 have been observed in these families. Recent studies suggested that preventive surgery to remove the ovaries and fallopian tubes can decrease the risk of ovarian cancers and other gynecologic cancers in women with BRCA1 and BRCA2 mutations. Another genetic syndrome, hereditary nonpolyposis colon cancer (HNPCC), also has been associated with endometrial and ovarian cancer. Incidence rates are highest in industrialized countries other than Japan.

Early detection: Periodic, thorough pelvic exams are important. The Pap test, useful in detecting cervical cancer, rarely uncovers early ovarian cancer. Transvaginal ultrasound and a tumor marker, CA125, may help in diagnosis but are not used for routine screening in women at average risk. Research on specific patterns of proteins in the blood may develop more sensitive screening tests in the future, but these are not yet available for clinical use.

Treatment: Surgery, radiation therapy, and chemotherapy are treatment options. Surgery usually includes the removal of the uterus (hysterectomy), and one or both ovaries and fallopian tubes (salpingo-oophorectomy). In some very early tumors, only the involved ovary will be removed, especially in young women who wish to have children. In advanced disease, an attempt is made to remove all intra-abdominal disease to enhance the effect of chemotherapy.

Survival: Survival varies by age; women younger than 65 years old are about twice as likely to survive 5 years following diagnosis than women 65 and older, 65.8% and 33.2%, respectively. Overall, nearly 80% of new ovarian cancer patients survive 1 year after diagnosis; the 5-year

relative survival rate for all stages is 53%. If diagnosed and treated while the disease is localized, the 5-year survival rate is 95%; however, only about 25% of all cases are detected at the localized stage. Five-year relative survival rates for women with regional and distant disease are 81% and 31%, respectively.

Pancreas

New cases: An estimated 30,700 new cases in the United States in 2003. Over the past 15 to 25 years, rates of pancreatic cancer have declined slowly in men and women.

Deaths: An estimated 30,000 deaths in 2003. The death rate from pancreatic cancer has continued to decline since the early 1970s in men, while it continued to increase in women. However, both the decrease in men and increase in women have slowed in recent years.

Signs and symptoms: Cancer of the pancreas generally develops without early symptoms. If a cancer develops in an area of the pancreas near the common bile duct, its blockage may lead to jaundice (yellowing of the skin and eyes due to pigment accumulation). Sometimes this symptom allows the tumor to be diagnosed at an early stage.

Risk factors: Cigarette and cigar smoking increase the risk of pancreatic cancer; incidence rates are more than twice as high for smokers as for nonsmokers. Risk also appears to increase with obesity, physical inactivity, chronic pancreatitis, diabetes, and cirrhosis. Pancreatic cancer rates are higher in countries whose populations eat a diet high in fat. Rates are slightly higher in males than in females.

Early detection: At present, only biopsy yields a certain diagnosis. Because of the "silent" early course of the disease, the need for biopsy may become obvious only with advanced disease. Researchers are focusing on ways to diagnose pancreatic cancer before symptoms occur.

Treatment: Surgery, radiation therapy, and chemotherapy are treatment options that can extend survival and/or relieve symptoms in many patients, but seldom produce a cure. Clinical trials with several new agents may offer improved survival and should be considered an option.

Survival: For all stages combined, the 1-year relative survival rate is 21%, and the 5-year rate is about 4%. Even for those people diagnosed with local stage disease, the 5-year relative survival rate is only 17%.

Prostate

New cases: An estimated 220,900 new cases will occur in the US during 2003. Prostate cancer incidence rates remain significantly higher in African American men than in white men. Between 1988 and 1992, prostate cancer incidence rates increased dramatically, due to earlier diagnosis in men without symptoms, using the prostate-specific antigen (PSA) blood test. Prostate cancer incidence rates subsequently declined and have leveled off, especially in the elderly. In ages under 65 years, however, rates have continued to increase at a less rapid rate. Rates peaked in 1992 among white men (236.4 per 100,00 persons) and in 1993 among African American men (333.6 per 100,000 persons).

Deaths: An estimated 28,900 deaths in 2003, the second leading cause of cancer death in men. Although death rates have been declining among white and African American men since the early 1990s, rates in African American men remain more than twice as high as rates in white men.

Signs and symptoms: Early prostate cancer usually has no symptoms. With more advanced disease, individuals may experience weak or interrupted urine flow; inability to urinate, or difficulty starting or stopping the urine flow; the need to urinate frequently, especially at night; blood in the urine; pain or burning on urination; or continual pain in lower back, pelvis, or upper thighs. Most of these symptoms are nonspecific and are similar to those caused by benign conditions.

Risk factors: The only well-established risk factors for prostate cancer are age, ethnicity, and family history of prostate cancer. More than 70% of all prostate cancer cases are diagnosed in men over age 65. African American men have the highest prostate cancer incidence rates in the world; the disease is common in North America and Northwestern Europe and is rare in Asia and South America. Recent genetic studies suggest that strong familial predisposition may be responsible for 5%-10% of prostate cancers. International studies suggest that dietary fat may also be a risk factor.

Early detection: The prostate-specific antigen (PSA) test, a blood test used to detect a substance made by the prostate called prostate-specific antigen, and the digital rectal examination should be offered annually beginning at age 50 to men who have a life expectancy of at least 10 years. Men at high risk (African Americans and men who have a first-degree relative diagnosed with prostate cancer at a young age) should begin testing at age 45.

Five-Year Relative Survival Rates* by Stage at Diagnosis, 1992-1998

Site	All Stages %	Local %	Regional %	Distant %	Site	All Stages %	Local %	Regional %	Distant %
Breast (female)	86	97	78	23	Ovary	53	95	81	31
Colon & rectum	62	90	65	9	Pancreas	4	17	7	1
Esophagus	13	27	13	2	Prostate†	97	100	–	34
Kidney	62	90	60	9	Stomach	22	59	22	2
Larynx	64	82	51	38	Testis	95	99	95	74
Liver	7	15	6	2	Thyroid	96	99	95	44
Lung & bronchus	15	49	22	3	Urinary bladder	82	94	48	6
Melanoma	89	96	60	14	Uterine cervix	71	92	51	15
Oral cavity	56	82	47	23	Uterine corpus	84	96	64	26

*Rates are adjusted for normal life expectancy and are based on cases diagnosed from 1992-1998, followed through 1999. †The rate for local stage represents local and regional stages combined.

Local: An invasive malignant cancer confined entirely to the organ of origin. **Regional:** A malignant cancer that 1) has extended beyond the limits of the organ of origin directly into surrounding organs or tissues; 2) involves regional lymph nodes by way of lymphatic system; or 3) has both regional extension and involvement of regional lymph nodes. **Distant:** A malignant cancer that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis to distant organs, tissues, or via the lymphatic system to distant lymph nodes.

Source: Surveillance, Epidemiology, and End Results Program, 1973-1999, Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD, 2002.

American Cancer Society Surveillance Research, 2003

Patients should be given information about the benefits and limitations of testing so that they can make an informed decision about testing.

Treatment: Depending on age, stage of the cancer, and other medical conditions of the patient, surgery and radiation should be discussed with the patient's physician. Hormonal therapy, chemotherapy, and radiation (or combinations of these treatments) are used for metastatic disease. Hormone treatment may control prostate cancer for long periods by shrinking the size of the tumor, thus relieving pain and other symptoms. Careful observation without immediate active treatment ("watchful waiting") may be appropriate, particularly for older individuals with low-grade and/or early-stage tumors.

Survival: Eighty-five percent of all prostate cancers are discovered in the local and regional stages; the 5-year relative survival rate for patients whose tumors are diagnosed at these stages is 100%. Over the past 20 years, the survival rate for all stages combined has increased from 67% to 97%. Relative survival after a diagnosis of prostate cancer continues to decline with longer follow-up. According to the most recent data, relative 10-year survival is 79%, and 15-year survival is 57%.

Skin

New cases: More than 1 million cases of highly curable basal cell or squamous cell cancers occur annually. The most serious form of skin cancer is melanoma, which is expected to be diagnosed in about 54,200 persons in 2003. During the 1970s, the incidence rate of melanoma increased rapidly at about 6% per year. Since 1981, however, the rate of increase slowed to a little less than 3% per year. Melanoma is primarily a disease of whites, and rates are more than 10 times higher in whites than in African Americans. Other important forms of skin cancer include Kaposi sarcoma, which commonly occurred among patients with AIDS prior to the introduction of protease inhibitors, and cutaneous T-cell lymphoma.

Deaths: An estimated 9,800 deaths this year, 7,600 from melanoma and 2,200 from other skin cancers. Melanoma mortality for the more recent period is increasing less rapidly in white men, while it has stabilized among white women.

Signs and symptoms: Any change on the skin, especially in the size or color of a mole or other darkly pigmented growth or spot. Scaliness, oozing, bleeding, or change in the appearance of a bump or nodule; the spread of pigmentation beyond its border; a change in sensation, itchiness, tenderness, or pain.

Risk factors: Excessive exposure to ultraviolet radiation from sunlight or tanning lamps; fair complexion; occupational exposure to coal tar, pitch, creosote, arsenic compounds, or radium; family history; and multiple or atypical nevi (moles).

Prevention: Limit or avoid exposure to the sun during the midday hours (10 a.m.- 4 p.m.). When outdoors, wear a hat that shades the face, neck, and ears, and a long-

Trends in Five-Year Relative Survival Rates*(%), by Race and Year of Diagnosis, US, 1974-1998

Site	White			African American			All Races		
	Relative 5-Year Survival Rate (%)			Relative 5-Year Survival Rate (%)			Relative 5-Year Survival Rate (%)		
	1974-76	1983-85	1992-98	1974-76	1983-85	1992-98	1974-76	1983-85	1992-98
All cancers	51	54	64†	39	40	53†	50	52	62†
Brain	22	26	32†	27	32	40†	22	27	32†
Breast (female)	75	79	88†	63	63	73†	75	78	86†
Cervix uterine	70	71	72†	64	60	60	69	69	71†
Colon	51	58	63†	46	49	53†	50	58	62†
Corpus uterine	89	85	86†	61	54	61	88	83	84†
Esophagus	5	9	15†	4	6	8†	5	8	13†
Hodgkin disease	72	79	85†	69	77	77†	71	79	84†
Kidney	52	56	62†	49	55	60†	52	56	62†
Larynx	66	69	66	60	55	54	66	67	64
Leukemia	35	42	47†	31	34	38	34	41	46†
Liver	4	6	7†	1	4	4†	4	6	7†
Lung & bronchus	13	14	15†	11	11	12†	12	14	15†
Melanoma of the skin	80	85	89†	67‡	74§	66‡	80	85	89†
Multiple myeloma	24	27	30†	28	31	33	24	28	30†
Non-Hodgkin lymphoma	48	54	56†	49	45	46	47	54	55†
Oral cavity	55	55	59†	36	35	35	53	53	56†
Ovary	37	40	53†	41	42	53†	37	41	53†
Pancreas	3	3	4†	3	5	4	3	3	4†
Prostate	68	76	98†	58	64	93†	67	75	97†
Rectum	49	56	62†	42	44	53†	49	55	62†
Stomach	15	16	21†	17	19	20	15	17	22†
Testis	79	91	96†	76‡	88‡	85	79	91	95†
Thyroid	92	93	96†	88	92	93	92	93	96†
Urinary bladder	74	78	82†	48	60	65†	73	78	82†

*Survival rates are adjusted for normal life expectancy and are based on cases diagnosed from 1974-76, 1983-85, and 1992-1998, and followed through 1999.

†The difference in rates between 1974-76 and 1992-1998 is statistically significant ($p < 0.05$).

‡The standard error of the survival rate is between 5 and 10 percentage points.

§The standard error of the survival rate is greater than 10 percentage points.

Source: Surveillance, Epidemiology, and End Results Program, 1973-1999, Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD, 2002.

American Cancer Society Surveillance Research, 2003

sleeved shirt and long pants. Wear sunglasses to protect the skin around the eyes. Use a sunscreen with a sun protection factor (SPF) of 15 or higher. Because severe sunburns in childhood may greatly increase risk of melanoma in later life, children, in particular, should be protected from the sun.

Early detection: Recognition of changes in skin growths or the appearance of new growths is the best way to find early skin cancer. Adults should practice skin self-examination regularly. Suspicious lesions should be evaluated promptly by a physician. Basal and squamous cell skin cancers often take the form of a pale, waxlike, pearly nodule, or a red, scaly, sharply outlined patch. A sudden or progressive change in a lesion's appearance should be checked by a physician. Melanomas often start as small, mole-like growths that increase in size and change color. A simple ABCD rule outlines the warning signals of melanoma: **A** is for asymmetry: one half of the mole does not match the other half; **B** is for border irregularity: the edges are ragged, notched, or blurred; **C** is for color: the pigmentation is not uniform, with variable degrees of tan, brown, or black; **D** is for diameter greater than 6 millimeters. Any sudden or progressive increase in size should be of concern.

Treatment: Treatment for basal cell cancer and squamous cell cancer includes surgical treatments in 90% of cases, such as electrodessication (tissue destruction by heat), cryosurgery (tissue destruction by freezing), and laser therapy for early skin cancer. Radiation therapy is also an option in some cases. For malignant melanoma, the primary growth must be adequately excised, and it may be necessary to remove nearby lymph nodes.

Removal and microscopic examination of all suspicious moles is essential. Advanced cases of melanoma are treated with immunotherapy or chemotherapy.

Survival: For basal cell or squamous cell cancers, cure is highly likely if detected and treated early. Melanoma can spread to other parts of the body quickly. When detected in its earliest stages and treated properly, however, it is highly curable. The 5-year relative survival rate for patients with melanoma is 89%. For localized melanoma, the 5-year relative survival rate is 96%; survival rates for regional and distant stage diseases are 60% and 14%, respectively. About 82% of melanomas are diagnosed at a localized stage.

Urinary Bladder

New cases: An estimated 57,400 new cases in 2003. Bladder cancer incidence rates declined from 1987 to 1999 in males, while they have stabilized for the last 25 years in females. Overall, bladder cancer incidence is nearly four times higher in men than in women, and 1.5 times higher in whites than in African Americans.

Deaths: An estimated 12,500 deaths will occur in 2003. Mortality rates have continued to decrease since the 1970s among African Americans, while rates have stabilized since the late 1980s among whites.

Signs and symptoms: Blood in the urine; usually associated with increased frequency of urination.

Risk factors: Smoking is the greatest risk factor for bladder cancer. Smokers experience twice the risk of nonsmokers. Smoking is estimated to be responsible for about 48% of bladder cancer deaths among men and 28% among women. People living in urban areas and workers in dye, rubber, or leather industries also have a higher risk.

Early detection: Bladder cancer is diagnosed by examination of cells in the urine and examination of the bladder wall with a cystoscope, a slender tube fitted with a lens and light that can be inserted through the urethra.

Treatment: Surgery, alone or in combination with other treatments, is used in more than 90% of cases. Superficial, localized cancers may also be treated by administering immunotherapy or chemotherapy directly into the bladder. Chemotherapy alone or with radiation before cystectomy (bladder removal) has improved some treatment results.

Survival: When diagnosed at a localized stage, the 5-year relative survival rate is 94%; 74% of cancers are detected this early. For regional and distant stages, 5-year relative survival rates are 48% and 6%, respectively. Beyond five years, survival continues to decline, with 76% of patients surviving 10 years after diagnosis, and 66% surviving 15 years.

Uterine Cervix

New cases: An estimated 12,200 cases of invasive cervical cancer are expected to be diagnosed in 2003. Incidence rates have decreased steadily over the past several decades. In 1995-1999, the incidence rate in African American women (13.6 per 100,000) was higher than the rate in white women (8.1 per 100,000). As Pap screening has become more prevalent, pre-invasive lesions of the cervix are detected far more frequently than invasive cancer.

Deaths: An estimated 4,100 cervical cancer deaths in 2003. Mortality rates have also declined sharply over the past several decades.

Signs and symptoms: Symptoms usually do not appear until abnormal cervical cells become cancerous and invade nearby tissue. When this happens, the most common symptom is abnormal vaginal bleeding. Bleeding may start and stop between regular menstrual periods, or it may occur after sexual intercourse, douching, or a pelvic exam. Menstrual bleeding may last longer and be heavier than usual. Bleeding after menopause also may be a symptom of cervical cancer. Increased vaginal discharge is another symptom of cervical cancer.

Risk factors: Cervical cancer risk is closely linked to sexual behavior and to sexually transmitted infections with certain types of human papilloma virus. Women who have sex at an early age, many sexual partners, or have partners who have had many sexual partners are at higher risk of developing the disease. Cigarette smoking increases cervical cancer risk.

Early detection: The Pap test is a simple procedure that can be performed by a health care professional as part of a pelvic exam. A small sample of cells is collected from the cervix, transferred to a slide, and examined under a microscope. Screening should begin about three years after a woman begins having sexual intercourse, but no later than age 21. Screening should be done annually with regular Pap tests or every two years using liquid-based tests. For women age 30 and over who have had three tests in a row with normal findings, the Pap test may be performed every 2-3 years. However, doctors may suggest a woman get screened more often if she has certain risk factors, such as HIV infection or a weak immune system. Most women age 70 and older who

have had several recent normal Pap tests, and most women who have had a total hysterectomy, do not need to continue screening.

Treatment: For preinvasive lesions, changes in the cervix may be treated by electrocoagulation (the destruction of tissue through intense heat by electric current), cryotherapy (the destruction of cells by extreme cold), or laser ablation, or by local surgery. Invasive cervical cancers generally are treated by surgery or radiation, or both, as well as chemotherapy in some cases.

Survival: Survival for patients with preinvasive lesions is nearly 100%. Eighty-nine percent of cervical cancer patients survive 1 year after diagnosis, and 71% survive 5 years. When detected at an early stage, invasive cervical cancer is one of the most successfully treatable cancers with a 5-year relative survival rate of 92% for localized cancers. Whites are more likely than African Americans to have their cancers diagnosed at this early stage. Fifty-six percent of invasive cervical cancers among white women and 46% of cancers among African American women are diagnosed at a localized stage.

Uterine Corpus (Endometrium)

New cases: An estimated 40,100 cases of cancer of the uterine corpus (body of the uterus), usually of the endometrium or lining of the uterus, are expected to be diagnosed in 2003. After declining between the mid-1970s and 1980s, incidence rates of endometrial cancer increased by about 0.6% per year from 1988 to 1999. Incidence rates are higher among white women (26.0 per 100,000) than African Americans (17.7 per 100,000) and every other racial/ethnic group.

Deaths: An estimated 6,800 deaths in 2003. Although incidence rates are higher among white women than African American women, the relationship is reversed for mortality rates. African American women have mortality rates that are nearly twice as high as rates among white women (7.0 per 100,000 compared to 3.9 per 100,000).

Signs and symptoms: Abnormal uterine bleeding or spotting is a frequent early sign. Pain and systemic symptoms are late symptoms.

Risk factors: High cumulative exposure to estrogen is the major risk factor for endometrial cancer, the most common type of cancer of the uterine corpus. Factors that increase estrogen exposure include estrogen replacement therapy, tamoxifen, early menarche, late menopause, never having children, a history of failure to ovulate, and obesity. Progesterone plus estrogen replacement therapy (called hormone replacement therapy, or HRT) is believed to largely offset the increased risk related to HRT using only estrogen. Research has not implicated estrogen exposures in the development of the other types of uterine corpus cancer, which are more aggressive and have a poorer prognosis. Other risk factors for uterine corpus cancer include infertility and hereditary nonpolyposis colon cancer (HNPCC). Pregnancy and the use of oral contraceptives appear to provide protection against endometrial cancer.

Early detection: Most endometrial cancer is diagnosed at an early stage because of post-menopausal bleeding. All women are encouraged to report any unexpected bleeding or spotting to their physicians. Annual screening for endometrial cancer with endometrial biopsy beginning at age 35 should be offered to women with or at risk for HNPCC.

Treatment: Uterine corpus cancers are usually treated with surgery, radiation, hormones, and/or chemotherapy, depending on the stage of disease.

Survival: The 1-year relative survival rate for endometrial cancer is 93%. The 5-year relative survival rate is 96%, 64%, and 26%, if the cancer is diagnosed at local, regional, and distant stages, respectively. Relative survival rates for whites exceed those for African Americans by about 15 percentage points at every stage.

Special Section: Smoking Cessation

The devastating effects of tobacco use on the health and welfare of modern society are now widely recognized.[1, 2] In the United States, cigarette smoking alone causes approximately 30% of cancer deaths and a total of 440,000 premature deaths annually, most from lung and other cancers, ischemic heart disease, stroke, and chronic obstructive lung disease.[3] An estimated $157 billion in annual health-related economic losses are also attributable to smoking.[3]

Less well recognized is that two parallel strategies can effectively prevent much of the current and future epidemic of death from tobacco use. First, long-term success in ending the epidemic depends on reducing the uptake of smoking and other forms of tobacco use among adolescents through a variety of policy measures that are proving effective in states such as California, Massachusetts, Oregon, Arizona, and Florida.[2, 4] Second, in the short term and for the 46.5 million Americans who are already addicted to tobacco, immediate efforts are needed to increase cessation and to help smokers quit at an earlier age. Many of the detrimental effects of smoking can be prevented or reversed by quitting smoking. Successful treatment of tobacco dependence has been proven to increase cessation rates and can, if widely implemented, substantially reduce tobacco-attributable deaths during the first half of the 21st century. To accomplish this and to meet the American Cancer Society's 2015 goals,[5] vigorous support for tobacco cessation is critical.

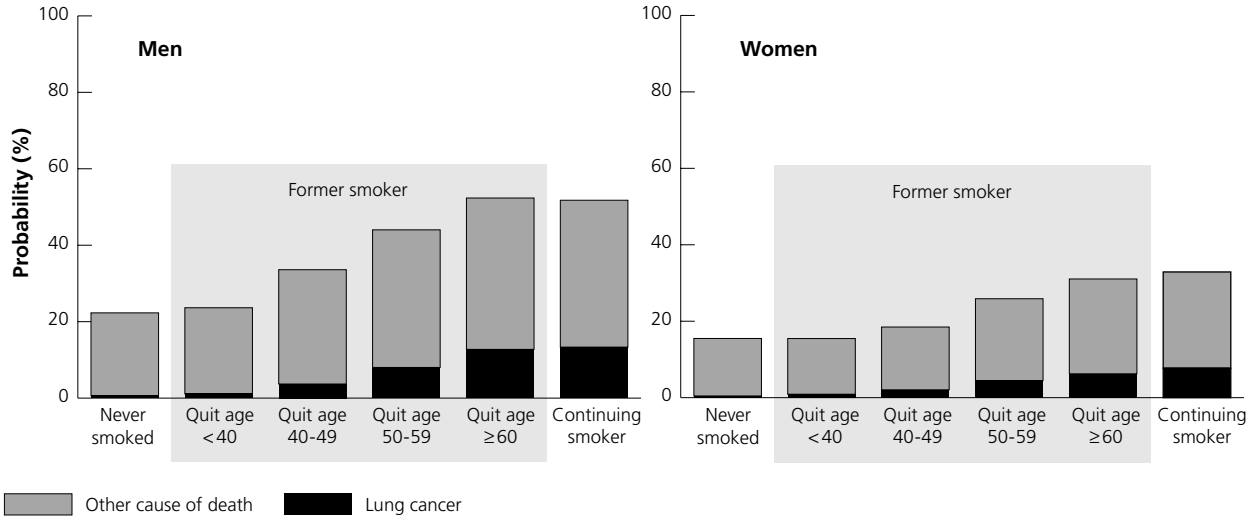
This special section discusses advances in our understanding of tobacco dependence and treatment and current information on smoking cessation in the US. It presents various strategies and suggests policies that, if acted on appropriately, have the potential to increase smoking cessation rates and to prevent millions of premature deaths from smoking. Its purpose is to stimulate concerted action on the part of individuals, clinicians, health care delivery systems, employers, and policy makers, and to urge the integration of cost-effective treatment of tobacco dependence into standard medical practice.

Reasons to Quit Smoking

Individuals vary in the importance they place on different benefits from quitting smoking or ending their dependence on other forms of tobacco. Motivating factors[6] include:

- Escaping the high cost of addiction ($1,800-$3,000 annually, assuming a pack-a-day habit)
- Ending the embarrassment of being dependent
- Living long enough to achieve certain ambitions and lifetime milestones
- Avoiding abandonment of one's spouse and family because of premature death
- Providing a positive example for children and others

Figure 1. Probability of Dying Between Ages 35 and 69 by Smoking Status and Age at Quitting



Note: CPS-II probabilities adjusted to 1990 US mortality. Lung cancer probabilities affected by other causes of death.

- Reducing the fear of the diseases caused by smoking
- Eliminating tobacco exposure of the fetus during pregnancy and of babies during early infancy

Cessation Lengthens Life

People who quit smoking live longer than those who continue to smoke. Figure 1 compares the probability of dying from lung cancer or other causes during middle age (between 35 to 69 years of age) in current cigarette smokers, in former smokers who quit smoking at various ages, and in persons who have never smoked. More than one-third (38%) of men who continue to smoke will die during middle age compared with 22% of never smokers and 23% of former smokers who quit before age 40. A similar difference in the risk of death in middle age is seen when comparing women who currently smoke (25%) to those who have never smoked or quit before age 40 (15%). (See Figure 1, page 21.)

People who stop smoking at younger ages experience the greatest health benefits from cessation; those who quit by age 35 avoid 90% of the risk attributable to tobacco.[7] However, even smokers who quit after age 50 substantially reduce their risk of premature death. The argument that it is too late to quit smoking because the damage is already done is untrue.

Quitting Is Difficult

For most tobacco users, addiction to tobacco is a true drug dependence, comparable in severity to the dependence caused by opiates, amphetamines, and cocaine.[8] Furthermore, tobacco dependence is a chronic, relapsing condition that warrants repeated clinical intervention, just as other addictive disorders do. Only about 5% of smokers who had smoked every day or some days were able to quit and maintain abstinence for 3-12 months.[9] Consequently, repeated attempts, multiple approaches, and ongoing support are essential to achieving and maintaining abstinence.

Cessation Is Possible

An estimated 44.3 million adults (24.7 million men and 19.7 million women) in the United States were former smokers in 2000.[9] In 2000, 48.8% of US adults who ever smoked cigarettes had stopped smoking. Historically, the percentage of former smokers has been lower among blacks (37.3%), Hispanics (42.9%), persons aged 18 to 24 years (22.4%) and aged 25 to 44 years (34.8%), and those with less education, e.g., a GED diploma, (33.6%) than among whites, persons who are older, and those who have higher educational status (Table 1).

Figure 2 (page 23) illustrates that the so-called "quit ratio" (percentage of ever smokers who have quit) has increased since 1965, especially among more educated smokers, and in persons aged 45 years and older. The quit ratio has historically been lower in women than in men, and in African Americans than in whites and Hispanics. However, as shown in Figure 2-B, the quit ratios in women and men have converged over time, so that about half of all persons who ever smoked regularly are now former smokers. Although these data indicate that quitting is possible, they also reveal that many smokers quit at older ages when the benefits are smaller. Further, it illustrates that cessation trends continue to lag among African Americans and those who are less educated.

Table 1. Percentage of Ever Smokers* Who Quit – National Health Interview Survey, United States, 2000

Characteristic	Percent
Total	48.8
Sex	
Male	50.0
Female	47.3
Race/ethnicity	
White, non-Hispanic	51.0
Black, non-Hispanic	37.3
Hispanic	42.9
American Indian/Alaska Native†	40.9
Asian†‡	44.7
Age groups	
18-24	22.4
25-44	34.8
45-64	55.6
65 or greater	80.1
Education	
0-12 years (no diploma)	47.1
High school equivalency test (GED)	33.6
12 years (diploma)	46.4
Associate degree	53.7
Some college	52.1
Undergraduate degree	64.0
Graduate degree	74.4

*Smoked >=100 cigarettes during their lifetime.

†Estimates may be imprecise due to small sample size.

‡Does not include Native Hawaiians and other Pacific Islanders.

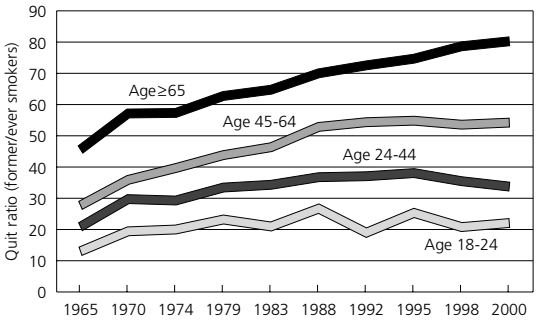
Source: Data from National Health Interview Survey, 2000, National Center for Health Statistics, Centers for Disease Control and Prevention.[9]

Cessation Is Cost Effective

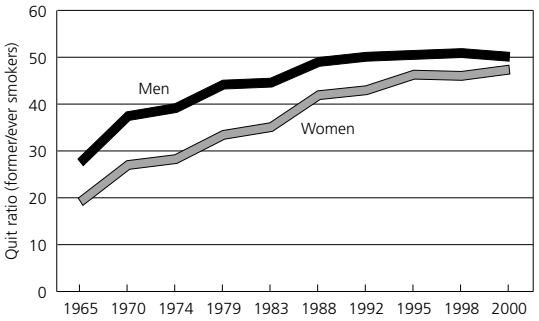
Smoking cessation programs provide large health benefits at a relatively low cost and are cost effective at the population level.[10] An analysis of the cost effectiveness of implementing the 1996 Agency for Health Care Policy and Clinical Practice Guideline for Cessation[8] revealed that cost per quality-adjusted-life-year saved ranged from $1,108-$4,542.[11] The cost is substantially less than the $61,744 for annual mammography for women aged 40-49 years and $23,335 for hypertension screening in 40-year-old men.[11] These calculations do not take into account the higher costs of medical care and hospitalization among smokers compared to nonsmokers. It has been estimated that the savings that result from reduced health care costs would more than pay for effective cessation interventions within three to four years.[12, 13] Moreover, studies of cost effectiveness tell us that the "cost per quitter" for the most successful interventions (intensive counseling, with nicotine gum) are less than the "cost per quitter" of minimal interventions. Thus, growing evidence suggests that employer-sponsored and government-funded health plan coverage of counseling and pharmacotherapy to help patients quit smoking is beneficial from a cost, as well as a health, perspective.[12, 13]

Figure 2. Smoking Quit Ratios,* National Health Interview Survey, US

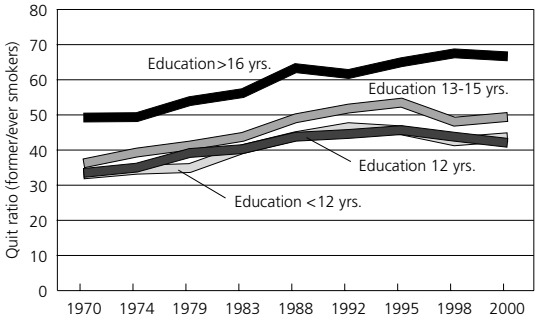
A. By Age and Year



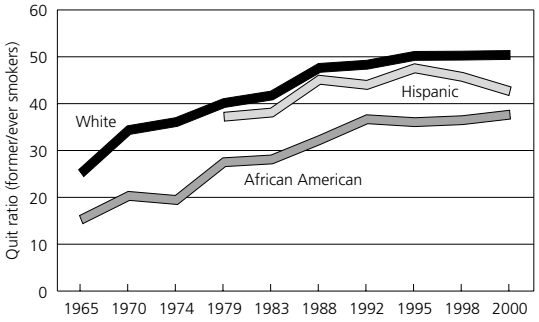
B. By Gender and Year



C. By Education Level and Year



D. By Race/Ethnicity and Year



*"Quit ratio" equals former smokers as a percentage of ever smokers.

Effective Treatments for Tobacco Dependence

Physician intervention: Even brief counseling by a primary care physician or other health care professional during the course of a regular medical encounter can effectively encourage smokers to quit.[14] Health care provider counseling may be as simple as advising a smoker to quit, or as complex as using computers to tailor the intervention to the individual smoker. The essential features of individual smoking cessation advice by health care providers are known as the 5 A's:

The "5 A's" for Provider Intervention in Smoking Cessation[8]

Ask about tobacco use	Identify and document tobacco use status for every patient at every visit.
Advise to quit	In a clear, strong, and personalized manner, urge every tobacco user to quit.
Assess willingness to make a quit attempt	During the visit, determine whether the tobacco user is willing to make a quit attempt this time.
Assist in quit attempt	For the patient willing to make a quit attempt, use counseling and pharmacotherapy to help them.
Arrange follow up	Schedule follow-up contact, preferably within the first week after the quit date.

Table 2. Recommended Therapies for Smoking Cessation

Therapy	Duration	Approx. Cost per Day (in 2000)	Estimated Abstinence Proportion* (95% C.I.†)
First line (FDA approved)			
Bupropion (Zyban®): A non-nicotine based antidepresessant, this drug can help reduce nicotine withdrawal symptoms and the urge to smoke. Some common side effects are dry mouth, difficulty sleeping, dizziness, and skin rash. Contraindicated if smoker has a history of seizures. *Availability:* Prescription only with a doctor consultation	7-12 weeks; maintenance up to 6 months Start 1-2 weeks before the quit date	$3.33	30.5 (23.2, 37.8)
Nicotine gum: This chewing gum releases nicotine into the bloodstream through the lining of the mouth, but it might not be appropriate for people with temporomandibular joint disease or for those with dentures or other dental work. Up to 2 mg dose if less than 25 cigarettes/day; 4 mg dose if >= 25 cigarettes/day *Availability:* Over the counter (OTC)	Up to 12 weeks	$6.25 for 10 (2-mg pieces); $6.87 for 10 (4-mg pieces)	23.7 (20.6, 26.7)
Nicotine inhaler: This device delivers a vaporized form of nicotine to the mouth through a mouthpiece attached to a plastic cartridge. Most of the nicotine travels to the mouth and throat, where it is absorbed through the mucous membranes. Common side effects include throat and mouth irritation and coughing. Anyone with bronchial problems should use with caution. *Availability:* Prescription only with a doctor consultation	Up to 6 months	$10.94 for 10 cartridges	22.8 (16.4, 29.2)
Nicotine nasal spray: The spray comes in a pump bottle containing nicotine that tobacco users can inhale when they have an urge to smoke. This product is not recommended for people with nasal or sinus conditions, allergies, or asthma, nor is it recommended for young tobacco users. *Availability:* Prescription only with a doctor consultation	3-6 months	$5.40 for 12 doses	30.5 (21.8, 39.2)
Nicotine patch: Patch supplies a steady amount of nicotine to the body through the skin, and it is sold in varying strengths as an 8-week smoking cessation treatment. Nicotine doses can be regularly lowered as the treatment progresses or given as a steady dose during treatment. The nicotine patch may not be a good choice for people with skin problems or allergies to adhesive tape. *Availability:* Either OTC or by prescription with a doctor consultation	4 weeks; then 2 weeks; then 2 weeks 8 weeks	$4.22 $4.51	17.7 (16.0, 19.5)
Second line (not FDA approved)			
Clonidine: Evidence suggests that clonidine is capable of improving smoking cessation rates. Although it may reduce craving for cigarettes after cessation, it does not consistently ameliorate other withdrawal symptoms. Side effects such as drowsiness, dizziness, or dry mouth may occur. *Availability:* Prescription only for both the patch and oral formulation	3-10 weeks	$0.24 for 0.2 mg (oral formulation); $3.50 for a patch	25.6 (17.7, 33.6)
Nortriptyline: Evidence suggests that this drug is effective in smoking cessation. However, this form of antidepressant may produce a number of side effects, including drowsiness and dry mouth. *Availability*: Prescription only with a doctor consultation	12 weeks	$0.74 for 75 mg	30.1 (18.1, 41.6)

*The estimated abstinence proportion was derived from a statistical meta-analysis of published studies. All these studies had at least five months of follow-up after the quit attempts and included a placebo group.

†Confidence Interval (C.I.): A range of possible values for the estimated proportion. A 95% CI will contain the true value 95 out of 100 samples surveyed. A 95% CI is commonly reported.

Sources: This table contains brief descriptions and was adapted from published medical articles.[8] Prices were based on retail prices at a national chain pharmacy located in Madison, Wisconsin, April 2000.

Physician counseling motivates individual smokers to consider the adverse effects of smoking and to become receptive to change. Most smokers cannot stop without more intensive help. Persons for whom physician counseling is most important in motivating cessation are heavy smokers who are at the greatest risk of smoking-related diseases.

Because over 70% of smokers visit a physician each year, clinicians have repeated opportunities to influence their patients' tobacco dependence.[15] However, many health care providers neglect these opportunities. Data from the 2000 National Health Interview Survey show that only 33% of all adults who talked to a doctor or health care professional within the previous year were asked if they smoked or used tobacco. Of current smokers or those who have quit smoking within the past 12 months, 51% were advised to quit smoking or encouraged to remain abstinent by their health care providers. Of those smokers who would like to quit and who have visited a health care provider within the past year, 58% were counseled on smoking cessation. Thus, low rates of appropriate tobacco cessation counseling by clinicians and other health care professionals are a continuing problem in primary health care. A Healthy People 2010 objective calls for increasing to 85% the proportion of primary care providers who counsel at-risk patients about tobacco cessation, physical activity, and cancer screening.[16] Achieving this goal will require the further education of individual clinicians on effective treatment methods and dedication to tobacco dependence treatment.[17] It will also require the commitment of health care administrators, insurers, and purchasers to institutionalize effective tobacco dependence treatment and a continued emphasis by medical organizations on improving effective tobacco dependence practices. (See the Role of the Health Care Delivery System in Smoking Cessation, next column.)

Drug therapy: The treatment of tobacco dependence involves both effective pharmacological interventions and community/behavioral support. Although patients often relapse and require repeated interventions, effective treatments can produce long-term abstinence. All patients attempting to quit should be encouraged to use effective pharmacotherapies except in the presence of specific contraindications.[8] There are five first-line, FDA-approved drug therapies for tobacco dependence: sustained-release bupropion hydrochloride (Zyban®), nicotine gum, nicotine inhaler, nicotine nasal spray, and nicotine patch (see Table 2). The evidence is strong and consistent that pharmacologic treatments for smoking cessation can help people to quit smoking.[8, 18] Second-line treatments for smoking cessation, such as clonidine hydrochloride and nortriptyline hydrochloride, are recommended,[8] but have not yet been approved by the FDA for this purpose.[8, 13]

Table 3. Percent of Current and Former US Adult Smokers* Using Recommended Cessation Methods

	Current Smokers (%)*	Former Smokers (%)*
Followed recommended therapy (drug therapy and/or counseling)	15.1	6.8
Quit "cold turkey" or slowly decreased amount smoked	82.4	91.4
Other	2.5	2.1

*Weighted percents are age-adjusted; data for the analyses were derived from the National Health Interview Survey, 2000, National Center for Health Statistics, Centers for Disease Control and Prevention.

Counseling: Counseling and behavioral therapies that are especially effective in treating tobacco dependence include practical counseling in problem-solving skills and social support. Counseling can be provided by telephone and in individual or group settings. Behavioral counseling therapies achieve long-term abstinence in 12%-18% of smokers in a single quit attempt.[19]

Despite the availability of effective drug and behavioral therapies to facilitate smoking cessation, recent data show that these are substantially underutilized. Only 15% of current smokers and 6.8% of former smokers report using any of these recommended therapies at their last quit attempt. The majority of persons who attempt to quit smoking cite "will power" alone to decrease the number of cigarettes smoked, or they quit "cold turkey" (see Table 3). In addition, it appears that many smokers trying to quit by using over-the-counter cessation aids (i.e., nicotine patches and gums) are not using these products appropriately. This makes successful quitting more difficult.[20]

The Role of the Health Care Delivery System in Smoking Cessation

There is increasing evidence that the success of treatment for tobacco dependence depends upon coordinated efforts by the health care system[21] and not just on the individual efforts of doctors or patients. Recently, the US Surgeon General released recommendations for systems change to health care administrators, insurers,

managed-care organizations, and purchasers. These recommendations include the following six strategies:[22]

- Every clinic should implement a tobacco-user identification system.
- All health care systems should provide education, resources, and feedback to promote provider interventions.
- Clinics should dedicate staff to provide tobacco dependence treatment and assess the delivery of this treatment in staff performance evaluations.
- Hospitals should promote policies that support and provide tobacco dependence services.
- Insurers and managed care organizations (MCOs) should include tobacco dependence treatment (both counseling and pharmacotherapy) as paid or covered services for all subscribers or members of health insurance packages.
- Insurers and MCOs should reimburse clinicians and specialists for delivery of effective tobacco dependence treatment and include these interventions among the defined duties of clinicians.

The Role of Employers in Smoking Cessation

The two most effective measures that employers can adopt to encourage smoking cessation are to restrict or ban smoking in the workplace,[23] and to provide help to employees who want to quit. Recent survey data indicate that 69% of US workers employed indoors outside the home had smoke-free workplaces.[24] While smoke-free workplaces protect nonsmokers, they also create environments that encourage smokers to cut back or quit.[23, 25] Studies show that employees in workplaces with smoking bans have higher rates of smoking cessation than employees in worksites where smoking is permitted.[26] It is estimated that if all workplaces became smoke-free, the per-capita consumption of cigarettes across the United States would decrease by 4.5% per year.[23]

Employers can also support smoking cessation efforts by providing access to information and worksite cessation programs on- or off-site. Employers could provide flexible work hours so that an employee who smokes could participate in ongoing worksite cessation programs. Further, employers could ensure that tobacco dependence treatments are a covered benefit in their sponsored health plans. Growing evidence suggests that health promotion programs (including worksite cessation programs) can improve a firm's profitability by reducing health care costs, absenteeism, and other personnel costs.[27]

Policy Issues and the Role of State Comprehensive Tobacco Control Programs

Reducing the toll of tobacco-related diseases is an important and feasible goal for the nation. The efforts of state and federal policy makers can facilitate action by health care providers, employers, and clinicians. A recent report from the Task Force on Community Preventive Services, an independent, nonfederal expert group, identified several measures that can be taken by communities and by health care systems to increase the number of tobacco users who attempt to quit and/or increase the success rates of individual cessation attempts.[28]

Recommendations at the community level are to:

- Increase the tobacco excise tax. Raising tobacco excise taxes increases government revenues while decreasing tobacco consumption. A cigarette price increase of 10% decreases overall tobacco consumption by approximately 4%. The decrease in consumption is significantly higher among youth and people with low incomes.
- Institute and sustain mass media campaigns combined with other interventions such as cessation. Effective counter-advertising and public education campaigns reduce initiation of smoking by adolescents and increase the motivation of addicted smokers to quit.

Recommendations at the health care systems level are to:

- Provide screening and counseling for tobacco cessation by health care professionals. Clinicians and other health care professionals should be reimbursed for providing screening and counseling for tobacco dependence treatment, just as they are reimbursed for treating other chronic conditions.
- Ensure access to pharmacological and counseling treatment of tobacco dependence in both public and private health care systems. Despite evidence of their effectiveness, formal treatment programs are used by relatively few smokers, and relapse rates are high. Barriers that discourage the use of such treatment

programs should be removed. Community-based resources such as centralized telephone quitlines and worksite cessation programs can increase access to effective treatment programs.

- Reduce patients' out-of-pocket costs for cessation. Private and public health plans could reduce financial barriers to tobacco cessation by removing copayments and covering the cost of treatment.

Tobacco control experts recognize that comprehensive tobacco control programs are needed to implement these measures effectively and to maximize their potential benefit to health. Already, many communities and some states recognize the debilitating economic and health consequences of tobacco use. California, Massachusetts, Arizona, and Oregon have each allocated funding and have developed successful comprehensive tobacco control programs. Tobacco is a public health hazard. More comprehensive tobacco control programs should be funded, and existing programs should be expanded in many more communities and states if we are to make progress toward achieving national public health goals in the 21st century.

For more information:

- American Cancer Society – 800-ACS (227)-2345
  www.cancer.org
- Center for Tobacco Cessation – 202-585-3200
  www.ctcinfo.org
- American Lung Association – 800-586-4872
  www.lungusa.org
- Agency for Healthcare Research and Quality – 301-594-1364
  www.ahrq.gov
- Centers for Disease Control and Prevention Office of Smoking and Health – 800-232-1311
  www.cdc.gov/tobacco
- National Cancer Institute – 800-422-6237
  www.cancer.gov
- Office of the Surgeon General –
  www.surgeongeneral.gov/tobacco/default.htm
- Office of the Surgeon General Tobacco Cessation Guidelines –
  www.surgeongeneral.gov/sgoffice.htm
- Department of Health and Human Services –
  www.healthfinder.gov

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Cancer in Racial and Ethnic Minorities

Overall, African Americans are more likely to develop and die from cancer than persons of any other racial and ethnic group. During 1992-1999, the average annual incidence rate for all cancer sites was 526.6 per 100,000 persons among African Americans, 480.4 per 100,000 for whites, 348.6 per 100,000 for Asian/Pacific Islanders, 329.6 per 100,000 in Hispanics, and 244.6 per 100,000 in American Indians/Alaska Natives. The death rate for all cancers combined is also about 30% higher in African Americans than white Americans. The average annual death rate (per 100,000) for all cancers combined from 1992-1999 was 267.3 for African Americans, 205.1 among whites, 129.2 among Hispanics, and 128.6 among both American Indians/Alaska Natives and Asian/Pacific Islanders.

Despite these high rates, mortality from all cancers combined decreased more among African American men than among other racial and ethnic groups between 1992-1999. During these same years, cancer incidence rates for men and women combined decreased by 1.6% per year among Hispanics, by 1.3% among African Americans, and by 0.9% among whites, while remaining relatively stable among American Indians/Alaska Natives and Asian/Pacific Islanders. Similarly, the death rate for all cancer sites decreased annually by 1.2% among African Americans, Asian/Pacific Islanders, and Hispanics, 0.9% among whites, and leveled off among American Indians/Alaska Natives.

Incidence and Mortality Rates* by Site, Race, and Ethnicity, US, 1992-1999

Incidence	White	African American	Asian/ Pacific Islander	American Indian/ Alaskan Native	Hispanic†
All Sites					
Males	568.2	703.6	408.9	277.7	393.1
Females	424.4	404.8	306.5	224.2	290.5
Total	480.4	526.6	348.6	244.6	329.6
Breast (female)	137.0	120.7	93.4	59.4	82.6
Colon & rectum					
Males	64.4	70.7	58.7	40.7	43.9
Females	46.1	55.8	39.5	30.8	29.7
Total	53.9	61.9	47.9	35.2	35.7
Lung & bronchus					
Males	82.9	124.1	63.8	51.4	44.1
Females	51.1	53.2	28.5	23.3	22.8
Total	64.3	82.6	44.0	35.4	31.5
Prostate	172.9	275.3	107.2	60.7	127.6

Mortality	White	African American	Asian/ Pacific Islander	American Indian/ Alaskan Native	Hispanic†
All Sites					
Males	258.1	369.0	160.6	154.5	163.7
Females	171.2	204.5	104.4	110.4	105.7
Total	205.1	267.3	128.6	128.6	129.2
Breast (female)	29.3	37.3	13.1	14.8	17.5
Colon & rectum					
Males	26.7	34.8	16.5	14.6	16.6
Females	18.4	25.4	11.6	11.3	10.6
Total	21.9	29.1	13.7	12.8	13.2
Lung & bronchus					
Males	81.7	113.0	42.3	49.3	38.2
Females	41.1	39.6	19.3	24.9	13.8
Total	57.9	68.9	29.3	35.5	24.1
Prostate	32.9	75.1	15.1	18.8	22.6

*Per 100,000, age-adjusted to the 2000 US standard population. Incidence rates obtained from SEER registries covering 10%-15% of the US population. Mortality data are from all states.

†Hispanics are not mutually exclusive from whites, African Americans, Asian/Pacific Islanders, and American Indian/Alaskan Natives.

Source: Surveillance, Epidemiology, and End Results Program, 1973-99, Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD, 2002.

American Cancer Society, Surveillance Research, 2003

The International Fight Against Cancer

The heart of the American Cancer Society's mission is to wipe out cancer. Because cancer knows no boundaries, this mission extends around the world. Better prevention, early detection, and treatment options, as well as improved immunization plans and sanitation, have helped some nations to lower incidence and death rates of cancers, such as cervix and stomach. Yet these and other cancers are still a problem in developing countries, and many other factors also contribute to an increasing overall cancer burden. For instance, Western lifestyle behaviors are becoming more common – including tobacco smoking, diets high in fat and low in fruits and

Cancer Around the World, 2000, Death Rates* per 100,000 Population for 45 Countries

	All Sites		Oral Cavity		Colon & Rectum		Breast	Prostate
Country	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Female**	**Male**
United States	161.8 (22)	116.4 (10)	1.8 (34)	0.8 (17)	15.9 (27)	12.0 (20)	21.2 (12)	17.9 (18)
Australia	150.9 (28)	103.2 (25)	2.2 (27)	0.9 (10)	20.1 (12)	14.4 (12)	19.7 (18)	18.0 (17)
Austria	168.6 (20)	113.8 (12)	3.7 (15)	0.8 (18)	23.0 (8)	14.9 (10)	23.3 (9)	18.9 (12)
Azerbaijan	114.2 (41)	61.8 (45)	1.3 (41)	0.5 (42)	6.4 (40)	4.8 (42)	8.8 (43)	4.3 (43)
Bulgaria	150.3 (29)	89.4 (35)	2.9 (21)	0.5 (43)	17.8 (20)	12.0 (21)	16.7 (31)	9.0 (34)
Canada	160.5 (23)	116.7 (9)	2.3 (25)	0.8 (19)	16.4 (26)	11.6 (23)	22.7 (10)	17.1 (21)
Chile	141.2 (34)	108.7 (18)	1.1 (45)	0.4 (45)	7.0 (39)	7.1 (37)	12.7 (37)	19.9 (9)
China	143.3 (33)	76.9 (43)	2.2 (28)	1.0 (6)	7.2 (38)	5.3 (41)	4.5 (45)	1.0 (45)
Colombia	116.1 (40)	106.5 (19)	1.4 (39)	1.0 (7)	5.8 (41)	6.1 (39)	10.6 (40)	15.1 (27)
Croatia	230.1 (2)	105.4 (21)	7.2 (3)	0.8 (20)	24.8 (6)	13.0 (16)	19.9 (17)	15.3 (25)
Cuba	141.0 (35)	104.0 (23)	4.0 (12)	1.6 (1)	11.4 (32)	12.4 (18)	15.6 (35)	22.1 (5)
Czech Republic	222.2 (3)	127.6 (6)	4.4 (9)	0.8 (21)	34.2 (1)	18.5 (3)	21.0 (13)	15.7 (23)
Denmark	184.9 (14)	144.0 (2)	3.0 (20)	1.2 (3)	23.8 (7)	18.5 (4)	29.2 (1)	23.1 (4)
Estonia	201.5 (9)	104.8 (22)	5.3 (5)	1.0 (8)	16.7 (24)	12.0 (22)	19.3 (19)	15.3 (26)
Finland	145.8 (32)	92.5 (32)	1.7 (36)	0.9 (11)	12.5 (30)	9.5 (32)	17.9 (26)	19.1 (11)
France	201.5 (10)	98.0 (30)	4.4 (10)	0.8 (22)	18.3 (17)	12.1 (19)	21.4 (11)	19.2 (10)
Germany	176.6 (16)	116.9 (8)	3.2 (19)	0.8 (23)	21.7 (11)	17.0 (6)	23.7 (8)	18.4 (15)
Greece	149.5 (31)	81.8 (42)	1.5 (37)	0.5 (44)	8.4 (37)	6.7 (38)	16.7 (32)	10.7 (33)
Hungary	272.3 (1)	147.4 (1)	10.9 (1)	1.6 (2)	33.5 (2)	20.9 (1)	25.3 (7)	17.9 (19)
Ireland	170.2 (19)	127.8 (5)	3.4 (17)	0.8 (24)	22.6 (9)	15.4 (8)	25.8 (6)	21.6 (6)
Israel	135.1 (38)	111.4 (15)	1.3 (42)	0.7 (33)	19.7 (13)	15.3 (9)	26.2 (4)	14.2 (30)
Japan	159.5 (24)	83.1 (41)	2.0 (33)	0.8 (25)	17.6 (21)	11.0 (28)	7.7 (44)	5.5 (40)
Kazakhstan	201.9 (8)	102.6 (27)	2.5 (22)	1.2 (4)	12.2 (31)	8.6 (33)	13.3 (36)	5.2 (41)
Kyrgyzstan	185.6 (13)	112.6 (14)	2.1 (31)	0.7 (34)	10.9 (35)	7.9 (35)	17.0 (29)	6.4 (39)
Latvia	196.7 (11)	102.8 (26)	4.8 (8)	0.7 (35)	17.9 (19)	13.3 (15)	18.1 (24)	13.0 (31)
Lithuania	195.9 (12)	97.0 (31)	5.0 (7)	0.8 (26)	18.0 (18)	10.7 (29)	19.0 (20)	15.6 (24)
Macedonia	140.1 (36)	85.5 (38)	2.1 (32)	0.7 (36)	11.2 (34)	7.8 (36)	17.2 (28)	6.8 (37)
Mauritius	79.6 (45)	66.3 (44)	2.2 (29)	0.7 (37)	5.8 (42)	3.9 (45)	9.2 (41)	7.3 (36)
Mexico	112.5 (42)	106.3 (20)	1.4 (40)	0.7 (38)	4.7 (44)	4.6 (43)	12.2 (38)	16.6 (22)
Netherlands	182.0 (15)	120.0 (7)	1.5 (38)	0.8 (27)	19.0 (14)	14.0 (13)	27.8 (2)	20.0 (8)
New Zealand	167.2 (21)	131.1 (3)	2.3 (26)	0.9 (12)	25.7 (4)	20.2 (2)	25.9 (5)	21.2 (7)
Norway	155.7 (27)	113.1 (13)	2.4 (24)	0.9 (13)	22.0 (10)	18.0 (5)	20.7 (14)	26.8 (3)
Poland	205.2 (6)	111.4 (16)	3.7 (16)	0.8 (28)	16.6 (25)	11.6 (24)	16.8 (30)	11.2 (32)
Portugal	157.1 (26)	89.1 (37)	3.9 (13)	0.6 (41)	18.5 (16)	11.3 (26)	18.4 (22)	17.9 (20)
Rep. of Moldova	157.8 (25)	89.4 (36)	6.7 (4)	0.8 (29)	15.8 (28)	10.6 (30)	18.5 (21)	5.0 (42)
Romania	150.0 (30)	90.0 (34)	4.2 (11)	0.9 (14)	11.4 (33)	8.2 (34)	16.2 (34)	8.3 (35)
Russian Fed.	211.2 (5)	100.6 (29)	5.3 (6)	0.8 (30)	17.5 (22)	12.7 (17)	16.7 (33)	6.8 (38)
Slovakia	217.8 (4)	108.8 (17)	9.5 (2)	1.0 (9)	28.0 (3)	16.1 (7)	18.4 (23)	14.3 (29)
Slovenia	203.1 (7)	115.9 (11)	3.4 (18)	0.7 (39)	25.1 (5)	14.6 (11)	20.3 (16)	18.8 (13)
Spain	176.1 (17)	85.0 (40)	3.9 (14)	0.8 (31)	17.3 (23)	11.1 (27)	18.1 (25)	15.0 (28)
Sweden	137.9 (37)	104.0 (24)	1.3 (43)	0.7 (40)	14.4 (29)	11.5 (25)	17.5 (27)	27.3 (2)
Trinidad & Tobago	103.5 (44)	101.9 (28)	2.5 (23)	1.1 (5)	8.5 (36)	9.7 (31)	20.6 (15)	32.3 (1)
Turkmenistan	117.7 (39)	85.2 (39)	2.2 (30)	0.9 (15)	4.7 (45)	4.1 (44)	9.2 (42)	1.8 (44)
United Kingdom	171.0 (18)	128.0 (4)	1.8 (35)	0.8 (32)	18.7 (15)	13.8 (14)	26.8 (3)	18.5 (14)
Venezuela	104.1 (43)	91.8 (33)	1.3 (44)	0.9 (16)	5.8 (43)	6.1 (40)	11.6 (39)	18.2 (16)

Note: Figures in parentheses are order of rank within site and sex group.

*Rates are age-adjusted to the World Health Organization world standard population.

vegetables, and lack of exercise – leading to increased risk for cancers of the lung and colon, among others. (See also Worldwide Tobacco Use, page 34.)

The Society collaborates with other cancer-related organizations worldwide in the global fight against cancer, especially in the developing world where survival rates are low and resources are limited. Our international mission includes:

- Capacity building with developing cancer societies
- Tobacco control
- Information exchange and delivery
- Conferences and knowledge-sharing
- Resource development and fundraising for international efforts

Cancer Around the World (continued)

Country	Lung & Bronchus		Uterus		Stomach		Leukemia	
	Male	Female	Cervix	Corpus	Male	Female	Male	Female
United States	53.2 (13)	27.2 (1)	3.3 (33)	2.0 (32)	4.5 (45)	2.3 (45)	6.6 (4)	4.2 (5)
Australia	36.2 (31)	14.0 (10)	2.4 (41)	1.6 (38)	6.1 (44)	3.0 (44)	5.7 (14)	3.8 (14)
Austria	41.8 (25)	10.8 (16)	4.7 (26)	2.8 (19)	14.1 (24)	8.6 (22)	5.0 (25)	3.6 (18)
Azerbaijan	25.5 (37)	4.5 (42)	1.9 (44)	3.9 (10)	24.7 (8)	10.5 (10)	4.0 (38)	2.7 (39)
Bulgaria	43.7 (22)	7.1 (32)	7.4 (15)	3.2 (14)	17.8 (20)	9.0 (20)	5.2 (21)	3.3 (24)
Canada	50.4 (14)	25.0 (3)	2.8 (39)	1.8 (35)	6.4 (43)	3.2 (43)	6.2 (8)	3.9 (8)
Chile	20.3 (40)	7.0 (33)	10.6 (8)	1.4 (40)	30.1 (5)	12.7 (7)	4.0 (39)	3.0 (37)
China	33.2 (32)	13.5 (11)	3.1 (35)	0.4 (44)	27.0 (6)	13.0 (6)	2.8 (44)	2.0 (44)
Colombia	17.0 (43)	8.5 (24)	13.7 (4)	3.5 (13)	26.4 (7)	16.4 (2)	4.7 (31)	3.9 (9)
Croatia	70.3 (3)	9.4 (20)	5.7 (21)	1.9 (34)	21.7 (14)	9.1 (19)	5.8 (12)	3.5 (20)
Cuba	42.8 (23)	15.6 (8)	10.6 (9)	4.0 (9)	8.4 (38)	4.3 (38)	4.8 (30)	3.6 (19)
Czech Republic	65.3 (5)	11.5 (14)	6.2 (20)	4.4 (4)	13.5 (25)	7.5 (24)	6.7 (3)	4.4 (3)
Denmark	50.0 (15)	26.7 (2)	4.1 (28)	2.4 (22)	7.5 (40)	3.6 (41)	5.8 (13)	3.9 (10)
Estonia	64.5 (6)	8.6 (23)	9.7 (10)	2.9 (17)	24.2 (11)	10.4 (11)	5.7 (15)	3.9 (11)
Finland	41.2 (26)	7.4 (28)	1.3 (45)	2.5 (21)	10.3 (30)	5.6 (31)	4.7 (32)	3.3 (25)
France	48.5 (19)	6.7 (35)	3.5 (32)	2.1 (30)	8.0 (39)	3.6 (42)	6.1 (9)	3.9 (12)
Germany	46.2 (20)	9.6 (18)	4.2 (27)	2.1 (31)	12.9 (27)	7.8 (23)	5.7 (16)	3.9 (13)
Greece	50.0 (16)	7.4 (29)	2.2 (42)	1.1 (43)	8.5 (37)	4.7 (36)	6.3 (6)	3.8 (15)
Hungary	86.2 (1)	20.0 (5)	7.7 (14)	4.1 (8)	21.0 (16)	10.1 (13)	7.6 (1)	4.9 (1)
Ireland	38.3 (30)	17.3 (7)	3.9 (29)	1.5 (39)	10.1 (31)	5.0 (34)	5.4 (19)	3.3 (26)
Israel	27.5 (36)	9.3 (21)	3.1 (36)	1.8 (36)	9.3 (35)	5.6 (32)	6.5 (5)	4.5 (2)
Japan	33.1 (33)	9.6 (19)	3.0 (37)	1.2 (42)	31.2 (4)	13.8 (4)	4.1 (36)	2.6 (41)
Kazakhstan	59.5 (9)	8.3 (25)	8.1 (12)	2.4 (23)	32.0 (3)	13.8 (5)	3.3 (43)	2.5 (42)
Kyrgyzstan	40.7 (27)	7.3 (30)	11.3 (6)	4.9 (2)	47.0 (1)	18.9 (1)	4.1 (37)	3.2 (30)
Latvia	59.1 (10)	6.3 (37)	6.6 (17)	4.3 (6)	24.4 (10)	10.4 (12)	6.0 (10)	4.0 (6)
Lithuania	56.5 (11)	5.5 (39)	8.8 (11)	3.9 (11)	24.5 (9)	9.5 (17)	5.7 (17)	3.8 (16)
Macedonia	39.8 (28)	6.6 (36)	6.3 (18)	3.0 (15)	21.9 (13)	9.5 (18)	4.3 (35)	2.7 (40)
Mauritius	16.7 (44)	4.2 (44)	13.6 (5)	0.2 (45)	10.6 (29)	5.7 (30)	3.4 (41)	2.0 (45)
Mexico	22.1 (39)	8.2 (26)	17.1 (1)	4.5 (3)	13.2 (26)	9.8 (15)	4.9 (27)	4.0 (7)
Netherlands	59.7 (8)	14.8 (9)	2.2 (43)	2.2 (26)	9.4 (34)	4.6 (37)	4.9 (28)	3.2 (31)
New Zealand	39.3 (29)	18.7 (6)	3.9 (30)	2.2 (27)	6.8 (42)	4.0 (39)	6.3 (7)	4.4 (4)
Norway	31.7 (34)	12.8 (12)	3.3 (34)	3.0 (16)	9.6 (33)	5.5 (33)	4.6 (33)	3.2 (32)
Poland	71.5 (2)	11.3 (15)	7.8 (13)	2.9 (18)	19.2 (19)	7.3 (25)	5.6 (18)	3.5 (21)
Portugal	29.5 (35)	4.8 (40)	4.8 (25)	2.3 (25)	22.2 (12)	10.9 (8)	5.1 (23)	3.4 (22)
Rep. of Moldova	42.1 (24)	6.2 (38)	7.0 (16)	2.2 (28)	20.4 (17)	9.0 (21)	5.2 (22)	3.3 (27)
Romania	45.1 (21)	7.3 (31)	10.9 (7)	2.2 (29)	17.6 (21)	7.0 (27)	4.5 (34)	3.0 (38)
Russian Fed.	68.2 (4)	6.8 (34)	5.2 (24)	2.6 (20)	35.6 (2)	15.2 (3)	5.0 (26)	3.4 (23)
Slovakia	60.7 (7)	7.8 (27)	5.4 (23)	5.2 (1)	16.9 (23)	7.3 (26)	7.1 (2)	3.7 (17)
Slovenia	55.3 (12)	10.1 (17)	5.6 (22)	4.4 (5)	20.2 (18)	9.6 (16)	5.9 (11)	3.2 (33)
Spain	49.4 (17)	4.2 (45)	2.7 (40)	2.4 (24)	12.6 (28)	6.2 (29)	5.4 (20)	3.2 (34)
Sweden	22.6 (38)	12.6 (13)	2.9 (38)	2.0 (33)	7.4 (41)	4.0 (40)	5.1 (24)	3.3 (28)
Trinidad & Tobago	13.2 (45)	4.3 (43)	15.0 (3)	4.3 (7)	8.7 (36)	6.9 (28)	3.4 (42)	3.1 (36)
Turkmenistan	18.9 (42)	4.6 (41)	6.3 (19)	1.4 (41)	21.1 (15)	10.8 (9)	2.6 (45)	2.4 (43)
United Kingdom	48.6 (18)	21.1 (4)	3.9 (31)	1.7 (37)	10.1 (32)	4.8 (35)	4.9 (29)	3.3 (29)
Venezuela	19.4 (41)	9.2 (22)	15.2 (2)	3.7 (12)	17.5 (22)	10.0 (14)	3.9 (40)	3.2 (35)

Source: GLOBOCAN 2000, Cancer Incidence, Mortality, and Prevalence Worldwide, Version 1.0.

American Cancer Society, Surveillance Research, 2003

Tobacco Use

Smoking is the most preventable cause of death. In 1995, two million people in developed countries died prematurely from smoking-related diseases.[1] Approximately half of all Americans who continue to smoke will die from their cigarette addiction.[1] In the United States, tobacco use was responsible for nearly one in five deaths or an estimated 440,000 deaths per year from 1995-1999.[2, 3] Smoking accounts for at least 30% of all cancer deaths and 87% of lung cancer deaths.[4, 5]

Lung cancer mortality rates are about 22 times higher for current male smokers and 12 times higher for current female smokers compared with lifelong never smokers.[5] Smoking is also associated with increased risk for cancers of the mouth, nasal cavities, pharynx, larynx, esophagus, stomach, pancreas, liver, uterine cervix, kidney, bladder, and myeloid leukemia. In addition to cancer, smoking is a major cause of heart disease, stroke, chronic bronchitis, and emphysema, and is associated with gastric ulcers.[5]

Trends in Smoking

- Cigarette smoking among adults aged 18 and over declined 40% between 1965 and 1990 – from 42% to 25%.[6] Smoking prevalence among adults decreased by an average of 1% per year from 1993 to 2000.[7]
- Between 1978 and 1995, cigarette smoking prevalence declined for whites (34% to 26%), African Americans (37% to 27%), Hispanics (30% to 19%), and Asian and Pacific Islanders (24% to 15%). Among American Indians and Alaska Natives, smoking prevalence did not change for men from 1983 to 1995 or for women from 1978 to 1995.[8]
- Although cigarette smoking became prevalent among men before women, the gender gap narrowed in the mid-1980s and has remained constant.[9]
- Between 1983 and 1999, smoking among college graduates decreased almost 50% from 21% to 11%, but among adults without a high school education the percentage decreased only 22% from 41% to 32%.[6]
- Per capita consumption of cigarettes continues to decline. After peaking at 4,345 cigarettes per capita in 1963, consumption among Americans 18 years and older decreased 53% to an estimated 2,037 cigarettes per capita in 2001.[10, 11]
- Current cigarette smoking among US high school students increased significantly from 28% in 1991 to a peak of 36% in 1997, and declined significantly to 29% in 2001. In addition, current frequent cigarette smoking among US high school students increased from 13% in 1991, peaked at 17% in 1997 and 1999, and declined significantly to 14% in 2001.[12]
- In 1997, nearly one-half (48%) of male students and more than one-third (36%) of female students reported using some form of tobacco – cigarettes, cigars, or smokeless tobacco – in the past month. The percentages declined to 39% for male students and to 30% for female students in 2001.[13, 14]

Profile of Smokers

Over 80% of adult smokers surveyed in 1991 had begun smoking by age 18. In addition, 35% had become daily smokers by age 18.[15] Among adults in 2000, national data showed:[7]

- An estimated 46.5 million US adults were current smokers.
- Men were more likely to smoke (26%) than women (21%).
- Cigarette smoking was highest among American Indians and Alaska Natives (36%) and lowest among Asians (14%).
- Adults with only a General Education Development (GED) diploma (47%) and high school dropouts (34%) have high percentages of cigarette smoking.

Among US high school students in 2001, national data showed:[14]

- Nearly one-fourth (22%) smoked a whole cigarette before age 13.
- Nearly two-thirds (64%) have ever tried cigarette smoking.
- White (32%) and Hispanic (27%) students were more likely to be current cigarette smokers (smoked at least one cigarette in the past month) than African American (15%) students.
- White (17%) students were more likely to smoke cigarettes frequently (on at least 20 of the 30 days preceding the survey) than Hispanic (7%) and African American (5%) students.

Among US middle school students in 2000, national data showed:[16]

- Eight percent smoked a whole cigarette before age 11.
- Fifteen percent reported using some form of tobacco – cigarettes, cigars, smokeless tobacco, pipes, bidis, or kreteks – in the past month.

- More than one-third (36%) have ever tried cigarette smoking.
- Eleven percent smoked cigarettes currently (smoked at least one cigarette in the past month).

Smokeless Tobacco

In 1986, the US Surgeon General concluded that the use of smokeless tobacco is not a safe substitute for smoking cigarettes or cigars, as these products cause various cancers and noncancerous oral conditions, and can lead to nicotine addiction.[17]

- Oral cancer occurs several times more frequently among snuff dippers compared with non-tobacco users.[17]
- The risk of cancer of the cheek and gums may increase nearly 50-fold among long-term snuff users.[17]
- According to the US Department of Agriculture, US output of moist snuff has risen over 40% in the past decade from 48 million pounds in 1991 to an estimated 68 million pounds in 2001.[11]
- Among adults aged 18 and older, national data showed 6% of men and 1% of women were current users of chewing tobacco or snuff. Among men, American Indians and Alaska Natives (8%) and whites (7%) were more likely to use smokeless tobacco than African Americans (3%), Hispanics (2%), and Asian and Pacific Islanders (1%).[8]
- Nationwide, 15% of US male high school students currently used chewing tobacco, snuff, or dip in 2001. White male students (19%) were more likely to use smokeless tobacco than Hispanic (6%) and African American (3%) male students.[14]
- Nationwide, 6% of US male middle school students currently used chewing tobacco, snuff, or dip in 2000.[16]

Cigars

The consumption of large cigars and cigarillos increased from 1993 to 1999. An estimated 3.8 billion large cigars and cigarillos were expected to be consumed in 2001. Small-cigar production increased from 1.5 billion pounds in 1997 to an estimated 2.4 billion pounds in 2001.[11]

- In 1998, the median percentage of adults aged 18 years and older who ever smoked cigars was 39%. More men than women had ever smoked cigars in all 50 states.[18]
- In 1998, the median percentage of adults aged 18 years and older who had smoked cigars in the past month was 5%. More men than women smoked cigars in the past month in all 50 states.[18]
- Nationwide, 15% of US high school students (grades 9 to 12) had smoked cigars, cigarillos, or little cigars on at least one of the past 30 days. Male students (22%) were more likely than female students (9%) to smoke cigars currently. White male students (24%) were significantly more likely than African American male students (16%) to report current cigar use.[14]
- Nationwide, 7% of US middle school students (grades 6 to 8) had smoked cigars on at least one of the past 30 days. Male students (10%) were more likely than female students (5%) to smoke cigars currently.[16]

In 2001, seven major cigar manufacturers provided five health warnings that rotated on labels on cigars sold in the US. The companies agreed to the warnings in June 2000 to settle a lawsuit brought by the Federal Trade Commission for failure to warn consumers of the dangers of cigar smoking. Cigar smoking has health consequences and hazards similar to those of cigarettes and smokeless tobacco such as:[19]

- Cancer of the lung, oral cavity, larynx, esophagus, and probably cancer of the pancreas.
- Four to 10 times the risk of dying from laryngeal, oral, or esophageal cancers compared with nonsmokers.

Smoking Cessation

(See special section on pages 21-28.)

Secondhand Smoke

Secondhand smoke, or environmental tobacco smoke (ETS), contains numerous human carcinogens for which there is no safe level of exposure. Many scientific consensus groups reviewed the data on ETS, including a recent review by the International Agency for Research on Cancer (IARC) and the National Institute of Environmental Sciences' National Toxicology Program.[24] Public policies to protect people from secondhand smoke are based on the following detrimental effects of ETS in the US:

- Each year, about 3,000 nonsmoking adults die of lung cancer as a result of breathing secondhand smoke.[22]
- ETS causes an estimated 35,000 to 40,000 deaths from heart disease in people who are not current smokers.[25]
- ETS causes coughing, phlegm, chest discomfort, and reduced lung function in nonsmokers.[22]
- Each year, exposure to secondhand smoke causes 150,000 to 300,000 lower respiratory tract infections (such as pneumonia and bronchitis) in US infants and children younger than 18 months of age. These infections result in 7,500 to 15,000 hospitalizations every year.[22]

- Secondhand smoke increases the number of asthma attacks and the severity of asthma in about 200,000 to 1 million asthmatic children.[22]
- Secondhand smoke contains over 4,000 substances, more than 40 of which are known or suspected to cause cancer in humans and animals and many of which are strong irritants.[22]

Worldwide Tobacco Use

While the prevalence of smoking has been slowly declining in the United States and most other high-income countries over the past 20 years, smoking prevalence rates have been steadily rising in developing nations.

- Smoking prevalence rates are increasing in developing nations at a rate of about 3.4% per year.[26]
- Smoking prevalence rates among men in developing countries are about 50%; rates among women are substantially lower but increasing.
- Based on current patterns, smoking-related diseases will kill about 500 million of the world's 1.2 billion smokers alive today.[27]
- If current trends continue, tobacco-caused deaths are expected to increase from about 4 million per year today to about 10 million per year by 2030, with 70% of these additional deaths occurring in developing nations. By 2030, tobacco's annual death toll will be higher than the combined mortality due to malaria, pneumonia, tuberculosis, and diarrheal diseases.
- In China, for example, where approximately two-thirds of the male population smokes, tobacco currently kills 800,000 people per year and will eventually kill 100 million of the 300 million Chinese males now aged 0-29.[28]
- Today, about 8% of women in developing countries and 15% of women in developed countries smoke. It is predicted that by 2025 both figures will rise to 20%, with a global total of 532 million female smokers.[29]
- The first Global Youth Tobacco Survey (GYTS) found that among youth aged 13 to 15, current tobacco use prevalence ranged from 3.3% to 62.8%. Nearly 25% of youths who smoke reported smoking their first cigarette before age 10.[30]

To curtail the global tobacco pandemic, World Health Organization (WHO) member states have been negotiating since 1999 to promulgate the first global public health treaty, the Framework Convention on Tobacco Control (FCTC). The convention, to be adopted by May 2003, promises to address vital issues such as tobacco advertising and promotion, agricultural diversification, cigarette smuggling, and tobacco taxation.[31]

Costs of Tobacco in the US

The number of people who prematurely die or suffer illness from tobacco use results in substantial health-related economic costs to society. During 1995 to 1999, adult male and female smokers lost an average of 13.2 and 14.5 years of life, respectively, due to smoking.[3] In addition:[3]

- Smoking causes approximately $157.7 billion in annual health-related economic costs, including adult mortality-related productivity costs, adult medical expenditures, and neonatal medical expenditures.
- Mortality-related productivity losses in the US amounted to $81.9 billion annually during 1995 to 1999, or $1,760 in lost productivity per adult smoker in 1999.
- Smoking-related medical costs totaled $75.5 billion in 1998 and accounted for 8% of personal health care medical expenditures. This translates to $1,623 in excess medical expenditures per adult smoker in 1999.
- Smoking-attributable neonatal costs were $366 million in 1996, or $704 per maternal smoker.
- From 1995 to 1999, the total economic costs per smoker per year were $3,391.
- For each pack of cigarettes sold in 1999, $3.45 was spent on medical care due to smoking, with $3.73 in productivity losses, for a total cost of $7.18 per pack.
- The impact of cigarette smoking on state Medicaid and Medicare budgets varied among states in 1993, ranging from $1.9 billion in New York to $11.4 million in Wyoming for Medicaid, and $1.5 billion in California to $8 million in Alaska for Medicare.[32, 33]

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Nutrition and Physical Activity

Scientific evidence suggests that about one-third of the cancer deaths that occur in the US each year are due to nutrition and physical activity factors, including obesity. For the majority of Americans who do not use tobacco, dietary choices and physical activity are the most important modifiable determinants of cancer risk.

Evidence also indicates that although inherited genes do influence cancer risk, heredity alone explains only a fraction of all cancers. Most of the variation in cancer risk across populations cannot currently be explained by inherited factors; behavioral factors such as cigarette smoking, certain dietary patterns, and physical activity can substantially affect one's risk of developing cancer. These factors modify the risk of cancer at all stages of its development.

The American Cancer Society reviewed the scientific evidence and updated its nutrition and physical activity guidelines in 2001. Changes from the Society's 1996 guidelines include increased emphasis on the role of physical activity and weight control in reducing cancer risk and the addition of a physical activity recommendation for youth due to increasing trends in overweight and obesity in this age group. Because healthful individual behaviors are most likely to occur when there is social and environmental support in communities, these 2001 guidelines include for the first time an explicit *Recommendation for Community Action* to facilitate healthful food choices and opportunities for physical activity in schools, worksites, and communities.

The Society's recommendations are consistent in principle with the 2000 Dietary Guidelines for Americans, and recommendations of other agencies for general health promotion and for the prevention of coronary heart disease, diabetes, and other diet-related chronic conditions. Although no diet can guarantee full protection against any disease, the Society believes that the following recommendations offer the best nutrition and physical activity information currently available to help Americans reduce their risk of cancer.

Recommendations for Individual Choices

1. Eat a variety of healthful foods, with an emphasis on plant sources.

- Eat five or more servings of vegetables and fruit each day.
- Choose whole grains in preference to processed (refined) grains and sugar.
- Limit consumption of red meats, especially high-fat and processed meats.
- Choose foods that help maintain a healthful weight.

There is strong scientific evidence that healthy dietary patterns, in combination with regular physical activity, are needed to maintain a healthy body weight and to reduce cancer risk. Many epidemiologic studies have shown that populations that eat diets high in vegetables and fruit and low in animal fat, meat, and/or calories have reduced risk of some of the most common cancers. The scientific study of nutrition and cancer is highly complex, and many important questions remain unanswered. It is not presently clear how single nutrients, combinations of nutrients, overnutrition and energy imbalance, or the amount and distribution of body fat at particular stages of life affect one's risk of specific cancers. Until more is known about the specific components of diet that influence cancer risk, the best advice is to emphasize whole foods and the consumption of a mostly plant-based diet.

2. Adopt a physically active lifestyle.

- **Adults:** Engage in at least moderate activity for 30 minutes or more 5 or more days of the week; 45 minutes or more of moderate to vigorous activity 5 or more days per week may further enhance reductions in the risk of breast and colon cancer.
- **Children and adolescents:** Engage in at least 60 minutes per day of moderate to vigorous physical activity at least 5 days per week.

Scientific evidence indicates that physical activity may reduce the risk of certain cancers as well as provide other important health benefits. Regular physical activity contributes to the maintenance of a healthy body weight by balancing caloric intake with energy expenditure. Other mechanisms by which physical activity may help to prevent certain cancers may involve both direct and indirect effects. For colon cancer,

physical activity accelerates the movement of food through the intestine, thereby reducing the length of time that the bowel lining is exposed to potential carcinogens. For breast cancer, vigorous physical activity may decrease the exposure of breast tissue to circulating estrogen. Physical activity may also affect cancers of the colon, breast, and other sites by increasing metabolism and reducing circulating concentrations of insulin and related growth factors. Physical activity helps to prevent Type II diabetes, which is associated with increased risk of cancers of the colon, pancreas, and possibly other sites. The benefits of physical activity go far beyond reducing the risk of cancer. They include reducing the risk of heart disease, high blood pressure, diabetes, falls, osteoporosis, stress, and depression.

3. Maintain a healthful weight throughout life.

- Balance caloric intake with physical activity.
- Lose weight if currently overweight or obese.

Overweight and obesity are associated with increased risk for cancers at several sites: breast (among postmenopausal women), colon, endometrium, adenocarcinoma of the esophagus, and kidney. The best way to achieve a healthful body weight is to balance energy intake (food intake) with energy expended (physical activity). Excess body fat can be reduced by restricting caloric intake and increasing physical activity. Caloric intake can be reduced by decreasing the sizes of food portions and limiting the intake of calorie-dense foods (e.g., those high in fat and refined sugars such as fried foods, cookies, cakes, candy, ice cream, and soft drinks). Such foods should be replaced with more healthful vegetables and fruit, whole grains, and beans. Because overweight in youth tends to continue throughout life, the increasing prevalence of overweight and obesity in pre-adolescents and adolescents may increase incidence of cancer in the future. For these reasons, efforts to establish a healthful weight and healthful patterns of weight gain should begin in childhood.

4. If you drink alcoholic beverages, limit consumption.

People who drink alcohol should limit their intake to no more than 2 drinks per day for men and 1 drink a day for women. Alcohol consumption is an established cause of cancers of the mouth, pharynx, larynx, esophagus, liver, and breast. For each of these cancers, risk increases substantially with intake of more than 2 drinks per day. Alcohol consumption combined with tobacco use increases the risk of cancers of the mouth, larynx, and esophagus far more than the independent effect of either drinking or smoking. Regular consumption of even a few drinks per week has been associated with an increased risk of breast cancer in women. The mechanism for an effect of alcohol on breast cancer is not known with certainty, but may be due to alcohol-induced increases in circulating estrogens or other hormones in the blood, reduction of folic acid levels, or to a direct effect of alcohol or its metabolites on breast tissue.

Some groups of people should not drink alcoholic beverages at all. These include children and adolescents; individuals of any age who cannot restrict their drinking to moderate levels; women who are or may become pregnant; individuals who plan to drive or operate machinery or who take part in other activities that require attention, skill, or coordination; and individuals taking prescriptions or over-the-counter medications that can interact with alcohol.

Recommendation for Community Action

Public, private, and community organizations should work to create social and physical environments that support the adoption and maintenance of healthful nutrition and physical activity behaviors.

- Increase access to healthy foods in schools, worksites, and communities.
- Provide safe, enjoyable, and accessible environments for physical activity in schools, and for transportation and recreation in communities.

The American Cancer Society guidelines relate to individual choices regarding diet and physical activity patterns, but those choices occur within a community context that either facilitates or interferes with healthy behaviors. Therefore, this key recommendation for community action accompanies the four guidelines for individual choices for nutrition and physical activity to reduce cancer risk. This recommendation for community action underscores the importance of community measures to support healthy behaviors by increasing access to healthful food choices and opportunities to be physically active.

Environmental Cancer Risks

Environmental factors, defined broadly to include smoking, diet, and infectious diseases as well as chemicals and radiation, cause an estimated three-quarters of all cancer deaths in the United States. Among these factors, tobacco use, obesity, and physical inactivity have a greater effect on individual cancer risk than do trace levels of pollutants in food, drinking water, and air. However, the degree of risk from pollutants depends on the concentration, intensity, and duration of exposure. Substantial increases in risk have been shown in settings where workers have been exposed to high concentrations of ionizing radiation, certain chemicals, metals, and other substances, as well as from radiation accidents, nuclear bombs, and patients treated with drugs or therapies later found to be carcinogenic.

Even low-dose exposures that pose only a small risk to individuals can still cause substantial ill health across an entire population if the exposures are widespread. For example, secondhand tobacco smoke increases risk in large numbers of people who do not smoke but are exposed to others' smoke. Strong regulatory control and attention to safe occupational practices, drug testing, and consumer product safety play an important role in reducing risk of cancer from environmental exposures. Additional information on environmental factors associated with cancer risks can be found at several Web sites, including www.atsdr.cdc.gov, www.epa.gov, www.niehs.nih.gov, www.osha.gov, and www.who.int.

Risk Assessment

Risk assessment evaluates both the cancer-causing potential of a substance as well as the levels of the substance in the environment and the extent to which people are actually exposed. However, the process is not perfect. For most potential carcinogens, data are only available from high-dose experiments in animals or highly exposed occupational groups. To use such information to set human safety standards, regulators must extrapolate from animals to humans and from high-dose to low-dose conditions. Because both extrapolations involve much uncertainty, as does the effect of mixtures of chemicals and of especially susceptible subgroups of the population, risk assessment generally makes conservative assumptions to err on the side of safety. For cancer safety standards, acceptable risks are usually limited to those that increase risk by no more than one case per million persons over a lifetime.

Safety standards developed in this way for chemical or radiation exposures are the basis for federal regulatory activities at the Food and Drug Administration, the Environmental Protection Agency, and the Occupational Safety and Health Administration. The application of laws and procedures by which standards are implemented and risks are controlled is called risk management.

Chemicals

Various chemicals (for example, benzene, asbestos, vinyl chloride, arsenic, aflatoxin) show definite evidence of causing cancer in humans; others are considered probable human carcinogens based on evidence from animal experiments (for example, chloroform, dichlorodiphenyl-trichloroethane [DDT], formaldehyde, polychlorinated biphenyls [PCBs], polycyclic aromatic hydrocarbons). Often in the past, direct evidence of human carcinogenicity has come from studies of workplace conditions involving sustained, high-dose exposures. For some exposures (asbestos and radon), the risks are greatly increased when combined with tobacco smoking.

Radiation

The only types of radiation proven to cause human cancer are high-frequency ionizing radiation (IR) and ultraviolet (UV) radiation. Exposure to sunlight (UV radiation) causes almost all cases of basal and squamous cell skin cancer and is a major cause of skin melanoma. Disruption of the earth's ozone layer by pollution (the "ozone hole") may cause rising levels of UV radiation.

Evidence that high-dose IR (x-rays, radon, etc.) causes cancer comes from studies of atomic bomb survivors, patients receiving radiotherapy, and certain occupational groups, such as uranium miners. Virtually any part of the body can be affected by IR, but especially bone marrow and the thyroid gland. Diagnostic medical and dental x-rays are set at the lowest dose levels possible to minimize risk without losing image quality and medical usefulness. Radon exposures in homes can increase lung cancer risk, and cigarette smoking greatly increases the effect of radon exposure on lung cancer risk. Fortunately, there are tests which can be used to detect high levels of radon. Remedial actions may be needed if radon levels are too high.

Unproven Risks

Public concern about cancer risks in the environment often focuses on unproven risks or on situations in

which known carcinogen exposures are at such low levels that risks are negligible, for example:

Pesticides. Many kinds of pesticides (insecticides, herbicides, etc.) are widely used in agriculture in the production of the food supply. High doses of some of these chemicals have been shown to cause cancer in animals, but the very low concentrations found in some foods have not been associated with increased cancer risk. In fact, people who eat more fruits and vegetables, which may be contaminated with trace amounts of pesticides, generally have lower cancer risks than people who eat few fruits and vegetables. Workers exposed to higher levels of pesticides, in industry or farming, may be at higher risk of certain cancers. Environmental pollution by pesticides such as DDT, which is now banned but was used in agriculture in the past, degrade slowly and can lead to accumulation in body fat. These residues have been suggested as a possible risk factor for breast cancer, although study results have been largely negative.

Continued research regarding pesticide use is essential for maximum food safety, improved food production through alternative pest control methods, and reduced pollution of the environment. In the meantime, pesticides play a major role in sustaining our food supply. When properly controlled, the minimal risks they pose are greatly overshadowed by the health benefits of a diverse diet rich in foods from plant sources.

Non-ionizing radiation. Electromagnetic radiation at frequencies below ionizing and ultraviolet levels has not been proven to cause cancer. Some studies suggest an association with cancer, but most of the now-extensive research in this area does not. Low-frequency radiation includes radiowaves, microwaves, and radar, as well as power frequency radiation arising from the electric and magnetic fields associated with electric currents, cellular phones, and household appliances.

Toxic wastes. Toxic wastes in dump sites can threaten human health through air, water, and soil pollution. Many toxic chemicals contained in such wastes can be carcinogenic at high doses, but most community exposures appear to involve very low or negligible dose levels. Clean-up of existing dump sites and close control of toxic materials in the future are essential to ensure healthy living conditions.

Nuclear power plants. Ionizing radiation emissions from nuclear facilities are closely controlled and involve negligible levels of exposure for communities near the plants. Reports about cancer case clusters in such communities have raised public concern, but studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere.

The American Cancer Society

In 1913, 10 physicians and five laymen founded the American Society for the Control of Cancer. Its stated purpose was to disseminate knowledge about the symptoms, treatment, and prevention of cancer; to investigate conditions under which cancer was found; and to compile statistics about cancer. Later renamed the American Cancer Society, Inc., the organization now includes more than three million friends and volunteers working to conquer cancer.

Organization: The American Cancer Society, Inc., consists of a National Society with 17 chartered Divisions throughout the country, and a local presence in most communities.

The National Society: A National Assembly provides basic representation from the Divisions and additional representation on the basis of population. The Assembly approves the charters for the 17 Divisions, approves the Society's strategic plan, and elects a volunteer Board of Directors. The Board of Directors sets strategic goals for the Society, ensures management accountability, and provides stewardship of donated funds. The National Society is responsible for overall planning and coordination of the Society's programs for cancer information delivery, cancer control and prevention, advocacy, and resource development. The National Society also provides technical help and materials for Divisions and local offices and administers its research program.

The Divisions: These are governed by Division Boards of Directors comprised of both medical and lay volunteers throughout the US and Puerto Rico. The Society's

17 Divisions are responsible for program delivery in their regions.

Local offices: Local offices are organized to deliver cancer control programs at the community level. Descriptions of some of the Society's major programs follow.

Advocacy and Public Policy

Every day legislators make decisions that impact the lives of millions of Americans who have been touched by cancer. Laws and policies can fund cancer research, ensure access to care, offer screening and treatment to the medically underserved, and reduce suffering from tobacco-related illnesses. Advocacy can exponentially expand the Society's ability to fulfill its goals by ensuring lawmakers at every level of government adopt policies, laws, and regulations that will help people fight cancer.

Advocacy Priorities

Together with its research, education, service, and cancer control initiatives, the Society strives to advocate for and strengthen our nation's laws and regulations in a way that will:

- Increase investments for cancer research, prevention, early detection, and care.
- Increase access to quality cancer care, screening, prevention, and awareness efforts.
- Reduce health disparities among minorities and the medically underserved.
- Reduce and prevent suffering from tobacco-related illnesses.

As the largest source of cancer research and application funding, the federal government provides billions of dollars for research, prevention, and early detection. But additional investments are needed to reach the next level of medical breakthroughs against cancer. A majority of Americans want the government to help marshal the resources dedicated to broadening our scientific knowledge and increasing our nation's capacity to prevent and treat this disease. At the same time, we need policy makers to support efforts that ensure that research advancements reach the public. Federal funding is the foundation for the bridge between the lab room and the patient's room. The Society believes that urging legislators to fund research and its application moves our nation that much closer to our ultimate goal – defeating cancer.

Expanded access to quality cancer care, screening, early detection, prevention, and awareness programs can be achieved through advocacy. Local, state, and federal government leaders must help remove barriers that impede access to important cancer-fighting tools, such as early detection tests and clinical trials. Promoting policies that will improve the quality of life for people with cancer goes hand in hand with the Society's commitment to these issues.

Reducing health disparities among minorities and the medically underserved is critical to reducing overall incidence and mortality. People who are poor, lack health insurance, have lower levels of education, or are members of racial or ethnic minorities are more likely to develop and die of cancer. Advocacy efforts can help improve these statistics by urging the government to raise awareness levels and better educate these communities about cancer. Laws and policies that provide greater access to cancer care for these groups can be implemented. Support for creative interventions, more research, and culturally appropriate outreach are also needed to reach and serve these populations.

Tobacco is responsible for nearly one-third of all cancer deaths. Federal, state, and local governments have a role to play in helping the Society reduce the nation's enormous tobacco-related cancer burden. Steps must be taken to help tobacco users quit and to keep children from using these deadly products, for example, through increased tobacco taxes, a proven means of reducing tobacco use, especially among youth. Policies that ensure all employees work in a smoke-free environment must be implemented. Effective local, state, and federal tobacco control programs must be sufficiently funded. Furthermore, the Society also believes the Food and Drug Administration (FDA) must be empowered with meaningful regulatory authority over tobacco products to ensure that tobacco is treated the same way as all other legal products.

Advocacy Successes

American Cancer Society advocacy initiatives rely on the combined efforts of a community-based grassroots network of cancer survivors and caregivers, Society volunteers and staff, health care professionals, public health organizations, and other collaborative partners. In the past year, the American Cancer Society, through its local, state, and federal efforts, has successfully influenced or supported policies, laws, and regulations that:

- Secured continued investments for cancer research at the National Institutes of Health (NIH) and the National Cancer Institute (NCI), and funding for the new NIH Center on Minority Health and Health Disparities.
- Improved our ability to apply research findings in cancer-related screening and early detection programs provided by the Centers for Disease Control and Prevention (CDC).
- Garnered significant bipartisan support in Congress for legislation that would help more Americans gain access to the full range of colorectal cancer screening tests.
- Enacted laws in 16 states and the District of Columbia ensuring health care coverage for the full range of colorectal cancer screening tests to people over 50 or at a high risk for the disease.
- Ensured that in 2003 more than 5.7 million more federal employees and their dependents will have coverage for the full range of colorectal cancer screening tools than in 2002.
- Guaranteed the inclusion of strong patient protections and access to clinical trials in the versions of the Patients' Bill of Rights passed by the House and the Senate, and passed access to clinical trials legislation in a total of 16 states.
- Secured passage of tobacco excise tax increases in 22 states.
- Developed and promoted landmark legislation to reduce barriers and expand access to ethnic minorities and medically underserved communities.
- Led the way toward introduction of two comprehensive, bipartisan cancer bills.
- Made major strides toward passage of meaningful FDA regulatory authority for tobacco products.

In addition, on September 18 and 19, 2002, 3,000 Relay Community Ambassadors from every state and Congressional district and thousands of other Society volunteers came to Washington, DC, for the first ever Relay for Life® Celebration on the Hill to celebrate cancer survivorship and advocate for laws that help people fight cancer.

Cancer Information

Providing the public with accurate, up-to-date information on cancer anytime, day or night, is a priority for the American Cancer Society. Through our toll-free cancer information service at 1-800-ACS-2345, trained specialists answer calls in both English and Spanish, 24 hours a day, seven days a week. At our Web site www.cancer.org, visitors can find the latest cancer news, links to community resources and events, and available books. Cancer questions can be emailed to this Web site and are answered promptly. An online community of fellow patients, survivors, and caregivers who understand and inspire is also available via the Cancer Survivors Network.℠

National Cancer Information Center – 1-800-ACS-2345

People facing cancer need clear, reliable information in order to understand their disease and make informed decisions about their health. Trained cancer information specialists are available 24 hours a day, seven days a week to answer questions about cancer, link callers with resources in their communities, and provide information on local events. Cancer information specialists answer calls in both English and Spanish, and callers who speak languages other than English and Spanish can also be assisted through the translation services provided. The National Cancer Information Center includes an email response center staffed by cancer information specialists who reply to questions and comments submitted through the Society's Web site.

American Cancer Society Web Site – www.cancer.org

The American Cancer Society's Web site is an important extension of the Society's mission to provide lifesaving information to the public. The user-friendly site includes an interactive cancer resource center containing in-depth information on every major cancer type. Information is also available in Spanish. Through the Web site, visitors can order American Cancer Society publications, gain access to daily cancer-related articles, and find additional online and offline resources. Other useful sections on the Web site include a directory of medical resources, links to other sites organized by cancer type or topic, resources for media representatives, and information on the Society's research grants program, advocacy efforts, and special events.

Publications

The Society publishes a large number of patient education brochures and pamphlets, consumer books, and professional books and journals for patients, families, and health care professionals. These include books on specific cancer types, psychosocial, quality-of-life and caregiving issues, and prevention; cookbooks; and

textbooks and other specialized cancer-related topics for health care professionals. The three clinical journals, *Cancer*, *Cancer Cytopathology*, and *CA-A Cancer Journal for Clinicians*, are also available. For more information, call 1-800-ACS-2345, or visit our online bookstore at www.cancer.org.

Community Cancer Control

Community cancer control encompasses activities at the local, state, regional, and national level which have a positive impact on the entire spectrum of prevention, early detection, effective treatment, survival, and quality of life related to cancer. Across the country, the Society seeks to fulfill its mission to save lives and diminish suffering from cancer through community-based programs aimed at reducing the risk of cancer, detecting cancer as early as possible, ensuring proper treatment, and empowering people facing cancer to cope with the disease and maintain the highest possible quality of life.

Prevention

Primary cancer prevention means taking the necessary precautions to prevent the occurrence of cancer in the first place. The Society's prevention programs focus primarily on tobacco control, the relationship between diet and physical activity and cancer, promoting coordinated school health, and reducing the risk of skin cancer. Programs are designed to help adults and children make health-enhancing decisions and act on them.

The Society has joined other health, education, and social service agencies to promote comprehensive school health education and National School Health Education Standards. Comprehensive school health education is a planned health education curriculum for pre-school to grade 12. The standards describe for schools, parents, and communities how to create an instructional program that will enable students to become healthy and capable of academic success.

The Society's school health education programs emphasize the importance of developing good health habits and can be an integral part of a comprehensive school health education curriculum.

Specific programs that the Society has developed to strengthen schools' ability to teach cancer prevention include conducting a National School Health Coordinator Leadership Institute, creation of a series of social marketing campaigns on the benefits of school health, and coordinating the development of a Healthy Kids Network of parents and community members in support of school health and cancer prevention.

The American Cancer Society works collaboratively with our national partners to implement comprehensive tobacco control programs. The Society advocates for social environmental change at the national, state, and community levels that prevents youth from starting to use tobacco and provides support for those who wish to stop smoking.

Tobacco control efforts include:

- Strong, meaningful FDA regulation of all tobacco products
- Reduction of tobacco advertising and promotion directed at youth
- Increased funding to support comprehensive tobacco control programs
- Reduction of environmental tobacco smoke exposure
- Support for coordinated school-based education programs
- Accessible cessation programs for those who wish to quit
- Tobacco tax increases to offset health care costs associated with tobacco use
- Support for a global partnership to reduce tobacco-related death and disease

The Society promotes its skin protection message through a variety of media and education activities, as well as through the 33 member organizations of the American Cancer Society Skin Protection Federation. This coalition includes nonprofit organizations, government agencies, and corporations that have a combined constituency of over 100 million adults and children. The purpose of the coalition is to accelerate promotion of the American Cancer Society's guidelines for skin cancer prevention, and to provide a forum for member organizations to share information and strategies that increase awareness about skin protection and encourage more people to adopt skin protection behaviors.

With possibly more than 60% of cancers preventable and due to lifestyle behaviors like smoking, sun exposure, and dietary habits that often begin in childhood, children and youth are an important audience for cancer prevention. The Society, together with the Centers for Disease Control and Prevention (CDC) and a host of other education, health, and social service agencies, has identified schools as a key system for impacting cancer prevention. By strengthening the 15,000 school districts in the US and helping them to deliver strong, coordinated school health programs and effective school

health education, the American Cancer Society has the ability to impact over 45 million school children.

Detection and Treatment

The Society also seeks, through the dissemination of its early cancer detection guidelines and its cancer detection and advocacy programs, to ensure that cancer is diagnosed at the earliest possible stage when there is the greatest chance of successful treatment. American Cancer Society guidelines for early cancer detection are reviewed annually to ensure that recommendations to the public and health care providers are based on the most current scientific evidence. Currently, the Society has early detection recommendations for cancers of the breast, cervix, colon and rectum, prostate, and endometrium, and general recommendations for a cancer-related checkup. (For more information, see Screening Guidelines, page 48.) The Society works in partnership with many public and private organizations in diverse settings to increase awareness about breast cancer and the importance of early detection, and to overcome the barriers to regular mammography use.

The Society, in partnership with the CDC, is leading a national initiative to increase colorectal cancer screening which is currently underutilized by adults. In addition to public outreach campaigns and initiatives targeting health care providers, the American Cancer Society and the CDC have established the National Colorectal Cancer Roundtable, bringing leading government agencies, professional and medical organizations, and advocacy and patient groups together to identify collective strategies and opportunities to increase screening for colorectal cancer. Working with the Ad Council, the premier nonprofit communications organization dedicated to stimulating action on public issues, the Society has been able to reach millions of people with the lifesaving colorectal cancer screening message: "Get the test. Get the polyp. Get the cure." Using a larger-than-life polyp character to grab attention, this campaign is designed to educate the public that screening tests can prevent this disease by removing polyps before they become cancerous.

The availability of genetic testing for inherited risk for cancer has raised a complex set of questions about the medical, psychosocial, ethical, legal, policy, and quality-of-life implications about the use of genetic information. The Society is working with other national organizations to address these issues through advocacy and educational initiatives.

As the delivery of health care continues to change, the Society is working with partners in all sectors of the health care system to ensure that all individuals are offered a full range of services to enable them to reduce their risk of getting cancer or to find their cancer at an early, treatable stage, and that persons with cancer receive the highest quality care.

Patient Services

The Society offers a range of practical and emotional support for patients, their families, their caregivers, and their community from the time of diagnosis throughout life.

Cancer Survivors Network℠: Created by and for cancer survivors and their families, this "virtual" community offers unique opportunities and accessibility to survivors, caregivers, and all those touched by cancer. It is a welcoming, safe place for people to find hope and inspiration from others who have "been there." Services include radio talk show conversation and interviews, individual stories, personal Web pages, discussion forums, an Expression Gallery, and more – available online at www.cancer.org or by phone at 1-877-333-4673 (HOPE).

I Can Cope®: Adult cancer patients and their loved ones learn ways to navigate the cancer experience while building their knowledge, coping skills, and positive attitude. In this series of educational classes, doctors and other health care professionals provide information, encouragement, and practical tips in a supportive environment.

Hope Lodge®: This home-like environment provides free, temporary sleeping accommodations for cancer patients undergoing treatment and their family members. It makes the cancer treatment process a little easier by providing a supportive environment and lifting the financial burden of an extended stay.

"tlc"™: A magazine and catalog in one, *"tlc"* supports women dealing with hair loss and other physical effects of cancer treatment. The magalog offers a wide variety of affordable products, such as wigs, hats, and prostheses, through the privacy and convenience of mail order.

Look Good...Feel Better: Through this service, women in active cancer treatment learn techniques to restore their self-image and cope with appearance-related side effects. Certified beauty professionals provide tips on makeup, skin care, nail care, and head coverings. This program is a partnership among the American Cancer Society, the Cosmetic, Toiletry, and Fragrance Association Foundation, and the National Cosmetology Association.

Road to Recovery℠: This service assists cancer patients and their families with transportation to and from treatment facilities. Volunteer drivers donate their time and resources to take patients to treatment appointments and return them to their homes.

Reach to Recovery®: Breast cancer survivors provide one-on-one support and information to help individuals cope with breast cancer. Specially trained survivors serve as volunteers, responding in person or by phone to the concerns of people facing breast cancer diagnosis, treatment, recurrence, or recovery.

Man to Man®: This comfortable, community-based setting for discussion and education provides men facing prostate cancer with support individually or in groups. Man to Man also offers men the opportunity to educate their communities about prostate cancer and advocate with lawmakers for stronger research and treatment policies.

Children's camps: In some areas, the Society sponsors camps for children who have, or have had, cancer. These camps are equipped to handle the special needs of children undergoing treatment.

Pain Control

Cancer pain management is a serious public health problem and a major priority for the Society. Approximately 50%-70% of people with cancer experience some degree of pain. Less than half of them get adequate relief from their pain, and this negatively affects their quality of life. Through service, collaboration, education, advocacy, and research, the Society is working aggressively to eliminate barriers to cancer-related pain relief across the survivorship continuum. Tools are being enhanced and expanded that educate the public, patients, families, and health care providers about the availability of treatments that effectively manage most cancer pain.

Research

The research program has three components: extramural grants that fund researchers at universities, research institutes, and cancer centers throughout the US; intramural epidemiology and surveillance research; and the intramural behavioral research center. The intramural programs are dedicated to research conducted by the Society's own in-house scientists. As the largest source of private, nonprofit cancer research funds in the US, the Society dedicated more than $130 million to research and health professional training in 2001, with less than 5% of that amount going toward the operating expenses of the research program. Since 1946, when the Society awarded its first research grants, we have invested almost $2.5 billion in research. The investment has paid rich dividends: the 5-year survival rate has almost tripled since 1946, and the new case rates and death rates from cancer have declined each year since 1990. Indeed, Society-supported researchers have contributed to most of the advances that, for the first time, make the conquest of cancer a feasible goal.

Extramural Grants

The American Cancer Society's extramural grants program supports the best research at more than 150 of the top US medical schools and universities across a wide range of health care disciplines critically important to the control of cancer. Grant applications solicited through a nationwide competition are subjected to a rigorous external peer review, ensuring that only the best research is funded, wherever it may be. The lion's share of our research budget is dedicated to funding investigators at the beginning of their research careers, a time when they are less likely to receive funding from the federal government. Strong emphasis is placed on research needs that are unmet by other funding organizations, such as our current targeted research area of cancer in the poor and underserved. The success of the Society's research program is exemplified by the fact that 32 Nobel Prize winners received grant support from the Society early in their careers.

Epidemiology and Surveillance Research

Intramural epidemiologic research at the American Cancer Society evaluates trends in cancer incidence and mortality, cancer risk factors, and cancer patient care, and Society epidemiologists study the causes and prevention of cancer in large prospective studies. In addition to *Cancer Facts & Figures*, the department provides descriptive cancer statistics in several other publications including *Cancer Statistics*, *Breast Cancer Facts & Figures*, and *Cancer Facts & Figures for African Americans*. Trends and patterns in cancer risk factors such as tobacco use, nutrition, and physical activity are presented in *Cancer Prevention & Early Detection Facts & Figures*. This publication serves as a resource for the Society's 17 regional Divisions to assess progress toward the Society's goals. For the past five years, the department has collaborated with the National Cancer Institute, the Centers for Disease Control and Prevention, including the National Center for Health Statistics, and the North American Association of

Central Cancer Registries to produce the annual Report to the Nation on progress related to cancer prevention and control in the United States. Internationally, the department collaborates with the World Health Organization to publish tobacco control country profiles, a monograph on tobacco consumption, production, and trade in 197 countries.

The department also analyzes patterns of cancer causation in large prospective studies. Three such studies have been undertaken over the past 50 years:

- Hammond-Horn (188,000 men studied from 1952-1955)
- Cancer Prevention Study I (1 million people studied from 1959-1972 in 25 states)
- Cancer Prevention Study II (CPS-II, a continuing study of 1.2 million people enrolled in 1982 by 77,000 volunteers in 50 states)

About 130 scientific publications based on CPS-II have examined the contribution of lifestyle (smoking, nutrition, weight, etc.), family history, illnesses, medications, and environmental exposures to various cancers. Mortality follow-up of all CPS-II cohort members continues. In addition, cancer incidence follow-up and periodic updating of exposure information occurs in the CPS-II Nutrition Cohort, a subgroup of 184,000 men and women.

In 1998, the CPS-II LifeLink Study obtained blood samples from approximately 40,000 surviving members of the CPS-II Nutrition Cohort residing in urban and suburban areas. An additional 67,000 buccal (check) cell samples were obtained, providing DNA specimens on over 100,000 cohort members. These blood and buccal cells samples are being stored in liquid nitrogen for future epidemiologic investigations, including the role of nutritional, hormonal, and genetic factors in the development of cancer and other diseases. Additional information about the Cancer Prevention Studies is available at www.cancer.org, including copies of questionnaires and publication citations.

Behavioral Research Center

The Behavioral Research Center was established in 1995 to conduct original behavioral and psychosocial cancer research, provide consultation to other parts of the Society, and facilitate the transfer of behavioral and psychosocial research and theory to improve cancer control policies. Among the ongoing research projects of the center are:

- An extensive nationwide, longitudinal study of adult cancer survivors to determine the unmet psychosocial needs of survivors and their caretakers, to identify factors that affect their quality of life, to evaluate programs intended to meet their needs, and to examine late effects, including second cancers.
- A cross-sectional national study of cancer survivors who are two, five, and 10 years from their initial diagnosis and treatment. This study will evaluate the psychological needs, adjustment, and quality of life of cancer survivors and provide information now on longer-term cancer survivors.
- Analysis of data from the health-related quality-of-life surveys conducted by the Department of Health and Human Services Centers for Medicare and Medicaid (formerly the Health Care Financing Administration, or HCFA). Data are being provided to the Behavioral Research Center to examine changes in quality of life of cancer survivors who receive Medicare-managed care.
- A study to test the Patient/Provider/System Theoretical Model (PPSTM) for cancer screening in primary care centers.
- A pilot study of cancer knowledge, attitudes, beliefs, and risk perceptions among African American college students.
- Research to investigate the ethnic disparity in physical activity from a theory of planned behavior perspective, with the objective of providing information needed to develop ethnic-specific exercise interventions to increase physical activity and help reduce cancer risk.
- Research to explore sedentary behavior patterns in an obese population. The objective is to identify key determinants of this population's behavior in order to increase their physical activity and reduce their cancer risk.
- A survey of researchers in the field of psycho-oncology about their current research interests and opinions.
- A study to examine prevalence rates of fruit and vegetable consumption, physical activity, and smoking in cancer survivors and their influence on quality of life.
- A study of the use of complementary therapies by breast and prostate cancer survivors, as well as a corresponding survey of physicians who treat cancer patients. The physicians' survey will explore physician-patient communications about complementary therapies.

Sources of Statistics

Cancer Deaths. The estimated numbers of US cancer deaths are calculated by fitting the numbers of cancer deaths for 1979 through 2000 to a statistical model which forecasts the numbers of deaths that are expected to occur in 2003. The estimated numbers of cancer deaths for each state are calculated similarly, using state level data. For both the US and state estimates, data on the numbers of deaths are obtained from the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention.

We discourage the use of our estimates to track year-to-year changes in cancer deaths because the numbers can vary considerably from year to year, particularly for less common cancers and for smaller states. Mortality rates reported by NCHS are generally more informative statistics to use when tracking cancer mortality trends.

Mortality Rates. Mortality rates or death rates are defined as the number of people per 100,000 dying of a disease during a given year. In this publication, mortality rates are based on counts of cancer deaths compiled by NCHS for 1930 through 1999 and population data from the US Bureau of the Census. Unless otherwise indicated, death rates in this publication are age-adjusted to the 2000 US standard population, to allow comparisons across populations with different age distributions. These rates should only be compared to other statistics that are age-adjusted to the US 2000 standard population.

New Cancer Cases. The estimated numbers of new US cancer cases are calculated by estimating the numbers of cancer cases that occurred each year from 1979 through 1999 and fitting these estimates to a statistical model which forecasts the numbers of cases that are expected to occur in 2003. Estimates of the numbers of cancer cases for 1979 through 1999 are used rather than actual case counts because case data are not available for all 50 states. The estimated numbers of cases for 1979 through 1999 are calculated using cancer incidence rates from the regions of the United States included in the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program and population data collected by the US Bureau of the Census.

State case estimates are calculated by apportioning the total US case estimates for 2003 by state, based on the state distribution of estimated cancer deaths for 2003.

Like the method used to calculate cancer deaths, the methods used to estimate new US and state cases for the upcoming year can produce numbers that vary considerably from year to year, particularly for less common cancers and for smaller states. For this reason, we discourage the use of our estimates to track year-to-year changes in cancer occurrence. Incidence rates reported by SEER are generally more informative statistics to use when tracking cancer incidence trends for the United States, and rates from state cancer registries are useful for tracking local trends.

Incidence Rates. Incidence rates are defined as the number of people per 100,000 who are diagnosed with cancers during a given time period. For this publication, incidence rates for the US were calculated using data on cancer cases collected by the SEER program and population data collected by the US Bureau of the Census. State incidence rates presented in this publication are published in the North American Association of Central Cancer Registries' publication *Cancer Incidence in North America, 1995-1999.* Incidence rates for the United States were originally published in *SEER Cancer Statistics Review, 1973-1999.* This source is preferred because it provides incidence data by race/ethnicity. Unless otherwise indicated, incidence rates in this publication are age-adjusted to the 2000 US standard population, to allow comparisons across populations that have different age distributions. Note that because of delay in reporting cancer cases to the National Cancer Institute (NCI), cancer incidence rates for the most recent diagnosis years may be underestimated. Cancers most affected by reporting delays are melanoma of the skin and prostate, which are frequently diagnosed in nonhospital settings.

Survival. Five-year relative survival rates are presented in this report for cancer patients diagnosed between 1992 and 1998, followed through 1999. Relative survival rates are used to adjust for normal life expectancy (and events such as death from heart disease, accidents, and diseases of old age). These rates are calculated by dividing observed 5-year survival rates for cancer patients by 5-year survival rates expected for people in the general population who are similar to the patient group with respect to age, sex, race, and calendar year of observation. All survival statistics presented in this publication were originally published in *SEER Cancer Statistics Review, 1973-1999.*

Probability of Developing Cancer. Probabilities of developing cancer are calculated using DevCan (Probability of Developing Cancer Software) developed by the National Cancer Institute. These probabilities reflect the average experience of people in the United States and do not take into account individual behaviors and risk factors. For example, the estimate of 1 man in 13 developing lung cancer in a lifetime underestimates the risk for smokers and overestimates risk for nonsmokers.

Additional Information. More information on the methods used to generate the statistics for this report can be found in the following publications:

A. For information on data collection methods used by the National Center for Health Statistics: National Center for Health Statistics. *Vital Statistics of the United States, 2000, Vol II, Mortality, Part A.* Washington, DC: Public Health Service 2000, or visit the NCHS Web site at www.cdc.gov/nchs.

B. For information on data collection methods used by the National Cancer Institute's Surveillance, Epidemiology and End Results Program: Ries LAG, Eisner MP, Kosary CL, et al. (eds). *SEER Cancer Statistic Review, 1973-1999*. National Cancer Institute. Bethesda, MD, 2002. Available at: http://seer.cancer.gov/csr/1973_1999/. Accessed October 24, 2002.

C. For information on the methods used to estimate the numbers of new cancer cases and deaths: Wingo PA, Landis S, Parker S, Bolden S, Heath CW. Using cancer registry and vital statistics data to estimate the number of new cancer cases and deaths in the United States for the upcoming year. *J Reg Management.* 1998;25(2):43-51.

D. For information on the methods used to calculate the probability of developing cancer: Feuer EJ, Wun L-M, Boring CC, et al. The lifetime risk of developing breast cancer. *J Natl Cancer Inst.* 1993; 85:892-897.

Age Adjustment to the Year 2000 Standard

Epidemiologists use a statistical method called "age-adjustment" to compare groups of people with different age compositions. This is especially important when examining cancer rates, since cancer is generally a disease of older people. For example, without adjusting for age, it would be inaccurate to compare the cancer rates of the state of Florida, which has a large elderly population, to that of Alaska, which has a younger population. Without adjusting for age, it would appear that the cancer rates for Florida are much higher than Alaska. However, once the ages are adjusted, it appears their rates are similar.

Starting with the publication of *Cancer Facts & Figures 2003*, we use the 2000 US population standard for age-adjustment. This is a change from statistics previously published by the American Cancer Society. Prior to this year, most age-adjusted rates were standardized to the 1970 census, although some were based on the 1980 census or even the 1940 census. This change has also been adopted by federal agencies that publish statistics. The new age standard applies to data from calendar year 1999 and forward. The change also requires a recalculation of age-adjusted rates for previous years to allow valid comparisons between current and past years.

The purpose of shifting to the Year 2000 Standard is to more accurately reflect contemporary incidence and mortality rates, given the aging of the US population. On average, Americans are living longer because of the decline in infectious and cardiovascular diseases. Greater longevity allows more people to reach the age when cancer and other chronic diseases become more common. Using the Year 2000 Standard in age-adjustment instead of the 1970 or 1940 standards allows age-adjusted rates to be closer to the actual, unadjusted rate in the population.

The effect of changing to the Year 2000 Standard will vary from cancer to cancer, depending on the age at which a particular cancer usually occurs. For all cancers combined, average annual age-adjusted incidence rate for 1995-99 will increase approximately 20% when adjusted to the Year 2000 compared to the Year 1970 Standard. For cancers, such as colon cancer, that occur mostly at older ages, the Year 2000 Standard will increase incidence by up to 25%, whereas for cancers such as acute lymphocytic leukemia, the new standard will decrease the incidence by about 7%. These changes are caused by the increased representation of older ages (for all cancers combined and colon cancer) or by the decreased representation of younger ages (for acute lymphocytic leukemia) in the Year 2000 Standard compared to the Year 1970 Standard.

It is important to note that in no case will the actual number of cases/deaths or age-specific rates change, only the age-standardized rates which are weighted to the different age-distribution.

Screening Guidelines

For the Early Detection of Cancer in Asymptomatic People

Site	Recommendation
Breast	Women 40 and older should have an annual mammogram, an annual clinical breast examination (CBE) by a health care professional, and should perform monthly breast self-examinations (BSE). Ideally the CBE should occur before the scheduled mammogram. Women ages 20-39 should have a CBE by a health care professional every three years and should perform BSE monthly.
Colon & rectum	Beginning at age 50, men and women should follow one of the examination schedules below: • A fecal occult blood test (FOBT) every year • A flexible sigmoidoscopy (FSIG) every five years • Annual fecal occult blood test and flexible sigmoidoscopy every five years* • A double-contrast barium enema every five years • A colonoscopy every 10 years **Combined testing is preferred over either annual FOBT, or FSIG every 5 years, alone. People who are at moderate or high risk for colorectal cancer should talk with a doctor about a different testing schedule.*
Prostate	The PSA test and the digital rectal examination should be offered annually, beginning at age 50, to men who have a life expectancy of at least 10 years. Men at high risk (African American men and men with a strong family history of one or more first-degree relatives diagnosed with prostate cancer at an early age) should begin testing at age 45. For both men at average risk and high risk, information should be provided about what is known and what is uncertain about the benefits and limitations of early detection and treatment of prostate cancer so that they can make an informed decision about testing.
Uterus	**Cervix:** Screening should begin approximately three years after a woman begins having vaginal intercourse, but no later than 21 years of age. Screening should be done every year with regular Pap tests or every two years using liquid-based tests. At or after age 30, women who have had three normal test results in a row may get screened every 2-3 years. However, doctors may suggest a woman get screened more often if she has certain risk factors, such as HIV infection or a weak immune system. Women 70 years and older who have had three or more consecutive normal Pap tests in the last 10 years may choose to stop cervical cancer screening. Screening after total hysterectomy (with removal of the cervix) is not necessary unless the surgery was done as a treatment for cervical cancer. **Endometrium:** The American Cancer Society recommends that all women should be informed about the risks and symptoms of endometrial cancer, and strongly encouraged to report any unexpected bleeding or spotting to their physicians. Annual screening for endometrial cancer with endometrial biopsy beginning at age 35 should be offered to women with or at risk for hereditary nonpolyposis colon cancer (HNPCC).
Cancer-related checkup	For individuals undergoing periodic health examinations, a cancer-related checkup should include health counseling, and depending on a person's age, might include examinations for cancers of the thyroid, oral cavity, skin, lymph nodes, testes, and ovaries, as well as for some nonmalignant diseases.

American Cancer Society guidelines for early cancer detection are assessed annually in order to identify whether there is new scientific evidence sufficient to warrant a re-evaluation of current recommendations. If evidence is sufficiently compelling to consider a change or clarification in a current guideline or the development of a new guideline, a formal procedure is initiated. Guidelines are formally evaluated every 5 years regardless of whether new evidence suggests a change in the existing recommendations. There are nine steps in this procedure, and these "guidelines for guideline development" were formally established to provide a specific methodology for science and expert judgment to form the underpinnings of specific statements and recommendations from the Society. These procedures constitute a deliberate process to insure that all Society recommendations have the same methodological and evidence-based process at their core. This process also employs a system for rating strength and consistency of evidence that is similar to that employed by the Agency for Health Care Research and Quality (AHCRQ) and the US Preventive Services Task Force (USPSTP).

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The American Cancer Society is the nationwide community-based voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer, through research, education, advocacy, and service.

No matter who you are, we can help. Contact us anytime, day or night, for information and support.

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