Cancer Facts & Figures for Hispanics/Latinos 2012-2014

American Cancer Society®

Contents

Acknowledgments

The production of this report would not be possible without the efforts of Priti Bandi, MS; Ermilo Barrera, MD; Keona Graves; Trista Hargrove, MA; Brenda McNeal; Melissa Maitin-Shepard, MPP; Deepa Naishadham, MA, MS; Mona Shah, PhD; Edgar Simard, PhD, MPH; Scott Simpson; Kristen Sullivan, MS, MPH; Ed Trapido, ScD; and Dana Wagner.

Cancer Facts & Figures for Hispanics/Latinos is a publication of the American Cancer Society, Atlanta, Georgia.

For more information, contact:
Rebecca Siegel, MPH
Vilma Cokkinides, PhD, MSPH
Ahmedin Jemal, PhD
Surveillance Research

National Home Office: American Cancer Society Inc.
250 Williams Street, NW, Atlanta, GA 30303-1002
(404) 320-3333

This publication attempts to summarize current scientific information about cancer. Except when specified, it does not represent the official policy of the American Cancer Society.

Suggested citation: American Cancer Society. *Cancer Facts & Figures for Hispanics/Latinos 2012-2014.* Atlanta: American Cancer Society, 2012.

Overview

Introduction

According to the US Census Bureau, 50.5 million Americans, or 16% of the total US population, identified themselves as Hispanic or Latino in 2010.[1,2] The terms "Hispanic" and "Latino/a" are used to refer to persons of Hispanic origin. The word Hispanic is a US federal designation used in national and state reporting systems that is a separate concept from race; therefore, persons of Hispanic origin may be of any race. Latino/a is a self-designated term of ethnicity. In this document, Hispanic and Latino/a are used interchangeably without preference or prejudice. Hispanics are the largest, fastest-growing, and youngest minority group in the United States. Between 2000 and 2010 the Hispanic population grew by 43%, four times the growth of the total population. In 2010, 30% of Hispanics in the US were younger than 15 years, compared to 19% of non-Hispanics.[2] Approximately 37% of Hispanics are born outside the US. The majority of Hispanics are of Mexican origin (63%), followed by Puerto Rican (9%), Central American (8%), South American (6%), and Cuban (4%) and other descent.[1]

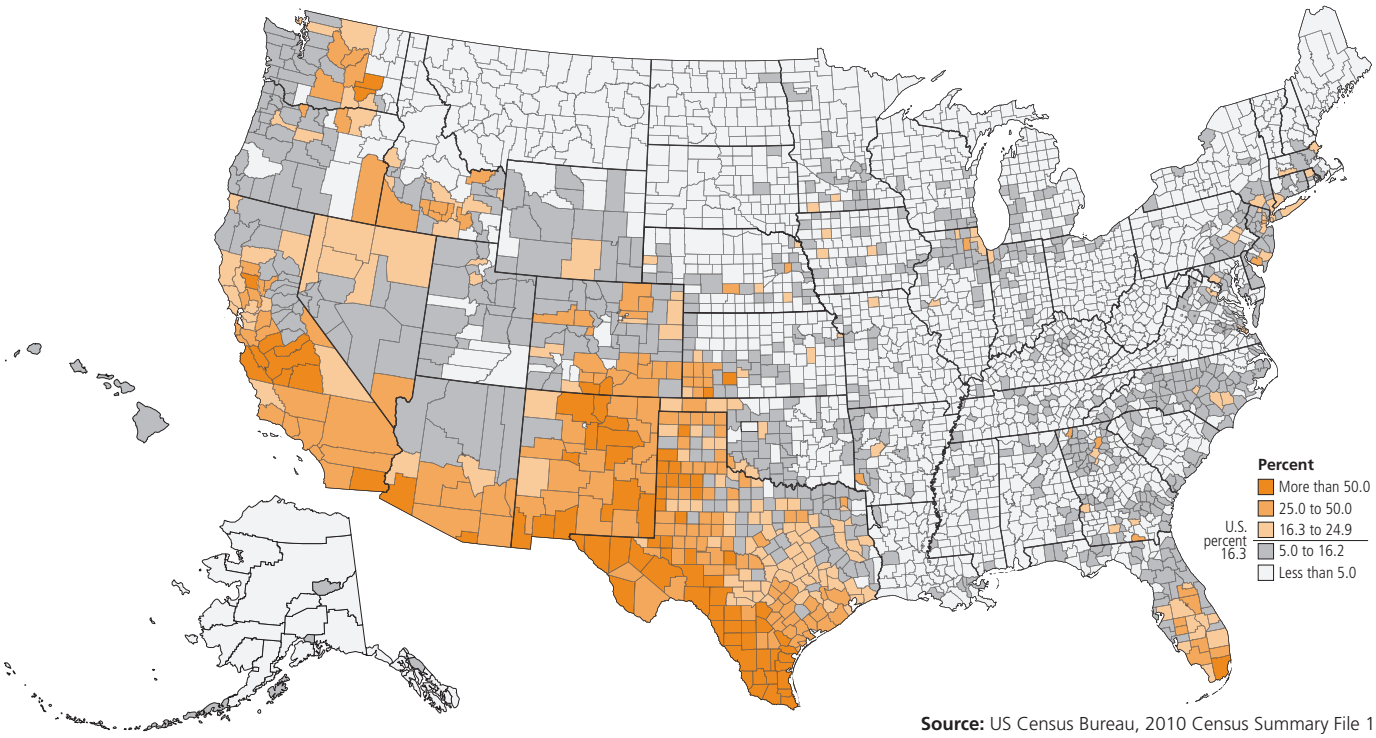
The Hispanic population is not equally distributed across the US, but is concentrated in the West (41%) and South (36%) (Figure 1). More than half of all Hispanics live in California (28%), Texas (19%), or Florida (8%). Among states there is substantial variation in the Hispanic population by country of origin. For example, Mexican Americans comprise more than 80% of the Hispanic population in both Texas and California, compared to only 15% in Florida.

This report presents statistics on cancer incidence, mortality, survival, and risk factors for Hispanics in the US. All incidence and mortality rates have been age adjusted to the standard US population of the 2000 census in order to allow comparison between population groups with different age distributions. This publication is intended to provide information to community leaders, public health and health care workers, and others interested in cancer prevention, early detection, and treatment for Hispanics. It is important to note that most cancer data in the US are reported for Hispanics as an aggregate group, which masks important differences that exist between Hispanic subpopulations according to country of origin. For example, a study of Hispanic adults in Florida found that the age-adjusted cancer death rate in Cuban men (327.5 per 100,000) was twice that in Mexican men (163.4 per 100,000).[3]

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, infectious organisms, poor nutrition, chemicals,

Figure 1. Hispanic Population Distribution as a Percent of Total Population by County, 2010



Source: US Census Bureau, 2010 Census Summary File 1.

and radiation) and internal factors (inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). These causal factors may act together or in sequence to initiate or promote cancer development. Cancers associated with infectious agents are much more common among Hispanics than non-Hispanics; one in six new cancers in Latin America, compared to one in 25 new cancers in North America, is attributable to infectious agents.[4] Ten or more years often pass between exposure to external factors and detectable cancer. Cancer is treated with surgery, radiation, chemotherapy, hormone therapy, biologic therapy, and targeted therapy.

Can Cancer Be Prevented?

A large number of cancer cases and deaths could be prevented with the adoption of healthier lifestyles, including not smoking, maintaining a healthy body weight, and being physically active. All cancers caused by tobacco and heavy alcohol use could be prevented completely. Many of the cancers caused by external factors, such as infectious organisms, are also preventable. A large proportion of cancers of the colorectum could be prevented by avoiding risk factors such as obesity, physical inactivity, consumption of red and processed meat, and by detection and removal of precancerous lesions through screening. Almost all cervical cancers could be prevented by the detection and removal of precancerous cervical lesions, as well as vaccination against human papillomavirus. Screening can detect cancers of the breast, colorectum, and cervix at an early stage when treatment is more likely to be successful.

What Is the Risk of Developing or Dying of Cancer?

Anyone can develop cancer. The risk of being diagnosed with cancer increases with age because most cancers require many years to develop (Table 1). However, because the Hispanic population is young, a larger proportion of cancers are diagnosed in younger ages; 26% of cancer diagnoses in Hispanics are in those younger than 50 years of age, compared to only 12% in non-Hispanic whites.

Overall, about 1 in 2 Hispanic men and 1 in 3 Hispanic women will be diagnosed with cancer in their lifetime. The lifetime probability of dying from cancer is 1 in 5 for Hispanic men and 1 in 6 for Hispanic women. Cancer is the leading cause of death among Hispanics, accounting for 21% of deaths overall and 15% of deaths in children (Table 2).

How Many New Cancer Cases and Deaths Are Expected in 2012?

New cases: About 53,600 new cancer cases in men and 59,200 cases in women are expected to be diagnosed among Hispanics in 2012 (Figure 2). Prostate cancer is expected to be the most commonly diagnosed cancer in men and breast cancer the most common in women. Cancers of the colorectum and lung will be the second- and third-most commonly diagnosed cancers in Hispanic men, while among women, cancers of the colorectum and thyroid will be second and third, respectively.

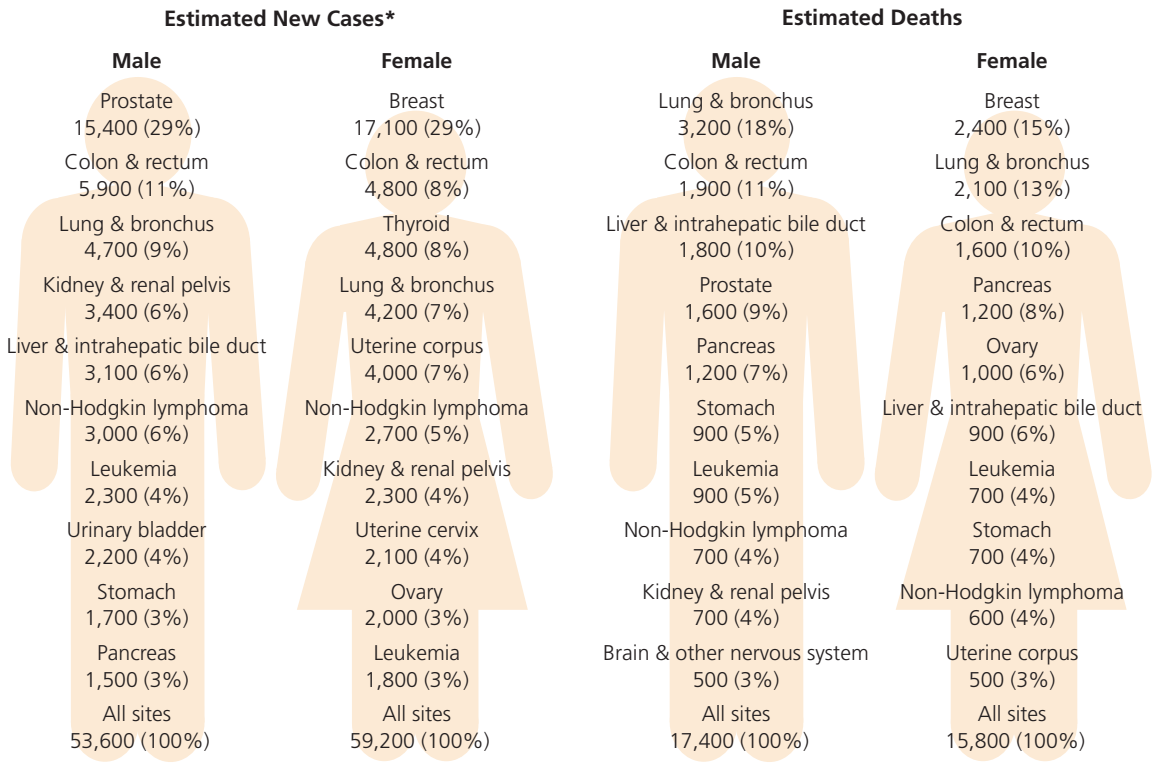
Table 1. Probability (%) of Developing Invasive Cancer among Hispanics/Latinos over Selected Age Intervals, US, 2007 to 2009*

		Birth to 39	40 to 59	60 to 69	70 and older	Birth to death
All sites†	Male	1.20 (1 in 83)	6.06 (1 in 17)	12.11 (1 in 8)	35.43 (1 in 3)	40.63 (1 in 2)
	Female	1.90 (1 in 53)	7.56 (1 in 13)	8.38 (1 in 12)	24.76 (1 in 4)	35.03 (1 in 3)
Breast	Female	0.40 (1 in 252)	3.03 (1 in 33)	2.65 (1 in 38)	4.97 (1 in 20)	9.83 (1 in 10)
Colorectum	Male	0.06 (1 in 1,580)	0.80 (1 in 125)	1.27 (1 in 78)	4.16 (1 in 24)	5.13 (1 in 20)
	Female	0.06 (1 in 1,554)	0.62 (1 in 162)	0.85 (1 in 117)	3.33 (1 in 30)	4.31 (1 in 23)
Liver & intrahepatic bile duct	Male	0.02 (1 in 5,777)	0.49 (1 in 203)	0.59 (1 in 169)	1.13 (1 in 89)	1.88 (1 in 53)
	Female	0.01 (1 in 8,781)	0.11 (1 in 938)	0.21 (1 in 477)	0.82 (1 in 122)	1.02 (1 in 98)
Lung & bronchus	Male	0.02 (1 in 6,188)	0.36 (1 in 280)	1.09 (1 in 92)	4.80 (1 in 21)	5.02 (1 in 20)
	Female	0.02 (1 in 5,419)	0.34 (1 in 292)	0.83 (1 in 121)	3.11 (1 in 32)	3.80 (1 in 26)
Melanoma of the skin	Male	0.02 (1 in 4,510)	0.08 (1 in 1,254)	0.11 (1 in 920)	0.43 (1 in 235)	0.52 (1 in 191)
	Female	0.05 (1 in 2,089)	0.13 (1 in 763)	0.10 (1 in 1,023)	0.29 (1 in 350)	0.51 (1 in 194)
Prostate	Male	0.01 (1 in 15,266)	1.71 (1 in 58)	5.34 (1 in 19)	11.48 (1 in 8)	14.57 (1 in 7)
Stomach	Male	0.02 (1 in 4,191)	0.22 (1 in 452)	0.42 (1 in 240)	1.57 (1 in 64)	1.82 (1 in 55)
	Female	0.03 (1 in 3,178)	0.16 (1 in 634)	0.21 (1 in 482)	0.95 (1 in 105)	1.20 (1 in 83)
Uterine cervix	Female	0.19 (1 in 533)	0.38 (1 in 264)	0.20 (1 in 498)	0.36 (1 in 281)	1.05 (1 in 95)

* For those free of cancer at beginning of age interval. Based on cancer cases diagnosed during 2007 to 2009. † All sites excludes basal cell and squamous cell skin cancers and in situ cancers except urinary bladder.

Source: DevCan: Probability of Developing or Dying of Cancer Software, Version 6.6.1 Statistical Research and Applications Branch, National Cancer Institute, 2012. http://srab.cancer.gov/devcan.

Figure 2. Leading Sites of New Cancer Cases and Deaths among Hispanics, 2012 Estimates



* Excludes basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder. Estimates are rounded to the nearest 100.

Table 2. Leading Causes of Death among Hispanics and Non-Hispanic Whites, US, 2009

	Hispanic				Non-Hispanic White			
	Rank	Number of deaths	Percent of total deaths	Death rate*	Rank	Number of deaths	Percent of total deaths	Death rate*
All ages								
Cancer	1	29,935	21.1	114.8	2	457,189	23.5	177.4
Heart diseases	2	29,611	20.9	124.2	1	485,779	25.0	180.9
Accidents (unintentional injuries)	3	10,654	7.5	26.1	5	91,416	4.7	40.7
Cerebrovascular diseases	4	7,065	5.0	29.5	4	101,703	5.2	37.8
Diabetes	5	6,311	4.5	25.6	7	47,851	2.5	18.4
All causes		141,576	100.0	523.1		1,944,606	100.0	748.1
Children ages 1-14								
Accidents	1	656	30.1	4.8	1	1,668	33.0	5.1
Cancer	2	315	14.5	2.4	2	673	13.3	2.1
Congenital anomalies (birth defects)	3	193	8.9	1.3	3	422	8.4	1.3
Assault (homicide)	4	147	6.8	1.1	4	258	5.1	0.8
Pneumonia and influenza	5	97	4.5	0.7	5	179	3.5	0.5
All causes		2,176	100.0	16.0		5,048	100.0	15.5

* Rates are per 100,000 and age adjusted to the 2000 US standard population.

Source: US Mortality Data, National Center for Health Statistics, Centers for Disease Control and Prevention, 2012.

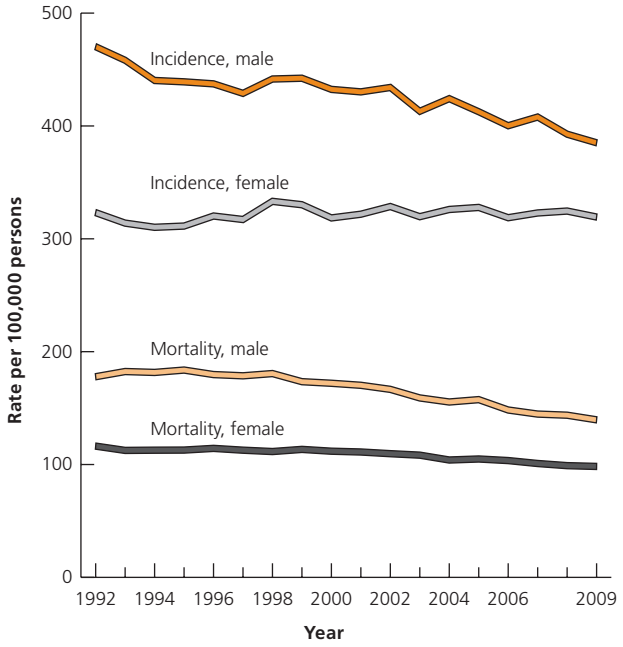
Deaths: About 17,400 Hispanic men and 15,800 Hispanic women are expected to die from cancer in 2012 (Figure 2, page 3). Among men, lung cancer is expected to account for about 18% of the total, followed by colorectal (11%) and liver (10%) cancers. Among women, breast cancer is the leading cause of cancer death (15%), followed by cancers of the lung (13%) and colorectum (10%). In contrast, the leading cause of cancer death in non-Hispanic women is lung cancer.

How Have Cancer Rates Changed Over Time?

Trends in cancer incidence rates: Cancer incidence rates for Hispanics have been available since 1992. In examining the most recent 10 years for which data are available (2000-2009), incidence rates for all cancers combined among Hispanic men decreased by an average of 1.7% per year (Figure 3), compared to declines of 1.4% among African American men and 1.0% among non-Hispanic white men. Over the same time period, incidence rates among women for all cancers combined decreased annually by 0.3% among Hispanics and 0.2% among non-Hispanic whites, while remaining unchanged among African Americans. It is important to realize that because the US Hispanic population is very dynamic as a result of the influx of new immigrants, trends reflect the cancer risk of incoming Hispanics as well as changes in the risk of established residents.

Trends in cancer death rates: Death rates for all cancers combined decreased from 2000 to 2009 by an average of 2.3% per year among Hispanic men and by 1.4% per year among Hispanic women. The average annual decrease in non-Hispanic whites over the same time interval was 1.5% in men and 1.3% in women.

Figure 3. Trends in Incidence and Death Rates for All Cancers Combined among Hispanics 1992-2009



Rates are age adjusted to the 2000 US standard population.
Persons of Hispanic/Latino origin may be any race.

Data Sources: Incidence – Surveillance, Epidemiology, and End Results (SEER) Program, SEER 13 areas, excluding Alaska Native Registry, National Cancer Institute, 2012. Mortality – National Center for Health Statistics, Centers for Disease Control and Prevention, 2012. Deaths were excluded from Connecticut, District of Columbia, Maine, Maryland, Minnesota, New Hampshire, New York, North Dakota, Oklahoma, South Carolina, and Vermont due to a large number of individuals with unknown origin/ethnicity.

Table 3. Cancer Incidence and Mortality Rates and Ratios Comparing Hispanics to Non-Hispanic Whites, 2005-2009

	Incidence						Mortality					
	Male			Female			Male			Female		
	Hispanic	Non-Hispanic White	Ratio†	Hispanic	Non-Hispanic White	Ratio†	Hispanic	Non-Hispanic White	Ratio†	Hispanic	Non-Hispanic White	Ratio†
All sites	418.7	556.6	0.8*	333.2	433.9	0.8*	146.3	221.9	0.7*	100.5	154.7	0.6*
Prostate	124.9	143.2	0.9*	–	–	–	17.8	21.9	0.8*	–	–	–
Breast	–	–	–	93.0	126.6	0.7*	–	–	–	14.9	23.0	0.6*
Colorectum	46.9	53.4	0.9*	33.3	39.8	0.8*	15.3	19.8	0.8*	10.2	13.8	0.7*
Lung & bronchus	45.4	85.7	0.5*	26.6	60.5	0.4*	30.8	68.0	0.5*	14.0	43.1	0.3*
Stomach	13.5	7.9	1.7*	8.1	3.5	2.3*	7.3	4.0	1.8*	4.3	2.0	2.2*
Uterine cervix	–	–	–	11.8	7.2	1.6*	–	–	–	3.0	2.1	1.5*
Liver & intrahepatic bile duct	17.5	8.3	2.1*	6.6	2.8	2.4*	11.8	7.0	1.7*	5.3	2.9	1.9*
Thyroid	4.6	6.7	0.7*	17.2	18.9	0.9*	0.5	0.5	1.1	0.6	0.5	1.4*
Acute lymphocytic leukemia	2.6	1.7	1.5*	2.1	1.3	1.6*	0.8	0.5	1.5*	0.7	0.4	1.9*
Gallbladder	1.3	0.7	1.8*	2.8	1.2	2.4*	0.6	0.4	1.5*	1.3	0.7	1.9*

Rates are per 100,000 and age adjusted to the 2000 US standard population. Persons of Hispanic origin may be of any race. *The difference between the rates for Hispanics and non-Hispanic whites is significant (P< 0.05). †Ratio is the unrounded Hispanic rate divided by the non-Hispanic white rate.

Data Source: Incidence: North American Association of Central Cancer Registries, 2012. Incidence data are based on the NAACCR Hispanic Identification Algorithm (NHIA). Mortality: National Center for Health Statistics, Centers for Disease Control and Prevention, 2012.

Major Differences in the Cancer Burden between Hispanics and Non-Hispanic Whites

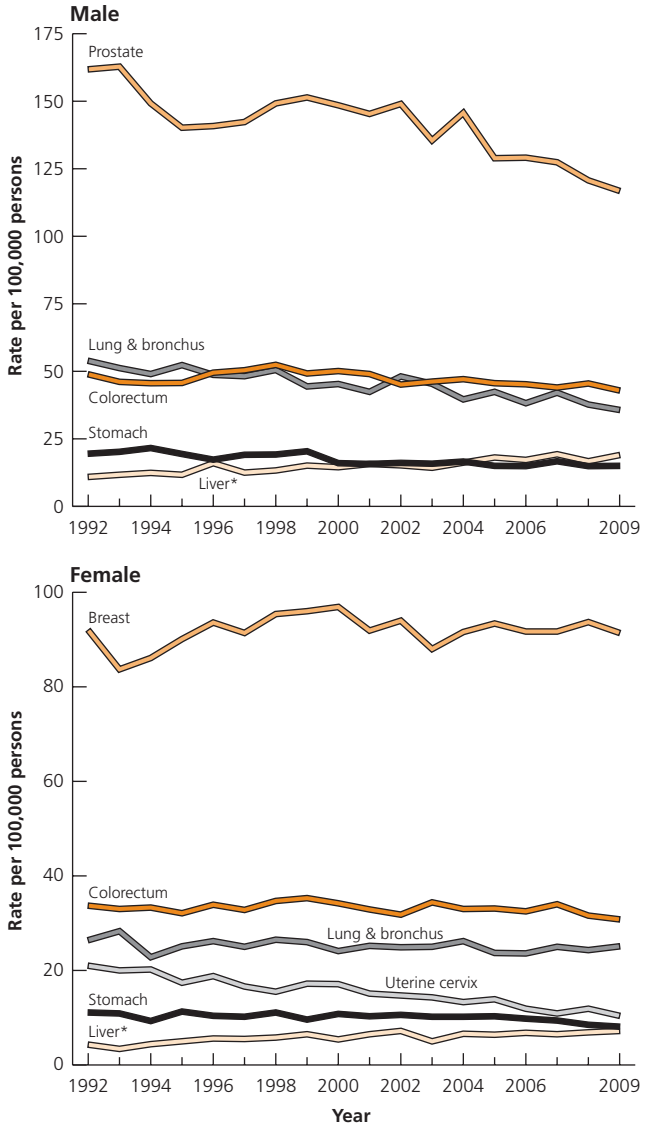
Incidence and death rates: Table 3 shows differences in cancer incidence and death rates between Hispanics and non-Hispanic whites in the US. For all cancers combined, and for the most common cancers (prostate, female breast, colorectal, and lung), incidence and death rates are lower among Hispanics than among non-Hispanic whites. Cancers for which rates are higher in Hispanics include stomach, cervix, liver, acute lymphocytic leukemia, and gallbladder. Trends in cancer incidence and death rates among Hispanics for specific cancer sites are shown in Figures 4 and 5, page 6. It is important to reiterate that statistics reported for all Hispanics combined mask wide variation in the cancer burden for specific populations according to country of origin.

The cancer burden among Hispanics living in the US is generally similar to that seen in the countries of origin for which data are available. Compared to rates in the US, incidence of breast, colorectal, lung, and prostate cancers are generally lower in Central and South America, whereas incidence rates of cervical, liver, and stomach cancers are higher.[5] There is evidence that descendants of Hispanic immigrants have cancer rates that approach those of non-Hispanic whites due to acculturation.[6-8] Acculturation, or assimilation, refers to the process by which immigrants adopt the attitudes, values, customs, beliefs, and behaviors of their new culture. The effects of acculturation are complex and can be associated with both positive and negative influences on health.[9] Among Hispanic immigrants to the US, for example, assimilation may result in improved access to health care and preventive services, as well as the adoption of unhealthy behaviors (e.g., smoking and excessive alcohol consumption) and decreases in dietary quality and physical activity. One study found that overall cancer death rates were 22% higher among US-born than foreign-born Hispanics.[10]

Stage distribution and survival: Stage of disease describes the extent or spread of cancer at the time of diagnosis. Local stage describes a malignant cancer that is confined to the organ of origin. A cancer that is diagnosed at a regional stage has spread from its original site into surrounding organs, tissues, or nearby lymph nodes. Distant-stage cancer has spread to distant organs. In general, the further a cancer has spread, the less likely that treatment will be effective. Although Hispanics have lower incidence and death rates than non-Hispanic whites for the most common cancers, they are generally less likely to be diagnosed with a localized stage of disease, particularly for melanoma and breast cancer (Figure 6, page 7).

Survival rates indicate the percentage of patients who are alive after a given time period following a cancer diagnosis. The most commonly used survival measure for the general population is relative survival, which is the ratio of observed survival in a group of cancer patients divided by the expected survival in a comparable group of cancer-free individuals. However, because expected survival data have historically been unavailable for Hispanics, a different measure called cause-specific survival is used to describe survival in this report. Cause-specific survival is the probability of surviving a specific disease within a certain time period (usually 5 years) after diagnosis.

Figure 4. Cancer Incidence Rates in Hispanics by Site, 1992-2009

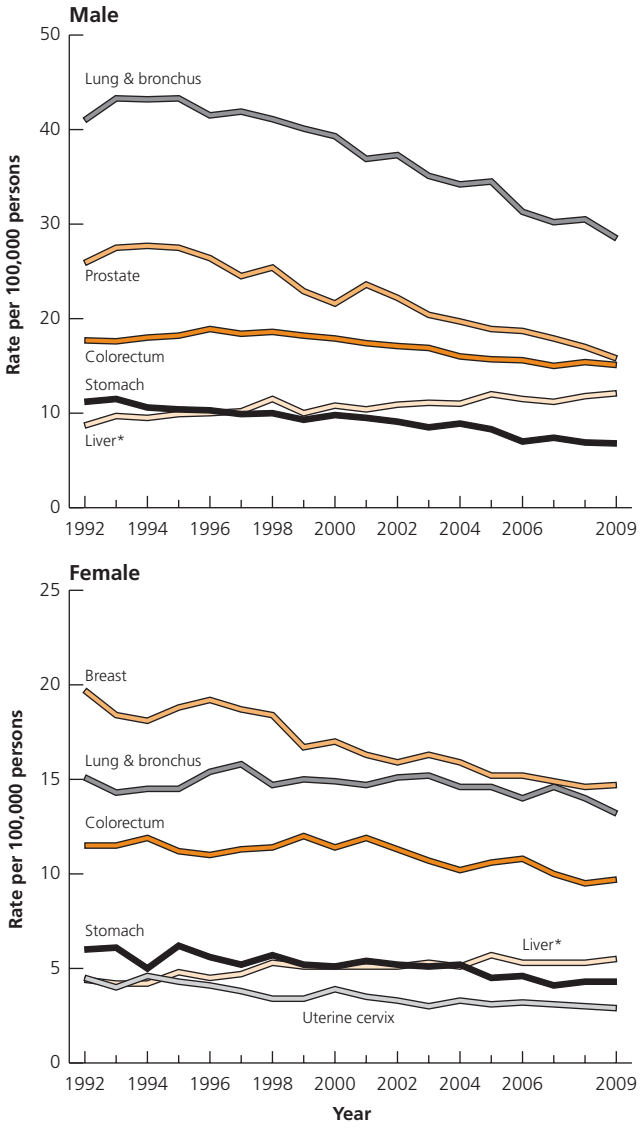


Rates are age adjusted to the 2000 US standard population. Persons of Hispanic/Latino origin may be of any race. *Includes intrahepatic bile duct.

Data Sources: Incidence – Surveillance, Epidemiology, and End Results (SEER) Program, SEER 13 areas, excluding the Alaska Native Registry, National Cancer Institute, 2012. Mortality – National Center for Health Statistics, Centers for Disease Control and Prevention, 2012. Deaths were excluded from Connecticut, District of Columbia, Maine, Maryland, Minnesota, New Hampshire, New York, North Dakota, Oklahoma, South Carolina, and Vermont due to a large number of individuals with unknown origin/ethnicity.

American Cancer Society, Surveillance Research, 2012

Figure 5. Cancer Mortality Rates in Hispanics by Site, 1992-2009



Rates are age adjusted to the 2000 US standard population. Persons of Hispanic/Latino origin may be of any race. *Includes intrahepatic bile duct.

Data Sources: Incidence – Surveillance, Epidemiology, and End Results (SEER) Program, SEER 13 areas, excluding the Alaska Native Registry, National Cancer Institute, 2012. Mortality – National Center for Health Statistics, Centers for Disease Control and Prevention, 2012. Deaths were excluded from Connecticut, District of Columbia, Maine, Maryland, Minnesota, New Hampshire, New York, North Dakota, Oklahoma, South Carolina, and Vermont due to a large number of individuals with unknown origin/ethnicity.

American Cancer Society, Surveillance Research, 2012

Cancer survival rates are generally similar among Hispanics and non-Hispanic whites. Of those cancer sites listed in Table 4, page 8, the largest difference in survival is for melanoma; among men, about 87% of non-Hispanic whites survive five years after diagnosis, compared to only 77% of Hispanics. This survival disparity may be due to a higher proportion of thicker tumors and later stage at diagnosis among Hispanics.[11,12] Differences in survival rates may reflect later stage at diagnosis, less access to timely, high-quality treatment, and differences in tumor biology.

Major Cancer Sites

Female Breast

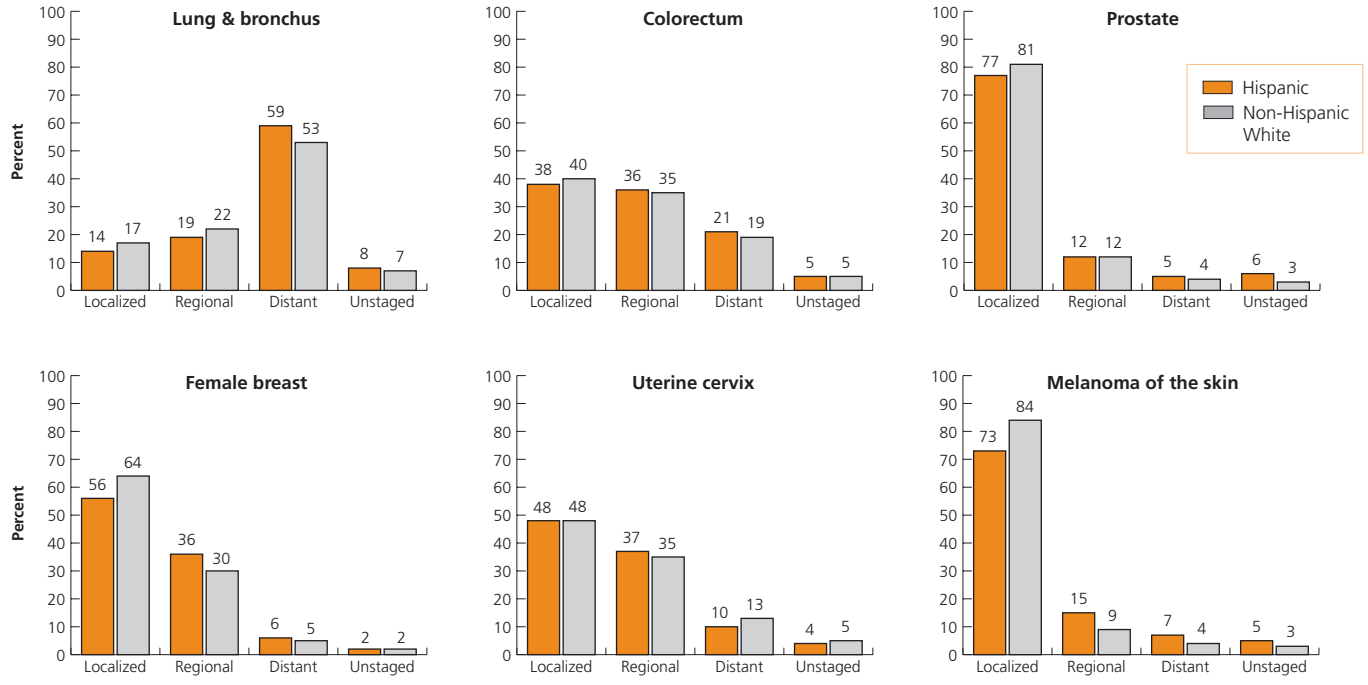
New cases: Breast cancer is the most commonly diagnosed cancer among Hispanic women; an estimated 17,100 Hispanic women are expected to be diagnosed in 2012. From 2000 to 2009, breast cancer incidence rates decreased from 97.2 (per 100,000) to 93.0 among Hispanic women and from 138.1 to 128.4 among non-Hispanic white women.

The breast cancer incidence rate in Hispanic women is 26% lower than in non-Hispanic white women (Table 3, page 4). Within the Hispanic population, the incidence rate is 50% lower in foreign-born women than in US-born women.[13] These risk differences are primarily attributed to differences in the prevalence of breast cancer risk factors.[14] For example, an estimated 7% of the reduced risk for Hispanic women is explained by more protective reproductive patterns (lower age at first birth and a greater number of births).[15,16] They may also reflect less use of hormone replacement therapy and underdiagnosis due to lower utilization of mammography;[17-19] in 2010, among women 40 years of age and older, 64% of Hispanics and 67% of non-Hispanic whites reported having a mammogram in the past two years.[20] Other factors that increase breast cancer risk include age, family history, early menarche, late menopause, postmenopausal obesity, alcohol consumption, and physical inactivity. Studies examining body size and weight change in relation to breast cancer risk indicate that the relationship between body mass and breast cancer may differ by ethnicity.[21-23] Ethnic variation in genetic factors that influence breast cancer development may also contribute to differences in risk.[24-26]

Deaths: An estimated 2,400 deaths from breast cancer are expected to occur among Hispanic women in 2012. Breast cancer is the leading cause of cancer death among Hispanic women. During the period from 2000 to 2009, breast cancer death rates decreased by 1.6% per year among Hispanic women and by 2.0% per year among non-Hispanic white women.

Stage distribution and survival: Breast cancer is less likely to be diagnosed at the earliest stage in Hispanic women compared to non-Hispanic white women even after accounting for differences in age, socioeconomic status, and method of detection.[27] During 2005-2009, 56% of breast cancers among Hispanic women were diagnosed at a local stage, compared to 64% among non-Hispanic white women (Figure 6). Lower rates of mammography utilization and delayed follow up of abnormal screening results or self-discovered breast abnormalities among Hispanic women likely contribute to this difference.[20,28,29] Hispanic women are also more likely to be diagnosed with tumors that are larger and are hormone receptor negative, both of which are more difficult to treat.[30,31] However, even when age, stage, and tumor characteristics are similar, Hispanic women are more likely to die from

Figure 6. Stage Distribution for Selected Cancers among Hispanics and Non-Hispanic Whites, 2005-2009



Note: Percentages may not total 100 due to rounding. Persons of Hispanic/Latino origin may be of any race.

Data Source: Surveillance, Epidemiology, and End Results (SEER) Program, 18 SEER registries, Division of Cancer Control and Population Sciences, National Cancer Institute, 2012.

breast cancer than non-Hispanic whites.[30] Differences in access to care and treatment likely contribute to this disparity.[32,33] Intervention programs that follow patients throughout treatment in order to enhance communication between the surgeon, oncologist, and patient have been shown to reduce disparities in breast cancer care.[34] Five-year cause-specific survival rates for local, regional, and distant-stage breast cancer diagnosed in Hispanic women are 96%, 83%, and 26%, respectively.

Colon & Rectum

New cases: An estimated 5,900 Hispanic men and 4,800 Hispanic women are expected to be diagnosed with cancer of the colon or rectum in 2012. Colorectal cancer is the second-most commonly diagnosed cancer in both Hispanic men and women. Colorectal cancer incidence rates among Hispanic men and women are 12% and 16% lower, respectively, than those among non-Hispanic whites (Table 3, page 4). However, the rates among US Hispanics are higher than those among residents of Puerto Rico and Spanish-speaking countries in South and Central America.[35] For example, compared to colorectal cancer incidence rates among men living in Puerto Rico, rates among men living in the US mainland are 8% higher among Hispanics and 45% higher among non-Hispanic whites.[35] Colorectal cancer is rare in developing countries but common in economically affluent countries, where diets tend to be higher in fat, refined carbohydrates, and animal protein and levels of physical activity are low.[36] From 2000 to 2009, colorectal cancer incidence rates decreased 2.3% per year in Hispanic men and 2.4% per year in Hispanic women, compared to annual declines of 3.5% and 2.8% in non-Hispanic white men and women, respectively.

Factors that increase risk for colorectal cancer include a personal or family history of polyps or colorectal cancer, chronic inflammatory bowel disease, inherited syndromes, obesity, diabetes, consumption of red and processed meat, smoking, and alcohol consumption.[37] Hispanics are disproportionately affected by diabetes and the elevated risk for colorectal cancer with which it is associated.[38] Factors that protect against colorectal cancer include occupational or recreational physical activity, use of anti-inflammatory drugs, milk and calcium consumption, and screening, through the detection and removal of polyps before they develop into cancer.[37]

Deaths: About 1,900 Hispanic men and 1,600 Hispanic women are expected to die from colorectal cancer in 2012. Colorectal cancer is the second-leading cause of cancer death among Hispanic men and the third-leading cause of cancer death among Hispanic women. Between 2000 and 2009, death rates for colorectal cancer decreased by about 2% per year among Hispanics and by 3% per year among non-Hispanics.

Stage distribution and survival: Colorectal cancer can be treated successfully when it is diagnosed early. The 5-year cause-specific survival rate among Hispanics for colorectal cancer diagnosed at a localized stage is 89%; survival drops to 68% and 15% for those diagnosed at a regional and distant stage, respectively. Hispanics are less likely than non-Hispanic whites to be diagnosed with localized colorectal cancer (38% versus 40%) and more likely to be diagnosed with distant-stage disease (21% versus 19%) (Figure 6, page 7), likely due to lower rates of screening and less access to timely medical care (Table 8, page 21).[20]

Lung & Bronchus

New cases: About 4,700 Hispanic men and 4,200 Hispanic women are expected to be diagnosed with lung cancer in 2012. Lung cancer is the third-most commonly diagnosed cancer in Hispanic men and the fourth most common in Hispanic women, while it is the second-most common cancer among non-Hispanic whites. Cigarette smoking is the major risk factor for lung cancer, accounting for about 87% and 70% of the total cases in US men and women, respectively.[39] Lung cancer incidence rates among Hispanics are about half those of non-Hispanic whites (Table 3, page 4) because of traditionally lower rates of cigarette smoking and because Hispanics who do smoke are less likely to be daily smokers.[40,41] Lung cancer susceptibility may also differ by race/ethnicity, particularly for lower levels of smoking.[42,43] (See Table 6, page 15, for smoking prevalence among Hispanics.)

Table 4. Five-year Cancer-specific Survival Rates (%), 2002-2008

	Hispanic	Non-Hispanic White
Male		
All sites	65.1	66.5
Prostate	92.9	93.9
Lung & bronchus	14.4	16.0
Colorectum	63.7	65.7
Stomach	27.5	24.8
Liver & intrahepatic bile duct	18.8	18.2
Melanoma of the skin	76.6	87.0
Female		
All sites	67.2	66.1
Breast	86.4	88.6
Colorectum	63.5	64.3
Lung & bronchus	20.4	20.7
Uterine cervix	74.6	70.7
Stomach	28.4	30.8
Liver & intrahepatic bile duct	18.6	16.4
Melanoma of the skin	88.3	92.3

Data Source: Surveillance, Epidemiology, and End Results (SEER) Program, 18 SEER registries, Division of Cancer Control and Population Sciences, National Cancer Institute, 2012.

From 2000 to 2009, lung cancer incidence rates declined faster in Hispanic men (2.9% per year) than non-Hispanic white men (1.7% per year), which may reflect the arrival of new Hispanic immigrants with lower lung cancer risk. Among women, incidence rates were stable in both Hispanics and non-Hispanic whites during this time period. Increased smoking as a result of acculturation has been observed among female, but not male, Hispanics.[44] Most cases of lung cancer could be prevented by increasing cessation among adult smokers and by decreasing initiation of smoking among adolescents. Within 10 years of cessation, the risk of lung cancer in former smokers is 30% to 50% lower than that of continuing smokers.[45]

Deaths: About 3,200 lung cancer deaths in men and 2,100 deaths in women are expected to occur among Hispanics in 2012. Lung cancer is the leading cause of cancer death among Hispanic men and the second-leading cause among Hispanic women. Lung cancer death rates within Hispanic subpopulations vary substantially according to differences in smoking patterns.[7] For example, Cuban men have both the highest smoking prevalence and the highest lung cancer death rates – 30% higher than those of Mexican or Puerto Rican men.[46]

Death rates for lung cancer declined by 3.3% per year among Hispanic men and by 1.0% per year among Hispanic women from 2000 to 2009. During the same time interval, lung cancer death rates among non-Hispanic whites decreased by 2.0% per year in men and by 0.4% per year in women. The larger declines in death rates among men reflect earlier and larger reductions in smoking compared to women; the smoking patterns of US women lag about 20 years behind those of men.

Stage distribution and survival: Most patients with lung cancer are diagnosed at an advanced stage; only 14% of Hispanics and 17% of non-Hispanic whites are diagnosed with localized disease (Figure 6, page 7), for which cause-specific survival is approximately 60%. The 5-year cause-specific survival rate for all Hispanic lung cancer patients combined is 14% and 20% for men and women, respectively (Table 4).

Prostate

New cases: An estimated 15,400 Hispanic men are expected to be diagnosed with prostate cancer in 2012, making it the most commonly diagnosed cancer among Hispanic men. In 2005-2009, the prostate cancer incidence rate among Hispanics (124.9 per 100,000) was about 13% lower than the rate among non-Hispanic whites (143.2 per 100,000), likely due to lower rates of PSA testing among Hispanics (Table 3, page 4). Prostate cancer incidence rates decreased 2.4% per year in Hispanic men and 2.2% per year in non-Hispanic white men from 2000 through 2009. Increasing age and a family history of the disease are the only well-established risk factors for prostate cancer.

Deaths: An estimated 1,600 deaths from prostate cancer are expected among Hispanic men in 2012, making prostate cancer the fourth-leading cause of cancer death. The prostate cancer death rate is slightly lower in Hispanic men (17.8 per 100,000) than in non-Hispanic white men (21.9 per 100,000) (Table 3, page 4). From 2000 to 2009, the death rate decreased by 3.8% per year in Hispanic men and by 3.3% per year in non-Hispanic white men.

Stage distribution and survival: About 77% of prostate cancers are discovered at a localized stage in Hispanic men compared to 81% in non-Hispanic white men (Figure 6, page 7), for which 5-year cause-specific survival is approximately 97% for both groups.[47] The survival rate for those diagnosed at a distant stage is 31.2% among Hispanic men and 28.6% among non-Hispanic whites.

Cancer Sites with Higher Rates among Hispanics

Cancers of the stomach, liver, and uterine cervix, all of which are related to infectious agents, are more common in economically developing countries, especially in Central and South American countries and parts of Asia and Africa. In the US, the incidence and mortality rates of these cancers are higher among Hispanics than non-Hispanic whites, especially among first-generation immigrants.[48,49]

Liver and Intrahepatic Bile Duct

In 2012, approximately 4,300 Hispanics will be diagnosed with liver cancer, and about 2,700 will die from the disease. Liver cancer incidence rates in the US are about twice as high in Hispanics as in non-Hispanic whites, and about three times higher in men than in women (Table 3, page 4).[50] Incidence rates for liver cancer have been increasing since the mid-1980s; during the most recent 10 years of data (2000-2009), rates increased annually by 2.6% in men and 2.0% in women among Hispanics and 4.0% and 2.5% among non-Hispanic white men and women, respectively. Liver cancer is one of the most fatal types of cancer; the 5-year survival rate among Hispanics is about 19% for both men and women (Table 4).

Figures 7a and 7b (page 10) show international patterns of liver cancer incidence rates by sex. The majority of liver cancers in developing countries and about 20% in developed countries are attributable to chronic infections with hepatitis B virus (HBV) and/or hepatitis C virus (HCV).[51,52] Primary prevention of HBV infection is achieved through vaccination. There is no vaccine to prevent HCV infection, although its transmission is potentially preventable through public health measures, such as screening of blood, organ, tissue, and semen donors and needle/syringe exchange programs.[53] Treatment of liver disease in people with chronic HBV and/or HCV infection may reduce the risk of developing liver cancer.[54] For more information about HBV and HCV, see page 19.

Other risk factors for liver cancer include alcohol consumption and aflatoxin (a contaminant found in moldy grains and meals in economically developing countries).[53,55] Although alcohol consumption among Hispanics is generally low, some studies have found that heavy or binge drinking is more common among Mexican than non-Hispanic white men.[56,57]

Stomach

In 2012, approximately 3,000 Hispanics will be diagnosed with stomach cancer, and an estimated 1,600 will die from the disease. In the US, the stomach cancer incidence rate in Hispanic men is 70% higher than that among non-Hispanic white men; among women, the rate among Hispanics is more than double that among non-Hispanic whites (Table 3, page 4). Incidence rates decreased by about 2% per year among both Hispanics and non-Hispanic whites from 2000 to 2009. Hispanics are diagnosed with stomach cancer at a young age (< 50 years) more often than any other racial or ethnic group.[58] The 5-year survival rate for stomach cancer in Hispanics is about 28% (Table 4).

Chronic infection with *Helicobacter pylori (H. pylori)* is the strongest identified risk factor for stomach cancer, though only 5% of infected individuals will develop the disease.[59,60] The prevalence of *H. pylori* infection is higher in lower-income countries and among individuals of lower socioeconomic status.[61] Stomach cancer incidence has decreased substantially in high-income countries, but is still very common throughout Mexico, Central and South America, and Asia.[62] Stomach cancer was the leading cause of cancer death in the US prior to the 1950s, but ranks 14th today. The large declines in stomach cancer rates reflect reductions in both the prevalence of *H. pylori* infection and the consumption of salt-preserved foods due to improvements in hygiene and food preservation practices. In the more recent time period, treatment of *H. pylori*-infected individuals may have also contributed to these declines. For more information about *H. pylori*, see page 19.

Other risk factors for stomach cancer include smoking, and probably high consumption of grilled or barbecued meat and fish.[55,63] High alcohol consumption may also increase risk.[64] Some studies have shown that fruits and non-starchy vegetables, particularly allium vegetables (e.g., garlic, onions, leeks) protect against stomach cancer.[55]

Figure 7a. International Variation in Age-standardized Liver Cancer Incidence Rates among Males, 2008

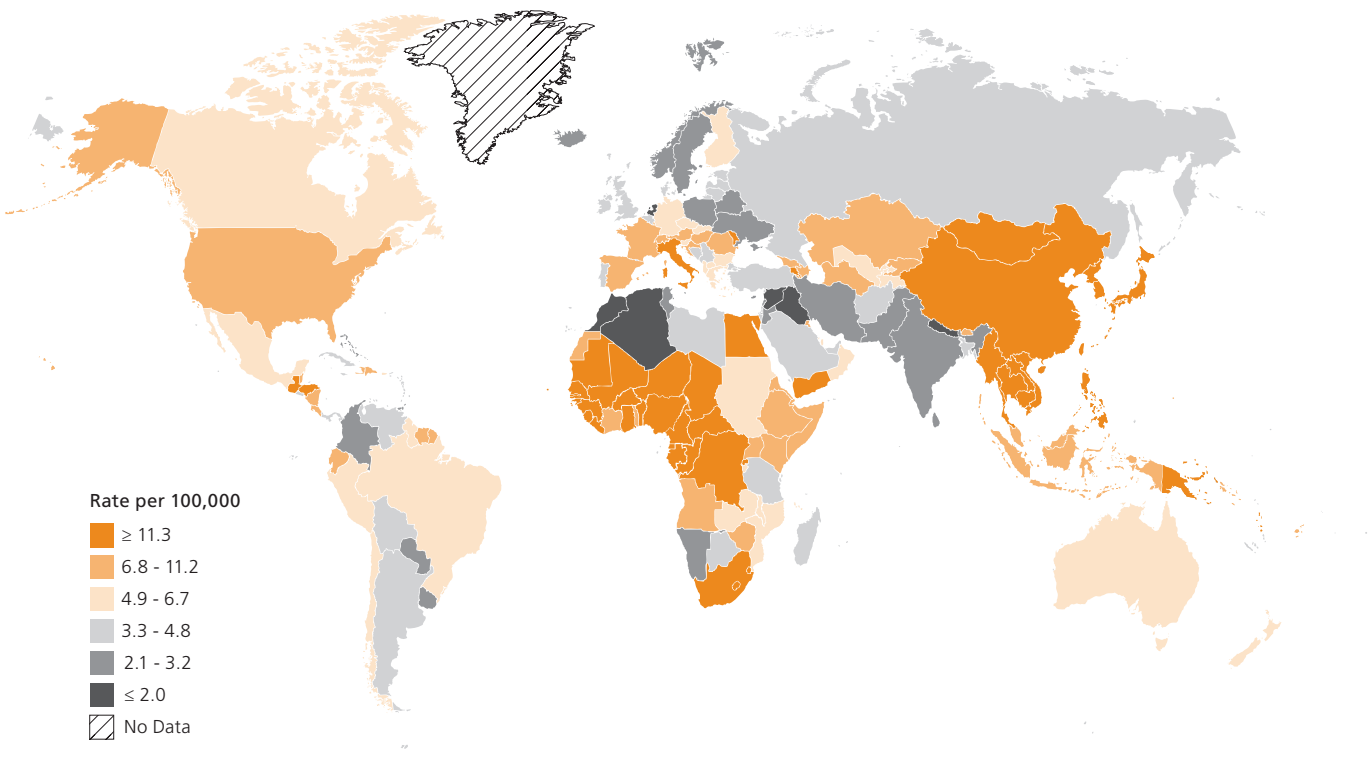
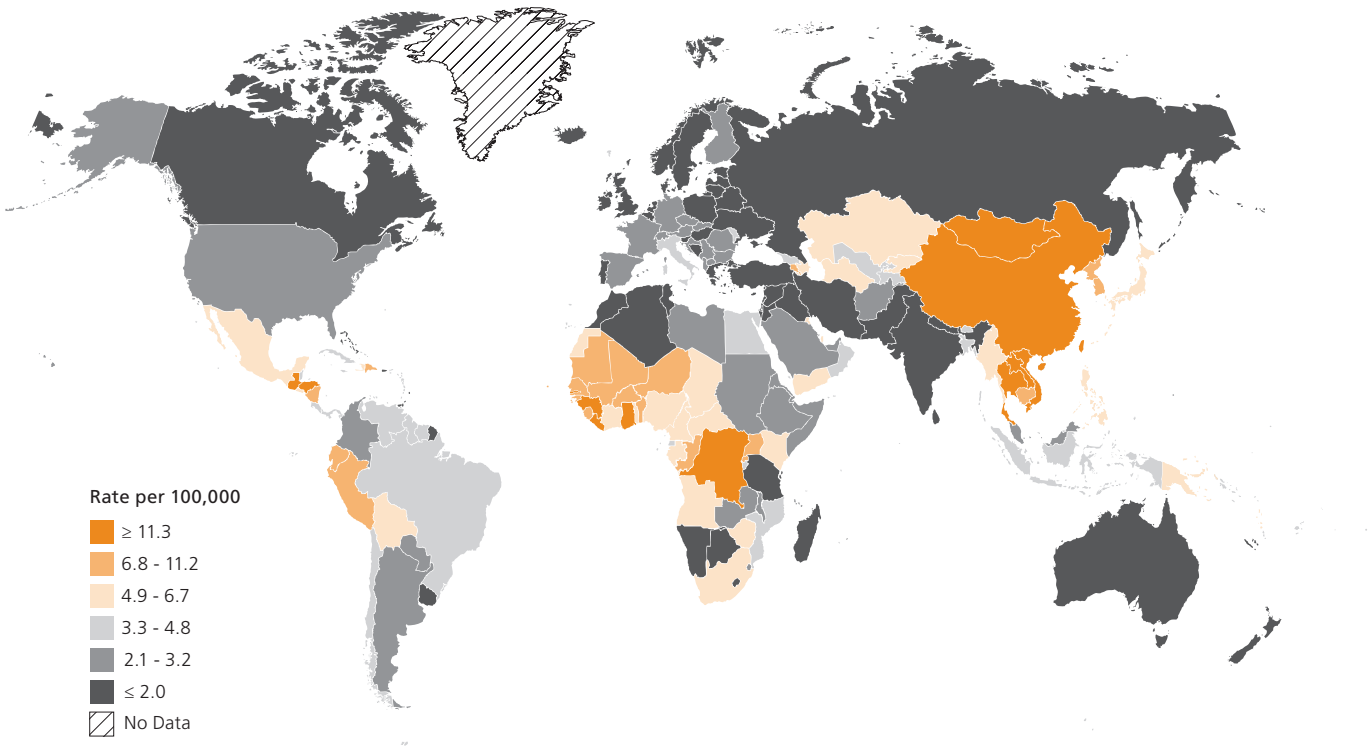
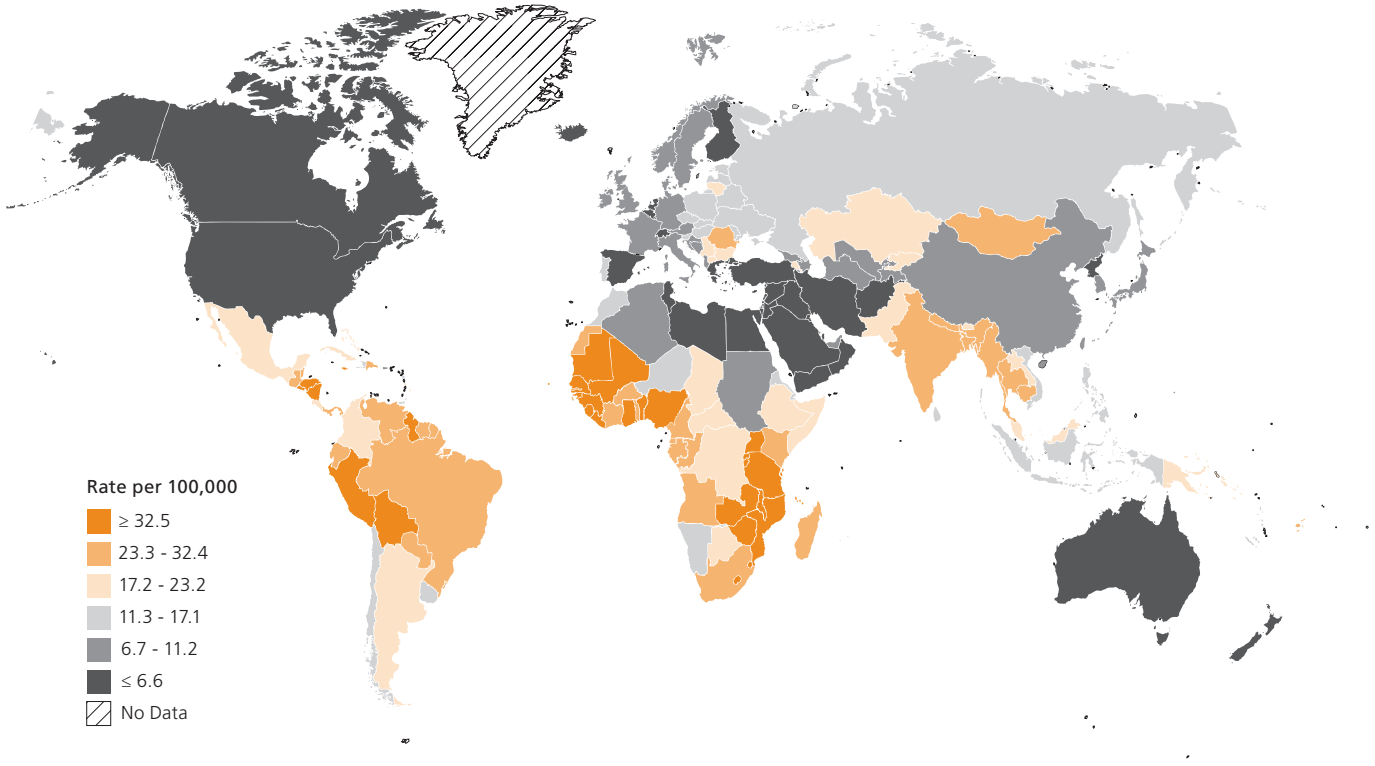


Figure 7b. International Variation in Age-standardized Liver Cancer Incidence Rates among Females, 2008



Source: GLOBOCAN 2008.

Figure 8. International Variation in Age-standardized Cervical Cancer Incidence Rates, 2008



Source: GLOBOCAN 2008.

Uterine Cervix

In 2012, 2,100 Hispanic women in the US will be diagnosed with cervical cancer and approximately 500 will die from the disease. Women in Mexico and Central and South America experience approximately triple the cervical cancer incidence and mortality rates of women in the US, largely due to lack of access to screening in these countries (Figure 8).[62,65] Overall, the cervical cancer incidence rate among Hispanic women residing in the US is about 64% higher than among non-Hispanic whites (Table 3, page 4). A geographic analysis in the US found that Hispanic women experience the highest cervical cancer incidence rates of any racial/ethnic group in every region; the highest rates were found among Hispanic women in the Midwest, likely due to large numbers of new immigrants in this region.[66]

Cervical cancer is caused by infection with certain types of human papillomavirus (HPV).[67] There are two vaccines approved by the Food and Drug Administration for the prevention of the most common cancer-causing HPV infections: Gardasil protects against four HPV types and is approved for use in both males and females, and Cervarix protects against two HPV types and is approved for use in females. For more information about HPV and HPV vaccines, please see page 20.

Cervical cancer is one of only two cancers (colorectal is the other) that can actually be prevented through screening and the removal of precancerous lesions. The Pap test, which is the most common method of screening for cervical cancer, and the HPV test are both simple procedures in which a small sample of cells is collected from the cervix. In addition to detecting precancerous lesions that can be removed before they develop into cancer, the Pap test can detect cancer early, when treatment is more successful. Fortunately, most cervical precancers are slow-growing, so nearly all cases could be prevented with regular screening. The 5-year survival rate for cervical cancer is 75% among Hispanic women and 71% among non-Hispanic whites.

Cervical cancer screening is recommended even for women who have been immunized against HPV because the vaccine does not protect against all HPV types. Low rates of screening and poor adherence to recommended follow up after an abnormal screening result are thought to contribute to the higher mortality among Hispanic women.[68] It has been estimated that as many as 80% of deaths from cervical cancer could be prevented by regular screening coupled with adequate patient follow up and treatment.[69] For more information on screening for cervical cancer, see page 22.

Gallbladder

An estimated 400 Hispanic women will be diagnosed with cancer of the gallbladder in 2012. It is one of the few cancers that occurs more often in women than in men. In the US, Hispanic women have higher incidence rates than any other racial/ethnic group; rates among Hispanic women are twice those of both Hispanic men and non-Hispanic white women and four times those of non-Hispanic white men (Table 3, page 4). Incidence rates of gallbladder cancer among Hispanics in the US decreased 3.4% per year in men and 1.1% per year in women from 2000 to 2009. Gallbladder cancer has nonspecific symptoms that typically result in a late stage at diagnosis and very poor survival.[70] The 5-year cause-specific survival rate is about 20%.

Hispanic women living in California and New Mexico have the highest incidence of gallbladder cancer (along with American Indians in New Mexico) in the US, with rates 3- to 5-fold those of non-Hispanic white women in those states.[70] There is wide variation in worldwide incidence; populations with the highest risk of gallbladder cancer are found in Latin America and Asia.[70] Notably, gallbladder cancer is the most common cause of cancer death among Chilean women, with rates exceeding breast and cervical cancers.[71] A history of gallstones is the strongest risk factor for gallbladder cancer, although less than 1% of individuals with gallstones will develop this cancer.[70,72] Other risk factors for gallbladder cancer include chronic inflammation of the biliary tract, diabetes, the use of hormone replacement therapy, and female obesity.[73-76]

Cancer in Children and Adolescents

Overview

Cancer is a relatively rare disease in children (ages 0-14 years) and adolescents (ages 15-19 years). The types of cancer that commonly occur in children are different from those that are common in adults. Unlike many adult cancers, for which tobacco use, overweight and obesity, and physical inactivity are known preventable causes, cancer in childhood and adolescence is not well understood. Some causes of childhood cancer include genetic changes that can be passed down from parent to child, radiation exposure, and infections with certain viruses. For reasons that are not clearly understood, the global distribution of childhood cancer varies by level of economic development.[77]

New cases: It is estimated that about 2,500 Hispanic children (ages 0-14 years) in the US will be diagnosed with cancer in 2012, accounting for about 2.2% of the total cancer cases in Hispanics. In contrast, childhood cancer accounts for 0.7% of new cancer cases in the total US population. The difference arises primarily because the Hispanic population is younger – children account for 30% of the US Hispanic population, compared to 20% of the total US population.[2,78]

Incidence rates for all cancers combined are slightly lower in Hispanic than non-Hispanic white children and adolescents. Leukemia is the most common cancer in children, followed by cancers of the brain/central nervous system and lymphoma (Table 5). Childhood cancers with higher rates in Hispanics than non-Hispanic whites include leukemia, osteosarcoma, germ cell tumors, and retinoblastoma. Figure 9 (page 14) shows differences in the major types of childhood cancer by race/ethnicity. Hispanic children have the highest rates of leukemia, double those of African American children who experience the lowest rates.

The high rates of leukemia in Hispanic children are driven by acute lymphocytic leukemia, for which Hispanics of all ages experience a higher incidence than other population groups.[79,80]

Deaths: Although childhood cancer is rare, it is the second-leading cause of death among both Hispanic and non-Hispanic white children (ages 1-14 years). Among adolescents (ages 15-19 years), cancer is the fourth-leading cause of death among Hispanics and the third-leading cause among non-Hispanic whites. It is estimated that about 400 Hispanic children will die from cancer in 2012.

Trends in incidence and death rates: From 2000 to 2009, incidence rates for all cancers combined were stable among both Hispanic and non-Hispanic white children (ages 0-14 years); in contrast, incidence rates increased by 1.7% per year among Hispanic adolescents (ages 15-19 years) while remaining stable among non-Hispanic whites adolescents.

Death rates for all cancers combined during 2000-2009 decreased by 2.2% per year among Hispanic children (ages 0-14 years) and were stable among adolescents (age 15-19 years). Among non-Hispanic whites, death rates decreased by 2.5% per year among both children and adolescents during this time period.

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

Table 5. Childhood Cancer Incidence Rates and Rate Ratios Comparing Hispanics to Non-Hispanic Whites, 2005-2009

	Age 0-14 years			Age 15-19 years		
	Hispanic	Non-Hispanic White	Rate Ratio	Hispanic	Non-Hispanic White	Rate Ratio
All sites	15.5	16.2	0.96*	21.7	23.5	0.92*
Leukemia	6.1	5.0	1.23*	4.8	3.0	1.62*
Lymphoid leukemia	4.8	3.9	1.24*	3.0	1.5	2.09*
Acute myeloid leukemia	0.8	0.7	1.19*	1.0	0.9	1.09
Brain & other nervous system	2.7	3.7	0.74*	1.8	2.5	0.72*
Lymphomas	1.6	1.7	0.96	3.9	5.6	0.69*
Non-Hodgkin lymphoma (except Burkitt lymphoma)	0.6	0.6	0.97	1.2	1.5	0.81*
Hodgkin lymphoma	0.6	0.6	1.10	2.4	3.7	0.65*
Burkitt lymphoma	0.2	0.3	0.55*	0.1	0.3	0.48*
Soft-tissue sarcomas	1.0	1.1	0.96	1.5	1.6	0.95
Bone tumors	0.8	0.7	1.10	1.5	1.6	0.95
Osteosarcoma	0.5	0.3	1.36*	0.9	0.8	1.16
Germ cell tumors	0.6	0.5	1.31*	3.9	2.9	1.36*
Malignant gonadal germ cell tumor	0.4	0.2	1.83*	3.1	2.3	1.34*
Intracranial & intraspinal germ cell tumor	0.2	0.1	1.29*	0.2	0.3	0.94
Neuroblastoma	0.6	1.3	0.51*	†	†	–
Renal tumors	0.6	0.9	0.70*	0.2	0.2	0.98
Retinoblastoma	0.4	0.3	1.29*	†	†	–
Hepatic tumors	0.3	0.2	1.15	0.2	0.1	1.28

Rates are per 100,000 and age adjusted to the 2000 US standard population. Persons of Hispanic/Latino origin may be of any race. Ratio is the unrounded Hispanic rate divided by the non-Hispanic white rate.

*The difference between the Hispanic and non-Hispanic white rate is significant ($p<0.05$). † Data suppressed due to fewer than 25 cases.

Data Source: North American Association of Central Cancer Registries (NAACCR), 2012. Incidence data are based on the NAACCR Hispanic Identification Algorithm (NHIA).

American Cancer Society, Surveillance Research, 2012

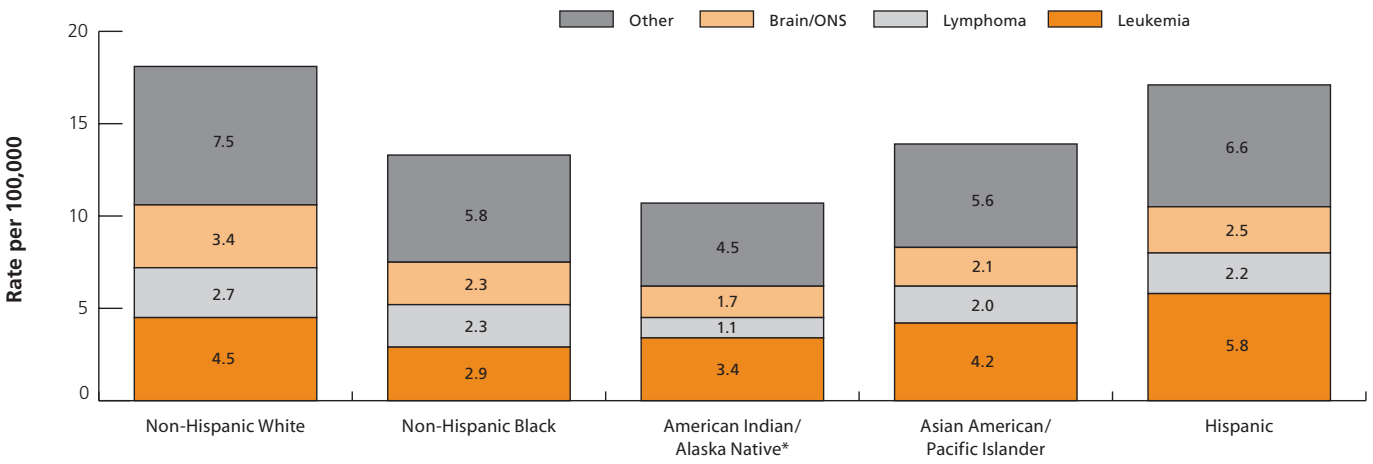
Survival: Over the past 30 years, there have been significant improvements in 5-year relative survival rates for most childhood cancers. The substantial progress in pediatric cancer survival rates is largely attributable to significant advances in treatment and the high proportion of patients participating in clinical trials. However, survival among Hispanics remains poorer than that among whites for all cancers combined and for many cancers. The 5-year cause-specific survival rate for all cancers combined among children and adolescents diagnosed during 2002-2008 was 80% among Hispanics and 86% among non-Hispanic whites. The largest survival disparities are for brain and central nervous system tumors among children (0-14 years; 19% lower among Hispanics) and for leukemia and soft tissue sarcomas among adolescents (15-19 years; ≥10% lower among Hispanics).[81] Treatment for childhood cancer depends on the type and stage of disease and involves a team that includes pediatric oncologists, nurses, social workers, and psychologists.

Selected Cancers

Leukemia: Leukemia is a condition in which too many underdeveloped white blood cells are found in the blood and bone marrow. It is the most common cancer in children and young adults, representing about one-third of all childhood cancers. There are two major types of leukemia in children (ages 0-14 years) – acute lymphocytic leukemia (ALL), accounting for 83% of pediatric leukemia cases in Hispanics, and acute myeloid leukemia (AML), accounting for 11% of cases. Incidence of ALL is highest in children 1 to 4 years of age. The incidence of ALL and AML is higher among Hispanic than non-Hispanic white children/adolescents. Though genetic abnormalities appear to be responsible for some proportion of childhood leukemia, few risk factors other than radiation exposure are well established.[82]

Five-year survival rates for ALL have improved significantly over the past two decades for all children, including Hispanics.[83] However, survival is lower among Hispanic compared to non-Hispanic white children for all leukemia subtypes. For example, the 5-year cause-specific survival rates for ALL are 87% and 92% for Hispanics and non-Hispanic whites, respectively; for AML these numbers drop to 69% and 76%, respectively. Although less access to treatment likely accounts for some of the disparity,[84] these differences are also apparent in clinical trials, in which everyone receives equal treatment.[83,85] Recent research has shown that this disparity may be due to an excess burden of high-risk leukemia types among Hispanic children.[86,87]

Figure 9. Comparison of Common Childhood Cancer Incidence Rates by Race/Ethnicity, Ages 0-19 Years, 2005-2009



Rates are per 100,000 and age adjusted to the 2000 US standard population. Persons of Hispanic origin may be of any race.
*Incidence rates for American Indian/Alaska Native are based on the CHSDA (Contract Health Service Delivery Area) counties.
Source: North American Association of Central Cancer Registries, 2012.

Brain and other nervous systems cancers: Brain and other nervous system (ONS) cancers account for about 17% of all malignancies among Hispanic children in the US. Incidence rates of these tumors are about 26% lower in Hispanic children compared to non-Hispanic white children, among whom rates are highest (Figure 9). Most of this difference is explained by the incidence rate for astrocytoma, which is about 35% lower in Hispanic than non-Hispanic white children.[88,89] The difference may also reflect differences in access to and utilization of state-of-the-art diagnostic techniques in the detection of these cancers.

Survival for pediatric cancers of the brain/ONS is highly dependent on age at diagnosis, tumor type and location, and treatment. The overall 5-year cause-specific survival rate is 69% among Hispanics and 77% among non-Hispanic whites. Among both groups, survival is about 5% higher for adolescent patients than for children.

Lymphoma: Among children and adolescents, the highest risk of developing lymphoma is during ages 10 to 19 years. Lymphoma incidence rates among children (ages 0 to 14 years) are the same for Hispanics and non-Hispanic whites, while among adolescents (ages 15 to 19 years), incidence rates in Hispanics are 35% lower for Hodgkin lymphoma and 20% lower for non-Hodgkin lymphoma.[88] One study found that lymphoma incidence rates among Hispanic children in Florida (primarily Cuban and Central American origin) were twice those of Hispanic children in California (primarily of Mexican origin).[90]

Survival for pediatric lymphoma is slightly lower among Hispanics than non-Hispanic whites. The 5-year cause-specific survival rate for Hodgkin lymphoma is 95% for children (ages 0-14 years) and 94% for adolescents (ages 15-19 years); the rates for non-Hodgkin lymphoma are 88% and 77%, respectively.

Risk Factors for Cancer

Tobacco use is the most preventable cause of disease, accounting for about 30% of all cancer deaths.[91] Similarly, overweight or obesity, physical inactivity, and poor nutrition are estimated to account for one-third of cancer deaths. Alcohol consumption is another important risk factor for some cancers, particularly liver cancer. Certain cancers (e.g., liver, cervix, and stomach) are related to infectious agents, such as hepatitis B virus, hepatitis C virus, human papillomavirus, human immunodeficiency virus, and *Helicobacter pylori*; Hispanics in the US bear a disproportionate burden of these cancers. In addition, intense sun exposure and indoor tanning are associated with increased risk of skin cancers. Experts believe that if current knowledge about cancer prevention and early detection was fully applied, about half of all cancer deaths could be prevented.[20,92]

Tobacco

Adults

Tobacco use is a major cause of cancer in the US and is responsible for about 30% of all cancer deaths. Most lung cancers and many cancers of the mouth, nasal cavities, pharynx, larynx, esophagus, stomach, colorectum, liver, kidney, pancreas, uterine cervix, bladder, and myeloid leukemia, are caused by cigarette smoking.[93]

The percentage of adults who smoke is lower among Hispanics (13%) than non-Hispanic whites (21%). Smoking rates in Hispanic women are about half those in non-Hispanic white women, while smoking rates in Hispanic men are about three-quarters of those in non-Hispanic white men (Table 6). Rates of smoking among Hispanic adults who were born in the US are higher than those who are foreign-born.[44,94] Among the major Hispanic subgroups, Cubans and Puerto Ricans are more likely to smoke (18%) than Mexicans (13%).[95] Among smokers overall, Hispanics are more likely than non-Hispanic whites to be low-level smokers (consuming 5 or fewer cigarettes per day).[41,96,97]

There are tremendous health and economic benefits associated with smoking cessation that are greater for those who quit at a younger age. Quitting smoking substantially reduces the risk of lung cancer and other smoking-related diseases. For many smokers, quitting is difficult because of the addictive properties of nicotine in tobacco. Advice to quit by a health care provider can encourage smokers to quit, and cessation aids can improve success rates, including medications (nicotine replacement products alone or in combination with antidepressant medication), counseling, and behavioral therapies.[20,96,98] However, lower rates of health insurance coverage and less access to medical care reduce the likelihood that Hispanic smokers will have access to tobacco cessation treatments.[99,100] In some studies, the role of social support appears to be extremely important to the

Table 6. Current (%) Cigarette Smoking and Alcohol Consumption, Adults 18 and Older, US, 2010

	Hispanic			Non-Hispanic White		
	Male	Female	Total	Male	Female	Total
Smoking	**15.8**	**9.0**	**12.5**	**22.6**	**19.6**	**21.0**
Origin						
Puerto Rican	19.0	16.6	17.6	–	–	–
Mexican	17.0	7.9	12.6	–	–	–
Cuban	20.7	15.1	18.2	–	–	–
Dominican	5.8	5.5	6.2	–	–	–
Central or South American	11.7	5.5	8.8	–	–	–
Education*						
≤12 years (no diploma)	16.0	8.5	12.7	45.1	40.8	43.1
High school diploma or GED†	20.5	11.1	15.5	32.6	30.1	31.3
Some college	15.5	9.9	12.6	24.8	22.8	23.7
Bachelor's degree or higher	6.9	6.7	6.5	9.0	8.8	8.9
Poverty‡						
Poor	18.2	8.7	12.9	42.4	37.1	39.4
Near poor	17.0	9.2	13.5	33.4	31.2	32.2
Nonpoor	12.9	9.5	11.3	19.0	15.9	17.5
Health insurance						
No	16.8	7.1	12.7	45.6	36.5	42.2
Yes	13.3	9.7	11.4	19.0	17.8	18.4
Immigration						
US-born	18.5	14.1	16.2	23.2	20.9	22.0
Foreign-born, In US ≥10 yrs	15.1	6.4	10.7	16.9	14.3	15.0
Foreign-born, in US 1-9 yrs	13.2	5.5	9.6	19.8	15.4	17.3
Alcohol consumption§	**63.1**	**43.4**	**53.2**	**74.6**	**67.6**	**70.9**
Light	31.5	22.3	27.0	32.3	33.6	32.9
Moderate	16.4	3.5	10.0	25.4	10.9	18.0
Heavy	3.9	1.7	2.8	6.5	5.9	6.2
Binge	28.2	10.1	19.4	36.3	18.9	27.4

Estimates are age adjusted to the 2000 US standard population. Smoking by Hispanic origin based on combined data for 2009-2010.

* Ages 25 years and older. † General Education Development. ‡ Poor persons are defined as below the poverty threshold; near poor persons have incomes between 100% and less than 200% of the poverty threshold; non-poor persons have incomes of 200% or greater than the poverty threshold. § Light: 3 drinks or fewer per week; moderate: 4-14 drinks per week for men and 4-7 drinks per week for women; heavy: more than 14 drinks per week for men and more than 7 drinks per week for women; binge; 5 or more drinks on at least one day in past year.

Source: National Health Inerview Survey, 2009, 2010 National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2010, 2011.

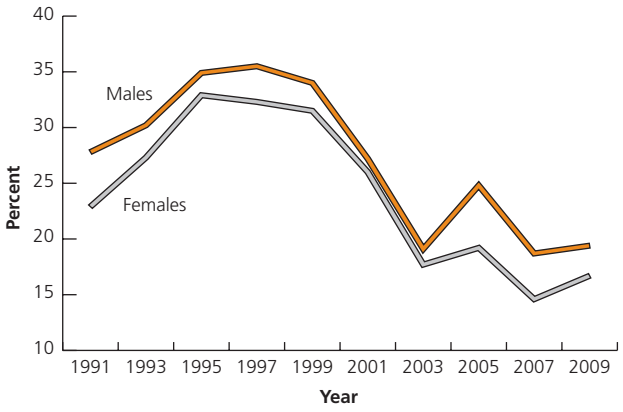
Table 7. Smoking and Alcohol Consumption in High School Students (2009) and HPV Vaccine Uptake in Adolescent Girls (2010), US

	Hispanic			Non-Hispanic White		
	Total	Female	Male	Total	Female	Male
Smoking						
Any tobacco use*	20.8	18.1	23.6	30.3	24.9	35.1
Cigarette use†	18.0	16.7	19.4	22.5	22.8	22.3
Alcohol						
Current alcohol use‡	42.9	43.5	42.4	44.7	45.9	43.6
Binge drinking§	24.1	23.3	25.1	27.8	27.5	28.0
HPV vaccine utilitzation¶						
≥ 1 dose	–	56.2	–	–	45.8	–
3 doses	–	29.5	–	–	32.4	–
Completion rate**	–	56.1	–	–	74.7	–

*Smoked cigarettes, cigars, cigarillos, or little cigars, or used chewing tobacco, snuff, or dip on one or more of the 30 days preceding the survey. †Smoked cigarettes on one or more of the 30 days preceding the survey. ‡Had one or more drink of alcohol on one or more of the 30 days preceding the survey. §Had five or more drinks of alcohol in a row within a couple of hours one or more of the 30 days preceding the survey. ¶Among girls ages 13-17. **The proportion of girls with at least one dose who completed the 3-dose series.

Source: Youth Risk Behavior Surveillance System, 2009, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. *MMWR Morb Mortal Wkly Rep.* 2010;59(SS-5).

Figure 10. Trends in Current Cigarette Smoking*, Hispanic High School Students, US, 1991-2009



* Smoked cigarettes on one or more of the 30 days preceding the survey.

Source: Youth Risk Behavior Surveillance System, 1991-2009. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2010.

success of quit attempts in Latino smokers, especially support from one's spouse. Additionally, social support among Latinos seems to buffer against depression, which is negatively associated with quit attempts.[101,102]

Smoking cessation programs for Hispanics may be most effective if they include outreach by lay health advisors *(promotoras)*. These advisors, who are trained to attend to the specific health and medical needs of community members, assist medically underserved Hispanic smokers in accessing tobacco cessation services.[103 103] Smokers may also improve their chances of quitting by accessing cost-free tobacco cessation telephone counseling services available in many states, such the National Quitline Service at 1-800-QUIT-NOW or web-based online services at smokefree.gov.

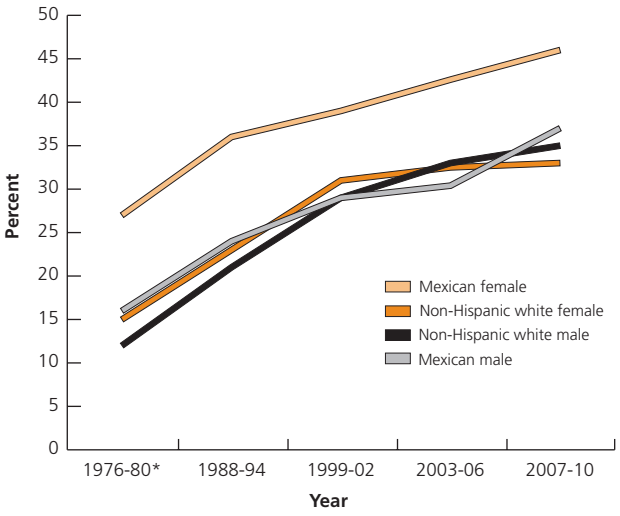
Youth

In general, Hispanic youth are less likely to smoke cigarettes than non-Hispanic white youth (Table 7). Between 1991 and 2009, the percentage of Hispanic high school students who smoked peaked at 33% in 1995 for girls and at 36% in 1997 for boys (Figure 10). Following a period of steady declines through 2003, smoking prevalence among Hispanic youth has since been relatively stable, similar to trends in other racial/ethnic youth.[104] In 2009, 17% of Hispanic girls and 19% of Hispanic boys smoked cigarettes. In contrast to markedly lower smoking rates in Hispanic women compared to men, smoking rates among adolescents show little gender difference (Table 7). There is no recent data available on cigarette use among the various subgroups of Hispanic adolescents. According to one report, prevalence of smoking did not differ among subgroups of Hispanic adolescents with the exception of Cuban boys, who had somewhat higher rates.[105]

Control

A variety of public health interventions have proven effective in reducing tobacco use, including tobacco tax increases, smoke-free laws, and counter-advertising campaigns.[20,106,107] Tobacco tax increases may be particularly effective among Hispanics because studies have found this group to be more price-sensitive than other population sub-groups.[107] Counter-marketing strategies can also be effective in neutralizing tobacco industry advertising and promotional strategies targeted at Hispanic

Figure 11. Obesity Trends for Mexican American and Non-Hispanic White Adults 20-74 Years, US, 1976-2010



Body mass index ≥ 30.0 kg/m² (age adjusted to the 2000 US standard population). *Data for Mexican Americans are for years 1982-84.

Source: National Health and Nutrition Examination Survey, Hispanic Health and Nutrition Examination Survey (1982-84). Centers for Disease Control and Prevention, 2012.

groups.[107-109] However, state tobacco control programs are typically underfunded based on levels recommended by the Centers for Disease Control and Prevention (CDC).[20] In 2009, tobacco control funding allocations were less than 50% of recommended levels in seven states with nearly 80% of the US Hispanic population (Arizona, California, Florida, Illinois, New Jersey, New York, and Texas).[110]

Overweight and Obesity

Adults

Obesity is associated with an increased risk of several cancers, including breast (postmenopausal), adenocarcinoma of the esophagus, colorectum, endometrium, kidney, and pancreas.[111,112] Obesity also increases the risk of diabetes, high blood pressure, heart disease, and premature death.[112] An adult with a body mass index (BMI) of 30 or greater is considered obese while 25 or greater is considered overweight. BMI is the ratio of weight (kilograms) to height (meters) squared (see sidebar).

In the early 1990s, 21% of US adults were obese; by 2009-2010, this figure had risen to 35%.[113-116] The prevalence of obesity has increased across all racial/ethnic groups. The sudden increase in obesity is linked with changes in the social environment, including the availability and promotion of high-calorie and low-nutrient foods and reduced opportunities to engage in physical activity at work, while commuting, in school, and during leisure time.[112,117]

Defining Overweight and Obese

Different measures are used to determine whether a person is considered overweight or obese, taking height into account. A common scale is the body mass index (BMI), or ratio of weight (in kilograms) to height (in meters, squared). For adults 20 years of age and older, overweight is defined as a BMI of 25.0-29.9 kg/m²; obesity is defined as a BMI of 30.0 kg/m² or greater. Although BMI may overestimate body fat in athletes and others who have a muscular build, or underestimate body fat in older persons who have lost muscle mass, in general it is a reliable indicator of total body fat.

This table relates BMI to pounds and inches rather than kilograms and meters. For example, a 5'4" woman is considered overweight if she weighs between 145 and 173 pounds. She is obese if she weighs 174 pounds or more. A 5'10" man is considered overweight if he weighs between 174 and 208 pounds and obese if he weighs 209 pounds or more.

Height (feet, inches)	Body weight (pounds) Overweight*	Obese†
6'4"	205	246
6'3"	200	240
6'2"	194	233
6'1"	189	227
6'0"	184	221
5'11"	179	215
5'10"	174	209
5'9"	169	203
5'8"	164	197
5'7"	159	191
5'6"	155	186
5'5"	150	180
5'4"	145	174
5'3"	141	169
5'2"	136	164
5'1"	132	158
5'0"	128	153
4'11"	124	148
4'10"	119	143

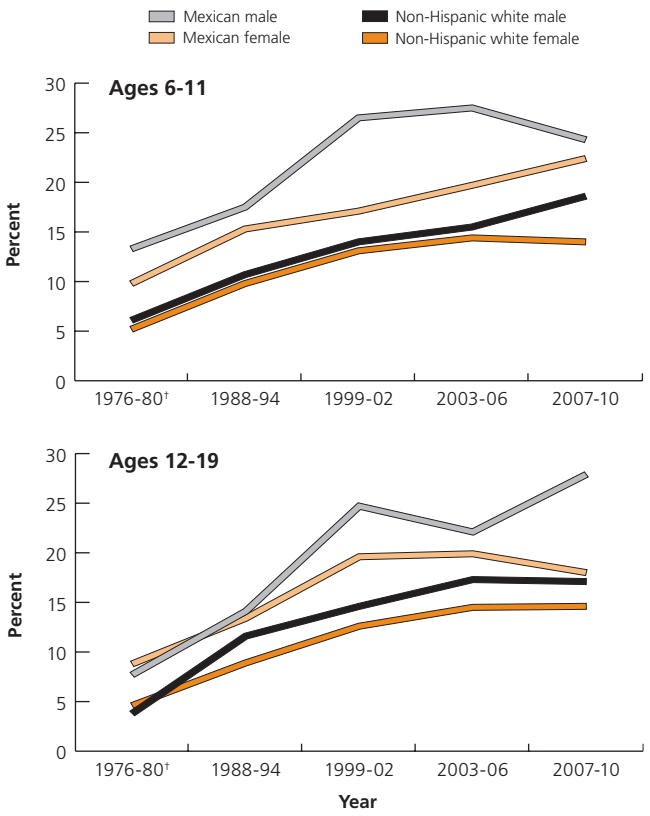
* Overweight defined as body mass index of 25-29.9 kg/m².

† Obesity defined as body mass index of 30 kg/m² or greater.

These changes have resulted in increased caloric consumption and decreased energy expenditure in the population.[117,118]

The prevalence of obesity is higher among Hispanic women than Hispanic men or non-Hispanic whites (Figure 11). The National Health and Nutrition Examination Survey (NHANES) is the most accurate source of information on obesity trends in the US because height and weight are measured rather than reported by participants. The NHANES reports data for Hispanics of Mexican descent but not other Hispanic subgroups. When first measured in 1976-1980, 27% of Mexican American women and 16% of Mexican American men were obese; by 2009-2010,

Figure 12. Trends in Obesity for Mexican American and Non-Hispanic White Children, 1976-2010



*BMI at or above the 95th percentile cut-point based on the 2000 sex-specific BMI-for-age CDC Growth Charts. †Data for Mexican Americans in 1976-80 are for years 1982-84.

Source: National Health and Nutrition Examination Survey, Hispanic Health and Nutrition Examination Survey (1982-84). Centers for Disease Control and Prevention, National Center for Health Statistics, Health, United States.

those numbers had risen to 45% in women and 37% in men.[113] The prevalence of overweight among Mexican Americans in 2009-2010 was 80% in women and 82% in men, compared to 60% and 74% in non-Hispanic white women and men, respectively.[113] Duration of residence in the US is associated with body weight. The obesity prevalence among immigrants who have lived in the US for at least 15 years is double that of new immigrants (residence less than one year).[119]

Aside from avoiding tobacco use, maintaining a healthy weight and engaging in regular physical activity are the most important approaches to reducing the risk of cancer, as well as many other chronic diseases.[112] The American Cancer Society nutrition and physical activity guidelines for cancer prevention, which were most recently updated in 2012, recommend achieving and maintaining a healthy weight throughout life, adopting a physically active lifestyle, consuming a healthy diet, with an emphasis on plant sources, and limiting consumption of alcoholic beverages.[112] The US Department of Agriculture recommendations on nutrition and physical activity for Americans are consistent with those of the Society and are available in Spanish. (For additional information, see *Las Guias Alimentarias para los Estadounidenses, 2010* at choosemyplate.gov/print-materials-ordering/DGbrochure-spanish.pdf.)

Youth

Overweight children often become overweight adults, with an increased risk for a wide variety of poor health outcomes.[118] Some of the health consequences of overweight and obesity can occur early in life, such as high blood pressure, high cholesterol, and diabetes.[118] The prevalence of overweight in children of all racial and ethnic groups has increased sharply in the US since 1980.[20,114,118]

For children and adolescents, the BMI that is considered healthy varies by age. Obese is defined as a BMI at or above the 95th percentile from sex- and age-specific growth charts.[114] Data from the NHANES show that between the late 1970s and 2010, the percentage of US children (ages 6 to 11) who were obese more than doubled, while the percentage of obese adolescents (ages 12 to 19) almost tripled.[114,116] The percentage of obese children and adolescents has been consistently higher among Mexican Americans than non-Hispanic whites (Figure 12). In 2009-2010, one in five (21%) Hispanic children (ages 2 to 19 years) was obese, compared to 14% of non-Hispanic whites.[114] Obesity prevention strategies at the community, school, and family level are necessary to address the childhood epidemic in the US.[118,120,121]

Community Strategies

There is growing recognition that multiple aspects of social environments where people live, work, and play appear to be linked to overweight and obesity.[112,118,122] Although healthy eating and physical activity are a matter of individual choice, the local food environment (e.g., fast-food outlet versus supermarket density) and built-environment features (e.g., accessibility to parks, gym, or other recreational settings) can influence individuals' choice and ability to adopt a healthy lifestyle.[117,118,122] Therefore, the American Cancer Society nutrition and physical activity guidelines include recommendations for community-level actions. They suggest the need for public, private, and community organizations to work together to facilitate and promote policies to effect changes in social and physical environments in order to enable people to adopt and maintain healthy nutrition and physical activity behaviors.[112] Specifically, community-level actions are needed to: (1) increase access to healthy foods in schools, worksites, and communities; (2) provide safe, enjoyable spaces for physical activity in schools; and (3) provide for safe, physically active transportation (such as biking and walking) and recreation in communities. One example of this type of urban planning in the Hispanic community is Plan El Paso 2010, which received the 2011 National Award for Smart Growth Achievement from the US Environmental Protection Agency. For more information on Plan El Paso, visit planelpaso.org.

Alcohol

Adults

Excessive alcohol consumption is a primary cause of cirrhosis and liver cancer. Alcohol consumption also increases the risk of cancers of the oral cavity and pharynx, esophagus, larynx, colorectum, and female breast.[92,123-125] The American Cancer Society's dietary guidelines for cancer prevention and risk reduction state that individuals should limit their alcohol consumption to no more than 2 drinks per day for men and no more than 1 drink per day for women. Alcohol consumption is of special concern among Hispanics because of their higher rates of liver cancer compared to other population groups.[112]

According to data from the National Health Interview Survey in 2010, Hispanics tend to consume less alcohol than non-Hispanic whites, especially women. Approximately 2% of Hispanic women and 4% of Hispanic men reported heavy alcohol consumption, compared to 6% of non-Hispanic white women and 7% of non-Hispanic white men (Table 6, page 15). However, some studies have reported higher rates of binge drinking among Mexican than non-Hispanic white men.[56,57] Lower alcohol consumption among Hispanic women may be explained by social customs and attitudes within the Hispanic culture and socioeconomic factors.[126-128] It is important that health promotion and cancer prevention efforts among Hispanic adults encourage adoption of nutritional advice about alcohol consumption.[129,130]

Youth

In 2009, Hispanic high school students reported alcohol consumption levels similar to non-Hispanic whites. About 43% of Hispanic girls and boys reported consuming alcohol on at least one of the preceding 30 days, and 24% reported consuming 5 or more drinks on a single occasion (Table 7, page 16). Similar to smoking, alcohol consumption in Hispanic female adolescents is equivalent to that in males and in sharp contrast to much lower rates of alcohol consumption in Hispanic women compared to men. Prevention strategies to reduce alcohol use among Hispanic youth emphasize the importance of parental communication and family interventions.[131-133]

Infectious Agents

Helicobacter pylori

Chronic infection with a bacterium called *Helicobacter pylori (H. pylori)* is a strong risk factor for stomach cancer.[59 59] Approximately half of the world's population is infected with *H. pylori*, though most are unaware because they do not experience symptoms. In the US, infection rates among Hispanics are two to four times those in whites and decline among successive generations. For example, compared to second-generation US-born Hispanics, prevalence is approximately 10 times higher among foreign-born Hispanics and 3 times higher among first-generation US-born Hispanics.[134] Stomach cancer risk varies among Hispanics by nativity consistent with these patterns.[135] In Mexico, approximately 66% of adults test positive for *H. pylori*.[136] *H. pylori* transmission is thought to occur from person to person through fecal-oral and oral-oral routes, and is facilitated by the crowded living conditions and relatively poor sanitation common in the countries of origin of many Hispanic immigrants. However, because sources and transmission routes are uncertain, specific primary prevention strategies have not been recommended. *H. pylori*-infected individuals who experience symptoms or who have a family history of stomach cancer can be successfully treated with antibiotics.[137]

Hepatitis B Virus and Hepatitis C Virus

Chronic infection with hepatitis B virus (HBV) and hepatitis C virus (HCV) is strongly associated with the development of cirrhosis and liver cancer.[51] There has been a vaccine available for the primary prevention of infection with HBV since 1982 that has resulted in a substantial reduction in HBV infection among children.[138,139] The prevalence of HBV infection (past or present) has also decreased among Mexican Americans, from 5% in 1988-1994 to 3% in 1999-2006.[138] In contrast, prevalence of HBV infection remained relatively unchanged at 3% among non-Hispanic whites in the US during this time period. A history of HBV infection is more common among foreign-born (12%) than US-born (4%) persons.[138] It has been estimated that immigrants to the US, many of whom come from high-prevalence countries, account for 95% of new HBV infections.[140]

The Centers for Disease Control and Prevention recommends receipt of the three-dose hepatitis B vaccine series for all infants at birth, children ages 0 to 18 years who were not previously vaccinated, and high-risk adults (e.g., health care workers, injection drug users, and individuals with multiple sexual partners).[141,142] Pregnant women should be screened for evidence of HBV infection, and if positive, newborn infants should receive both hepatitis B immune globulin and hepatitis B vaccine within 12 hours of birth.[143]

In contrast to HBV infection, there is no vaccine to protect against HCV infection. Although HCV infection is the most common blood-borne infection in the US, infected individuals are often unaware of their positive status because they do not have symptoms.[144] The virus is spread through blood-to-blood or sexual contact (i.e., the use of injection drugs, receipt of unscreened blood transfusion or organ transplant, or kidney dialysis). Data from 1999-2002 showed similar prevalence of HCV infection among Mexican Americans (1.3%) and non-Hispanic whites (1.5%), while Mexican-born individuals are about one-third as likely as US-born persons, 0.5% versus 1.8%, respectively, to be infected.[145] Similarly, US-born Hispanics are much more likely than foreign-born Hispanics to have risk factors for HCV infection (e.g., injection drug use, kidney dialysis, or tattoos).[146]

HPV Vaccine Recommendations from the Advisory Committee on Immunization Practices*

Females

- Routine vaccination at 11 to 12 years of age (may start at 9 years of age) with 3 doses of either Cervarix or Gardasil
- Vaccination at 13 to 26 years of age for those who have not been previously vaccinated or have not completed the 3-dose series

Males

- Routine vaccination at 11 to 12 years of age (may start at 9 years of age) with 3 doses of Gardasil
- Vaccination at 13 to 21 years of age for those who have not been previously vaccinated or have not completed the 3-dose series; males 22 to 26 years of age may also be vaccinated
- Vaccination of men through 26 years of age who have a weakened immune system (e.g., due to HIV infection) or who have sex with men

*The Advisory Committee on Immunization Practices issues official, federal recommendations for the use of vaccines in the US that are published by the Centers for Disease Control and Prevention. The above recommendations are current as of July 1, 2012.

For additional information, please see the following Web sites:
cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-gardasil.pdf.
cdc.gov/vaccines/pubs/vis/downloads/vis-hpv-cervarix.pdf

Primary prevention strategies include both educating uninfected individuals at high risk for infection about exposure prevention and counseling infected individuals about how to avoid transmission to others.[144] Routine screening of high-risk individuals in order to identify infected persons is also advised. In the health care setting, workers should be educated about the importance of infection-control techniques when handling all blood products. One-time screening of all persons born between 1945 and 1965 has also recently been proposed as a strategy to identify HCV-infected individuals.[147]

Human Papillomavirus

Persistent infection with human papillomavirus (HPV) causes nearly all cervical and anal cancers, about 40% of other genital cancers (i.e., vaginal, vulvar, penile), and an increasing proportion of head and neck cancers.[148-150] Of those cancers currently known to be associated with HPV, Hispanics have higher rates than non-Hispanics for cancers of the cervix and penis.[151] HPV is the most common sexually transmitted infection in the US, and adolescents and young adults have the highest prevalence of all age groups; almost half of women 20 to 24 years of age are infected.[152] Prevalence of HPV infection among females 14 to 59 years of age is similar among Mexican Americans and non-Hispanic whites (24%);[152] however, first generation Mexican immigrants have a higher prevalence of HPV infection than US-born Mexican women.[153] It is important to note that most cervical HPV infections are successfully cleared by the body within one year and do not result in the persistent infection required for progression to cancer.[154]

There are more than 100 types of HPV, only about 12 of which cause cancer.[149] HPV types 16 and 18 account for about 70% of all cervical cancer cases and almost all other HPV-related cancers.[149,155] Two FDA-approved vaccines for the prevention of HPV infection are currently available in the US. Gardasil provides protection against four HPV types (6, 11, 16 and 18) and is recommended for use in both males and females; Cervarix protects against two HPV types (16 and 18) and is recommended for use in females only. To prevent cervical cancer, HPV vaccination is recommended for all adolescent girls (ages 11 to 12 years) and for females (ages 13 to 26) who have not been previously vaccinated. Both vaccines are administered in three doses over the course of six months. The vaccines are covered under the Vaccines for Children (VFC) program, a national subsidy that provides vaccines free of charge to children younger than 18 years of age who are under- or uninsured. Most private health insurers also cover the vaccine.[20]

The annual National Immunization Survey among teens (ages 13 to 17 years) began monitoring HPV vaccine utilization in 2007 and revealed variation in coverage by race/ethnicity (Table 7, page 16). Although more Hispanic (56%) than non-Hispanic white (46%) girls had initiated vaccination, the rate of completion of the recommended 3-dose series was lower in Hispanics (56% versus 75%).[156] While trends in HPV vaccine utilization have been positive, continued efforts are needed to address barriers and expand coverage.[156]

Cancer Screening

Regular screening can detect cancer at an early stage and improve the chances of a cure for some types of cancer.[20,157] Screening can also prevent some cancers (cervical and colorectal) by detecting and removing growths that are likely to progress to cancer.[157]

Cervical Cancer Screening

Regular use of Pap and HPV tests followed by appropriate and timely treatment reduces deaths from cervical cancer.[149] In 2012, the American Cancer Society updated cervical cancer screening recommendations for the detection of cervical cancer and precancerous lesions. These guidelines recommend that for women at average risk, screening should begin at age 21 and continue at regular intervals through at least age 65. For more information, see detailed cancer screening guidelines on page 22. Women who are at high risk for cervical cancer, such as those with HIV infection, organ transplant, or exposure to the drug DES, may require more frequent screening. Even women who have had the HPV vaccine should follow cevical cancer screening recommendations.[149]

While Hispanic women have historically been less likely to participate in cervical cancer screening compared to non-Hispanic white women, rates have improved in recent decades.[157,158] The prevalence of recent Pap testing among Hispanic women ages 18 and older increased from 64% in 1987 to 75% in 2010. Across Hispanic subgroups, Puerto Rican and Cuban women (≥ 80%) have the highest rates of cervical cancer screening. Regardless of ethnicity, uninsured women are less likely to have had a recent Pap test than women who have health insurance (Table 8).

Breast Cancer Screening

Mammography is a low-dose x-ray procedure that can detect breast cancer at a stage when treatment may be more effective. The American Cancer Society recommends annual mammograms for women 40 years of age and older who are at average risk for breast cancer, as well as regular clinical breast examinations.[157] Since 1987, the use of breast cancer screening has been increasing across all racial and ethnic groups, and the gap in the prevalence of recent (within the past two years) mammography use between Hispanic and non-Hispanic white women has narrowed to about 3%.[159,160] In 2010, 47% of Hispanic women 40 years of age and older had a mammogram within the past year, compared to 52% of non-Hispanic whites (Table 8). Among Hispanic subgroups, Mexican and Central/South American women were the least likely to have had a recent mammogram. Despite increases in the prevalence of screening, breast cancer is detected at an advanced stage more often in Hispanics than in non-Hispanic whites (Figure 6, page 7). This difference has been largely attributed to lower frequency of and longer intervals between mammograms, as well as lack of timely follow up of suspicious mammograms.[161,162]

Table 8. Cancer Screening Test Use (%) by Hispanic Origin, US, 2010

	Hispanic		Hispanic sub-groups					Non-Hispanic Whites	
	All	Uninsured	Puerto Rican	Mexican	Cuban	Dominican	Central or South American	All	Uninsured
Cervical cancer screening (women* 21 and older)									
Pap test within past 3 years	74.7	53.5	83.0	71.6	80.0	77.4	75.6	79.1	63.1
Breast cancer screening (women 40 and older)									
Mammogram within past 2 years	64.4	29.0	68.2	61.6	69.4	77.8	62.2	67.0	41.1
Mammogram within past year	46.5	16.3	51.3	44.3	54.7	51.5	48.4	51.5	22.2
Colorectal cancer screening† (adults 50 and older)									
Total	47.0	19.5	53.7	45.2	47.0	46.4	44.4	61.5	21.6
Men	42.2	16.2	50.9	39.2	–	–	34.5	63.2	10.7
Women	51.2	23.6	56.1	51.0	57.4	–	51.0	60.2	41.0

Age adjusted to the 2000 US standard population. Missing data indicate insufficient sample size. *Among women with an intact uterus. † Either fecal occult blood test within the past year, sigmoidoscopy within the past five years, or colonoscopy within the past 10 years.

Source: National Health Interview Survey Public Use Data File 2010, National Center for Health Statistics, Centers for Disease Control and Prevention, 2011.

Screening Guidelines for the Early Detection of Cancer in Average-risk Asymptomatic People

Cancer Site	Population	Test or Procedure	Frequency
Breast	Women, age 20+	Breast self-examination	Beginning in their early 20s, women should be told about the benefits and limitations of breast self-examination (BSE). The importance of prompt reporting of any new breast symptoms to a health professional should be emphasized. Women who choose to do BSE should receive instruction and have their technique reviewed on the occasion of a periodic health examination. It is acceptable for women to choose not to do BSE or to do BSE irregularly.
		Clinical breast examination	For women in their 20s and 30s, it is recommended that clinical breast examination (CBE) be part of a periodic health examination, preferably at least every three years. Asymptomatic women age 40 and over should continue to receive a clinical breast examination as part of a periodic health examination, preferably annually.
		Mammography	Begin annual mammography at age 40.*
Colorectal†	Men and women, age 50+	*Tests that find polyps and cancer:* Flexible sigmoidoscopy,‡ or	Every five years, starting at age 50
		Colonoscopy, or	Every 10 years, starting at age 50
		Double-contrast barium enema (DCBE),‡ or	Every five years, starting at age 50
		CT colonography (virtual colonoscopy)‡	Every five years, starting at age 50
		Tests that mainly find cancer: Fecal occult blood test (FOBT) with at least 50% test sensitivity for cancer, or fecal immunochemical test (FIT) with at least 50% test sensitivity for cancer‡§ or	Annual, starting at age 50
		Stool DNA test (sDNA)‡	Interval uncertain, starting at age 50
Prostate	Men, age 50+	Prostate-specific antigen test (PSA) with or without digital rectal exam (DRE)	Asymptomatic men who have at least a 10-year life expectancy should have an opportunity to make an informed decision with their health care provider about screening for prostate cancer after receiving information about the uncertainties, risks, and potential benefits associated with screening. Prostate cancer screening should not occur without an informed decision-making process.¶
Cervix	Women, age 21-29	Pap test	Cytology alone every 3 years (liquid or conventional). Recommend AGAINST annual cytology.
	Women, ages 30-65	co-testing with HPV test and Pap test	HPV + cytology "cotesting" every 5 years (preferred) or every 3 years with cytology alone (acceptable). Recommend AGAINST more frequent screening.
	Women, ages >65		Discontinue after age 65 if 3 negative cytology tests or 2 negative HPV tests in past 10 years with most recent test in past 5 years
Endometrial	Women, at menopause	At the time of menopause, women at average risk should be informed about risks and symptoms of endometrial cancer and strongly encouraged to report any unexpected bleeding or spotting to their physicians.	
Cancer-related checkup	Men and women, age 20+	On the occasion of a periodic health examination, the cancer-related checkup should include examination for cancers of the thyroid, testicles, ovaries, lymph nodes, oral cavity, and skin, as well as health counseling about tobacco, sun exposure, diet and nutrition, risk factors, sexual practices, and environmental and occupational exposures.	

*Beginning at age 40, annual clinical breast examination should be performed prior to mammography.

†Individuals with a personal or family history of colorectal cancer or adenomas, inflammatory bowel disease, or high-risk genetic syndromes should continue to follow the most recent recommendations for individuals at increased or high risk.

‡Colonoscopy should be done if test results are positive.

§For FOBT or FIT used as a screening test, the take-home multiple sample method should be used. An FOBT or FIT done during a digital rectal exam in the doctor's office is not adequate for screening.

¶Information should be provided to men about the benefits and limitations of testing so that an informed decision can be made with the clinician's assistance.

Colorectal Screening

The American Cancer Society recommends that screening for colorectal cancer begin at age 50 for persons at average risk with no symptoms of colorectal cancer (see page 22).[157] Hispanics 50 years of age and older are less likely to have had a recent screening test for colorectal cancer than non-Hispanic whites – 47% vs. 62%, respectively (Table 8, page 21). There are differences in the recent use of colorectal cancer tests by country of origin among Hispanics.[163,164] Similar to screening for other cancers, the least likely to have had a recent colorectal cancer screening test are Latinos from Mexico and Central or South America. Only about 20% of uninsured individuals 50 and older have had a recent colorectal cancer screening test, regardless of ethnicity (Table 8, page 21).

Prostate Cancer Screening

Evidence about the value of testing for early prostate cancer detection is insufficient to recommend for or against screening with the digital rectal examination (DRE) or the prostate-specific antigen (PSA) test for men at average risk.[157] Recently published results from clinical trials are conflicting about the benefit of PSA screening for reducing death from prostate cancer.[157] The American Cancer Society guidelines for the early detection of prostate cancer promote informed choice to men 50 years of age and older who have a life expectancy of at least 10 years. According to the guidelines, men should have an opportunity to make an informed decision with their health care provider about whether to be screened for prostate cancer after receiving information about the uncertainties, risks, and potential benefits associated with PSA screening (see page 22).[157] National data consistent with the guidelines are not available to effectively assess the proportion of age-eligible men and their providers who follow these recommendations.

Strategies to Improve Cancer Screening

Health care barriers – such as a lack of health insurance or a usual source of care – that are experienced by many Hispanic men and women in the US are reflected in lower rates of preventive services, such as cancer screening.[163,164] In addition, the lower educational status among Hispanics has been associated with lower cancer screening utilization in most studies; lower educational attainment may lead to less knowledge or awareness about cancer causes and screening practices. Effective communication strategies to close this knowledge gap are needed.[165] Studies have shown that the presence of social support may improve participation in screening examinations.[166] Local outreach programs and culturally targeted interventions by lay Hispanic health advisors along with physician encouragement to promote the benefits of early cancer detection are also effective strategies for improving cancer screening participation.

Factors That Influence Health: Socioeconomic Status and Cultural Values and Beliefs

Cancer occurrence and survival are influenced by economic, social, and cultural factors. Socioeconomic status, as measured by income and education, is the most critical factor affecting health and longevity. It influences the prevalence of underlying risk factors for cancer, access to health insurance, preventive care, early detection, and treatment. Cultural factors, including language, beliefs, values, and traditions, may also influence behaviors, beliefs about illness, and approaches to medical care. Other factors, including environment, genetics, previous and current health status, and psychosocial factors, also exert considerable influence on the cancer burden in the Hispanic population.

Socioeconomic Characteristics

In the US, compared to non-Hispanic whites, Hispanics have lower levels of educational attainment, are more likely to live in poverty, and are less likely to have health insurance (Table 9, page 24). In 2009, 13% of Hispanics had attained at least a bachelor's degree and 23% lived in poverty, compared to 31% and 9%, respectively, of non-Hispanic whites. However, there are also substantial socioeconomic differences within the Hispanic community according to country of origin. For example, although Cubans are the most likely to be foreign-born, they are also the most educated and the least likely to live in poverty.

Access to Health Care

Access to health care influences the use of preventive services (e.g., immunization and cancer screening) as well as receipt of cancer treatment.[32] Many Hispanics face financial, structural, and personal barriers to health care.[167] Financial barriers include inadequate health insurance, low personal income, and high rates of poverty (Table 9, page 24). Structural barriers include poor geographic access and lack of transportation to providers.[168] Personal barriers to care include cultural and linguistic factors, as well as discrimination and provider bias.[169-172] In the US, health care access is closely related to insurance coverage. Hispanics are the least likely to have health insurance of any racial or ethnic group.[32] Within the Hispanic population, uninsured rates

Principles for Culturally Proficient Health Services for Hispanic/Latino Families and Communities

- Involve family members.
- Show respect – Always be respectful, and explain without being condescending.
- Get personal – Hispanics typically prefer being closer to each other in space than non-Hispanic whites do.
- Ask about their life (family, friends, and work), and share life stories and pictures.
- Encourage them to ask questions.
- Take seriously the responsibility and respect conferred on the provider.
- Reach out to the community – Community-based organizations within Hispanics neighborhoods, barrios, *colonias*, and other ethnic enclaves provide a significant point of entry and opportunity to expand on any outreach effort in which you may be involved.
- Respect traditional healing approaches – Hispanic patients may combine respect for the benefits of mainstream medicine, tradition, and traditional healing with a strong religious component.

are highest among Mexicans and Central and South Americans and those who are foreign-born (Table 9). Hispanics overall are also almost half as likely as non-Hispanic whites to have a usual source of care.

Many underlying factors relate to lack of health care coverage and not having a usual source of care. Hispanics are much more likely than whites to work in agriculture, construction, domestic and food services, and other low-wage occupations, which are less likely to offer employer-based health insurance benefits.[173] Barriers to health care are particularly prevalent among Hispanic migrant workers.[174,175]

Table 9. Socioeconomic and Health Care Access Characteristics (%) by Hispanic Origin

	Hispanic					Non-Hispanic White
	All	Puerto Rican	Mexican	Cuban	Central or South American	
Socioeconomic characteristics*						
Foreign-born	37.1	1.2	35.6	62.4	58.3	3.8
Income below poverty rate	23.0	24.0	24.0	15.0	15.5	9.2
≥ 16 years education*	13.0	16.0	9.0	24.0	17.0	31.1
Speak English "well" or "very well"	71.1	87.2	69.7	67.0	67.1	77.2
Health care characteristics						
Median age (years)	27	28	25	40	30	42
No health care coverage						
By age:						
0-17 years	13.8	7.1	15.3	10.1	15.6	5.9
18+ years	34.5	17.5	37.3	28.8	40.1	13.8
18-64 years	40.8	20.8	44.1	34.4	47.0	16.6
≥65 years	3.5	0.9	3.9	1.2	7.2	0.3
By nativity:						
US-born	20.0	17.7	21.6	14.3	12.0	13.7
Foreign-born	45.6	–	49.1	38.0	44.3	16.2
No regular source of medical care†						
Men	38.7	24.0	40.4	38.5	44.0	23.1
Women	24.5	12.9	26.8	20.3	28.1	12.6

Age adjusted to the 2000 US standard population. *Among adults 25+ years. †Among adults 18-64 years.

Sources: Socioeconomic characteristics (except language): American Community Survey, 2009 compiled by Pew Hispanic Research Center, 2011. English language proficiency: American Community Survey, 2008-2010, US Census Bureau. Accessed via DataFerrett May 25, 2012. Health care characteristics: National Health Interview Surveys, 2009-2010, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention.

Eliminating disparities in health care access is a daunting task for health care policy in the US. The 2010 passage of the Affordable Care Act (ACA) offers some future prospects for reducing the numbers of uninsured, particularly among those with lower socioeconomic status, though the actual impact of ACA is unknown until the legislation is fully implemented. However, results from health care reform legislation enacted in Massachusetts in 2006, which was a model for ACA, provide an indication of the substantial potential of national health care reform for reducing disparities in health care coverage and access among the Hispanic population. For example, between 2005 and 2009, the proportion of individuals who reported having a usual health care provider increased 15% among Hispanics, compared to just 2% among non-Hispanic whites.[176]

Cultural Values and Beliefs

Cultural proficiency is an important element in providing high-quality health care and preventive services to diverse populations.[177] Cultural proficiency is a set of attitudes, skills, behaviors, and policies that enable organizations and staff to work effectively in cross-cultural situations.[172] It reflects the ability to acquire and use knowledge of the health-related beliefs, attitudes, practices, and communication patterns of patients and their families to improve services, strengthen programs, increase community participation, and close the gaps in health status among diverse population groups. Cultural proficiency also includes population-specific knowledge, including health-related beliefs and cultural values, disease prevalence, and treatment efficacy.[178]

The increasing population growth of racial and ethnic communities and linguistic groups, each with its own cultural traits and health profiles, presents challenges for health care delivery systems and for individual practitioners. Many experts have suggested that cultural competency plays an important role in closing the gaps in health care across racial and ethnic groups.[172] Numerous organizations have developed cultural competency resources to assist medical providers and public health professionals. Two examples available online are:

- The National Alliance for Hispanic Health, at hispanichealth.arizona.edu/primer%20for%20culural%20proficiency%20nahh.pdf
- The Office of Minority Health, at minorityhealth.hhs.gov/templates/browse.aspx?lvl=1&lvlID=3

How the American Cancer Society Helps Reduce Cancer Disparities

The American Cancer Society works relentlessly to save lives from cancer by helping people stay well and get well, by finding cures, and by fighting back against the disease. This section provides highlights and information on some of these efforts.

Stay Well and Get Well

The American Cancer Society helps people everywhere stay well by reducing their risk of cancer or detecting it early, when it is most treatable. If they are diagnosed with cancer, the Society provides the information, day-to-day help, and emotional support to guide them through every step of their experience and to help them get well.

Cancer Information

The American Cancer Society provides accurate, up-to date information spanning the cancer continuum from prevention to survivorship and end-of-life support in Spanish and English 24 hours a day, seven days a week at 1-800-227-2345 and online at cancer.org.

The Society develops numerous Spanish-language materials, such as a colorectal cancer information resource kit and *Cancer Facts & Figures for Hispanics/Latinos*, to educate Spanish-speaking populations about cancer. Information is also available in Bengali, Chinese, French, Haitian Creole, Hindi, Korean, and Russian – 170 languages in all. For more information, visit the Easy Reading Project Web site at cancer.org/easyreading.

Everyday Choices For A Healthier Life is a joint initiative of the American Cancer Society, the American Diabetes Association, and the American Heart Association to encourage risk reduction and the early detection of cancer, diabetes, heart disease, and stroke. The Everyday Choices Web site (everydaychoices.org) and brochure are both available in Spanish.

Programs and Services

Many American Cancer Society programs and services have been developed or tailored to be culturally appropriate and language-specific for Hispanic audiences. Examples include the following:

Help with Appearance-related Side Effects of Treatment

Luzca Bien Sientase Mejor® (Look Good Feel Better®) is for Hispanic women undergoing cancer treatment. The program, which is a collaboration of the Society, the Personal Care Products Council Foundation, and the Professional Beauty Association | National Cosmetology Association, teaches female patients beauty techniques to help restore their self-image and cope with appearance-related side effects during chemotherapy and radiation treatments.

Finding Hope and Inspiration

People with cancer and their loved ones do not have to face their cancer experience alone. They can connect with others who have "been there" through the American Cancer Society Cancer Survivors Network® (CSN). The online community includes prerecorded stories in Spanish by Hispanic cancer survivors sharing their personal journey with cancer.

Help with the Health Care System

Learning how to navigate the cancer journey and the health care system can be overwhelming for anyone, but it is particularly difficult for those who are medically underserved. The American Cancer Society Patient Navigator Program involves the placement of trained Society staff in health care facilities with oncology treatment services that treat a high proportion of the medically underserved. The goal of the program is to provide those cancer patients and their families with personalized and reliable cancer information, Society resource referrals, and timely follow up.

Support for Quitting Tobacco

The Society helps people quit tobacco through the American Cancer Society Quit For Life® Program, which is managed and operated by Alere Wellbeing. The two organizations have 35 years of combined experience in tobacco cessation coaching and have helped more than 1 million tobacco users. Program participants receive counseling from bilingual quit coaches and learning materials in Spanish.

Breast Cancer Support

Trained breast cancer survivors provide one-on-one support, information, and inspiration to breast cancer patients through the American Cancer Society Reach To Recovery® program. A promotional brochure is available in Spanish.

Find Cures

The American Cancer Society, the largest non-government, not-for-profit funding source of cancer research and training in the United States, has dedicated a portion of its research funding toward studies of cancer in poor and medically underserved populations. During the past decade, the Society's Extramural Grants program awarded 133 grants worth more than $113.5 million for research in poor and underserved populations, and recently established priority funding for psychosocial, behavioral, health policy, and health services research in hopes of reducing cancer health disparities.

Examples of the Society's currently funded research include:

- A study conducted by Curtis Wray, MD, of the University of Texas Medical School at Houston, aimed at reducing disparities in liver cancer treatment and outcomes for poor and medically underserved patients through the production of guidelines to assist patients and providers in making informed decisions about appropriate liver cancer treatments, including palliative care, particularly when the disease is in an advanced stage
- An intervention study conducted by Hayley Thompson, PhD, of Wayne State University, to determine whether showing Latina breast cancer survivors a DVD that provides key information about breast cancer recurrence, including the perspective of a Latina breast cancer survivor, can increase breast cancer screening rates after treatment
- A study conducted by Karen Freund, MD, MPH, of Tufts University School of Medicine, to understand the impact of the health care system on disparities in cancer outcomes for vulnerable populations; to determine how patient navigator programs help reduce barriers to care in vulnerable populations; and to understand the role of health insurance reform in reducing health disparities. Dr Freund received one of the Society's most prestigious grants – a Clinical Research Professor award.
- A study conducted by Michael Businelle, PhD, of MD Anderson Cancer Center, to determine factors that interfere with successful smoking cessation among Spanish-speaking Mexican Americans of low socioeconomic status (SES). The study will use smartphones to identify real-time situations that may promote a relapse in Spanish-speaking Mexican Americans, in comparison to whites, African Americans, and other Latinos. Dr. Businelle's eventual goal is to develop smartphone interventions tailored to assist low SES smokers with their specific tobacco cessation challenges.

Fight Back

The American Cancer Society and the American Cancer Society Cancer Action Network℠ (ACS CAN), the Society's nonprofit, nonpartisan advocacy affiliate, are dedicated to reducing cancer incidence and mortality rates among minority and medically underserved populations. This goal can be achieved by instituting effective policies and public health programs that promote overall wellness and save lives. ACS CAN is involved in advocacy efforts at both the state and federal levels. Listed below are some of the efforts that the American Cancer Society and ACS CAN have been involved with in the past few years:

ACS CAN and the Society are working to improve access to health care for people with cancer, which will help save lives. This work includes ensuring the implementation of provisions of the Affordable Care Act that will improve access to care for cancer patients and their families by:

- Ending discrimination against people with cancer and other life-threatening diseases
- Expanding access to care for people with cancer or at risk for cancer
- Refocusing the health care system on disease prevention

Each year, ACS CAN works hard to ensure that the agencies overseeing cancer research and prevention programs receive the funding needed to continue the battle against cancer. ACS CAN continues to lead the fight to maintain and increase the investment the US has made in biomedical and cancer research at the National Institutes of Health, the National Cancer Institute, and the Centers for Disease Control and Prevention (CDC). This investment includes increased funding for cancer research at the National Institute on Minority Health and Health Disparities, which the Society was instrumental in helping to establish.

Protecting state and federal funding for the CDC's National Breast and Cervical Cancer Early Detection Program is a high priority for the Society and ACS CAN. This successful program provides community-based breast and cervical cancer screening, diagnosis, and treatment to low income, uninsured women (cdc.gov/cancer/nbccedp). However, under current funding the program serves less than one in five eligible women nationwide. Cuts to the program would mean even fewer women would be served.

ACS CAN has been instrumental in the introduction of legislation that will create a national colorectal cancer prevention, early detection, and treatment program for the medically underserved. This bill will build on efforts to improve access to health care, remove some barriers Hispanic adults face when trying to access cancer screenings, and elevate the importance of refocusing our health care system on preventing disease altogether. The program would bridge the gap for men and women who are within the recommended age for colon cancer screening, but are not eligible for new benefits under the Affordable Care Act.

ACS CAN was a leading partner in the successful passage of the Family Smoking Prevention and Tobacco Control Act, which was signed into law in 2009. This law gives the Food and Drug Administration (FDA) the authority to regulate tobacco products and stop companies from marketing their deadly product to children. Every day, 3,800 young people under the age of 18 try a cigarette for the first time, and an estimated 1,000 become daily cigarette smokers.

Additional Resources

Intercultural Cancer Council (ICC)

The Intercultural Cancer Council promotes policies, programs, partnerships, and research to eliminate the unequal burden of cancer among racial and ethnic minorities and medically underserved populations in the United States and its associated territories. For more information, visit iccnetwork.org.

National Hispanic Council on Aging (NHCOA)

The National Hispanic Council on Aging is a constituency-based advocacy organization whose primary purpose is to enhance the quality of life for older Hispanic adults, families, and communities. Since its inception, the NHCOA has focused on the importance and function of the family to assist their elders in every aspect of living and to provide needed care in old age. For more information, visit nhcoa.org.

National Hispanic Medical Association (NHMA)

The National Hispanic Medical Association is a nonprofit association representing 45,000 licensed Hispanic physicians in the United States. The mission of the organization is to empower Hispanic physicians to lead efforts that improve the health of Hispanics and other underserved populations in collaboration with public and private sector partners. As a rapidly growing national resource based in the nation's capital, NHMA provides policy makers and health care providers with expert information and support to strengthen health service delivery to Hispanic communities across the nation. For more information, visit nhmamd.org.

National Alliance for Hispanic Health

The National Alliance for Hispanic Health is a nonprofit organization that provides science-based health information (English and Spanish) and advocates for health in the Hispanic community. Let's Talk About Cancer, is an Alliance program designed to provide awareness about cancer prevention and early detection for cancers of the cervix, ovary, and skin. For more information, visit letstalkaboutcancer.org.

Prevención

Prevención is a nonprofit organization that develops, produces, and disseminates Spanish-language educational materials on health promotion and disease prevention via Spanish-language radio, television, and the Internet. In partnership with government and private organizations, Prevención conducts health information campaigns targeted toward "hard-to-reach" Spanish-speaking segments of the population. For more information, visit prevencion.org.

Redes En Acción

The National Latino Cancer Research Network is a National Cancer Institute-funded initiative to combat cancer among Latinos. The program focuses on developing national and regional networks of partners engaging in cancer research, training, and awareness activities surrounding key Latino cancer issues. Under the NCI's Community Networks Program initiatives, Redes has expanded its infrastructure to reduce cancer disparities by promoting cancer education, research, and training in the US and Puerto Rico.

Sources of Statistics

New cancer cases: The estimated numbers of new cancer cases diagnosed among Hispanics in the US in 2012 were projected using a two-step process. First, the total number of cases was estimated for each year during 2000 to 2009 using incidence data from 50 states and the District of Columbia for those years that met the North American Association of Central Cancer Registries' (NAACCR) high-quality data standard for incidence. Then, the number of new cases was projected three years ahead based on trends obtained from joinpoint regression analysis.

Incidence rates: Incidence rates are defined as the number of people per 100,000 who are diagnosed with cancer during a given time period. Incidence rates in this report were calculated based on cancer incidence data provided by the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program or NAACCR and population data collected by the US Census Bureau. All incidence rates in this publication are age adjusted to the 2000 US standard population.

Cancer deaths: The estimated numbers of US cancer deaths among Hispanics in 2012 were calculated by fitting the number of cancer deaths from 1995 through 2009 to a statistical model that forecasts the numbers of deaths expected to occur in 2012. Data on the number of deaths are obtained from the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC). For more information on the projection of cancer deaths, see Chen et al.[179]

Death rates: Similar to the incidence rates, death rates represent the number of deaths per 100,000 population per year. Death rates were reported by the SEER program using data on cancer deaths from the National Center for Health Statistics along with population data from the US Census Bureau. All death rates in this publication are age adjusted to the 2000 US standard population.

National Health and Nutrition Examination Survey (NHANES). The NHANES is conducted by the CDC's National Center for Health Statistics (NCHS). It is designed to provide national prevalence estimates on the health and nutritional status of adults and children. Data are gathered through in-person interviews and direct physical exams in mobile examination centers. For more information, visit cdc.gov/nchs/nhanes.htm.

National Health Interview Survey (NHIS). The NHIS is conducted by the CDC's National Center for Health Statistics (NCHS). It is designed to provide national prevalence estimates on personal, socioeconomic, demographic, and health characteristics, such as cigarette smoking and physical activity. Data are gathered through a computer-assisted personal interview of adults 18 years of age and older. The annual survey has been conducted by NCHS since 1957. For more information, visit cdc.gov/nchs/nhis.htm.

Youth Risk Behavior Surveillance System (YRBSS). The YRBSS survey is conducted by the CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). It is designed to provide national, state, and local prevalence estimates on health risk behaviors such as tobacco use, unhealthy dietary behaviors, and physical inactivity among youth and young adults who attend public and private high schools. Data are gathered through a self-administered questionnaire completed during a required subject or class period. The biennial survey began in 1991. The state and local surveys are of variable data quality, and caution should be used in comparing data among them. For more information, visit cdc.gov/HealthyYouth/yrbs/ index.htm.

Factors That Influence Cancer Rates

Data Completeness and Geographic Coverage

Comparison of cancer rates between racial and ethnic groups, particularly those involving groups other than whites or African Americans, should be interpreted with caution for several reasons. First, the cancer experience within the Hispanic population varies greatly according to country of origin. Second, ethnicity and race are not always classified uniformly in medical records, death certificates, and the US decennial census, so rates for populations other than whites and African Americans are likely to be underestimated. Third, the long-term (1992-2009) incidence trend data presented in this report are from the 13 SEER cancer registry areas, which may not be representative of the total US population and may not accurately reflect the cancer experience of Hispanics throughout the US. Last, comparisons made between Hispanics and non-Hispanic whites consider only ethnicity and do not describe potential racial differences.

Hispanic/Latino Identification

Accurately identifying Hispanic/Latino individuals for cancer surveillance has been an ongoing challenge. In an effort to address this issue, NAACCR convened an expert panel in 2001 to develop the NAACCR Hispanic Identification Algorithm (NHIA), first released for use by cancer registries in 2003. NHIA uses a combination of patient variables found within cancer registry records, including last name and birthplace, to indirectly determine Hispanic origin. Following widespread implementation by state cancer registries, improvements were made to NHIA and a modified version was released in 2005 (NHIA v2). More recently, in certain states with large and diverse Hispanic/Latino populations, special research investigations have been under way to more precisely classify Hispanic subpopulations and describe their specific cancer burden. One such investigation from the Florida cancer surveillance registry documented the cancer incidence of Cubans, Puerto Ricans, and Mexicans residing in that state. Such information is useful for planning targeted cancer control programs.[7]

Age Adjustment to the Year 2000 Standard

Epidemiologists use a statistical method called "age adjustment" to compare groups of people with different age compositions. 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. This is especially true when examining cancer rates, since cancer is generally a disease of older people. Without adjusting for age, it would appear that the cancer rates in Florida are much higher than Alaska. However, once the ages are adjusted, the rates appear to be similar.

References

1. Ennis SR, Rios-Vargas M, Albert NG. The Hispanic Population: 2010: 2010 Census Briefs; 2011.

2. US Census Bureau. Current Population Survey, Annual Social and Economic Supplement, 2010 Internet release date: June 2011.

3. Martinez-Tyson D, Pathak EB, Soler-Vila H, Flores AM. Looking under the Hispanic umbrella: cancer mortality among Cubans, Mexicans, Puerto Ricans and other Hispanics in Florida. *Journal of immigrant and minority health / Center for Minority Public Health*. Aug 2009;11(4):249-257.

4. de Martel C, Ferlay J, Franceschi S, et al. Global burden of cancers attributable to infections in 2008: a review and synthetic analysis. *Lancet Oncol*. May 8 2012.

5. *American Cancer Society. Global Cancer Facts & Figures, 2nd Edition*. Atlanta, GA: American Cancer Society;2011.

6. Chao A, Gilliland FD, Hunt WC, Bulterys M, Becker TM, Key CR. Increasing incidence of colon and rectal cancer among Hispanics and American Indians in New Mexico (United States), 1969-94. *Cancer Causes Control*. Mar 1998;9(2):137-144.

7. Pinheiro PS, Sherman RL, Trapido EJ, et al. Cancer incidence in first generation U.S. Hispanics: Cubans, Mexicans, Puerto Ricans, and new Latinos. *Cancer Epidemiol Biomarkers Prev*. Aug 2009;18(8):2162-2169.

8. Wilkinson JD, Wohler-Torres B, Trapido E, et al. Cancer trends among Hispanic men in South Florida, 1981-1998. *Cancer*. Feb 15 2002;94(4):1183-1190.

9. Lara M, Gamboa C, Kahramanian MI, Morales LS, Bautista DE. Acculturation and Latino health in the United States: a review of the literature and its sociopolitical context. *Annu Rev Public Health*. 2005;26:367-397.

10. Singh GK, Hiatt RA. Trends and disparities in socioeconomic and behavioural characteristics, life expectancy, and cause-specific mortality of native-born and foreign-born populations in the United States, 1979-2003. *Int J Epid*. Aug 2006;35(4):903-919.

11. Cockburn MG, Zadnick J, Deapen D. Developing epidemic of melanoma in the Hispanic population of California. *Cancer*. Mar 1 2006;106(5):1162-1168.

12. Pollitt RA, Clarke CA, Swetter SM, Peng DH, Zadnick J, Cockburn M. The expanding melanoma burden in California hispanics: Importance of socioeconomic distribution, histologic subtype, and anatomic location. *Cancer*. Jan 1 2011;117(1):152-161.

13. John EM, Phipps AI, Davis A, Koo J. Migration history, acculturation, and breast cancer risk in Hispanic women. *Cancer Epidemiol Biomarkers Prev*. Dec 2005;14(12):2905-2913.

14. Chlebowski RT, Chen Z, Anderson GL, et al. Ethnicity and breast cancer: factors influencing differences in incidence and outcome. *J Natl Cancer Inst*. Mar 16 2005;97(6):439-448.

15. Martin JA, Hamilton BE, Sutton PD, et al. Births: final data for 2006. In: Statistics NCfH, ed. Vol 57: US Dept of Health and Human Services; 2009:1-104.

16. Sweeney C, Baumgartner KB, Byers T, et al. Reproductive history in relation to breast cancer risk among Hispanic and non-Hispanic white women. *Cancer Causes Control*. May 2008;19(4):391-401.

17. Friedman-Koss D, Crespo CJ, Bellantoni MF, Andersen RE. The relationship of race/ethnicity and social class to hormone replacement therapy: results from the Third National Health and Nutrition Examination Survey 1988-1994. *Menopause*. Jul-Aug 2002;9(4):264-272.

18. Hausauer AK, Keegan TH, Chang ET, Clarke CA. Recent breast cancer trends among Asian/Pacific Islander, Hispanic, and African-American women in the US: changes by tumor subtype. *Breast Cancer Res*. 2007;9(6):R90.

19. Li R, Gilliland FD, Baumgartner K, Samet J. Hormone replacement therapy and breast carcinoma risk in Hispanic and non-Hispanic women. *Cancer*. Sep 1 2002;95(5):960-968.

20. American Cancer Society. *Cancer Prevention & Early Detection Facts & Figures 2012*. Atlanta, GA: American Cancer Society;2012.

21. Baumgartner KB, Hunt WC, Baumgartner RN, et al. Association of body composition and weight history with breast cancer prognostic markers: divergent pattern for Hispanic and non-Hispanic White women. *Am J Epidemiol*. Dec 1 2004;160(11):1087-1097.

22. Slattery ML, Sweeney C, Edwards S, et al. Body size, weight change, fat distribution and breast cancer risk in Hispanic and non-Hispanic white women. *Breast Cancer Res Treat*. Mar 2007;102(1):85-101.

23. Wenten M, Gilliland FD, Baumgartner K, Samet JM. Associations of weight, weight change, and body mass with breast cancer risk in Hispanic and non-Hispanic white women. *Ann Epidemiol*. Aug 2002;12(6):435-434.

24. Fejerman L, John EM, Huntsman S, et al. Genetic ancestry and risk of breast cancer among U.S. Latinas. *Cancer Research*. Dec 1 2008;68(23):9723-9728.

25. Hines LM, Risendal B, Slattery ML, Baumgartner KB, Giuliano AR, Byers T. Differences in estrogen receptor subtype according to family history of breast cancer among Hispanic, but not non-Hispanic White women. *Cancer Epidemiol Biomarkers Prev*. Oct 2008;17(10):2700-2706.

26. Risendal B, Hines LM, Sweeney C, et al. Family history and age at onset of breast cancer in Hispanic and non-Hispanic white women. *Cancer Causes Control*. Dec 2008;19(10):1349-1355.

27. Lantz PM, Mujahid M, Schwartz K, et al. The influence of race, ethnicity, and individual socioeconomic factors on breast cancer stage at diagnosis. *Am J Public Health*. Dec 2006;96(12):2173-2178.

28. Press R, Carrasquillo O, Sciacca RR, Giardina EG. Racial/ethnic disparities in time to follow-up after an abnormal mammogram. *J Womens Health (Larchmt)*. Jul-Aug 2008;17(6):923-930.

29. Stuver SO, Zhu J, Simchowitz B, Hassett MJ, Shulman LN, Weingart SN. Identifying women at risk of delayed breast cancer diagnosis. *Jt Com J Qual Patient Saf*. Dec 2011;37(12):568-575.

30. Ooi SL, Martinez ME, Li CI. Disparities in breast cancer characteristics and outcomes by race/ethnicity. *Breast Cancer Res Treat*. Jun 2011;127(3):729-738.

31. Miller BA, Hankey BF, Thomas TL. Impact of sociodemographic factors, hormone receptor status, and tumor grade on ethnic differences in tumor stage and size for breast cancer in US women. *Am J Epidemiol*. Mar 15 2002;155(6):534-545.

32. Ward E, Halpern M, Schrag N, et al. Association of insurance with cancer care utilization and outcomes. *CA Cancer J Clin*. Jan-Feb 2008;58(1):9-31.

33. Freedman RA, He Y, Winer EP, Keating NL. Trends in racial and age disparities in definitive local therapy of early-stage breast cancer. *Journal of clinical oncology: official journal of the American Society of Clinical Oncology*. Feb 10 2009;27(5):713-719.

34. Bickell NA, Shastri K, Fei K, et al. A tracking and feedback registry to reduce racial disparities in breast cancer care. *Journal of the National Cancer Institute*. Dec 3 2008;100(23):1717-1723.

35. Soto-Salgado M, Suarez E, Calo W, Cruz-Correa M, Figueroa-Valles NR, Ortiz AP. Incidence and mortality rates for colorectal cancer in Puerto Rico and among Hispanics, non-Hispanic whites, and non-Hispanic blacks in the United States, 1998-2002. *Cancer*. Apr 28 2009.

36. Center MM, Jemal A, Smith RA, Ward E. Worldwide variations in colorectal cancer. *CA Cancer J Clin*. Nov-Dec 2009;59(6):366-378.

37. American Cancer Society. *Colorectal Cancer Facts & Figures 2011-2012*. Atlanta, GA: American Cancer Society;2011.

38. He J, Stram DO, Kolonel LN, Henderson BE, Le Marchand L, Haiman CA. The association of diabetes with colorectal cancer risk: the Multiethnic Cohort. *Brit J Cancer*. Jun 29 2010;103(1):120-126.

39. Smoking-attributable mortality, years of potential life lost, and productivity losses–United States, 2000-2004. *MMWR Morb Mortal Wkly Rep*. Nov 14 2008;57(45):1226-1228.

40. Fagan P, Moolchan ET, Lawrence D, Fernander A, Ponder PK. Identifying health disparities across the tobacco continuum. *Addiction*. Oct 2007;102 Suppl 2:5-29.

41. Hyland A, Rezaishiraz H, Bauer J, Giovino GA, Cummings KM. Characteristics of low-level smokers. *Nicotine Tob Res*. 2005 7(3):461-468.

42. Haiman CA, Stram DO, Wilkens LR, et al. Ethnic and racial differences in the smoking-related risk of lung cancer. *N Eng J Med*. Jan 26 2006;354(4):333-342.

43. Pinsky PF. Racial and ethnic differences in lung cancer incidence: how much is explained by differences in smoking patterns? (United States). *Cancer Causes Control*. Oct 2006;17(8):1017-1024.

44. Bethel J, Schenker M. Acculturation and smoking patterns among Hispanics: a review. *Am J Prev Med*. 2005;29(2):143-148.

45. Samet JM. The 1990 Report of the Surgeon General: The Health Benefits of Smoking Cessation. *Am Rev Respir Dis*. Nov 1990;142(5):993-994.

46. Martinez-Tyson D, Barnett Pathak E, Soler-Vila H, Flores AM. Looking Under the Hispanic Umbrella: Cancer Mortality Among Cubans, Mexicans, Puerto Ricans and Other Hispanics in Florida. *J Immigr Minor Health*. May 28 2008.

47. Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence – SEER 18 Regs Public-Use, Nov 2011 Sub (2000-2009) – Linked To County Attributes – Total U.S., 1969-2006 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch, released April 2012, based on the November 2011 submission. National Cancer Institute; 2012.

48. Thomas DB, Karagas MR. Cancer in first and second generation Americans. *Cancer Res*. Nov 1 1987;47(21):5771-5776.

49. Canto MT, Chu KC. Annual cancer incidence rates for Hispanics in the United States: surveillance, epidemiology, and end results, 1992-1996. *Cancer*. Jun 1 2000;88(11):2642-2652.

50. Siegel R, Naishadham D, Jemal A. Cancer statistics, 2012. *CA Cancer J Clin*. Jan-Feb 2012;62(1):10-29.

51. Donato F, Boffetta P, Puoti M. A meta-analysis of epidemiological studies on the combined effect of hepatitis B and C virus infections in causing hepatocellular carcinoma. *Int J Cancer*. Jan 30 1998;75(3):347-354.

52. Parkin DM. The global health burden of infection-associated cancers in the year 2002. *Int J Cancer*. Jun 15 2006;118(12):3030-3044.

53. London WT, McGlynn KA. Liver Cancer. In: Schottenfeld D, Fraumeni JF, eds. *Cancer Epidemiology and Prevention*. Third ed. New York: Oxford University Press; 2006:763-786.

54. Buchschacher GL, Wong-staal F. Etiology of Cancer: Viruses, Section One, RNA Viruses. In: DeVita VT, Hellman S, Rosenberg SA, eds. *Cancer Principles & Practice of Oncology*. Seventh ed. Philadelphia: Lippincott Williams & Wilkins; 2005:165-173.

55. World Cancer Research Fund/American Institute for Cancer Research. *Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective*. Washington DC:AICR2007.

56. Flores YN, Yee HF, Jr., Leng M, et al. Risk factors for chronic liver disease in Blacks, Mexican Americans, and Whites in the United States: results from NHANES IV, 1999-2004. *Am J Gastroenterol*. Sep 2008;103(9):2231-2238.

57. Naimi TS, Nelson DE, Brewer RD. The intensity of binge alcohol consumption among U.S. adults. *Am J Prev Med*. Feb 2010;38(2):201-207.

58. Al-Refaie WB, Tseng JF, Gay G, et al. The impact of ethnicity on the presentation and prognosis of patients with gastric adenocarcinoma. Results from the National Cancer Data Base. *Cancer*. Aug 1 2008;113(3):461-469.

59. Eslick GD. Helicobacter pylori infection causes gastric cancer? A review of the epidemiological, meta-analytic, and experimental evidence. *World J Gastroenterol*. May 21 2006;12(19):2991-2999.

60. Shibata A, Parsonnet J. Stomach Cancer. In: Schottenfeld D, Fraumeni JF, eds. *Cancer Epidemiology and Prevention*. Third ed. New York: Oxford University Press; 2006:707-720.

61. Brown LM. Helicobacter pylori: epidemiology and routes of transmission. *Epidemiol Rev*. 2000;22(2):283-297.

62. Ferlay J, Shin H, Bray F, Forman D, Parkin D. GLOBOCAN 2008, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 10. Lyon, France: International Agency for Research on Cancer; 2010.

63. Ladeiras-Lopes R, Pereira AK, Nogueira A, et al. Smoking and gastric cancer: systematic review and meta-analysis of cohort studies. *Cancer Causes Control*. Sep 2008;19(7):689-701.

64. Duell EJ, Travier N, Lujan-Barroso L, et al. Alcohol consumption and gastric cancer risk in the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort. *Am J Clin Nutr*. Nov 2011;94(5):1266-1275.

65. Kamangar F, Dores GM, Anderson WF. Patterns of cancer incidence, mortality, and prevalence across five continents: defining priorities to reduce cancer disparities in different geographic regions of the world. *J Clin Oncol*. May 10 2006;24(14):2137-2150.

66. Watson M, Saraiya M, Benard V, et al. Burden of cervical cancer in the United States, 1998-2003. *Cancer*. Nov 15 2008;113(10 Suppl):2855-2864.

67. CDC. Human Papillomavirus (HPV) Vaccine Recommendations (2007, 2010,2011). Retrieved July 23, 2012, from www.cdc.gov/vaccines/pubs/ACIP-list.htm#hpv.

68. Reynolds D. Cervical cancer in Hispanic/Latino women. *Clin J Oncol Nurs*. 2004;8(2):146-150.

69. International Agency for Research on Cancer. *Cervix Cancer Screening* Lyon2005.

70. Randi G, Franceschi S, La Vecchia C. Gallbladder cancer worldwide: geographical distribution and risk factors. *Int J Cancer*. Apr 1 2006;118(7):1591-1602.

71. Andia ME, Hsing AW, Andreotti G, Ferreccio C. Geographic variation of gallbladder cancer mortality and risk factors in Chile: a population-based ecologic study. *Int J Cancer*. Sep 15 2008;123(6):1411-1416.

72. Hsing AW, Rashid A, Devesa SS, Fraumeni JFJ. Biliary Tract Cancer. In: Schottenfeld D, Fraumeni JF, eds. *Cancer Epidemiol Prev*. Third ed. New York: Oxford University Press; 2006:787-800.

73. Fernandez E, Gallus S, Bosetti C, Franceschi S, Negri E, La Vecchia C. Hormone replacement therapy and cancer risk: a systematic analysis from a network of case-control studies. *Int J Cancer*. Jun 20 2003;105(3):408-412.

74. Ren HB, Yu T, Liu C, Li YQ. Diabetes mellitus and increased risk of biliary tract cancer: systematic review and meta-analysis. *Cancer Causes Control*. Jun 2011;22(6):837-847.

75. Renehan AG, Tyson M, Egger M, Heller RF, Zwahlen M. Body-mass index and incidence of cancer: a systematic review and meta-analysis of prospective observational studies. *Lancet*. Feb 16 2008;371(9612):569-578.

76. Stinton LM, Shaffer EA. Epidemiology of gallbladder disease: cholelithiasis and cancer. *Gut Liver*. Apr 2012;6(2):172-187.

77. Mackay J, Jemal A, Lee N, Parkin D. *The Cancer Atlas*: American Cancer Society;2006.

78. Census. US Census Bureau, Census 2000 Summary File 4. Additional report 'We the People: Hispanics in the United States' Census 2000 Special Reports, 2004. CENSR-18.

79. Pullarkat ST, Danley K, Bernstein L, Brynes RK, Cozen W. High lifetime incidence of adult acute lymphoblastic leukemia among Hispanics in California. *Cancer Epidemiol Biomarkers Prev*. Feb 2009;18(2):611-615.

80. Yamamoto JF, Goodman MT. Patterns of leukemia incidence in the United States by subtype and demographic characteristics, 1997-2002. *Cancer Causes Control*. May 2008;19(4):379-390.

81. Surveillance Epidemiology and End Results Program. SEER*Stat Database: Incidence – SEER 18 Regs Public Use, Nov 2011 Sub (2000-2009) – Linked to County Attributes – Total US, 1969-2009 Counties. Bethesda, MD: National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch. In: Institute NC, ed2012.

82. Ross JA, Spector LG. Cancers in Children. In: Schottenfeld D, Fraumeni JF, eds. *Cancer Epidemiology and Prevention*. Third ed. New York: Oxford University Press; 2006:1251-1268.

83. Hunger SP, Lu X, Devidas M, et al. Improved Survival for Children and Adolescents With Acute Lymphoblastic Leukemia Between 1990 and 2005: A Report From the Children's Oncology Group. *J Clin Oncol*. May 10 2012;30(14):1663-1669.

84. Bhatia S. Disparities in cancer outcomes: lessons learned from children with cancer. *Pediatr Blood Cancer*. Jun 2011;56(6):994-1002.

85. Aplenc R, Alonzo TA, Gerbing RB, et al. Ethnicity and survival in childhood acute myeloid leukemia: a report from the Children's Oncology Group. *Blood*. Jul 1 2006;108(1):74-80.

86. Harvey RC, Mullighan CG, Chen IM, et al. Rearrangement of CRLF2 is associated with mutation of JAK kinases, alteration of IKZF1, Hispanic/Latino ethnicity, and a poor outcome in pediatric B-progenitor acute lymphoblastic leukemia. *Blood*. Jul 1 2010;115(26):5312-5321.

87. Yang JJ, Cheng C, Devidas M, et al. Ancestry and pharmacogenomics of relapse in acute lymphoblastic leukemia. *Nature Genet*. Mar 2011;43(3):237-241.

88. Surveillance Epidemiology and End Results Program. SEER*Stat Database: NAACCR Incidence – CiNA Analytic File, 1995-2009, for Expanded Races, Custom File with County, ACS Facts & Figures Projection Project, North American Association of Central Cancer Registries. In: IMS, ed: North American Association of Central Cancer Registries; 2012.

89. Linabery AM, Ross JA. Trends in childhood cancer incidence in the U.S. (1992-2004). *Cancer*. Jan 15 2008;112(2):416-432.

90. Wilkinson JD, Fleming LE, MacKinnon J, et al. Lymphoma and lymphoid leukemia incidence in Florida children: ethnic and racial distribution. *Cancer*. Apr 1 2001;91(7):1402-1408.

91. Centers for Disease Control and Prevention. The Health Consequences of Smoking: A Report of the Surgeon General. U.S. Department of Health and Human Services. Atlanta, GA2004.

92. Colditz GA, Atwood KA, Emmons K, et al. Harvard report on cancer prevention volume 4: Harvard Cancer Risk Index. Risk Index Working Group, Harvard Center for Cancer Prevention. *Cancer Causes Control*. Jul 2000;11(6):477-488.

93. Secretan B, Straif K, Baan R, et al. A review of human carcinogens–Part E: tobacco, areca nut, alcohol, coal smoke, and salted fish. *Lancet Oncol*. 2009 10:1033-1034.

94. Argeseanu Cunningham S, Ruben JD, Narayan KM. Health of foreign-born people in the United States: a review. *Health Place*. 2008;14(4):623-635.

95. Cokkinides V, Bandi P, Siegel R, Jemal A. Cancer-related Risk Factors and Early Detection in US Hispanics. *CA Cancer J Clin*. [published online ahead of print Sept 17, 2012].

96. Robles GI, Singh-Franco D, Ghin HL. A review of the efficacy of smoking-cessation pharmacotherapies in nonwhite populations. *Clin Ther*. 2008 30(5):800-812.

97. Zhu SH, Pulvers K, Zhuang Y, Baezconde-Garbanati L. Most Latino smokers in California are low-frequency smokers. *Addiction*. 2007;102 (Suppl 2):104-111.

98. Fiore M, Bailey W, Cohen S. *Treating Tobacco Use and Dependence. US Department of Health and Human Services. Public Health Services*. Rockville, Md.2000.

99. Cokkinides V, Halpern MT, Barbeau EM, Ward E, Thun MJ. Racial and ethnic disparities in smoking-cessation interventions: analysis of the 2005 National Health Interview Survey. *Am J Prev Med*. 2008;34(5):404-412.

100. Levinson AH, Borrayo EA, Espinoza P, Flores ET, Pérez-Stable EJ. An exploration of Latino smokers and the use of pharmaceutical aids. *Am J Prev Med*. 2006 31(2):167-171.

101. Zhu S, Nguyen Q, Cummins S, Wong S, Wightman V. Non-smokers seeking help for smokers: a preliminary study. *Tob Control*. 2006;15(2):107-113.

102. Brothers B, Borrelli B. Motivating Latino smokers to quit: does type of support matter? *Am J Health Promot* 2011;25(5):S96-102.

103. Rhodes SD, Foley KL, Zometa CS, Bloom FR. Lay health advisor interventions among Hispanics/Latinos: a qualitative systematic review. *Am J Prev Med*. 2007 33(5):418-427.

104. CDC. Tobacco Use Among Middle and High School Students – United States, 2000-2009. *MMWR Morb Mortal Wkly Rep*. 2010;59(33):1063-1068.

105. Caraballo R, Lin Yee S, Gfroerer J, Pechacek T, Henson R. Tobacco Use Among Racial and Ethnic Populations subgroups of Adolescents in the United States. *Prev Chronic Dis*. 2006;3(2):1-11.

106. Centers for Disease Control and Prevention. Reducing Tobacco Use: A Report of the Surgeon General, 2000. US Department of Health and Human Services. Washington, DC. 2000.

107. USDHHS. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease and Prevention and Health Promotion, Office of Smoking and Health;2012.

108. Fernandez S, Hickman N, Klonoff EA. Cigarette advertising in magazines for Latinas, White women, and men, 1998-2002: a preliminary investigation. *J Community Health*. 2005;30(2):141-151.

109. Acevedo-Garcia D, Barbeau E, Bishop JA, Pan J, Emmons KM. Undoing an epidemiological paradox: the tobacco industry's targeting of US Immigrants. *Am J Public Health*. 2004;94(12):2188-2193.

110. Campaign for Tobacco-Free Kids, American Cancer Society Cancer Action Network, American Heart Association, American Lung Association, and Americans for Nonsmokers' Rights. *A Broken Promise to Our Children: The 1998 State Tobacco Settlement Thirteen Years Later*. Washington, DC 2011.

111. International Agency for Research on Cancer. *Handbook of Cancer Prevention, Vol 6. Weight Control and Physical Activity*. Lyon, France 2002.

112. Kushi LH, Doyle C, Barbash R, et al. American Cancer Society Guidelines on Nutrition and Physical Activity for cancer prevention: reducing the risk of cancer with healthy food choices and physical activity. *CA Cancer J Clin*. 2012;62(1):30-67.

113. Flegal KM, Carroll MD, Kit BK, Ogden CL. Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *JAMA*. 2012 307(5):491-497.

114. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *JAMA*. 2012 307(5):483-490.

115. Ogden C, Carroll M, Curtin L, McDowell M, Tabak C, Flegal K. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*. 2006 295(13):1549-1555.

116. Ogden CL, Carroll MD, Flegal KM. High body mass index for age among US children and adolescents, 2003-2006. *JAMA*. 2008;299(20):2401-2405.

117. Department of Health and Human Services. The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity. Washington, DC: US Department of Health and Human Services. 2001.

118. Institute of Medicine. Preventing Childhood Obesity: Health in the Balance. (Eds.) Koplan, JP., Liverman, CT. Kraak, VI. Washington, DC. 2005.

119. Goel MS, McCarthy EP, Phillips RS, Wee CC. Obesity among US immigrant subgroups by duration of residence. *JAMA*. Dec 15 2004; 292(23):2860-2867.

120. Balcazar H, Alvarado M, Hollen ML, et al. Salud Para Su Corazon-NCLR: a comprehensive Promotora outreach program to promote heart-healthy behaviors among hispanics. *Health Promot Pract*. 2006 7(1):68-77.

121. Collins JL, Wechsler H. The VERB™ Campaign Not About Health, All About Fun: Marketing Physical Activity to Children. *Am J Prev Med*. 2008;36 (Suppl 6):S171-S172.

122. Sallis JF, Glanz K. Physical Activity and Food Environments: Solutions to the Obesity Epidemic. *Milbank Q*. 2009;87(1):123-154.

123. International Agency for Research on Cancer. Alcohol drinking. IARC Monogr Eval Carcinogen Risks Hum. Lyon, France. 1988.

124. Doll R, Forman D, La Vecchia C, Woutersen R. Alcoholic beverages and cancers of the digestive tract and larynx. In: Mcdonald I, (Editor). *Health Issue Related to Alcohol Consumption*. Second Ed. Oxford: Blackwell. 1995.

125. Schatzkin A, Longnecker M. Alcohol and breast cancer. Where are we now and where do we do from here? *Cancer*. 1994;74:1101-1110.

126. Marin G, Marin M. Differential perceptions of drinkers of alcoholic beverages by Mexican-Americans and non-Hispanic whites. *Subst Use Misuse*. 1997;32(10):1369-1384.

127. Slone LB, Norris FH, Gutiérrez Rodriguez F, Gutiérrez Rodriguez JJ, Murphy AM, Perilla JL. Alcohol use and misuse in urban Mexican men and women: An Epidemiologic perspective. *Drug Alcohol Depend*. 2006 85(2):163-170.

128. Mills BA, Caetano R. The Hispanic Americans Baseline Alcohol Survey (HABLAS): predictors of alcohol attitudes and expectancies in Hispanic national groups. *Alcohol Clin Exp Res*. 2010 34(5):790-799.

129. Komro KA, Perry CL, Veblen-Mortenson S, et al. Outcomes from a randomized controlled trial of a multi-component alcohol use preventive intervention for urban youth: project northland Chicago. *Addiction*. 2008 103(4):606-618.

130. Field C, Caetano R. The role of ethnic matching between patient and provider on the effectiveness of brief alcohol interventions with Hispanics. *Alcohol Clin Exp Res*. 2010 34(2):262-271.

131. Liddle HA, Rowe CL, Dakof GA, Henderson CE, Greenbaum PE. Multidimensional family therapy for young adolescent substance abuse: twelve-month outcomes of a randomized controlled trial. *J Consult Clin Psychol*. 2009 77(1):12-25.

132. Rowe CL, Liddle HA. Family-based treatment development for adolescent alcohol abuse. *Int J Adolesc Med Health*. Jan-Mar;18. 2006 18(1): 43-51.

133. Copello AG, Velleman RD, Templeton LJ. Family interventions in the treatment of alcohol and drug problems. *Drug Alcohol Rev*. 2005 24(4):369-385.

134. Tsai CJ, Perry S, Sanchez L, Parsonnet J. Helicobacter pylori infection in different generations of Hispanics in the San Francisco Bay Area. *Am J Epidemiol*. Aug 15 2005;162(4):351-357.

135. Chang ET, Gomez SL, Fish K, et al. Gastric Cancer Incidence among Hispanics in California: Patterns by Time, Nativity, and Neighborhood Characteristics. *Cancer Epidemiol Biomarkers Prev*. May 2012;21(5):709-719.

136. Torres J, Leal-Herrera Y, Perez-Perez G, et al. A community-based seroepidemiologic study of Helicobacter pylori infection in Mexico. *J Infect Dis*. Oct 1998;178(4):1089-1094.

137. Malfertheiner P, Megraud F, O'Morain C, et al. Current concepts in the management of Helicobacter pylori infection: the Maastricht III Consensus Report. *Gut*. Jun 2007;56(6):772-781.

138. Wasley A, Kruszon-Moran D, Kuhnert W, et al. The prevalence of hepatitis B virus infection in the United States in the era of vaccination. *J Infect Dis*. Jul 15 2010;202(2):192-201.

139. Ioannou GN. Hepatitis B virus in the United States: infection, exposure, and immunity rates in a nationally representative survey. *Ann Intern Med*. Mar 1 2011;154(5):319-328.

140. Mitchell T, Armstrong GL, Hu DJ, Wasley A, Painter JA. The increasing burden of imported chronic hepatitis B–United States, 1974-2008. *PloS one*. 2011;6(12):e27717.

141. Mast EE, Margolis HS, Fiore AE, et al. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) part 1: immunization of infants, children, and adolescents. *MMWR Recomm Rep*. Dec 23 2005;54(RR-16):1-31.

142. Mast EE, Weinbaum CM, Fiore AE, et al. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) Part II: immunization of adults. *MMWR Recomm Rep*. Dec 8 2006;55(RR-16):1-33; quiz CE31-34.

143. Lin K, Vickery J. Screening for hepatitis B virus infection in pregnant women: evidence for the U.S. Preventive Services Task Force reaffirmation recommendation statement. *Ann Intern Med*. Jun 16 2009;150(12):874-876.

144. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. Centers for Disease Control and Prevention. *MMWR Recomm Rep*. Oct 16 1998;47(RR-19):1-39.

145. Armstrong GL, Wasley A, Simard EP, McQuillan GM, Kuhnert WL, Alter MJ. The prevalence of hepatitis C virus infection in the United States, 1999 through 2002. *Ann Intern Med*. May 16 2006;144(10):705-714.

146. Trooskin SB, Vega M, Herrine SK, et al. Prevalence of HCV risk factors in Hispanic-American sub populations. *J Immigr Minority Health*. Dec 2010;12(6):915-920.

147. Rein DB, Smith BD, Wittenborn JS, et al. The cost-effectiveness of birth-cohort screening for hepatitis C antibody in U.S. primary care settings. *Ann Intern Med*. Feb 21 2012;156(4):263-270.

148. Parkin DM, Bray F. Chapter 2: The burden of HPV-related cancers. *Vaccine*. Aug 31 2006;24 Suppl 3:S3/11-25.

149. Saslow DS, Solomon D, Lawson HW, et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of Cervical Cancer. *CA Cancer J Clin*. 2012;64(5).

150. Marur S, D'Souza G, Westra WH, Forastiere AA. HPV-associated head and neck cancer: a virus-related cancer epidemic. *Lancet Oncol*. Aug 2010;11(8):781-789.

151. Watson M, Saraiya M, Ahmed F, et al. Using population-based cancer registry data to assess the burden of human papillomavirus-associated cancers in the United States: overview of methods. *Cancer*. Nov 15 2008;113(10 Suppl):2841-2854.

152. Dunne EF, Unger ER, Sternberg M, et al. Prevalence of HPV infection among females in the United States. *JAMA*. Feb 28 2007;297(8):813-819.

153. Giuliano AR, Papenfuss M, Schneider A, Nour M, Hatch K. Risk factors for high-risk type human papillomavirus infection among Mexican-American women. *Cancer Epidemiol Biomarkers Prev*. Jul 1999;8(7):615-620.

154. Rodriguez AC, Schiffman M, Herrero R, et al. Rapid clearance of human papillomavirus and implications for clinical focus on persistent infections. *J Natl Cancer Inst*. Apr 2 2008;100(7):513-517.

155. Gillison ML, Chaturvedi AK, Lowy DR. HPV prophylactic vaccines and the potential prevention of noncervical cancers in both men and women. *Cancer*. Nov 15 2008;113(10 Suppl):3036-3046.

156. CDC. National and State Vaccination Coverage Among Adolescents Aged 13 Through 17 Years – United States, 2010. *MMWR Morb Mortal Wkly Rep*. 2011;60(33):1117-1123.

157. Smith RA, Cokkinides V, Brooks D, Saslow D, Shah M, Brawley OW. Cancer screening in the United States, 2011: A review of current American Cancer Society guidelines and issues in cancer screening. *CA Cancer J Clin*. 2011;61(1):8-30.

158. National Center for Health Statistics. *Health, United States, Chartbook on Trends in the Health of Americans, 2010*. Centers for Disease Control and Prevention, National Center for Health Statistics, Hyattsville, MD 2010.

159. Breen N, Cronin KA, Meissner HI, et al. Reported drop in mammography: is this cause for concern? *Cancer*. 2007;109(12):2405-2409.

160. Breen N, Wagener DK, Brown ML, Davis WW, Ballard-Barbash R. Progress in cancer screening over a decade: results of cancer screening from the 1987, 1992, and 1998 National Health Interview Surveys. *J Natl Cancer Inst*. Nov 21 2001;93(22):1704-1713.

161. Otero-Sabogal R, Owens D, Canchola J, Golding JM, Tabnak F, Fox P. Mammography rescreening among women of diverse ethnicities: patient, provider, and health care system factors. *J Health Care Poor Underserved*. Aug 2004;15(3):390-412.

162. Smith-Bindman R, Miglioretti D, Lurie N, et al. Does utilization of screening mammography explain racial and ethnic differences in breast cancer? *Ann Intern Med*. 2006;144(8):541-553.

163. Jerant AF, Fenton JJ, Franks P. Determinants of racial/ethnic colorectal cancer screening disparities. *Arch Intern Med*. 2008 168(12):1317-1324.

164. Jerant AF, Arellanes RE, Franks P. Factors associated with Hispanic/non-Hispanic white colorectal cancer screening disparities. *J Gen Intern Med*. 2008 23(8):1241-1245.

165. Cameron KA, Francis L, Wolf MS, Baker DW, Makoul G. Investigating Hispanic/Latino perceptions about colorectal cancer screening: a community-based approach to effective message design. *Patient Educ Couns*. 2007 68(2):145-152.

166. Chin MH, Walters AE, Cook SC, Huang ES. Interventions to reduce racial and ethnic disparities in health care. *Med Care Res Rev*. 2007;64(5 suppl):7S-28S.

167. Smedley BD, Stith AY, Nelson AR, eds. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: National Academies Press2002.

168. Gresenz CR, Rogowski J, Escarce JJ. Community demographics and access to health care among U.S. Hispanics. *Health Serv Res*. Oct 2009;44(5 Pt 1):1542-1562.

169. Timmins CL. The impact of language barriers on the health care of Latinos in the United States: a review of the literature and guidelines for practice. *J Midwifery Womens Health*. Mar-Apr 2002;47(2):80-96.

170. Shavers VL, Klein WM, Fagan P. Research on race/ethnicity and health care discrimination: where we are and where we need to go. *Am J Public Health*. May 2012;102(5):930-932.

171. Abouzaid S, Maio V. The inequality in health care quality. *Am J Med Qual*. May-Jun 2009;24(3):182-184.

172. *Principles and Recommended Standards for Cultural Competence Education of Health Care Professionals*: The California Endowment;2002.

173. Escarce J, Kapur K. *Access to and Quality of Health Care. In Hispanics and the Future of America*. Eds. Marta Tienda and Faith Mitchell. pp.410-415. Committee on Transforming Our Common Destiny, National Research Council National Academy Press, Washington, DC. 2006.

174. Arcury TA, Quandt SA. Delivery of health services to migrant and seasonal farmworkers. *Annu Rev Public Health*. 2007;28:345-363.

175. Hoerster KD, Mayer JA, Gabbard S, et al. Impact of individual-, environmental-, and policy-level factors on health care utilization among US farmworkers. *Am J Public Health*. Apr 2011;101(4):685-692.

176. Maxwell J, Cortes DE, Schneider KL, Graves A, Rosman B. Massachusetts' health care reform increased access to care for Hispanics, but disparities remain. *Health Aff*. Aug 2011;30(8):1451-1460.

177. Betancourt JR, Green AR, Carrillo JE, Ananeh-Firempong O, 2nd. Defining cultural competence: a practical framework for addressing racial/ethnic disparities in health and health care. *Public Health Rep*. Jul-Aug 2003;118(4):293-302.

178. Goode TD, Dunne MC, Bronheim SM. *The Evidence Base for Cultural and Linguistic Competency in Health Care*: Georgetown University;2006.

179. Chen HS, Portier K, Ghosh K, et al. Predicting US and State-Level Cancer Counts for the Current Calendar Year: Part I – Evaluation of Temporal Projection Methods for Mortality. *Cancer*. 2012.

Chartered Divisions of the American Cancer Society, Inc.

California Division, Inc.
1710 Webster Street
Oakland, CA 94612
(510) 893-7900 (O)
(510) 835-8656 (F)

East Central Division, Inc.
(PA, OH)
Route 422 and Sipe Avenue
Hershey, PA 17033-0897
(717) 533-6144 (O)
(717) 534-1075 (F)

Eastern Division, Inc.
(NJ, NY)
6725 Lyons Street
East Syracuse, NY 13057
(315) 437-7025 (O)
(315) 437-0540 (F)

Florida Division, Inc.
(including Puerto Rico operations)
3709 West Jetton Avenue
Tampa, FL 33629-5146
(813) 253-0541 (O)
(813) 254-5857 (F)

Puerto Rico
Calle Alverio #577
Esquina Sargento Medina
Hato Rey, PR 00918
(787) 764-2295 (O)
(787) 764-0553 (F)

Great Lakes Division, Inc.
(IN, MI)
1755 Abbey Road
East Lansing, MI 48823-1907
(517) 332-2222 (O)
(517) 664-1498 (F)

Great West Division, Inc.
(AK, AZ, CO, ID, MT, ND, NM, NV, OR, UT, WA, WY)
2120 First Avenue North
Seattle, WA 98109-1140
(206) 283-1152 (O)
(206) 285-3469 (F)

High Plains Division, Inc.
(including Hawaii operations, KS, MO, NE, OK, TX)
2433 Ridgepoint Drive
Austin, TX 78754
(512) 919-1800 (O)
(512) 919-1844 (F)

Hawaii Pacific Division, Inc.
2370 Nuuana Avenue
Honolulu, HI
(808) 595-7500 (O)
(808) 595-7502 (F)

Illinois Division, Inc.
225 N. Michigan Avenue
Suite 1200
Chicago, IL 60601
(312) 641-6150 (O)
(312) 641-3533 (F)

Mid-South Division, Inc.
(AL, AR, KY, LA, MS, TN)
1100 Ireland Way
Suite 300
Birmingham, AL 35205-7014
(205) 930-8860 (O)
(205) 930-8877 (F)

Midwest Division, Inc.
(IA, MN, SD, WI)
8364 Hickman Road
Suite D
Des Moines, IA 50325
(515) 253-0147 (O)
(515) 253-0806 (F)

New England Division, Inc.
(CT, ME, MA, NH, RI, VT)
30 Speen Street
Framingham, MA 01701-9376
(508) 270-4600 (O)
(508) 270-4699 (F)

South Atlantic Division, Inc.
(DE, GA, MD, NC, SC, VA, Washington, D.C., WV)
250 Williams Street
Atlanta, GA 30303
(404) 816-7800 (O)
(404) 816-9443 (F)

We **save lives** and create more birthdays
by helping you stay well, helping you get well,
by finding cures, and by fighting back.

cancer.org | 1.800.227.2345