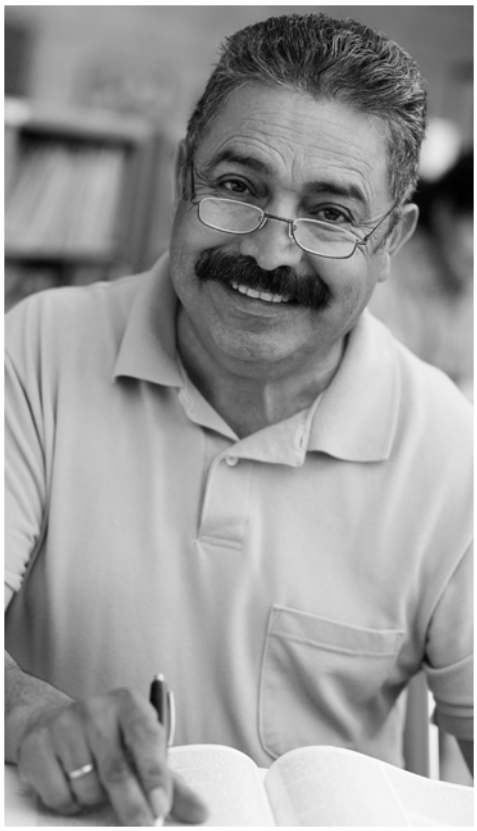
Cancer Facts & Figures for Hispanics/Latinos

2015-2017



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Overview

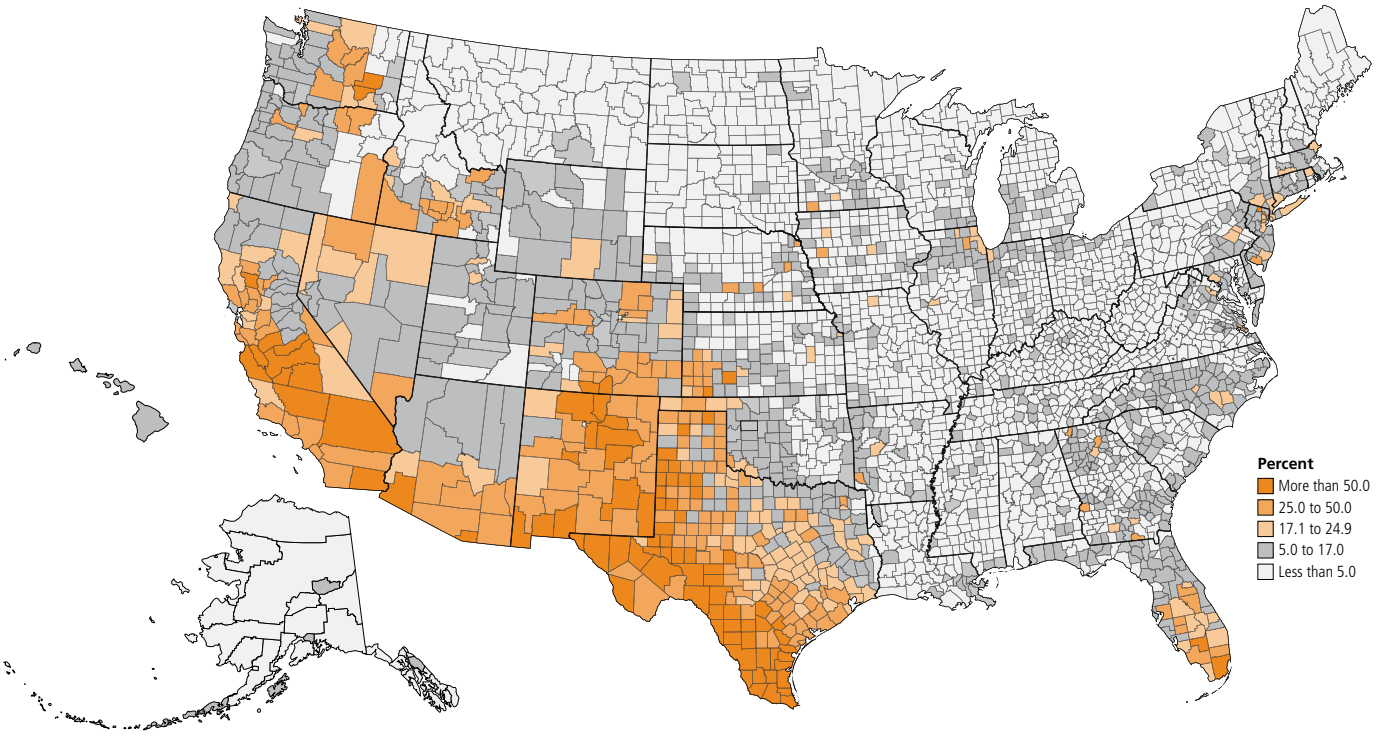
Introduction

According to estimates from the US Census Bureau, 55 million Americans, or 17% of the total US population, identified as Hispanic or Latino in 2014.[1] The terms "Hispanic" and "Latino/a" are used to refer to a person of Hispanic origin. The word Hispanic is a socially and politically constructed US federal designation used in national and state reporting systems that is a separate concept from race; as such, 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 and youngest minority group in the United States. Between 2000 and 2014 the Hispanic population grew by 57%, more than four times the growth of the total population.[1,2] In recent years, the growth of the Hispanic population in the US has been driven more by births than by immigration.[3]

From 2011 to 2013, 28% of the Hispanic population was younger than 15 years of age, compared to 16% of non-Hispanic whites.[4] More than one-third (35%) of Hispanics in the US are foreign born (i.e., born outside the US and its territories, including Puerto Rico). The majority of US Hispanics are of Mexican origin (64.3%), followed by Puerto Rican (9.5%), Salvadoran (3.7%), Cuban (3.7%), and Dominican (3.1%). The Hispanic population is not equally distributed across the US, but is concentrated in the West (40%) and South (37%) (Figure 1).[5] More than half of all Hispanics live in the three states of California (27%), Texas (19%), and Florida (9%). Among states there is substantial variation in the Hispanic population by country of origin. For example, Mexicans comprise more than 80% of the Hispanic population in both Texas and California, compared to only 15% in Florida.[4]

This report summarizes statistics on cancer incidence, mortality, survival, risk factors, and early detection and screening for Hispanics in the US. It 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, masking important differences between Hispanic subpopulations according to nativity status (i.e., those who are foreign born versus those who are US born), degree of acculturation, and country of origin. For example, one study found that US cancer death rates in Mexicans are 12% lower than those in mainland Puerto Ricans.[6]

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



Source: US Census Bureau, Population Estimates, July 2013. Released 2014.

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 external factors, such as tobacco, infectious organisms, and an unhealthy diet, and internal factors, such as inherited genetic mutations, hormones, and immune conditions. These factors may act together or in sequence to cause cancer. Ten or more years often pass between exposure to external factors and detectable cancer. Cancer is treated with surgery, radiation, chemotherapy, hormone therapy, immune therapy, and targeted therapy (drugs that specifically target cancer cells to prevent growth).

Can Cancer Be Prevented?

A substantial proportion of cancers could be prevented with the adoption of healthier lifestyles, including not smoking, maintaining a healthy body weight, eating a healthy diet, protecting skin from excessive sun exposure, and being physically active. All cancers caused by tobacco and heavy alcohol consumption could be prevented completely. Many of the cancers caused by infectious organisms are also avoidable, either by preventing the infection through behavioral changes or vaccination, or by treating the infection. For more information on cancer risk factors, see page 16.

Screening can help prevent colorectal and cervical cancers through the detection and removal of precancerous growths. Screening can also help detect cancers of the breast, colorectum, cervix, and lung (among long-term and/or heavy smokers) at an early stage, when treatment is more likely to be successful. For more information on cancer screening, see page 24.

What Is the Risk of Developing or Dying of 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 younger than the non-Hispanic white population, a larger proportion of cancers are diagnosed in younger age groups. For example, 25% 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 3 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 22% of deaths in 2012 (Table 2).

How Many New Cancer Cases and Deaths Are Expected in 2015?

New cases: About 58,400 new cancer cases in Hispanic men and 67,500 cases in Hispanic women are expected to be diagnosed in 2015 (Figure 2). These estimates do not include carcinoma in situ (noninvasive cancer) of any site except urinary bladder. They also exclude basal cell and squamous cell skin cancers, because

Table 1. Probability (%) of Developing Invasive Cancer among Hispanics/Latinos during Selected Age Intervals by Sex, US, 2010-2012*

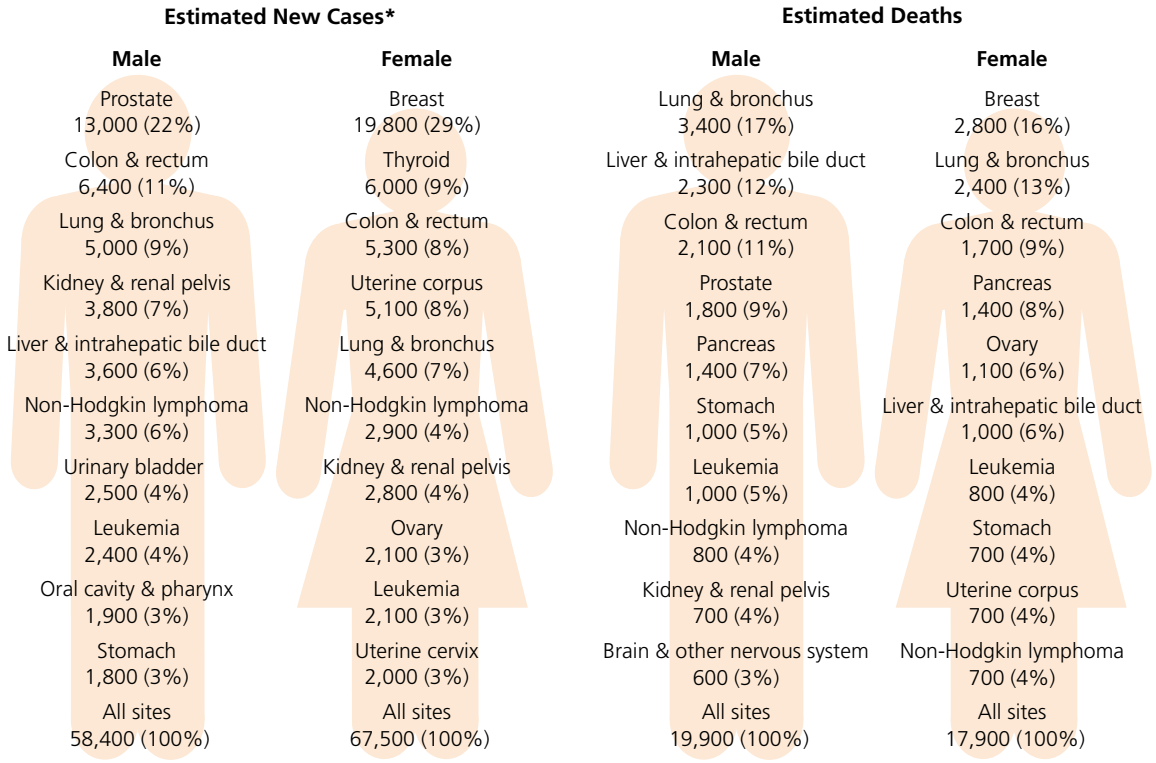
		Birth to 49	50 to 59	60 to 69	70 and Older	Birth to Death
All sites†	Male	2.6 (1 in 39)	4.6 (1 in 22)	11.3 (1 in 9)	32.8 (1 in 3)	38.8 (1 in 3)
	Female	4.4 (1 in 23)	4.8 (1 in 21)	8.0 (1 in 13)	24.2 (1 in 4)	34.4 (1 in 3)
Breast	Female	1.5 (1 in 68)	1.8 (1 in 55)	2.6 (1 in 38)	5.1 (1 in 20)	9.8 (1 in 10)
Colon & rectum	Male	0.3 (1 in 386)	0.6 (1 in 175)	1.1 (1 in 87)	3.7 (1 in 27)	4.7 (1 in 21)
	Female	0.2 (1 in 416)	0.5 (1 in 219)	0.8 (1 in 131)	3.1 (1 in 32)	4.1 (1 in 24)
Liver & intrahepatic bile duct	Male	0.1 (1 in 1,009)	0.4 (1 in 228)	0.7 (1 in 149)	1.4 (1 in 69)	2.2 (1 in 44)
	Female	<0.1 (1 in 3,466)	0.1 (1 in 1,078)	0.2 (1 in 456)	0.8 (1 in 124)	1.0 (1 in 97)
Lung & bronchus	Male	0.1 (1 in 1,406)	0.3 (1 in 370)	0.9 (1 in 107)	4.6 (1 in 22)	4.8 (1 in 21)
	Female	0.1 (1 in 1,208)	0.2 (1 in 421)	0.7 (1 in 143)	3.0 (1 in 33)	3.6 (1 in 28)
Non-Hodgkin lymphoma	Male	0.2 (1 in 443)	0.3 (1 in 383)	0.5 (1 in 191)	1.8 (1 in 54)	2.4 (1 in 42)
	Female	0.2 (1 in 604)	0.2 (1 in 488)	0.4 (1 in 254)	1.4 (1 in 69)	2.0 (1 in 50)
Prostate	Male	0.2 (1 in 574)	1.4 (1 in 73)	4.7 (1 in 21)	9.9 (1 in 10)	13.0 (1 in 8)
Stomach	Male	0.1 (1 in 1,099)	0.2 (1 in 644)	0.3 (1 in 294)	1.5 (1 in 68)	1.7 (1 in 59)
	Female	0.1 (1 in 1,117)	0.1 (1 in 923)	0.2 (1 in 471)	0.9 (1 in 108)	1.2 (1 in 83)
Thyroid	Male	0.1 (1 in 886)	0.1 (1 in 1,100)	0.1 (1 in 787)	0.2 (1 in 482)	0.5 (1 in 210)
	Female	0.7 (1 in 154)	0.3 (1 in 304)	0.3 (1 in 315)	0.5 (1 in 211)	1.7 (1 in 60)
Uterine cervix	Female	0.3 (1 in 324)	0.2 (1 in 639)	0.2 (1 in 619)	0.3 (1 in 298)	0.9 (1 in 111)

*For those who are free of cancer at beginning of each age interval. †All sites excludes basal and squamous cell skin cancers and in situ cancers except urinary bladder.

Source: DevCan: Probability of Developing or Dying of Cancer Software, Version 6.7.3. Statistical Research and Applications Branch, National Cancer Institute, 2015. http://surveillance.cancer.gov/devcan/.

American Cancer Society, Inc., Surveillance Research, 2015

Figure 2. Leading Sites of New Cancer Cases and Deaths among Hispanics – 2015 Estimates



*Estimates exclude basal and squamous cell skin cancers and in situ carcinoma except urinary bladder.

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Table 2. Leading Causes of Death among Hispanics and Non-Hispanic Whites, US, 2012

	Hispanic				Non-Hispanic White			
	Rank	Number of deaths	Percent of total deaths	Death rate*	Rank	Number of deaths	Percent of total deaths	Death rate*
Cancer	1	34,147	22	117.8	2	462,499	23	170.2
Heart diseases	2	31,595	20	122.4	1	481,991	24	171.2
Accidents (unintentional injuries)	3	11,447	7	26.5	5	99,288	5	43.7
Cerebrovascular diseases	4	7,767	5	30.1	4	100,154	5	35.5
Diabetes	5	7,363	5	27.1	7	50,443	3	18.5
Chronic liver disease & cirrhosis	6	4,988	3	14.2	12	25,720	1	9.9
Chronic lower respiratory diseases	7	4,477	3	18.6	3	127,116	6	46.2
Alzheimer's disease	8	3,772	2	17.4	6	72,772	4	24.9
Influenza and pneumonia	9	3,049	2	12.1	8	40,460	2	14.3
Nephritis, nephotic syndrome, & nephrosis	10	2,964	2	11.3	10	33,105	2	11.8
All causes		156,419	100	541.2		2,016,896	100	742.3

*Rates are per 100,000 and age adjusted to the 2000 US standard population. NOTE: Death rates are not directly comparable to those published in prior years due to updated population denominator data.

Source: National Center for Health Statistics, Centers for Disease Control and Prevention, 2015.

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these cases are not required to be reported to cancer registries. Prostate cancer will be the most commonly diagnosed cancer in Hispanic men, accounting for 22% of new cases, and breast cancer will be the most common in Hispanic women, accounting for 29% of cases. 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 thyroid and colorectum will be second and third, respectively.

Deaths: Among Hispanics, about 19,900 men and 17,900 women are expected to die from cancer in 2015 (Figure 2, page 3). Lung cancer is expected to account for about 17% of cancer deaths in Hispanic men, followed by liver (12%) and colorectal (11%) cancers. Prostate cancer will be the fourth most common cause of cancer death in Hispanic men, but ranks second in US men overall. Among Hispanic women, breast cancer will be the leading cause of cancer death (16%), followed by cancers of the lung (13%) and colorectum (9%). This is in contrast to US women overall, among whom lung cancer is the leading cause of cancer death.

How Have Cancer Rates Changed over Time?

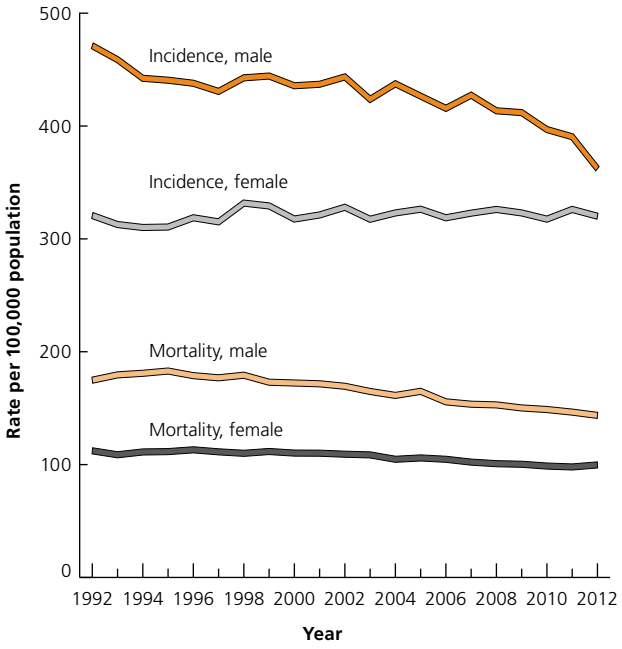
Trends in cancer incidence rates: Cancer incidence rates for Hispanics have been available since 1992 (Figure 3). In examining the most recent 10 years of data (2003-2012), incidence rates for all cancers combined among Hispanic men decreased by an average of 2.4% per year, compared to declines of 2.2% among non-Hispanic black men and 1.5% per year among non-Hispanic white men. Over the same time period, incidence rates among women decreased annually by 0.5% among Hispanics while remaining unchanged among non-Hispanic whites and blacks. Trends in cancer incidence rates in Hispanics for selected cancers are shown in Figure 4, page 6.

Trends in cancer death rates: Among Hispanics, death rates for all cancers combined decreased from 2003 to 2012 by an average of 1.5% per year in men and by 1.0% per year in women, very similar to declines among non-Hispanic whites. Trends in cancer death rates among Hispanics for selected cancers are shown in Figure 4, page 6.

Major Differences in the Cancer Burden by Race and Ethnicity

Incidence and death rates: Table 3 shows differences in cancer incidence and death rates between Hispanics and other racial and ethnic groups in the US. Cancer rates in Hispanics are most similar to those in Asians and Pacific Islanders, who share low rates of the most common cancers (female breast, colorectal, lung, and prostate) and high rates of stomach and liver cancers. Notably, Hispanics experience lung cancer incidence and death rates that are nearly half those in non-Hispanic blacks, who have the highest rates. However, Hispanic women have among

Figure 3. Trends in Incidence and Death Rates for All Cancers Combined among Hispanics, 1992-2012



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

Sources: Incidence – Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2015. Mortality – National Center for Health Statistics, Centers for Disease Control and Prevention, 2015. Deaths from New Hampshire and Oklahoma were excluded because these states did not collect data on Hispanic origin for some years.

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the highest cervical and gallbladder cancer incidence rates. It is important to reiterate that statistics reported for all Hispanics combined mask wide variation for different Hispanic subgroups, and trends are influenced by the cancer risk of new immigrants, as well as established residents.[7]

The cancer burden among Hispanics in the US is similar to that in immigrant countries of origin. Compared to the US, incidence rates in Latin America are generally lower for breast, colorectal, lung, and prostate cancers and higher for cervical and stomach cancers.[8] One exception to this is Puerto Rico (US territory), where rates of prostate cancer are higher than those in the mainland US (150 per 100,000 versus 128 in 2011).[9] Descendants of Hispanic immigrants have cancer rates that approach those of non-Hispanic whites due to acculturation.[10] Acculturation 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.[11] Among Hispanic immigrants in the US, acculturation may result in improved access to health care and preventive services, but may also lead to the adoption of unhealthy behaviors such as smoking,

Table 3. Cancer Incidence and Death Rates* by Site, Race, and Ethnicity, US, 2008-2012

		Hispanic/Latino	Non-Hispanic White	Non-Hispanic Black	Asian and Pacific Islander	American Indian and Alaska Native†
INCIDENCE	**All sites**					
	Male	408.5	528.9	592.3	316.8	423.3
	Female	330.4	436.2	408.1	287.5	372.9
	Acute lymphocytic leukemia					
	Male	2.5	1.8	1.2	1.5	1.3
	Female	2.1	1.4	0.8	1.2	1.5
	Breast (female)	91.9	128.1	124.3	88.3	91.9
	Colorectum					
	Male	44.6	47.4	60.3	39.0	50.4
	Female	30.6	36.2	44.1	29.2	40.1
	Gallbladder					
	Male	1.2	0.7	1.4	1.0	2.5
	Female	2.6	1.1	1.9	1.5	3.2
	Liver & intrahepatic bile duct					
	Male	19.3	9.3	16.5	20.6	18.7
	Female	7.2	3.2	4.8	7.9	8.9
	Lung & bronchus					
	Male	43.3	79.3	93.4	47.4	66.2
	Female	26.0	58.7	51.4	28.3	52.7
	Prostate	112.1	123.0	208.7	67.8	90.5
	Stomach					
	Male	13.5	7.8	15.1	14.5	12.0
	Female	7.8	3.5	8.0	8.5	6.6
	Thyroid					
	Male	5.1	7.7	3.7	6.3	4.0
	Female	19.3	21.9	12.9	20.4	12.9
	Uterine cervix	10.2	7.1	10.0	6.3	9.4
MORTALITY	**All sites**					
	Male	148.0	210.6	267.7	128.4	186.7
	Female	99.4	149.2	170.4	91.2	133.9
	Acute lymphocytic leukemia					
	Male	0.8	0.5	0.4	0.4	0.3
	Female	0.6	0.3	0.3	0.3	0.4
	Breast (female)	14.5	21.9	31.0	11.4	15.0
	Colorectum					
	Male	15.6	18.2	27.6	13.0	18.8
	Female	9.6	12.9	18.2	9.4	15.6
	Gallbladder					
	Male	0.7	0.4	0.8	0.7	0.9
	Female	1.3	0.6	1.0	0.8	1.8
	Liver & intrahepatic bile duct					
	Male	12.9	7.6	12.8	14.5	13.9
	Female	5.6	3.1	4.4	6.1	6.3
	Lung & bronchus					
	Male	29.5	62.2	74.9	34.0	49.1
	Female	13.7	41.4	36.7	18.2	32.1
	Prostate	17.8	19.9	47.2	9.4	20.2
	Stomach					
	Male	7.2	3.6	9.4	7.9	7.4
	Female	4.2	1.8	4.5	4.7	3.6
	Thyroid					
	Male	0.5	0.5	0.4	0.5	‡
	Female	0.7	0.5	0.6	0.8	0.5
	Uterine cervix	2.7	2.0	4.1	1.8	3.5

Hispanic origin is not mutually exclusive from Asian/Pacific Islander or American Indian/Alaska Native. *Rates are per 100,000 population and age adjusted to the 2000 US standard population. †Data based on Indian Health Service Contract Health Service Delivery Areas. Incidence rates exclude data from Kansas. ‡Rate not shown due to sparse data.

Source: Incidence – North American Association of Central Cancer Registries, 2015. Mortality - National Center for Health Statistics, Centers for Disease Control and Prevention, 2015.

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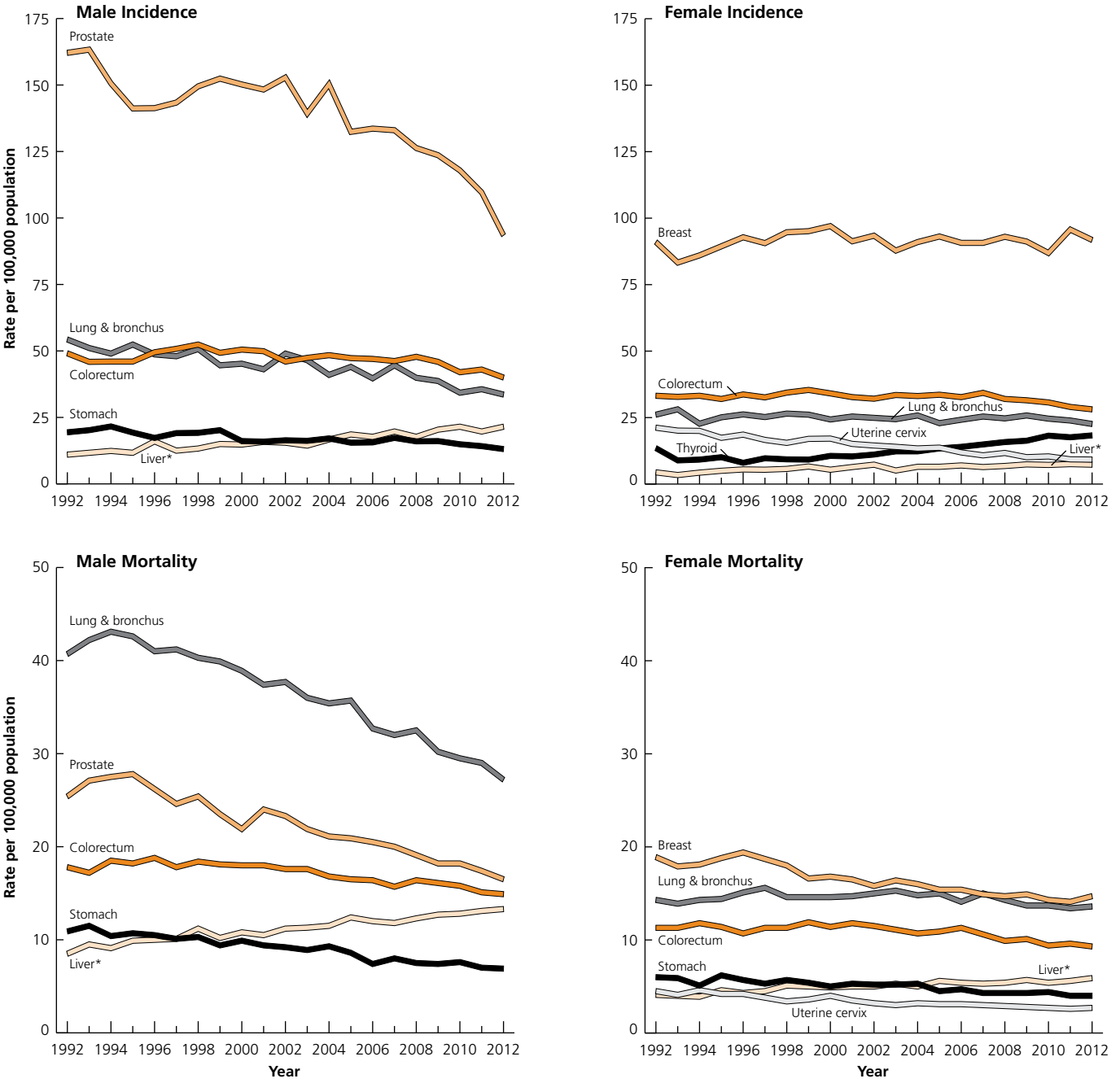
Figure 4. Trends in Cancer Incidence and Death Rates among Hispanics by Site, 1992-2012



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

Source: Incidence - Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2015. Mortality - National Center for Health Statistics, Centers for Disease Control and Prevention, 2015. Deaths from Oklahoma and New Hampshire were excluded because these states did not collect data on Hispanic origin for some years.

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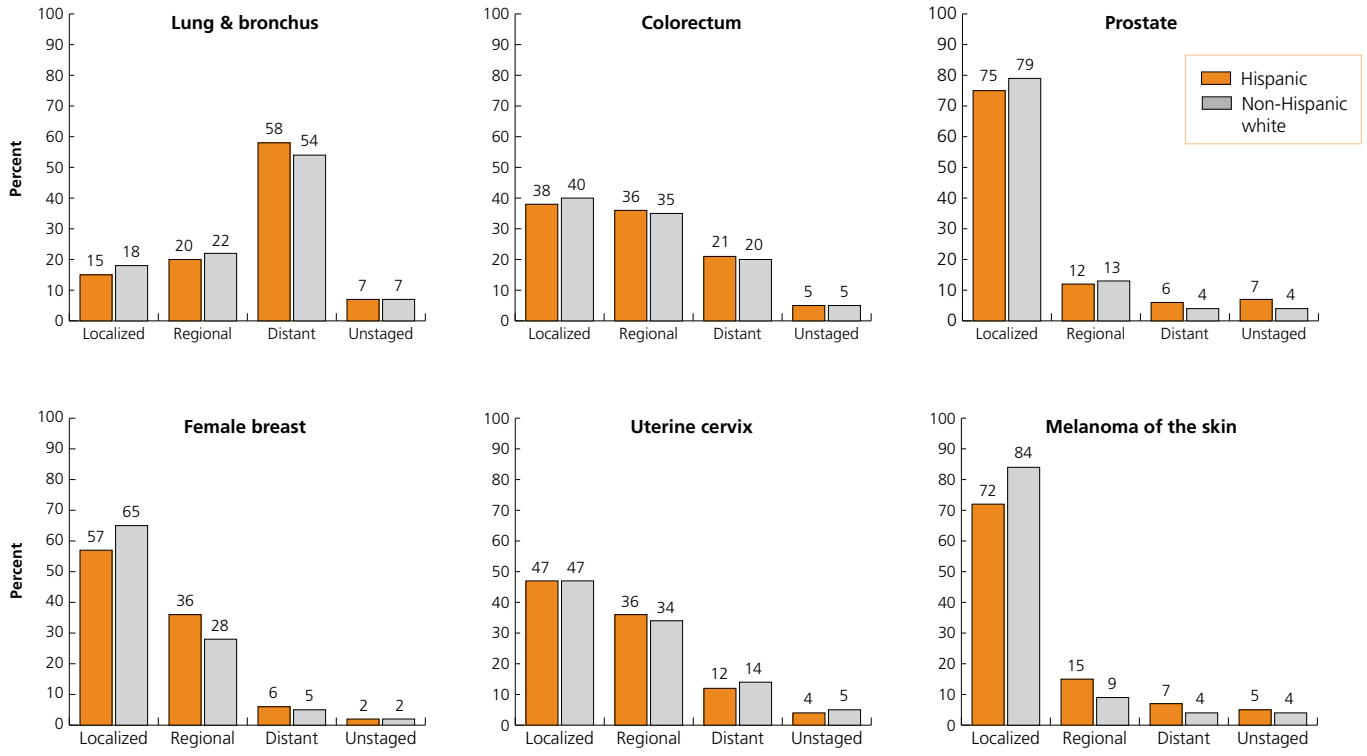
excessive alcohol consumption, and decreases in dietary quality and physical activity. For example, among Mexicans, average body mass index is highest among those who are US-born, followed by foreign-born individuals who have lived in the US for more than 15 years, and is lowest among foreign-born persons who have lived in the US 15 years or less.[12] Thus, acculturation can lead to substantial differences in health outcomes within a population. One study found that overall cancer death rates were 22% higher among US-born Hispanic men than foreign-born Hispanic men.[10] Even first generation Hispanics show evidence of acculturation, with higher cancer rates than those in their country of origin for the most common cancers.[13, 14]

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 and/or distant lymph nodes. In general, treatment is less likely to be effective the further a cancer has spread. 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 5).

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 percentage of cancer patients alive after a specified period of time following diagnosis (typically 5 years), divided by the percentage expected to be alive in the absence of cancer based on normal life expectancy. However, because life expectancy data have historically been unavailable for Hispanics, a different measure called cause-specific survival is used in this report. Cause-specific survival is the percentage of people who have not died from a specific disease within a certain time period (also typically 5 years) after a diagnosis. Although survival rates are useful for monitoring progress in early detection and treatment of most cancers, they do not represent the proportion of people who are cured because cancer deaths can occur more than 5 years after diagnosis.

In general, differences in survival rates between populations may reflect differences in the use of screening tests; stage at diagnosis; less access to timely, high-quality treatment; or a combination thereof. Survival rate differences may also be influenced by the accuracy of patient follow-up of cancer patients, particularly for populations with a large proportion of foreign-born individuals like Hispanics (see Factors that Influence Cancer Rates, page 32).[15] Of those cancer sites listed in Table 4, page 8, the largest difference in survival is for melanoma; among men, about 88% of non-Hispanic whites survive 5 years after diagnosis, compared to only 79% of Hispanics. This survival disparity may be due to a higher proportion of thicker tumors and later stage at diagnosis among Hispanics.[16, 17]

Figure 5. Stage Distribution for Selected Cancers among Hispanics and Non-Hispanic Whites, 2008-2012



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

Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2015.

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Table 4. Five-year Cause-specific Survival Rates (%), 2005-2011

	Hispanic	Non-Hispanic White
Male		
All sites	66	68
Colon & rectum	65	66
Liver & intrahepatic bile duct	20	20
Lung & bronchus	15	18
Melanoma of the skin	79	88
Prostate	93	94
Stomach	29	28
Female		
All sites	70	68
Breast	88	89
Colon & rectum	66	65
Liver & intrahepatic bile duct	22	20
Lung & bronchus	24	23
Melanoma of the skin	88	93
Stomach	31	34
Uterine cervix	75	70

Rates are based on cases diagnosed in 17 SEER registries from 2005 to 2011, followed through 2012. NOTE: Hispanic survival rates should be interpreted with caution. Please see section on Factors That Influence Cancer Rates, page 32, for more information.

Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2015.

Major Cancer Sites

Female Breast

New cases: Breast cancer is the most commonly diagnosed cancer among Hispanic women; an estimated 19,800 Hispanic women are expected to be diagnosed in 2015. From 2003 to 2012, breast cancer incidence rates were stable in both Hispanic and non-Hispanic white women.

The breast cancer incidence rate in Hispanic women is 28% lower than in non-Hispanic white women (Table 3, page 5), and within the Hispanic population, the risk of breast cancer is even lower in those who are foreign-born.[18] These differences in occurrence are primarily attributed to variation in the prevalence of risk factors.[19] Hispanic women are more likely to give birth to their first child at a younger age and have more children, both of which are protective against breast cancer; however, differences in reproductive factors vary substantially among Hispanic subgroups.[20, 21] Breastfeeding, which is also protective against breast cancer, is more common among Hispanic women, especially recent immigrants, than among white women.[22-24]

Lower incidence rates among Hispanic women may also be due to less use of menopausal hormone therapy and underdiagnosis due to lower utilization of mammography.[25-28] For more information about breast cancer screening, see page 24.

Other modifiable breast cancer risk factors include alcohol consumption, physical inactivity, and weight gain after the age of 18 and/or being overweight/obese (for postmenopausal breast cancer only).[29, 30] However, studies indicate that the relationship between body mass and breast cancer may differ by ethnicity.[31, 32] Nonmodifiable risk factors include a family history of breast cancer, high breast tissue density, type 2 diabetes, high bone mineral density (measured during screening for osteoporosis), certain benign breast conditions, ductal carcinoma in situ, lobular carcinoma in situ, and a long menstrual history (i.e., early menarche and/or late menopause).[33-37] Recent use of high-dose estrogen oral contraceptives may also increase risk of breast cancer, although an association with newer lower-dose formulations is not clear.[38] Ethnic variation in genetic factors that influence breast cancer development may also contribute to differences in risk.[39-41]

Deaths: Breast cancer is the leading cause of cancer death among Hispanic women, with an estimated 2,800 deaths expected in 2015. From 2003 to 2012, breast cancer death rates decreased by 1.3% per year among Hispanic women and by 1.9% per year among non-Hispanic white women.

Stage distribution and survival: Breast cancer is less likely to be diagnosed at a local stage in Hispanic women than in non-Hispanic white women, even after accounting for differences in age, socioeconomic status, and method of detection.[42, 43] During 2008-2012, 57% of breast cancers among Hispanic women were diagnosed at a local stage, compared to 65% among non-Hispanic white women (Figure 5, page 7). 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, 44-46] 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.[47, 48] Studies are conflicting with regard to whether Hispanic women have lower or higher breast cancer survival after accounting for these factors.[47, 49, 50]

Hispanic women continue to be less likely to receive appropriate and timely breast cancer treatment in comparison to non-Hispanic whites.[51] Intervention programs that follow patients throughout treatment in order to enhance communication between the surgeon, oncologist, and patient have been shown to reduce these disparities.[52] Five-year cause-specific survival rates for local, regional, and distant-stage breast cancer diagnosed in Hispanic women are 96%, 85%, and 31%, respectively.

Colon and Rectum

New cases: An estimated 6,400 Hispanic men and 5,300 Hispanic women are expected to be diagnosed with cancer of the colon or rectum in 2015. 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 6% and 15% lower, respectively, than those among non-Hispanic whites (Table 3, page 5). From 2003 to 2012, colorectal cancer incidence rates decreased by 3.0% per year among Hispanics 50 years of age and older, compared to an annual decline of 4.0% in non-Hispanic whites.

Incidence rates in US-mainland Hispanics have historically been higher than rates in residents of Puerto Rico and Spanish-speaking countries in South and Central America. However, this pattern is changing due to declines in the US and increasing rates in Puerto Rico and some Latin American countries.[53, 54] This is because colorectal cancer occurrence increases as countries undergo economic transition and factors associated with urbanization, such as unhealthy diets and obesity, become more prevalent.[55]

Factors that increase risk for colorectal cancer include a personal or family history of polyps or colorectal cancer, chronic inflammatory bowel disease (e.g., ulcerative colitis or Crohn's disease), inherited syndromes (e.g., hereditary non-polyposis colorectal cancer, also known as Lynch syndrome), obesity, type 2 diabetes, consumption of red or processed meat, smoking, and alcohol consumption.[29, 56-58] Hispanics are disproportionately affected by diabetes and the elevated risk for colorectal cancer with which it is associated.[59] Factors that reduce the risk of colorectal cancer include occupational or recreational physical activity (for colon cancer only), milk and calcium consumption, and fruit and vegetable consumption.[29] There is also evidence that long-term, regular use of aspirin and other non-steroidal anti-inflammatory drugs (NSAIDS) lowers the risk of colorectal cancer.[56] However, the American Cancer Society does not currently recommend use of these drugs for cancer prevention in the general population because of potential side effects (e.g., gastrointestinal bleeding). Screening also helps prevent colorectal cancer through the detection and removal of polyps before they develop into cancer. For more information on colorectal cancer screening, see page 26.

Deaths: About 2,100 Hispanic men and 1,700 Hispanic women are expected to die from colorectal cancer in 2015. Colorectal cancer is the third-leading cause of cancer death among Hispanic men and women. Between 2003 and 2012, death rates for colorectal cancer decreased by about 1.7% per year among Hispanics and by 2.7% per year among non-Hispanic whites.

Stage distribution and survival: The 5-year cause-specific survival rate among Hispanics for colorectal cancer diagnosed at a localized stage is 90%; survival drops to 70% and 16% for those diagnosed at regional and distant stages, respectively. Hispanics are slightly less likely than non-Hispanic whites to be diagnosed with localized disease (38% versus 40%, respectively) (Figure 5, page 7), likely due to lower rates of screening and less access to timely medical care.[28]

Lung and Bronchus

New cases: About 5,000 Hispanic men and 4,600 Hispanic women are expected to be diagnosed with lung cancer in 2015. Lung cancer is the third most-commonly diagnosed cancer in Hispanic men and the fifth most common in Hispanic women, whereas it is the second most common cancer among non-Hispanic whites in both sexes. Cigarette smoking is the major risk factor for lung cancer, accounting for about 84% and 81% of lung cancer deaths in US men and women, respectively.[60] Lung cancer incidence rates among Hispanics are about half those of non-Hispanic whites (Table 3, page 5) because of traditionally lower rates of cigarette smoking and because Hispanics who do smoke are less likely to be daily smokers and are more likely to smoke fewer cigarettes overall.[61-63] Lung cancer susceptibility may also differ by race/ethnicity, particularly at lower levels of smoking.[64, 65] For more information on smoking, see page 16.

From 2003 to 2012, lung cancer incidence rates declined somewhat faster in Hispanic men (3.1% per year) than non-Hispanic white men (2.3% per year), which may reflect the arrival of new Hispanic immigrants with lower lung cancer risk. Among women, incidence rates declined by 1.3% per year in Hispanics and by 0.7% per year in non-Hispanic whites during this time period. Increased smoking as a result of acculturation has been observed among female, but not male, Hispanics.[63, 66] Most cases of lung cancer could be prevented by increasing cessation among adult smokers and by decreasing initiation of smoking among adolescents. After 10 years of cessation, the risk of lung cancer in former smokers is about half the risk in continuing smokers.[67]

Deaths: About 3,400 lung cancer deaths in men and 2,400 deaths in women are expected to occur among Hispanics in 2015. 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 historical smoking patterns.[14] For example, Cuban men, who have historically had the highest smoking prevalence, have the highest lung cancer death rates – 30% higher than those of Mexican or Puerto Rican men.[7]

From 2003 to 2012, death rates for lung cancer declined by 3.1% per year among Hispanic men and by 1.4% per year among Hispanic women. During the same time interval, lung cancer death rates among non-Hispanic whites decreased by 2.4% per year in

men and by 1.1% 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. Screening with spiral computed tomography has been shown to reduce mortality among heavy or long-term smokers.[68] For information about lung cancer screening, see page 26.

Stage distribution and survival: Most patients with lung cancer are diagnosed at an advanced stage; only 15% of Hispanics and 18% of non-Hispanic whites are diagnosed with localized disease (Figure 5, page 7), for which the cause-specific survival is approximately 62% in Hispanics. Lung cancer is also one of the deadliest cancers; 5-year survival drops to 33% and 5% for Hispanics diagnosed at regional and distant stages, respectively. Hispanic women have higher 5-year cause-specific survival than Hispanic men for all lung cancers combined (24% versus 15%, respectively) (Table 4, page 8).

Prostate

New cases: Prostate cancer is the most common cancer among Hispanic men, with about 13,000 new cases expected in 2015. The incidence rate among Hispanics (112.1 per 100,000) is about 9% lower than that among non-Hispanic whites (123.0) (Table 3, page 5), likely due to lower rates of prostate-specific antigen (PSA) testing among Hispanics.[69] Prostate cancer incidence rates decreased 4.7% per year in Hispanic men and 3.5% per year in non-Hispanic white men from 2003 through 2012. Increasing age, African ancestry, certain inherited genetic conditions (e.g., Lynch syndrome), and a family history of the disease are the only well-established risk factors for prostate cancer. Obesity may also be associated with an increased risk of aggressive disease.[70]

Deaths: An estimated 1,800 deaths from prostate cancer are expected among Hispanic men in 2015, making prostate cancer the fourth-leading cause of cancer death. The death rate is slightly lower in Hispanic men (17.8 per 100,000) than in non-Hispanic white men (19.9) (Table 3, page 5). From 2003 to 2012, the death rate decreased by 3.0% per year in Hispanic men and by 3.3% per year in non-Hispanic white men.

Stage distribution and survival: About 75% of prostate cancers are discovered at a localized stage in Hispanic men compared to 79% in non-Hispanic white men (Figure 5, page 7), for which 5-year cause-specific survival rate is approximately 98% for both groups. The survival rate for those diagnosed at a distant stage is 32% among Hispanic men and 29% among non-Hispanic whites.

Cancer Sites with Higher Rates among Hispanics

While Hispanics have comparatively low rates for the most common cancers, they have disproportionately high rates of cancers related to infectious agents (i.e., cancers of the liver, stomach, and uterine cervix) and of gallbladder cancer. Cancers related to infectious agents are more common in economically developing countries, including parts of Latin America.[8] One in six new cancers in Central and South America is attributable to infectious agents, compared to one in 25 in North America.[71] In the US, the incidence and mortality rates of these cancers are higher among Hispanics, especially first generation immigrants for stomach and cervical cancers, than among non-Hispanic whites.[14]

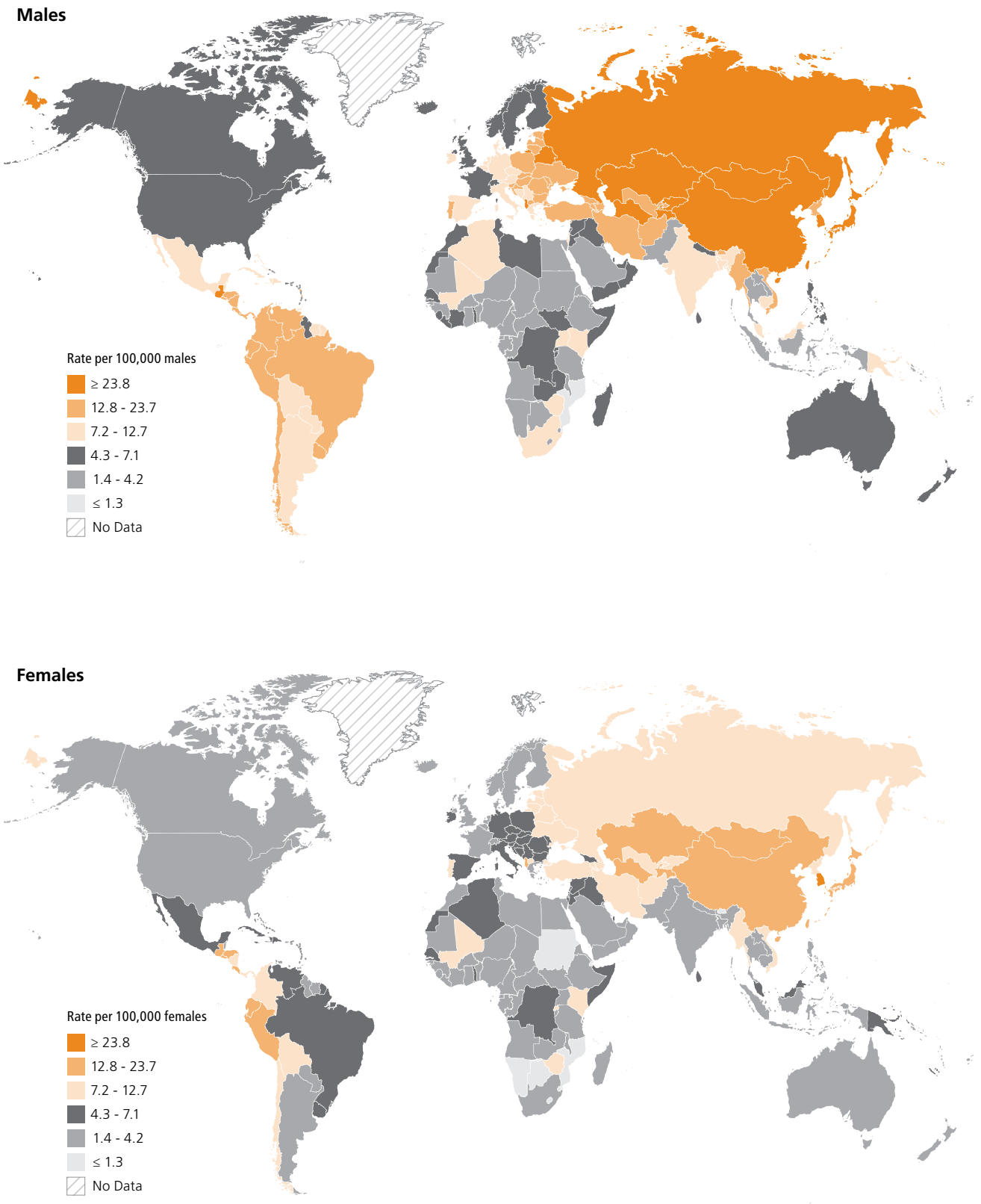
Liver and Intrahepatic Bile Duct

In 2015, approximately 5,100 Hispanics will be diagnosed with liver cancer, and about 3,300 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 5).[72] Incidence rates for liver cancer have been increasing since the mid-1980s; from 2003 to 2012, rates increased annually by 1.8% in men and 2.4% in women among Hispanics and 3.7% and 3.5% among non-Hispanic white men and women, respectively. However, a recent analysis indicates that rates may have approached a peak.[73] Trends in liver cancer death rates mirror those for incidence because liver cancer is one of the most fatal types of cancer; the 5-year cause-specific survival rate among Hispanics is 20% and 22% for men and women, respectively (Table 4, page 8). Liver cancer is expected to be the second most common cause of cancer death among Hispanic men in 2015 (Figure 2, page 3).

Chronic infections with hepatitis B virus (HBV) and/or hepatitis C virus (HCV) account for the majority of liver cancer cases in developing countries but a lower proportion in developed countries.[74] Primary prevention of HBV infection is achieved through vaccination; there is no vaccine to prevent HCV infection. Transmission of either infection is potentially preventable through public health measures, such as screening of blood, organ, tissue, and semen donors and, for HCV, needle/syringe exchange programs.[75] Treatment of liver disease in people with chronic HBV and/or HCV infection may reduce the risk of developing liver cancer.[76] For more information about HBV and HCV, see page 22.

Rates of obesity and diabetes among Hispanics have increased over the past several decades, particularly among Mexicans and mainland Puerto Ricans, and may be related to the increased incidence of liver cancer (for more information about obesity,

Figure 6. International Variation in Stomach Cancer Incidence Rates, 2012



Rates are adjusted to the 1960 world standard population.

Source: GLOBOCAN 2012.

see page 18).[77-81] Additional risk factors for liver cancer include heavy alcohol use, smoking, rare metabolic syndromes, and aflatoxin (a toxin produced by a fungus that can grow in grains or peanuts stored in moist, warm conditions, more often found in developing countries).[75, 82, 83] 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.[84, 85]

Stomach

In 2015, approximately 3,200 Hispanics will be diagnosed with stomach cancer, and an estimated 1,700 will die from the disease. In the US, the stomach cancer incidence rate in Hispanic men is 73% higher than that in non-Hispanic white men; among women, the rate among Hispanics is more than double that among non-Hispanic whites (Table 3, page 5). Incidence rates decreased by 2.7% per year in Hispanics and by 1.0% per yer in non-Hispanic whites from 2003 to 2012. Death rates likewise decreased during this time period, although rates in non-Hispanic whites declined more rapidly than in Hispanics, 3.3% per year versus 2.8%, respectively. Hispanics have a higher risk of early onset stomach cancer (age at diagnosis <50 years) than non-Hispanic whites, non-Hispanic blacks, and Asians and Pacific Islanders.[86] The 5-year cause-specific survival rate for stomach cancer in Hispanics is 30% (Table 4, page 8).

Chronic infection with *Helicobacter pylori (H. pylori)* is the strongest known risk factor for stomach cancer, though only 5% of infected individuals will develop the disease.[87, 88] The prevalence of *H. pylori* infection is higher in lower-income countries and among individuals of lower socioeconomic status.[89] Stomach cancer incidence has decreased substantially in high-income countries, but is still very common throughout Mexico, Central and South America, and Asia (Figure 6, page 11).[90] 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 are not well understood, but are thought to reflect reductions in the prevalence of *H. pylori* infection due to improvements in hygiene and lower consumption of salt-preserved foods due to improvements in food preservation practices. Screening for and treatment of *H. pylori*-infected individuals has been shown to reduce the risk of stomach cancer in recent randomized trials, but further research is needed to demonstrate the utility of such measures in clinical practice, and to assess potential harms.[91] For more information about *H. pylori*, see page 22.

Other risk factors for stomach cancer include smoking and probably high consumption of smoked foods, salted meat or fish, and pickled vegetables.[29, 92] High alcohol consumption may also increase risk, and obesity and gastrointestinal reflex may increase the risk of cancer in the upper region of the stomach.[92, 93] Some studies have shown that fruits and non-starchy vegetables, particularly allium vegetables (e.g., garlic, onions, leeks) protect against stomach cancer.[29]

Uterine Cervix

In 2015, 2,000 Hispanic women in the US will be diagnosed with cancer of the uterine cervix, more commonly referred to as cervical cancer, and approximately 600 will die from the disease. Overall, the cervical cancer incidence rate among US Hispanic women is about 44% higher than among non-Hispanic whites (Table 3, page 5). A geographic analysis in the US found that incidence rates among Hispanic women are highest in the lower Mississippi Valley and southern Appalachia.[94] However, incidence rates in Hispanic women declined by 3.9% per year from 2003 to 2012 compared to a more modest decline of 0.7% per year in non-Hispanic whites, partly due to lower baseline rates. Death rates decreased by 2.3% per year in Hispanics and were stable in non-Hispanic whites during this time period.

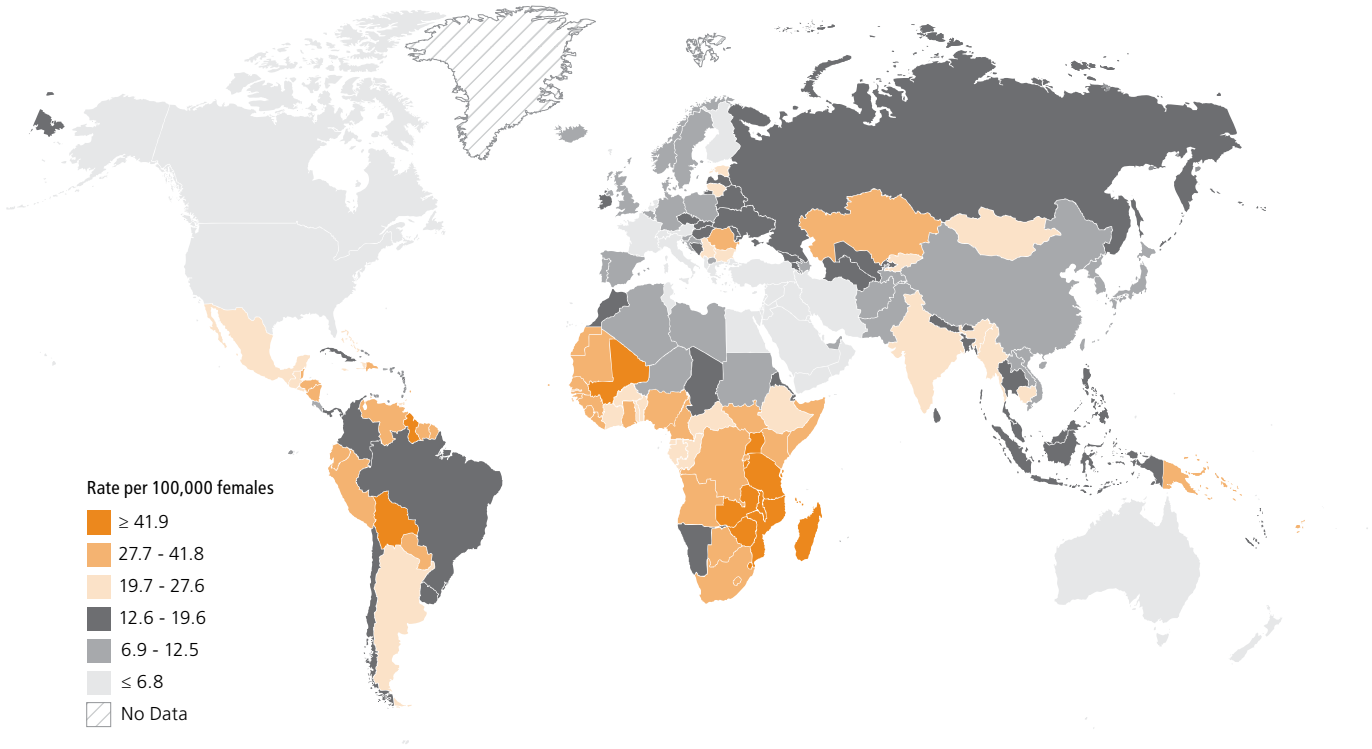
Cervical cancer is caused by persistent infection with certain types of human papillomavirus (HPV). Primary prevention of HPV infection is available through vaccination. In the US, there are three vaccines approved by the Food and Drug Administration for the prevention of the most common cancer-causing HPV infections (For more information, see page 23).[95] Cervical cancer can also be prevented through the removal of precancerous lesions detected via screening. 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 higher prevalence of HPV infection and less access to screening in those countries (Figure 7).[90, 96]

In addition to detecting precancerous lesions, screening can help 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 (for more information on cervical cancer screening, see page 24). Low rates of screening and poor adherence to recommended follow-up after an abnormal test are thought to contribute to the higher mortality among Hispanic women.[97] The 5-year survival rate for cervical cancer is 75% among Hispanic women and 70% among non-Hispanic whites. 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.[98]

Gallbladder

Gallbladder cancer is one of the few cancers that occurs more often in women than in men. An estimated 800 Hispanic women will be diagnosed with cancer of the gallbladder in 2015. In the US, Hispanic women have the second highest incidence rates following American Indian and Alaska Native women, twice the rates of both Hispanic men and non-Hispanic white women and four times those of non-Hispanic white men (Table 3, page 5).[99] Incidence rates of gallbladder cancer among Hispanics were stable in men and decreased by 1.6% per year in women from 2003 to 2012; death rates were stable among both sexes

Figure 7. International Variation in Age-standardized Cervical Cancer Incidence Rates, 2012



Rates are age adjusted to the 1960 world standard population.

Source: GLOBOCAN 2012.

during this time period. Gallbladder cancer has nonspecific symptoms that typically result in a late stage at diagnosis and very poor survival.[100] The 5-year cause-specific survival rate among Hispanics is about 25%.

There is wide variation in worldwide incidence, with the highest risk of gallbladder cancer found in Latin America and Asia.[90] Notably, gallbladder cancer is the second most common cause of cancer death among Chilean women following breast cancer. The reasons for the high rates of gallbladder cancer in Hispanics are not well-understood but are thought to possibly include genetic factors.[101] A history of gallstones is the strongest risk factor for gallbladder cancer, although less than 1% of individuals with gallstones will develop this cancer.[100, 101] Other risk factors include chronic inflammation of the biliary tract, diabetes, the use of hormone replacement therapy, and obesity.[30, 102-104] One study has also suggested that aflatoxin contamination of red chili peppers may be linked to the high gallbladder cancer rates observed in Chile.[105]

Cancer in Children and Adolescents

Overview

The types of cancer that most commonly occur in children (ages 0-14 years) and adolescents (ages 15-19 years) are different from those in adults. Unlike many adult cancers, for which behavioral factors like smoking are known preventable causes, risk factors for cancer in childhood and adolescence are not well understood. Some known causes include genetic changes that can be passed down from parent to child, radiation exposure, and certain viral infections. For reasons that are not clearly understood, childhood cancer is generally more common in economically developed than developing countries.[90]

New cases: An estimated 2,700 Hispanic children (ages 0-14 years) in the US will be diagnosed with cancer in 2015, accounting for about 2.1% of cancer cases in Hispanics. In contrast,

Table 5. Childhood and Adolescent Cancer Incidence Rates and Rate Ratios Comparing Hispanics to Non-Hispanic Whites, 2008-2012

	Age 0-14 years			Age 15-19 years		
	Hispanic	Non-Hispanic White	Rate Ratio	Hispanic	Non-Hispanic White	Rate Ratio
All sites	162.0	173.2	0.94*	206.0	241.5	0.85*
Leukemia	63.8	52.6	1.21*	42.8	31.5	1.36*
Lymphoid leukemia	49.9	41.1	1.22*	26.5	14.8	1.78*
Acute myeloid leukemia	8.4	6.9	1.21*	9.5	9.9	0.96
Brain & other central nervous system	27.6	39.4	0.70*	15.8	25.7	0.61*
Astrocytomas	12.5	20.4	0.61*	9.3	14.4	0.64*
Lymphomas	19.3	19.0	1.01	35.8	58.9	0.61*
Hodgkin lymphoma	6.0	5.5	1.08	22.4	38.7	0.58*
Non-Hodgkin lymphoma (except Burkitt lymphoma)	6.9	6.6	1.05	10.5	15.7	0.67*
Burkitt lymphoma	1.6	2.9	0.56*	1.1	2.6	0.43*
Soft-tissue sarcomas	9.9	11.3	0.88*	13.6	15.1	0.90
Bone tumors	7.1	7.2	0.98	13.7	14.6	0.94
Osteosarcoma	4.2	3.7	1.14	8.2	7.6	1.08
Germ cell tumors	6.0	5.0	1.20*	41.4	28.4	1.46*
Malignant gonadal germ cell tumor	3.3	1.9	1.70*	33.3	22.8	1.46*
Intracranial & intraspinal germ cell tumor	1.4	1.5	0.93	2.4	2.4	1.00
Neuroblastoma	7.1	13.2	0.53*	†	0.7	–
Renal tumors	6.6	9.4	0.70*	1.5	1.7	0.88
Retinoblastoma	4.7	3.9	1.21*	†	†	–
Hepatic tumors	3.2	2.7	1.16	1.3	1.1	1.21

Rates are per 1,000,000 and age adjusted to the 2000 US standard population. Persons of Hispanic/Latino origin may be of any race. Ratios are calculated as Hispanic incidence rate divided by Non-Hispanic White incidence rate. *The difference between the Hispanic and non-Hispanic white rates is significant (P <0.05). †Data suppressed due to fewer than 25 cases.

Source: North American Association of Central Cancer Registries, 2015.

American Cancer Society, Inc., Surveillance Research, 2015

childhood cancer accounts for 0.5% of new cancer cases in non-Hispanic whites. The difference arises primarily because of the difference in age distribution – children account for 28% of the Hispanic population, compared with 16% of the non-Hispanic white population.[4] From 2003 to 2012, incidence rates for all cancers combined in children were stable among Hispanics and increased slightly by 0.5% per year among non-Hispanic whites. In contrast, incidence rates in adolescents increased by 1.1% per year among Hispanics while remaining stable among non-Hispanic whites.

Leukemia is the most common cancer in Hispanic children, followed by cancers of the brain/central nervous system and lymphoma (Table 5). The cancer burden in Hispanic adolescents is slightly different; germ cell tumors are the most common cancer, followed by leukemia and lymphoma. Incidence rates for all cancers combined and for most cancer types are slightly lower in Hispanics than non-Hispanic whites. The exceptions are leukemia, germ cell tumors, and retinoblastoma, for which rates are higher in Hispanics. Hispanic children and adolescents have higher rates of leukemia than all other racial and ethnic groups in the US, nearly double those of non-Hispanic black children, who experience the lowest rates (Figure 8).

Deaths: An estimated 300 to 400 Hispanic children younger than 15 years of age will die from cancer in 2015. Childhood cancer is the second-leading cause of death among both Hispanic and non-Hispanic white children ages 1-14 years, following accidents. Among adolescents, cancer is the fourth-leading cause of death among Hispanics and the third-leading cause among non-Hispanic whites. Death rates for all cancers combined from 2003 to 2012 decreased by 2.2% per year among Hispanic children and were stable among adolescents. Among non-Hispanic whites, death rates decreased by 1.9% per year in children and by 2.1% per year in 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; localized pain or limping; unexplained fever or illness; frequent headaches, often with vomiting; sudden eye or vision changes; and excessive, rapid weight loss.

Survival: Over the past 30 years, there have been significant improvements in 5-year survival rates for most childhood cancers. This progress is largely attributable to advances in treatment and the high proportion of patients participating in clinical trials. However, some childhood cancers continue to have low survival rates, and survival in general among Hispanics remains lower than that among non-Hispanic 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 2005-2011 was 83% among Hispanics and 87% among non-Hispanic whites. The largest survival disparities are for neuroblastoma and brain/other nervous system tumors among children (9% and 8% lower among Hispanics, respectively) and for leukemia among adolescents (15% lower among Hispanics). 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.

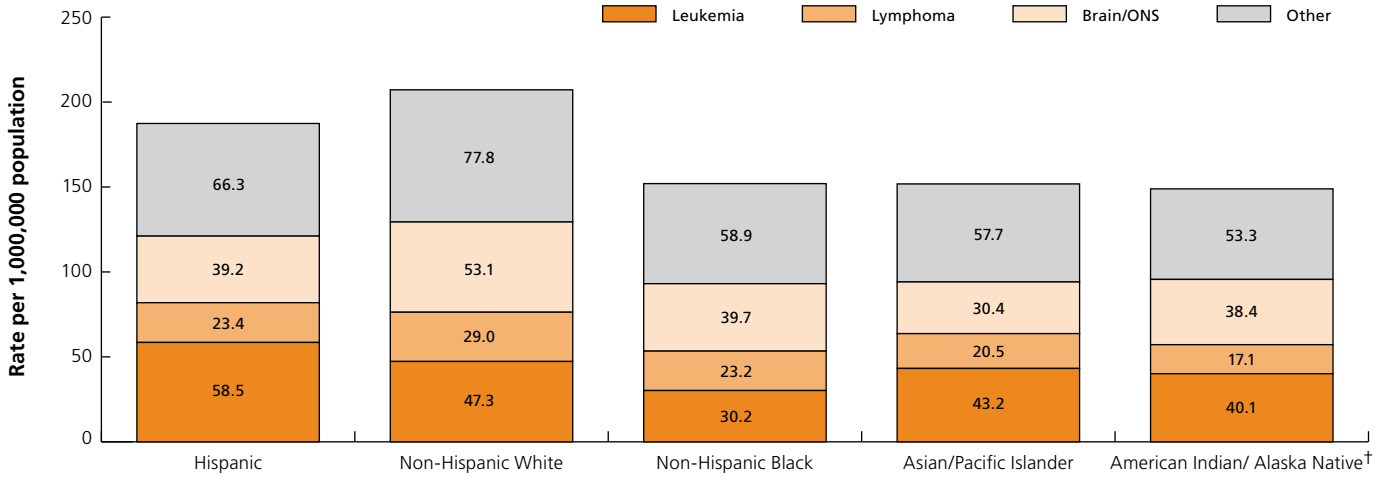
Selected Cancers

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, representing about one-third of all childhood cancers. There are two major types of leukemia in children – acute lymphocytic leukemia (ALL), accounting for 78% of pediatric leukemia cases in Hispanics, and acute myeloid leukemia (AML), accounting for 13% of cases. Incidence of ALL is highest in children 1 to 4 years of age. Both ALL and AML incidence rates are higher among Hispanic than non-Hispanic white children (Table 5). Though genetic abnormalities appear to be responsible for some proportion of childhood leukemia, few risk factors other than radiation exposure are well established.[106-109]

Five-year survival rates for ALL have improved substantially over the past two decades for all children.[110] 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 89% and 93% for Hispanics and non-Hispanic whites, respectively; for AML, these numbers drop to 69% and 77%, respectively. Although less access to treatment likely accounts for some of the disparity, these differences are also apparent in clinical trials, in which everyone receives equal treatment.[110, 111] Recent research has shown that lower survival may be due to an excess burden of high-risk leukemia types among Hispanic children.[108, 112, 113]

Brain and other nervous system: Brain and other nervous system (ONS) cancers account for about 17% of all malignancies among Hispanic children younger than 15 years of age and 8% among adolescents. Incidence rates of these tumors are about 30% and 39% lower in Hispanic children and adolescents, respectively, compared to non-Hispanic whites, among whom rates are highest (Table 5). Most of this difference is explained by the incidence rate for astrocytoma, which is about 39% lower in Hispanic than non-Hispanic white children. The difference may also reflect differences in access to and utilization of state-of-the-art diagnostic techniques in the detection of these cancers.[111]

Figure 8. Comparison of Common Childhood and Adolescent Cancer Incidence Rates by Race/Ethnicity, Ages 0-19 Years, 2008-2012



ONS = other nervous system. Rates are age adjusted to the 2000 US standard population. Persons of Hispanic/Latino origin may be of any race. *Includes benign and borderline brain tumors. †Data based on Indian Health Service Contract Health Service Delivery Areas. Incidence rates exclude data from Kansas.

Source: North American Association of Central Cancer Registries, 2015.

American Cancer Society, Inc., Surveillance Research, 2015.

Survival for cancers of the brain/ONS is highly dependent on age at diagnosis, tumor type and location, and treatment.[111] The overall 5-year cause-specific survival rate for children is 70% among Hispanics and 76% among non-Hispanic whites, whereas for adolescents it is 81% and 83%, respectively.

Lymphoma: The highest risk of developing lymphoma occurs during ages 10 to 19 years. Lymphoma incidence rates among children are the same for Hispanics and non-Hispanic whites (with the exception of Burkitt lymphoma, which is lower in Hispanics), while among adolescents, incidence rates in Hispanics are 42% lower for Hodgkin lymphoma and 37% lower for non-Hodgkin lymphoma (including Burkitt lymphoma). However, there are likely variations in risk between Hispanic subpopulations. One study found that lymphoma incidence rates among Hispanic children in Florida, who are primarily of Cuban and Central American origin, were twice those of Hispanic children in California, who are primarily of Mexican origin.[114]

Survival for pediatric lymphoma is similar in Hispanics and non-Hispanic whites. Among Hispanics, the 5-year cause-specific survival rate for Hodgkin lymphoma is 99% for children and 97% for adolescents; the rates for non-Hodgkin lymphoma are 91% and 86%, respectively.

Risk Factors for Cancer

Abstaining from tobacco use, maintaining a healthy body weight, having a physically active lifestyle, and consuming a healthy diet can greatly reduce a person's lifetime risk of developing or dying from cancer.[115] Tobacco use is one of the most preventable causes of disease, accounting for about 30% of all cancer deaths.[60] The World Cancer Research Fund estimates that about 20% of all cancers diagnosed in the US are related to overweight or obesity, physical inactivity, excess alcohol consumption, and/or poor nutrition.[115] Alcohol consumption is another important risk factor for some cancers, particularly liver cancer.[29, 83] Certain cancers (e.g., cervical, liver and stomach cancers) are related to infectious agents, such as hepatitis B virus (HBV), hepatitis C virus (HCV), human papillomavirus (HPV), human immunodeficiency virus (HIV), and *Helicobacter pylori (H. pylori)*.[71] Cancers related to infectious agents disproportionately affect Hispanics.[72] If current knowledge about cancer prevention and early detection was fully applied, much of the suffering and death from cancer could be prevented.[116, 117]

For information about risk factors for cancer beyond what is included in this chapter, visit cancer.org/research/cancerfactsstatistics/index for the latest edition of *Cancer Prevention & Early Detection Facts & Figures*.

Tobacco

Although the use of cigarettes, cigars, and smokeless tobacco is declining in the US, other tobacco products such as water pipes/hookahs and electronic nicotine delivery systems (commonly referred to as e-cigarettes) are gaining popularity. Tobacco use increases the risk of cancers of the lung, mouth, larynx, pharynx, esophagus, stomach, colorectum, liver, pancreas, kidney, bladder, uterine cervix, and ovary (mucinous), as well as myeloid leukemia.[60, 118] Long-term, heavy smoking may also increase the risk of breast cancer, particularly among women who began smoking before giving birth to their first child.[119, 120]

Adults

Overall, Hispanic adults are less likely to use tobacco than non-Hispanic whites or blacks.[121] In 2014, Hispanic adults were less likely to be current cigarette smokers than non-Hispanic whites (11% versus 18%, respectively), largely driven by the low smoking prevalence among Hispanic women (8%, compared to 15% among Hispanic men) (Table 6). Puerto Ricans (mainland) were more likely to smoke than other Hispanic subgroups in the US, and prevalence was higher among adults who were born in the US than among those who were foreign-born. In 2013, e-cigarette use was also lower among Hispanics than non-Hispanic whites (1% versus 2%, respectively).[121]

Smokers who quit can expect to live as many as 10 years longer than those who continue to smoke.[122] For many smokers, quitting is difficult because of the addictive properties of nicotine in tobacco. Advice from a health care provider can encourage smokers to quit.[123] However, in one survey, Hispanics were less likely to have received a health professional's advice to quit smoking and were less interested in quitting than non-Hispanic whites and blacks.[124] Hispanic smokers were also less likely to receive cessation services than non-Hispanic whites, which may be partly related to lower access to care. Use of cessation aids, such as nicotine replacement products and behavioral therapies, can improve success rates, and the combined use of counseling and medication has been shown to be more effective than individual treatment.[123, 125] Disparities in access to quit aids may be reduced in the future, as provisions in the Affordable Care Act (ACA) increase access to coverage of evidence-based cessation treatments.[126]

Social support, especially from one's spouse, may play a significant role in the success of quit attempts among Hispanic smokers. In particular, social support among Hispanics may prevent depression, which can otherwise reduce the success of quit attempts.[127, 128] Smoking cessation programs for Hispanics

Table 6. Current Cigarette Smoking* and Alcohol Consumption (%), Adults 18 Years and Older, US, 2014

	Hispanic			Non-Hispanic White		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
Smoking	**14.8**	**7.6**	**11.2**	**19.4**	**17.3**	**18.3**
Origin†						
Puerto Rican	24.6	15.3	19.9	–	–	–
Mexican	15.0	6.5	10.7	–	–	–
Cuban	16.7	6.2	11.8	–	–	–
Dominican	12.5	6.4	9.3	–	–	–
Central/South American	11.3	4.2	7.9	–	–	–
Education‡						
≤12 yrs, no diploma	14.9	7.5	11.2	42.8	41.8	42.2
GED	26.0	17.5	21.6	50.1	48.3	49.7
High school diploma	15.6	8.0	12.1	27.6	28.0	27.6
Some college	11.3	8.6	9.9	22.4	20.2	21.2
College degree	6.3	4.8	5.3	7.4	6.9	7.2
Poverty status§						
Poor	16.7	11.0	13.4	41.9	34.9	37.9
Near poor	14.2	6.6	10.4	35.1	30.8	32.7
Non poor	12.2	6.1	9.5	16.0	13.1	14.6
Health insurance status						
Not covered	16.7	5.0	11.0	41.2	38.7	40.1
Covered	12.5	8.3	10.4	17.8	16.5	17.1
Immigration status¶						
US-born	16.4	12.0	14.3	20.2	18.7	19.5
Foreign-born	12.0	4.3	8.2	21.0	11.7	16.7
Alcohol Consumption#	**67.4**	**46.1**	**56.6**	**74.8**	**68.9**	**71.7**
Light	34.2	24.0	29.0	33.1	34.8	34.0
Moderate	17.2	3.3	10.2	25.6	11.5	18.3
Heavy	4.3	1.6	2.9	6.5	6.4	6.5
Binge	30.2	13.4	21.8	36.1	25.0	30.4

GED=General Educational Development high school equivalency. Percent estimates, except overall smoking prevalence, are age adjusted to the 2000 US standard population. Persons of Hispanic/Latino origin may be of any race. *Ever smoked 100 cigarettes in lifetime and smoking every day or some days at time of survey. †Based on 2013 and 2014 National Health Interview Survey data combined. ‡Among persons ages 25 years or older. §Poor: <99% of poverty threshold. Near poor: 100% to ≤199% of poverty threshold. Non Poor: ≥200% of poverty threshold. ¶US-born includes those born in a US territory. #Current consumption: 12+ drinks in lifetime and ≥1 drink in past year. Light: 12+ drinks in lifetime and ≤3 drinks/week in past year. Moderate: 12+ drinks in lifetime and (male) 3-14 drinks/week in past year or (female) 3-7 drinks/week in past year. Heavy: 12+ drinks in lifetime and (male) >14 drinks/week in past year or (female) >7 drinks/week in past year. Binge: current drinker and (male) ≥5 or (female) ≥4 drinks on at least one day in the past year.

Source: Centers for Disease Control and Prevention. National Health Interview Surveys, 2013 and 2014. Public use data file. See Sources of Statistics (page 33) for complete citation.

American Cancer Society, Inc., Surveillance Research, 2015

may be more effective if they include lay health advisors (*promotoras*), who are trained to attend to the specific health and medical needs of community members and can assist medically underserved Hispanic smokers with accessing tobacco cessation services.[129] Some cessation services are available to all smokers free of charge. A US Department of Health and Human Services website (smokefree.gov) offers online advice and downloadable information on quitting, and a national quitline service (1-800-QUITNOW) provides free counseling services. For information about the Society's tobacco cessation initiatives visit cancer.org/healthy/stayawayfromtobacco/greatamericansmokeout/index or call 1-800-227-2345.

Youth

Smoking prevalence among Hispanic high school students peaked in the mid-1990s and decreased until 2003, but has since remained stable (Figure 9, page 18).[130] In 2013, the prevalence of youth cigarette smoking in Hispanics was lower than in non-Hispanic whites (14% versus 19%, respectively) (Table 7, page 18). In contrast to markedly lower smoking rates in adult Hispanic women compared to men, rates among boys and girls were similar. There is some evidence that smoking prevalence among foreign-born Hispanic adolescents increases with longer duration of residence in the US, particularly for females and also for Mexican males.[131, 132] Although there are limited data on

Table 7. Tobacco Use and Alcohol Consumption (%), High School Students, US, 2013

	Hispanic			Non-Hispanic White		
	Male	Female	Total	Male	Female	Total
Tobacco Use						
Cigarette smoking*	15.0	13.1	14.0	19.1	18.1	18.6
Frequent cigarette smoking†	3.4	2.4	2.9	7.6	7.7	7.6
Any tobacco product‡	20.7	15.3	18.0	33.2	20.7	26.9
Alcohol Consumption						
Current alcohol use§	35.2	39.7	37.5	36.9	35.7	36.3
Binge drinking¶	22.7	22.6	22.6	25.3	21.1	23.2
Drank before age 13 years#	23.4	20.2	21.8	19.6	13.8	16.7

Persons of Hispanic/Latino origin may be of any race. *Smoked cigarettes on one or more of the 30 days preceding the survey. †Smoked cigarettes on 20 or more of the 30 days preceding the survey. ‡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. §Had one or more drinks 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 on one or more of the 30 days preceding the survey. #Other than a few sips.

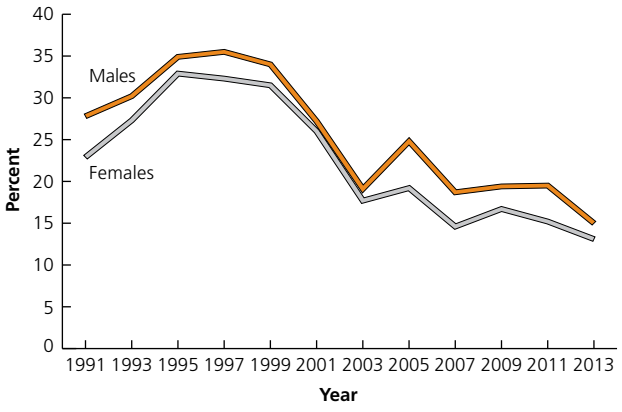
Source: Kann L, Kinchen S, Shanlin SL, et al. Youth Risk Behavior Surveillance – US, 2013. *MMWR Surveill Summ.* 2014;63(SS04):1-168.

youth cigarette use by Hispanic subgroup, one study reported similar smoking prevalence across subgroups with the exception of Cuban boys, who had higher smoking prevalence.[133] The overall prevalence of current e-cigarette use among high school students has increased rapidly, from 2% in 2011 to 13% in 2014.[134] E-cigarette use among Hispanic high school students was similar to that of non-Hispanic whites and was more than double that of non-Hispanic blacks (15% versus 6%, respectively).

Prevention and Control

The Centers for Disease Control and Prevention's (CDC's) comprehensive state-based tobacco prevention and control program aims to: a) prevent tobacco initiation among youth and young adults, b) promote quitting among youth and adults, c) eliminate secondhand smoke, and d) identify and eliminate tobacco-related disparities among population groups.[135] Despite documented benefits of implementing comprehensive, state-based tobacco control programs, prevention spending is still far below CDC-recommended levels.[136] Forty-three states and the District of Columbia planned to spend less than 50% of the CDC–recommended level on tobacco prevention programs for the 2015 fiscal year.[135, 137] There is also substantial variation in the implementation of tobacco control policies between states (e.g., tobacco-free laws, excise taxes, etc.); for example, the cigarette tax in Nevada is only $0.80, compared to $4.35 in New York. Tobacco tax increases may be particularly effective among Hispanics, who appear to be more price-sensitive than other population groups.[138]

Figure 9. Current Cigarette Smoking*, Hispanic High School Students, US, 1991-2013



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

Source: Centers for Disease Control and Prevention. 1991-2013 High School Youth Risk Behavior Survey Data.
Available at http://nccd.cdc.gov/youthonline/. Accessed February 11, 2015.

Other prevention and control efforts include federal initiatives for tobacco control such as clinical cessation services and regulation of tobacco products.[139] In addition, counter-marketing strategies can also be effective in neutralizing tobacco industry advertising and promotional strategies targeted at Hispanic groups.[138, 140, 141]

Overweight and Obesity

Aside from avoiding tobacco use, maintaining a healthy weight and engaging in regular physical activity are the most important approaches for reducing the risk of cancer and many other chronic diseases.[142] The American Cancer Society's nutrition and physical activity guidelines for cancer prevention 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. The US Department of Health and Human Services and the US Department of Agriculture (USDA) joint dietary recommendations for Americans are consistent with

those of the Society.[143] Visit choosemyplate.gov/print-materials-ordering/DGbrochure-spanish.pdf to view and download the USDA's guidelines in Spanish.

Overweight and obesity are associated with an increased risk for developing many cancers, including those of the breast (in postmenopausal women), colorectum, endometrium, kidney, and pancreas, as well as adenocarcinoma of the esophagus.[29] In addition, obesity probably increases the risk of gallbladder cancer and may increase the risk of cancers of the liver, cervix, and ovary; multiple myeloma; non-Hodgkin lymphoma; and aggressive forms of prostate cancer.[29,70] Although knowledge about the relationship between weight loss and cancer risk is limited, losing weight may reduce the risk of postmenopausal breast cancer and possibly other cancer sites.[144-147]

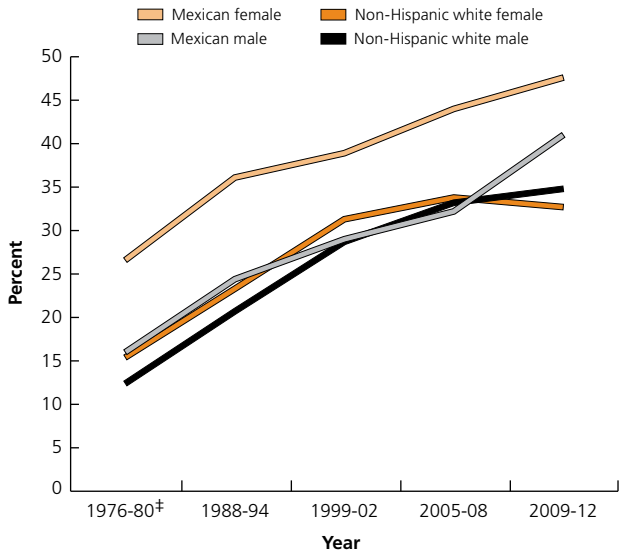
Defining Body Mass Index

For adults, this sidebar relates body mass index (BMI) to pounds and inches. For example, a 5-foot-4-inch woman is considered overweight if she weighs between 145 and 173 pounds; she is considered obese if she weighs 174 pounds or more. A 5-foot-10-inch man is considered overweight if he weighs between 174 and 208 pounds and obese if he weighs 209 pounds or more.

	Body weight (pounds)		
Height (feet, inches)	Overweight*	Obese†	Extremely Obese‡
6′4″	205	246	328
6′3″	200	240	319
6′2″	194	233	311
6′1″	189	227	302
6′0″	184	221	294
5′11″	179	215	286
5′10″	174	209	278
5′9″	169	203	270
5′8″	164	197	262
5′7″	159	191	255
5′6″	155	186	247
5′5″	150	180	240
5′4″	145	174	232
5′3″	141	169	225
5′2″	136	164	218
5′1″	132	158	211
5′0″	128	153	204
4′11″	124	148	198
4′10″	119	143	191

Body weights displayed are rounded down to the nearest pound. *Overweight is defined as BMI of 25-29.9 kg/m^2. †Obesity is defined as BMI of 30 kg/m^2 or greater. ‡Extreme obesity is defined as BMI of 40 kg/m^2 or greater. NOTE: 1 kg = 2.2 pound; 1 inch = 0.0254 meters.

Figure 10. Obesity* Trends, Mexican and Non-Hispanic White† Adults 20-74 Years, US, 1976-2012



Estimates are age adjusted to the 2000 US standard population. *Body mass index of 30.0 kg/m^2 or greater. †Persons of Mexican origin may be of any race. Data estimates for non-Hispanic white races starting in 1999 may not be strictly comparable with estimates for earlier years because of changes in Standards for Federal Data on Race and Ethnicity. ‡Data for Mexicans are for 1982-84.

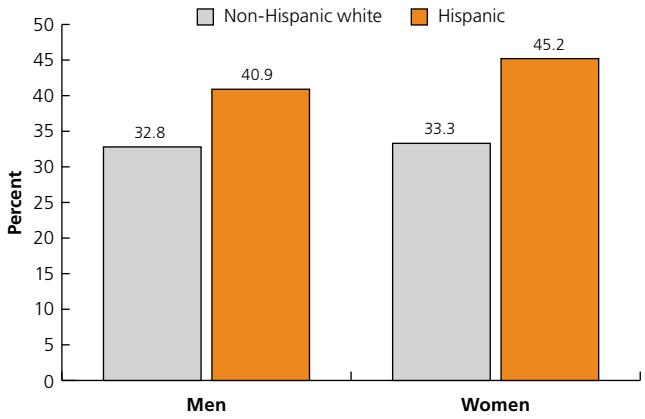
Source: National Center for Health Statistics. Health, United States, 2013: With Special Feature on Prescription Drugs. Hyattsville, MD. 2014. Complete trend data available at: <http://www.cdc.gov/nchs/hus/contents2013.htm#069> Accessed: May 20, 2014.

Adults

Body weight recommendations are often determined by a measure known as body mass index (BMI) (see sidebar). The World Health Organization (WHO) has defined the adult ranges for BMI categories as follows: healthy weight, 18.5 to 24.9 kg/m^2; overweight, 25.0 to 29.9 kg/m^2; and obese, 30.0 kg/m^2 or higher. The National Health and Nutrition Examination Survey (NHANES) is the preferred source for information on obesity trends in the US because height and weight are measured, rather than reported by participants. Historically, the NHANES has only reported data for Hispanics of Mexican descent; data for all Hispanics combined became available beginning with the 2007-2008 survey, but are still not available for Hispanic subgroups other than Mexicans.

The prevalence of obesity in the US rapidly increased across all races and among Mexicans from 1976 to 2003.[148] The rapid increase in obesity is linked with changes in the social environment, including the availability and promotion of high-calorie, low-nutrient foods and reduced opportunities to engage in physical activity at work or school, while commuting, and during leisure time.[142,149] These changes have resulted in increased caloric consumption and decreased energy expenditure in the population.[149,150]

Figure 11. Obesity* in Hispanic† and Non-Hispanic White Adults 20-74 Years, US, 2011-2012



Estimates are age adjusted to the 2000 US standard population. *Body mass index of 30.0 kg/m^2 or greater. †Hispanic includes all Hispanics, not just Mexicans, and may be of any race. All Hispanic persons were over-sampled in the 2011-12 National Health and Nutrition Examination Survey sample.

Source: Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey, 2011-2012. Public use data file. See Sources of Statistics (page 33) for complete citation.

While obesity rates have stabilized for non-Hispanic whites in the past decade, they have continued to increase among Mexicans, particularly for men (Figure 10, page 19).[151] In 2011-2012, the prevalence of obesity among Hispanics was 42% in men and 45% in women compared to 33% among both non-Hispanic white men and women (Figure 11). Duration of residence in the US may be associated with increased body weight.[12]

Youth

Unhealthy dietary patterns, physical inactivity, and excessive weight gain that begin during childhood often continue into adulthood, increasing the risk of cancer, diabetes, cardiovascular disease, hypertension, and osteoporosis. Children who are overweight are more likely to be overweight in adulthood; 70% of those who are overweight by adolescence will remain overweight as adults.[149, 152]

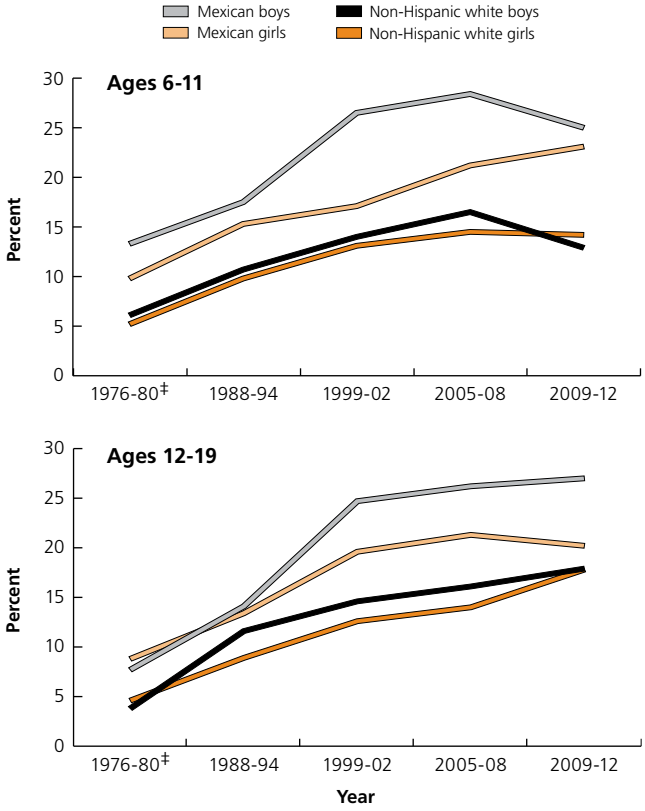
BMI values for youths are based on a percentile ranking of their weight and height according to the CDC's age- and gender-specific growth charts.[153] According to the CDC definitions, obesity in children is defined as a BMI at or above the 95th percentile for children of the same age and sex, and overweight is defined as a BMI between the 85th and 95th percentile.[153]

Since the late 1970s, the prevalence of obesity has doubled among Mexican and non-Hispanic white children (ages 6-11 years) and has tripled in adolescents (ages 12-19 years) (Figure 12). In 2011-2012, obesity prevalence among Hispanic boys was more than triple that among non-Hispanic white boys (29% versus 9%, respectively) (Figure 13). However, among girls 6-11 years and adolescents of both sexes, differences were less pronounced.

Community Strategies

The dramatic rise in obesity levels in the US in the past several decades has serious implications for public health and the economy.[154] In 2012, it was estimated that treating obesity-related illness in the US costs $190.2 billion per year.[155] There is growing recognition that multiple aspects of social environments where people live, work, and play appear to be linked to overweight and obesity.[142, 150, 156] 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 the ability to

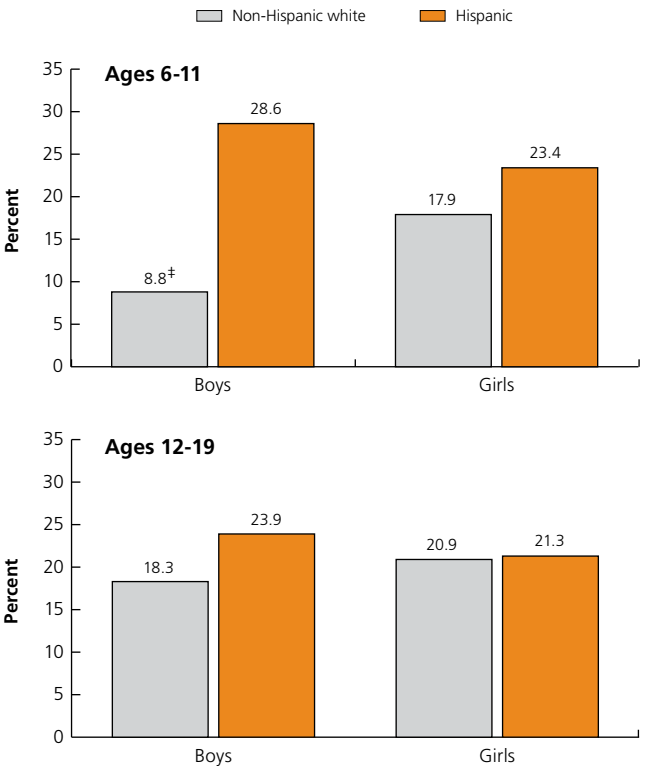
Figure 12. Obesity* Trends for Mexican† and Non-Hispanic White Children, 1976-2012



*Body mass index (BMI) at or above the sex- and age-specific 95th percentile BMI cutoff points from the 2000 sex-specific BMI-for-age CDC Growth Charts. †Persons of Mexican origin may be of any race. Data estimates for non-Hispanic whites starting in 1999 data may not be strictly comparable with estimates for earlier years because of changes in Standards for Federal Data on Race and Ethnicity. ‡Data for Mexicans are for 1982-84. NOTE: Ages 6-11: 1988-94 estimate for non-Hispanic white girls considered unreliable; relative standard error between 20-30%. Ages 12-19: 1988-94 estimate for Mexican girls considered unreliable; relative standard error between 20-30%. Estimates are not age adjusted.

Source: National Center for Health Statistics. Health, United States, 2013: With Special Feature on Prescription Drugs. Hyattsville, MD. 2014. Complete trend data available at: <http://www.cdc.gov/nchs/hus/contents2013.htm#070> Accessed: May 20, 2014.

Figure 13. Obesity* in Hispanic† and Non-Hispanic White Children, US, 2011-2012



*Body mass index (BMI) at or above the sex- and age-specific 95th percentile BMI cutoff points from the 2000 sex-specific BMI-for-age CDC Growth Charts. †Hispanic includes all Hispanics, not just Mexican, and may be of any race. ‡Relative standard error is between 30-40%. NOTE: Estimates are not age adjusted.

Source: Ogden CL, Carroll MD, Kit BK, Flegal KM. *JAMA*.2014;311(8):806-814.

adopt a healthy lifestyle.[149, 150, 156] Therefore, the American Cancer Society's nutrition and physical activity guidelines include recommendations for community-level actions that emphasize the need for public, private, and community organizations to work together to facilitate and promote changes in social and physical environments conducive to healthy behaviors.[142] Specifically, community-level actions are needed to: (1) increase access to healthy, affordable foods in schools, worksites, and communities; (2) decrease access to and marketing of foods and beverages of low nutritional value, particularly to youth; (3) provide safe, enjoyable, and accessible environments for physical activity in schools and worksites, and for transportation and recreation in communities. In urban neighborhoods where planned recreational space is limited, innovative community-level approaches are needed. For example, a multi-organization coalition in the Hispanic community of Santa Ana, California, created a mobile playground, thus providing a safe environment for children to be physically active where one did not previously exist.[157]

Alcohol

Alcohol consumption is an established risk factor for cancers of the mouth, pharynx, larynx, esophagus, liver, colorectum, and female breast, and may increase the risk of pancreatic cancer.[29, 83, 158] Combined with tobacco use, alcohol consumption increases the risk of cancers of the mouth, larynx, and esophagus far more than the independent effect of either drinking or smoking alone.[29] Breast cancer risk increases with higher intake of alcohol, and studies suggest a modest increased risk even for a few drinks per week.[159]

The American Cancer Society's nutrition and physical activity guidelines for cancer prevention and risk reduction state that individuals should limit alcohol consumption to no more than two drinks per day for men and no more than one drink per day for women.[142] Alcohol consumption is of special concern among Hispanics because of their high rates of liver cancer.

Adults

In 2014, the prevalence of alcohol consumption was lower among Hispanics (57%) than among non-Hispanic whites (72%) (Table 6, page 17). Binge drinking and heavy alcohol consumption is also lower among Hispanics. Lower alcohol consumption among Hispanic women may be explained by social customs and attitudes within the Hispanic culture.[160-162] Health promotion and cancer prevention efforts among Hispanic adults should encourage adoption of nutritional advice related to alcohol consumption.[163, 164] Additionally, outcomes of alcohol interventions among Hispanics patients are better if the intervention provider is also Hispanic.[164]

Youth

In 2013, the prevalence of alcohol consumption among high school students was similar between Hispanics (38%) and non-Hispanic whites (36%) (Table 7, page 18). However, the prevalence of drinking before age 13 was higher among Hispanic youth (22% versus 17%). Among foreign-born Hispanic youth, males are more likely to use alcohol and to binge drink than females.[165] However, differences in alcohol use by sex are diminished among second- or third-generation youths, who are also much more likely to use alcohol and binge drink than their foreign-born counterparts. Community-based efforts to prevent alcohol consumption among youth include enforcing drinking age laws, media campaigns, increasing excise taxes, and reducing exposure to alcohol advertising.[166, 167] Successful prevention strategies to reduce alcohol use among Hispanic youth emphasize the importance of parental communication and family interventions.[168-170]

Infectious Agents

Infectious agents are associated with several cancers, including those of the cervix, oropharynx, liver, and stomach, as well as certain types of lymphomas.[71] Fortunately, there are opportunities to prevent and treat many of these infections.

Helicobacter pylori (H. pylori)

Chronic infection with *H. pylori* causes stomach cancer and gastric lymphoma.[171, 172] *H. pylori* is a bacteria that grows in the stomach and, with continued infection, causes inflammation and damage to the stomach lining, which can eventually lead to cancer.[171] *H. pylori* transmission is thought to occur from person to person through fecal-oral and oral-oral routes and is facilitated by crowded living conditions and relatively poor sanitation. There are several *H. pylori* treatment options, including relatively inexpensive antibiotics and medications that effectively eliminate the bacteria.[173] Additionally, one review reported limited evidence for a reduction in stomach cancer incidence and mortality among asymptomatic Asian persons with *H. pylori* infection who were treated with antibiotics compared to those who were not.[174] However, further data are needed to establish the utility of this practice in wider settings.

H. pylori infection was found to be about three times higher among Mexicans than among non-Hispanic whites in a US population-based study (64% versus 21%, respectively).[175] Among Hispanics, *H. pylori* is highest among those who are foreign-born.[176]

Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV)

Infection with HBV or HCV becomes chronic when the immune system is unable to clear the virus following the initial acute phase of infection. Chronic infection with these viruses causes cirrhosis and liver cancer, and is also increasingly recognized as a risk factor for non-Hodgkin lymphoma.[177-180]

HBV: HBV is transmitted through blood or mucosal contact with infectious blood or body fluids (e.g., semen, saliva). Most (95%) newly infected adults will clear the virus within six months of infection, whereas the majority of infected infants will become chronically infected.[181] Vaccination against HBV, which has been available since 1982, is the primary prevention strategy in reducing prevalence of the virus.[182, 183] Those who should be vaccinated include newborns, unvaccinated children younger than 18 years of age, high-risk adults (e.g., health care workers), and unvaccinated adults with type I or type II diabetes. In 2014, 90.5% of Hispanic adolescents had received at least three HBV vaccine doses, similar to coverage among non-Hispanic whites (92.2%).[184]

Although mother-to-child transmission and infection in the health care setting due to needle sticks is possible, these are less common transmission routes in the US.[181] Most new HBV infections occur in unvaccinated adults with risk behaviors that include injection drug use, men who have sex with men, and multiple sex partners.[185, 186] In the US, an estimated 38,000 people are newly infected each year, and between 700,000 and 2.2 million people in the US are living with chronic HBV infection.[182, 187, 188] According to 1999-2008 NHANES data, prevalence of chronic infection in Mexicans was lower than in non-Hispanic whites (0.03% versus 0.11%, respectively).[183] Although the prevalence of chronic HBV infection in Latin America is generally similar to the US, regional prevalence is elevated in the Caribbean, tropical South America, and the Andean region.[189] As such, chronic infection prevalence among immigrants to the US varies substantially by country of origin.[188] The CDC recommends routine screening for chronic HBV infection among immigrants from counties where the background prevalence of chronic infection is 2% or more.[187]

HCV: In contrast to HBV infection, there is no vaccine to protect against HCV infection, which often becomes chronic regardless of age at infection. Transmission primarily occurs through sharing needles during injection drug use, but may also occur through needle stick injuries in health care settings, mother-to-child transmission during birth, and sexual contact with an infected partner (although this is rare).[190] People receiving donated blood, blood products, or organs prior to 1992, when HCV screening began, are also at increased risk for HCV infection.[181] Primary prevention strategies include both educating uninfected individuals who are at high risk for infection about exposure prevention and counseling infected individuals about how to avoid transmission to others. In 2013, the United States Preventive Services Task Force updated their guidelines recommending one-time screening among men and women born between 1945 and 1965 and periodic screening for people with high-risk behaviors, such as injection drug users.[191] Those who test positive for HCV are advised to begin antiviral treatment in order to reduce health effects related to HCV infection, including liver cancer.

Between 2003 and 2010, 2.7 million people (representing 1% of the US population) were estimated to have chronic HCV infection.[192] In an analysis of NHANES data, Mexicans and non-Hispanic whites born between 1945 and 1970 had a similar prevalence of HCV infection (2.7% versus 2.8%, respectively).[193] Although additional data on chronic infection by Hispanic subgroup are limited, one study found that mainland Puerto Ricans had substantially higher HCV infection prevalence than other Hispanic subgroups; South Americans had the lowest prevalence.[194] Most people infected with HCV will become chronically infected (75-85%) but will not experience symptoms for many years and are not aware of their infection until their liver is significantly damaged.[181] About 60-70% of people with chronic HCV will develop liver disease, which can lead to liver cancer; the risk of liver disease is higher among heavy alcohol drinkers and people co-infected with HBV or human immunodeficiency virus (HIV).[195]

Notably, HCV-related deaths are higher among Hispanics than non-Hispanic whites, likely due to less access to screening and treatment for the infection.[196]

Human Papillomavirus (HPV)

HPV is the most common sexually transmitted infection in the US, with approximately 14 million people newly infected annually.[197] Although most HPV infections are cleared by the immune system and do not cause cancer, virtually all cervical cancers are caused by persistent HPV infection. In 2009-2010, the estimated prevalence of cervical human papillomavirus infection was similar between Mexican and non-Hispanic white women (40% versus 39%, respectively).[198] Persistent infection with HPV also causes 90% of all anal cancers, more than 60% of certain types of oropharyngeal cancers (particularly cancers of the lingual and palatine tonsils), and 40% of vaginal, vulvar, and penile cancers.[199] There are more than 100 types of HPV, at least 12 of which cause cancer.[177] Types 16 and 18 account for about 70% of all cervical cancer cases worldwide and almost all cases of other HPV-related cancers.[181] However, among Hispanic women, a higher proportion of cervical cancers are caused by high-risk HPV types other than 16 and 18.[200, 201]

Three vaccines are approved by the FDA for the prevention of cervical cancer, all of which protect against types 16 and 18. One vaccine (HPV2) only provides protection against these two types, while a second protects against four types (HPV4), and the third against nine types (HPV9). The HPV2 and HPV4 vaccines have demonstrated some degree of additional protection against high-risk HPV types 31 and 45, both of which are directly targeted by the HPV9 vaccine, which protects against 90% of cervical cancers.[202] Updated HPV vaccination recommendations were published in March 2015 to reflect the FDA's December 2014 approval of HPV9 (see sidebar).

In 2007, the American Cancer Society published its own recommendations for HPV vaccine use, which are generally consistent with those of the Advisory Committee on Immunization Practices (ACIP), although at present the Society has no recommendation regarding the use of HPV vaccine in males.[203] It is important to remember that the HPV vaccination supplements, rather than replaces, cervical cancer screening because the vaccines do not provide protection against all types of HPV that cause cervical cancer. Thus, all women, even those who have been vaccinated, should continue to receive regular cervical cancer screening according to recommendations (see page 25).[204, 205]

Although the cost of the three-dose HPV vaccine series is relatively high (approximately $130 per dose), federal programs are in place to help make it more accessible. The Affordable Care Act requires Medicaid, as well as all new and renewed private insurance plans, to cover HPV vaccination without cost-sharing for eligible adults and children.[206] The HPV vaccine is also available through the federal Vaccines for Children (VFC) program, which covers vaccine costs for children and teens who do not have insurance and for some children and teens who are underinsured or eligible for Medicaid.[207] The VFC has helped diminish disparities in childhood vaccination between Hispanics and non-Hispanic whites.[208]

Initiation and completion of the HPV vaccine series remain lower than other routinely recommended vaccines in all racial and ethnic groups.[184] Among girls 13 to 17 years old, 66% of Hispanics had initiated the HPV vaccination series in 2014, compared with 56% of non-Hispanic whites; however, completion rates in both groups were similar (73% versus 71%, respectively) (Table 8, page 24). Among boys, 54% of Hispanics and 36% of non-Hispanic whites had initiated the HPV vaccination series, with similar completion rates (57% versus 58%, respectively).

Hispanic girls have historically had lower HPV vaccine completion rates than non-Hispanic whites.[209] Reasons for the increase in completion rates are currently unknown, but may be linked to provider-based federal initiatives.[184, 209] Within the Hispanic population, provider recommendation for receipt of the HPV vaccine plays a particularly important role in vaccine uptake for both girls and boys.[210, 211] For example, between 2010 and 2012, Hispanic parents who received a provider recommendation were more than eight times more likely to vaccinate their

HPV Vaccine Recommendations from the Advisory Committee on Immunization Practices*[95]

Females

Using HPV2, HPV4, or HPV9

- Ages 11-12 years (may start at 9 years of age): routine vaccination with 3 doses
- Through age 26 years: vaccination of those who have not been previously vaccinated or have not completed the 3-dose series

Males

Using HPV4 or HPV9

- Ages 11-12 years (may start at 9 years of age): routine vaccination with 3 doses
- Ages 13-21 years: vaccination of those who have not been previously vaccinated or have not completed the 3-dose series; males 22-26 years of age may also be vaccinated
- Through age 26 years: vaccination of those who have a weakened immune system (including those with HIV infection) and for men who have sex with men

*The Advisory Committee on Immunization Practices (ACIP) issues national recommendations for the use of vaccines in the US that are published by the Centers for Disease Control and Prevention.

son than parents who did not receive a provider recommendation.[211] In addition to improving provider and patient awareness, recommendations for improving HPV vaccination rates include expanding locations where the vaccine is offered, such as increasing school-based HPV vaccination programs and allowing the vaccine to be administered at pharmacies.[212]

Human Immunodeficiency Virus (HIV)

Infection with HIV weakens the immune system, increasing the risk of several cancers, including lymphoma, Kaposi's sarcoma, and cervical cancer. People with HIV are also at increased risk of infection with other cancer-causing infectious agents, such as HCV, HBV, HPV, and Epstein-Barr virus, and thus also have a higher incidence of cancers of the liver, anus, and oropharynx and Hodgkin's lymphoma.[213-215] HIV is primarily transmitted through sexual intercourse and injection drug use, although other infection routes are possible. Hispanics have higher incidence and burden of HIV compared to non-Hispanic whites; in 2013, the incidence of new HIV cases was nearly three times higher in Hispanics compared to non-Hispanic whites.[216] The majority of HIV cases among Hispanics are men, particularly those who have sex with other men.[216]

Table 8. Uptake (%) of Human Papillomavirus Vaccine, Adolescents Ages 13-17 Years, US, 2014

	Hispanic		Non-Hispanic White	
	Male	Female	Male	Female
≥1 dose	54.2	66.3	36.4	56.1
≥3 doses	27.8	46.9	18.8	37.5
Series completion*	57.2	72.8	57.9	70.6

Persons of Hispanic/Latino origin may be of any race. *Percentage who completed the 3-dose vaccination series among those who had at least one dose.

Source: Reagan-Steiner S, Yankey D, Jeyarajah J, et al. *MMWR Morb Mortal Wkly Rep.* 2015; 64(29): 784-792. Complete data tables available at: cdc.gov/vaccines/imz-managers/coverage/nis/teen/data/tables-2014.html. Accessed: July 30, 2015.

Cancer Screening

Regular screening can help detect cancer at an early stage and improve treatment success for some types of cancer.[204] Screening can also help prevent cervical and colorectal cancers by detecting and removing growths that are likely to progress to cancer.[204] The American Cancer Society screening guidelines for the early detection of cancer are on page 25. For information on cancer screening beyond what is included in this chapter, please visit cancer.org/research/cancerfactsstatistics/index to review the latest edition of *Cancer Prevention & Early Detection Facts & Figures*.

Cervical Cancer Screening

Regular use of Papanicolaou (Pap) and HPV tests followed by appropriate and timely treatment can help prevent both cervical cancer occurrence and death.[205] The Society recommends that for women at average risk, screening should begin at age 21 and continue at regular intervals through at least age 65. Women who are at high risk for cervical cancer, such as those with HIV infection, an organ transplant, or exposure to the drug diethylstilbestrol (DES), may require more frequent screening. It is important to realize that women who receive the HPV vaccine should still follow recommended screening guidelines because the vaccines do not protect against all types of cancer-causing HPV.

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.[217-219] In 2013, 77% of Hispanic women were up-to-date with cervical cancer screening compared to 83% of non-Hispanic whites (Table 9, page 26). Across Hispanic subgroups, screening prevalence ranges from 73% in Cubans to 83% in mainland Puerto Ricans. The prevalence of Pap testing among uninsured Hispanic women is higher than among uninsured non-Hispanic white women; evidence suggests that lower-income minorities may be more adept at accessing safety net and subsidized programs than non-Hispanic whites.[220]

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. Recently updated American Cancer Society screening guidelines for average-risk women recommend that those 40 to 44 years of age have the choice for annual mammography; those 45 to 54 have annual mammography; and those 55 years of age and older have biennial or annual mammography, continuing as long as overall health is good and life expectancy is 10 or more years.[221] Mammography prevalence among Hispanic women remains lower than among non-Hispanic whites despite a narrowing gap.[222] In 2013, 64% of Hispanic women 45 years of age and older had a mammogram within the past two years compared to 69% of non-Hispanic whites (Table 9, page 26). Among Hispanic subgroups, Cuban women were the least likely to have had a mammogram in the past two years. These variations in screening prevalence may be related to differences in access to health care.[223] Lower frequency of and longer intervals between mammograms, as well as lack of timely follow-up after an abnormal mammogram, are thought to contribute to the higher percent-

American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People*

Cancer Site	Population	Test or Procedure	Recommendation
Breast	Women, ages 40-54	Mammography	Women should undergo regular screening mammography starting at age 45 years. Women ages 45 to 54 should be screened annually. Women should have the opportunity to begin annual screening between the ages of 40 and 44.
	Women, ages 55+		Transition to biennial screening, or have the opportunity to continue annual screening, continuing as long as overall health is good and life expectancy is 10+ years.
Cervix	Women, ages 21-29	Pap test	Screening should be done every 3 years with conventional or liquid-based Pap tests.
	Women, ages 30-65	Pap test & HPV DNA test	Screening should be done every 5 years with both the HPV test and the Pap test (preferred), or every 3 years with the Pap test alone (acceptable).
	Women, ages 66+	Pap test & HPV DNA test	Women ages 66+ who have had ≥3 consecutive negative Pap tests or ≥2 consecutive negative HPV and Pap tests within the past 10 years, with the most recent test occurring in the past 5 years should stop cervical cancer screening.
	Women who have had a total hysterectomy		Stop cervical cancer screening.
Colorectal†	Men and women, ages 50+	Guaiac-based fecal occult blood test (gFOBT) with at least 50% sensitivity or fecal immunochemical test (FIT) with at least 50% sensitivity, **OR**	Annual testing of spontaneously passed stool specimens. Single stool testing during a clinician office visit is not recommended, nor are "throw in the toilet bowl" tests. In comparison with guaiac-based tests for the detection of occult blood, immunochemical tests are more patient-friendly and are likely to be equal or better in sensitivity and specificity. There is no justification for repeating FOBT in response to an initial positive finding.
		Stool DNA test, **OR**	Every 3 years
		Flexible sigmoidoscopy (FSIG),**OR**	Every 5 years alone, or consideration can be given to combining FSIG performed every 5 years with a highly sensitive gFOBT or FIT performed annually.
		Double-contrast barium enema, **OR**	Every 5 years
		Colonoscopy, **OR**	Every 10 years
		CT Colonography	Every 5 years
Endometrial	Women at menopause		Women should be informed about symptoms of endometrial cancer and encouraged to report unexpected bleeding to a physician.
Lung	Current or former smokers ages 55-74 in good health with 30+ pack-year history	Low dose helical CT (LDCT)	Clinicians with access to high-volume, high-quality lung cancer screening and treatment centers should initiate a discussion about annual lung cancer screening with apparently healthy patients ages 55-74 who have at least a 30 pack-year smoking history, and who currently smoke or have quit within the past 15 years. A process of informed and shared decision making with a clinician related to the potential benefits, limitations, and harms associated with screening for lung cancer with LDCT should occur before any decision is made to initiate lung cancer screening. Smoking cessation counseling remains a high priority for clinical attention in discussions with current smokers, who should be informed of their continuing risk of lung cancer. Screening should not be viewed as an alternative to smoking cessation.
Prostate	Men, ages 50+	Prostate-specific antigen test with or without digital rectal examination	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 whether to be screened for prostate cancer, after receiving information about the potential benefits, risks, and uncertainties associated with prostate cancer screening. Prostate cancer screening should not occur without an informed decision-making process.

CT=computed tomography. *All individuals should become familiar with the potential benefits, limitations, and harms associated with cancer screening. †All positive tests (other than colonoscopy) should be followed up with colonoscopy.

Table 9. Cancer Screening Test Use (%), Adults, US, 2013

	Hispanic		Hispanic Origin Subgroups					Non-Hispanic White	
	All	Uninsured	Mexican	Puerto Rican	Cuban	Central/ South American	Dominican	All	Uninsured
Cervical cancer screening (women 21-65 years)*									
Pap test within the past three years	77.1	64.1	76.9	82.7	73.3	75.6	80.4	82.8	57.3
Breast cancer screening (women 45+ years)									
Mammogram within the past two years	64.3	40.3	64.7	66.5	51.5	68.0	65.1	68.9	39.8
Colorectal cancer screening (50+ years)†									
Overall	44.9	11.0	44.6	56.8	38.6	40.5	38.6	60.5	29.8
Males	42.0	11.3	43.4	49.7	34.7	37.3	‡	60.4	21.3
Females	47.6	10.7	46.3	63.2	43.3	43.2	44.2	60.8	36.6

Percent estimates are age adjusted to the 2000 US standard population. Persons of Hispanic/Latino origin may be of any race. *Among women with intact uteri. †Fecal occult blood test (FOBT) in past year, sigmoidoscopy in past five years, or colonoscopy in past 10 years. ‡Estimate not provided due to instability.

Source: Centers for Disease Control and Prevention. National Health Interview Survey, 2013. Public use data file. See Sources of Statistics (page 33) for complete citation.

age of advanced stage breast cancers detected among Hispanics compared to non-Hispanic whites (Figure 5, page 7).[44, 224]

Colorectal Cancer Screening

The American Cancer Society recommends several options for colorectal cancer screening beginning at age 50 for persons at average risk (see page 25).[204] Structural examinations, which detect both cancer and precancerous lesions, include flexible sigmoidoscopy, colonoscopy, computed tomography (CT) colonography, and double-contrast barium enema.[225] Less invasive tests that usually only detect cancer are home-collection stool kits, including the guaiac-based fecal occult blood test (gFOBT), the fecal immunochemical test (FIT), and the newly approved multi-target sDNA test. In 2013, Hispanics 50 years of age and older were less likely to have had a recent screening test for colorectal cancer (45%) than non-Hispanic whites (61%) (Table 9). The difference in screening prevalence is largely driven by the lower use of colonoscopy in Hispanics, as gFOBT use is similar.[226, 227] Screening uptake varies by Hispanic origin and is especially low among uninsured Hispanics 50 years of age and older, among whom only 11% reported a recent test (Table 9).

In 1991, the Society, along with the Centers for Disease Control and Prevention (CDC) and many other organizations, formed the National Colorectal Cancer Roundtable (NCCRT), which is a coalition of public, private, and nonprofit organizations and experts dedicated to reducing colorectal cancer incidence and mortality in the US.[228] In 2014, the NCCRT launched the 80% by 2018 initiative, which aims to increase the colorectal cancer screening prevalence to 80% by the year 2018 among adults 50 years of age and older. Members of the NCCRT also aim to reduce disparities in screening utilization and access to care.

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.[204] Published results from clinical trials are conflicting about the benefit of PSA screening for reducing death from prostate cancer.[218] The American Cancer Society guidelines for the early detection of prostate cancer promote informed choice for 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 a 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 25).[218]

Lung Cancer Screening

Large randomized clinical trials among former and current heavy smokers have shown a 20% reduction in lung cancer deaths among those screened for lung cancer with low-dose spiral computed tomography (LDCT).[68, 229] The American Cancer Society recommends that clinicians with access to high-volume, high-quality lung cancer screening and treatment centers should initiate a discussion about lung cancer screening with apparently healthy patients 55 to 74 years of age who have at least a 30 pack-year smoking history and who currently smoke or have quit within the past 15 years (see page 25).[230] Patients should be informed of the potential benefits, limitations, and harms associated with LDCT screening for lung cancer before making a decision to screen. For current smokers, the discussions should also include information about the health risks associated with continuing to smoke. In 2010, there was little

difference in LDCT lung cancer screening between Hispanic and non-Hispanic white high-risk former and current smokers.[231]

Strategies to Improve Cancer Screening

Health care barriers – such as a lack of health insurance or a usual source of care – experienced by many Hispanic men and women in the US are reflected in lower use of preventive services, such as cancer screening.[223, 232, 233] To improve access to breast and cervical cancer screening in underserved populations, the CDC's National Breast and Cervical Cancer Early Detection Program (NBCCEDP) provides low-income, uninsured, and underinsured women with access to timely, high-quality screening exams for the early detection of breast and cervical cancers and diagnostic services. The NBCCEDP has served more than 4.7 million women since it began in 1991; during 2009-2013, 27% and 24% of women screened for cervical and breast cancer, respectively, were Hispanic.[234, 235] In addition, the CDC initiated the Colorectal Cancer Control Program in 2009, which awarded grants (totaling about $27 million) to 25 states and four tribal organizations for a 5-year period to increase population-level colorectal cancer screening among persons 50 years of age and older and to reduce screening disparities among those who are under- or uninsured.

The generally 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. Additionally, fatalism and fear also act as barriers to cancer screening.[236] Effective communication strategies to close this knowledge gap are needed. Studies have shown that the presence of social support and culturally appropriate outreach may improve screening uptake.[237-239] Local outreach programs, culturally targeted interventions conducted by lay Hispanic health advisors, and physician encouragement to promote the benefits of early cancer detection are also effective strategies for improving screening rates among Hispanics.[240] More information on socioeconomic and cultural factors that affect screening behavior can be found in the next chapter.

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 (Table 10, page 28), and are less likely to have health insurance (Table 11, page 29). In 2013, 35% of Hispanic adults did not have a high school diploma or the equivalent, and 25% of all Hispanics lived in poverty, compared to 8% and 11%, respectively, among non-Hispanic whites. However, there are also substantial socioeconomic differences within the Hispanic community according to country of origin. For example, Dominicans are approximately twice as likely as South Americans to live in poverty (28% versus 15%, respectively) and to not have a high school diploma (32% versus 15%, respectively).

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.[50] Many Hispanics face financial, structural, and personal barriers to health care.[241] Financial barriers include inadequate health insurance, low personal income, and high rates of poverty (Table 11, page 29). Structural barriers include poor geographic access and lack of transportation to providers.[242] Personal barriers to care include cultural and linguistic factors, as well as discrimination and provider bias.[243-246] 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; among those 18-64 years of age, 37% of Hispanics are uninsured compared to 13% of non-Hispanic whites (Table 11, page 29).[247] Within the Hispanic population, uninsured rates are highest among Mexicans and those who are foreign-born. Hispanics overall are also almost twice as likely as non-Hispanic whites to not have a usual source of care.

Many underlying factors relate to lack of health care coverage and not having a usual source of care. For example, 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.[248] Barriers to health care are particularly prevalent among Hispanic migrant workers.[249]

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 current and future prospects for mitigating the financial burden of preventive services and substantially reducing the number of uninsured Hispanics, particularly among those with lower socioeconomic status. Initial results from the first open-enrollment of the ACA were promising; the percentage of uninsured, working-age Hispanics in the US declined 36% between September 2013 and June 2014; in states that expanded Medicaid, the percentage declined by more than 50%.[250]

However, several challenges remain for expanding the benefits included in the provisions of the ACA to all uninsured Hispanics. Some states with large Hispanic populations, including Texas and Florida, have thus far chosen not to expand Medicaid coverage. In addition, language barriers may prevent a substantial number of Hispanics from enrolling; following the first enrollment period, 30% of Spanish-speaking Hispanics remained uninsured, compared to 19% among those who primarily speak English. It is also important to note that enrollment is not open to undocumented immigrants, who make up about 4% of the US population and are predominantly Hispanic.[251] As undocumented immigrants are often unable to obtain jobs with employer-based health insurance, substantial disparities in access to health care among this group remain a concern.[252, 253]

Please visit healthcare.gov/ for more information about health insurance options made available through provisions in the ACA. Visit cuidadodesalud.gov/es/ for a Spanish version of the information.

Cultural Values and Beliefs

Cultural proficiency, or cultural competency, is an important element in providing high-quality health care and preventive services to diverse populations.[254] It is a set of attitudes, skills, behaviors, and policies that enable organizations and staff to work effectively in cross-cultural situations.[246] Cultural proficiency 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. It also includes population-specific knowledge, including cultural values, disease prevalence, and treatment efficacy.[255]

The increasing growth of ethnically diverse communities, each with their own cultural traits and health profiles, presents challenges for health care delivery systems and for individual practitioners. Many experts have suggested that cultural competency among health care providers plays an important role in closing the gaps in health care across racial and ethnic groups.[246] Numerous organizations have developed cultural competency resources to assist medical providers and public health professionals. Two examples available online are:

- Visit hispanichealth.arizona.edu/primer%20for%20culural%20proficiency%20nahh.pdf for the National Alliance for Hispanic Health's *A primer for cultural proficiency: Towards quality health services for Hispanics*, made available online from the Arizona Hispanic Center of Excellence.
- Visit minorityhealth.hhs.gov/omh/content.aspx?id=6515&lvl=2&lvlid=16 for the for the US Office of Minority Health's example.

Table 10. Socioeconomic Characteristics (%) by Race/Ethnicity and Hispanic Origin, US, 2013

	Hispanic	Hispanic Origin Subgroups						Non-Hispanic White
	All	Mexican	Puerto Rican	Cuban	Central American	South American	Dominican	All
Foreign-born	35.2	33.3	1.5	56.6	60.3	62.4	54.5	3.9
Income below federal poverty level	24.8	26.2	26.2	20.0	23.3	14.9	28.3	11.1
Speak English less than "very well"*	32.3	32.3	17.4	39.6	48.7	36.3	42.2	1.6
Less than high school diploma, adults ≥25 years	35.3	40.9	22.6	21.0	44.9	14.9	31.6	8.3

*Among respondents ≥5 years who indicated that a language other than English was spoken at home. Respondents were asked to rank English-speaking ability as "not well at all," "not well," "well," or "very well."

Sources: Foreign-born – U.S. Census Bureau, American FactFinder, available at factfinder.census.gov/faces/tableservices/jsf/pages/index.xhtml. Based on data from the 2013 American Community 1-year Estimates for the United States, not including Puerto Rico. All other characteristics – Dominguez K, Penman-Aguilar A, Chang M-H, et al. Vital Signs: Leading Causes of Death, Prevalence of Diseases and Risk Factors, and Use of Health Services among Hispanics in the United States – 2009-2013. *MMWR Morb Mort Wkly Rep*. 2015; 64(Early Release):1-10.

Table 11. Health Care Access Characteristics (%) by Race/Ethnicity and Hispanic Origin, US, 2013-2014

	Hispanic	Hispanic Origin Subgroups					Non-Hispanic White
	All	Mexican	Puerto Rican	Cuban	Central/ South American	Dominican	All
No health care coverage							
By age:							
<18 years	10.8	11.9	4.8	*	11.1	8.5	4.4
18-64 years	36.9	40.0	18.2	29.6	41.3	30.6	13.2
65+ years	4.9	5.9	†	*	11.6	*	0.3
By nativity, adults 18+ years:							
US-born	16.9	18.2	14.6	12.9	14.0	18.5	10.8
Foreign-born	43.6	47.7	*	29.7	40.5	26.8	14.5
No usual source of medical care, adults 18-64 years							
Overall	27.8	29.0	20.2	26.9	29.0	24.4	16.0
Men	34.0	36.0	24.3	27.8	33.9	31.6	20.2
Women	21.3	21.9	16.0	25.4	23.6	16.1	12.0

All health care access estimates except for 0-17 year olds are age adjusted to the 2000 US standard population. *Estimate not provided due to instability. †Unable to calculate relative standard error.

Sources: Centers for Disease Control and Prevention. National Health Interview Surveys, 2013 and 2014. Public use data file. See Sources of Statistics (page 33) for complete citation.

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 latest 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 online at cancer.org and at 1-800-227-2345.

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 – more than 200 languages in all. Visit the Easy Reading Project website at cancer.org/easyreading for more information.

Everyday Choices For A Healthier Life is a collaborative 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 website (everydaychoices.org) and brochure are both available in Spanish.

The American Cancer Society has partnered with NBC UNIVERSO to produce the *Prevenir Es Vivir (Prevention is Life)* campaign, a comprehensive health platform powered by Telemundo that aims to drive education and awareness among Hispanics about general health and wellness, with an emphasis on the prevention of diabetes, cancer, heart disease and obesity. Visit learnlivegrow.org/prevention-is-life for more information (visit PreveniresVivir.com for a Spanish version of the information).

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

The Luzca Bien Sientase Mejor® program (Look Good Feel Better®) is a collaboration of the American Cancer Society, the Personal Care Products Council Foundation, and the Professional Beauty Association that helps Hispanic women with cancer manage the appearance-related side effects of treatment. The free program engages certified beauty professionals trained as Luzca Bien Sentase Mejor volunteers to teach simple techniques on skin care, makeup, and nail care, and give practical tips on hair loss, wigs, and head coverings. To learn more, visit lookgoodfeelbetter.org/es or call 1-800-395-LOOK (1-800-395-5665).

Finding Hope and Inspiration

People with cancer and their loved ones do not have to face their cancer experience alone. The American Cancer Society Cancer Survivors Network® is a free online community created by and for people living with cancer and their families. At csn.cancer.org, they can get and give support, connect with others, find resources, and tell their own story through personal expressions like music and art.

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, those who experience language or health literacy barriers, or those with limited resources. The American Cancer Society Patient Navigator Program was designed to reach those most in need. Patient navigators can help find transportation to and from cancer-related appointments; assist with medical financial issues, including insurance navigation; identify community resources; and provide information on a patient's cancer diagnosis and treatment process. The Society collaborates with a variety of organizations, including the National Cancer Institute's Center to Reduce Cancer Health Disparities, the Center for Medicare and Medicaid Services, numerous cancer treatment centers, and others to implement and evaluate this program.

Support for Quitting Tobacco

The Quit For Life® Program is the nation's leading tobacco cessation program. Brought to you by a collaboration between the American Cancer Society and Alere Health, the program is built on the organizations' more than 35 years of combined experience in tobacco cessation. The Quit For Life Program employs an evidence-based combination of physical, psychological, and behavioral strategies to enable participants to take responsibility for and overcome their addiction to tobacco, including a critical mix of medication support, phone-based cognitive behavioral coaching, text messaging, and web-based learning and support tools. The program produces an average quit rate of 49% at sixth months (defined as not having smoked within 30 days of the survey), making the program nine times more effective than quitting without support. Program participants receive counseling from bilingual quit coaches and learning materials in Spanish.

Breast Cancer Support

Through the American Cancer Society Reach To Recovery® program, trained breast cancer survivor volunteers provide one-on-one support, information, and resource referrals to people facing or living with breast cancer. These volunteers give cancer patients and their family members the opportunity to ask questions, talk about their fears and concerns, and express their feelings. The Reach To Recovery volunteers have been there, and they offer understanding, support, and hope. A promotional brochure is available in Spanish.

Find Cures

The American Cancer Society, the largest non-governmental, not-for-profit funding source of cancer research 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 193 grants, totaling nearly $128 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:

Helping to Reduce Colon Cancer Screening Disparities: Latinos face numerous barriers when it comes to getting needed colorectal cancer screening tests. Daniel Reuland, MD, at the University of North Carolina, Chapel Hill, says that Latinos specifically grapple with language and cultural barriers. To overcome these challenges, Reuland is testing the effectiveness of two unique interventions: multimedia decision aids and patient navigators. Reuland's study, which is focused on Latinos ages 50 to 75 years, will show patients a video – in either English or Spanish – that explains colon cancer screening "using easy-to-understand narrated segments, patient testimonials, graphics, and animations." Patients will be shown the video before they see their doctor. After patients watch the video and see their doctor, a bilingual patient navigator will help them complete the screening process. Reuland hopes his innovative intervention, which he says is a practical solution, will prove effective and ultimately be widely implemented.

Jamilia Sly, PhD, at the Icahn School of Medicine at Mount Sinai, is also exploring a new approach for increasing colorectal cancer screening rates among Hispanics. Her previous research has shown that training African Americans to help other African Americans navigate the colorectal cancer screening process has worked to increase screening rates. In her new project, Sly will test this same model, which she refers to as peer navigation, among Latinos. The study will involve the creation of a culturally specific training program for the Latino peer navigators. She believes that, if successful, the peer navigator model for Latinos could be executed on a larger scale and ultimately increase colonoscopy screening rates.

One-on-one Assistance May Help Underserved Populations to Stop Smoking: Sanja Percac-Lima, MD, PhD, at Massachusetts General Hospital, will be leading a study to assess whether bilingual community outreach workers can help increase lung cancer screening rates among older current and former smokers. Her work will focus on patients who use community health centers, as they are much more likely to smoke compared with people who get care from a private practice. Percac-Lima hopes her study will reveal a way to prevent the development of lung cancer screening disparities.

Class, Race, and Cancer: Unraveling the Complex Connections: Social inequality plays a significant, but often overlooked, role in cancer. Factors such as socioeconomic status, discrimination, and past trends and historical context are interconnected and help explain certain racial and ethnic differences in cancer occurrence. Nancy Krieger, PhD, a Harvard School of Public Health researcher and new American Cancer Society Research Professor, is launching several new studies that she hopes will give researchers, doctors, and patients a better understanding of how social inequalities impact cancer.

Cary Gross, MD at Yale University is going to explore disparities in breast cancer care by examining how clinicians' use of a beneficial, but expensive, personalized cancer care innovation – called gene expression profiling – differs by insurance status, hospital type, and patients' sociodemographic characteristics. Gross hopes his findings will help to reveal what action could be taken to decrease disparities and excessive costs associated with gene expression profiling.

Terry A. Badger, PhD, RN, FAAN at the University of Arizona is designing and testing an intervention aimed at helping improve the quality of life of Hispanics with breast cancer. Latinas have less access to psychosocial programs, and thus tend to suffer disproportionately from the emotional side effects of cancer. Her intervention will help improve the quality of life of Latinas with breast cancer by using telephone outreach that also incorporates the patient's support partner, such as a family member or friend.

Fight Back

The American Cancer Society and the American Cancer Society Cancer Action Network[SM] (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, which 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 (NIH), the National Cancer Institute (NCI), 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 ACS CAN. This successful program provides community-based breast and cervical cancer screening, diagnosis, and treatment to low-income, under- and uninsured women (cdc.gov/cancer/nbccedp). However, under current funding the program serves 1 in 10 eligible women nationwide. Cuts to the program would mean even fewer women would be served.

Colorectal cancer screening by colonoscopy can remove precancerous polyps during the procedure, thereby making it a unique preventive service. ACS CAN has been instrumental in the introduction of the Removing Barriers to Colorectal Cancer Screening Act of 2015, which will address a barrier to care in the Medicare program for the colorectal cancer preventive service. Unlike private insurance, under Medicare, if a polyp is found and removed during a screening colonoscopy, a beneficiary can be charged a co-pay between $300 and $500. Private insurance

covers the colonoscopy with polyp removal without a charge to the patient. This legislation would increase access to care for Medicare beneficiaries by putting coverage for this screening on par with those on private insurance.

ACS CAN was also 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. ACS CAN continues to encourage the FDA to assert its regulatory authority over all tobacco products, not just cigarettes and chewing tobacco.

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 territories. Visit iccnetwork.org for more information.

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. Visit nhcoa.org for more information.

National Hispanic Medical Association (NHMA)

The National Hispanic Medical Association is a nonprofit association representing 50,000 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. Visit nhmamd.org for more information.

National Alliance for Hispanic Health

The National Alliance for Hispanic Health is a nonprofit organization that provides science-based health information (in English and Spanish) and advocates for health in the Hispanic community. The Alliance also produces publications on specific cancer topics for Hispanics, such as skin cancer and cancer survivorship. Visit hispanichealth.org for more information.

Redes En Acción

The National Latino Cancer Research Network is a National Cancer Institute (NCI)-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. Visit redesenaccion.org for more information.

Factors That Influence Cancer Rates

Comparison of cancer incidence, death, and survival rates between racial and ethnic groups, particularly those involving groups other than whites or blacks, should be interpreted with caution for several reasons. First, because of how cancer data are collected, we cannot present most cancer statistics according to country of origin and nativity status, masking important differences within the aggregated Hispanic population. In addition, ethnicity and race are not always classified uniformly in medical records, death certificates, and the US decennial census, so incidence and mortality rates for populations other than whites and blacks are likely to be underestimated. Also, the long-term (1992-2012) incidence trend data presented in this report are from the SEER cancer registry areas, which may not accurately reflect the cancer experience of Hispanics throughout the US.

According to population-based data, Hispanic patients have similar, or sometimes higher, cancer survival rates than non-Hispanic whites for many cancer sites, despite having lower socioeconomic indicators. This counter-intuitive scenario, sometimes referred to as the "Hispanic paradox," may reflect incomplete or biased data instead of a true survival advantage.[15] For example, Hispanics who immigrate to the US likely represent a selectively healthy subset of their home-country's population.[256] In addition, US Hispanics may return to their country of

origin after a cancer diagnosis seeking stronger social support. Frequent migration among seasonal workers may also hamper the patient follow-up necessary for the calculation of survival rates. As a result of the greater difficulties in the accurate recording of cancer deaths for immigrant populations, a recent study found that survival rates for Hispanics may be artificially inflated and should be interpreted with caution.[15]

Hispanic/Latino Identification

Accurately identifying Hispanic/Latino individuals for cancer surveillance has been an ongoing challenge. In an effort to address this issue, the North American Association of Central Cancer Registries (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). However, misclassification of Hispanic cases remains an issue. More recently, in certain states with large and diverse Hispanic/Latino populations, special research investigations have been underway 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.[14] Such information is useful for planning targeted cancer control programs.

Age Adjustment

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 misleading to compare the cancer rates of Florida, which has a large elderly population, to those of Alaska, which has a younger population, because cancer is generally a disease of older people. Without adjusting for age, it would appear as though the risk of cancer in Florida is much higher than in Alaska. However, after adjusting for age, the cancer rates for the two states are similar. Likewise, age adjustment is necessary when comparing rates for Hispanics to other US groups because of the younger age distribution of the US Hispanic population.

Sources of Statistics

Estimated new cancer cases: The estimated number of new cancer cases diagnosed among Hispanics in the US in 2015 were projected using a two-step process. First, the total number of cases was estimated for the 10 most recent years of data (2003 to 2012) by applying age-specific incidence rates for Hispanics from 44 states and the District of Columbia that met the North American Association of Central Cancer Registries' (NAACCR) high-quality data standards for all 10 years to Hispanic population estimates.[257] Then, the number of new cases was projected three years ahead based on the 10-year average annual percent change obtained from joinpoint regression analysis.

Incidence rates: Incidence rates are calculated by dividing the number of people who are diagnosed with cancer during a given time period by the number of people at risk for the disease in a population, and are reported as the number of cases diagnosed per 100,000 people at risk. Long-term incidence trends (1992 to 2012) were based on data from the 12 oldest Surveillance, Epidemiology, and End Results (SEER) program areas.[258] NAACCR incidence data were the source for the 10-year average annual percent change in cancer incidence rates for 2003-2012, as well as the 5-year average annual age-adjusted incidence rates for 2008-2012.[257] International incidence rates displayed in Figures 7 and 8 were provided by the World Health Organization's International Agency for Research on Cancer's GLOBOCAN database.[90] All incidence rates in this publication are age adjusted to the 2000 US standard population, with the exception of the incidence rates displayed in Figures 7 and 8, which are age adjusted to the 1960 world standard population.

Estimated cancer deaths: The estimated number of US cancer deaths among Hispanics in 2015 were calculated by fitting the number of cancer deaths from 1998 through 2012 to a statistical model that forecasts the number of deaths expected to occur in 2015. Data on the number of deaths are obtained from the National Center for Health Statistics (NCHS) of the CDC.[259] For more information on the projection of cancer deaths, see Chen et al.[260]

Death rates: Similar to the incidence rates, death rates represent the number of people who die from cancer during a given time period divided by the number of people at risk in the population, presented in terms of cancer deaths per 100,000 people. Death rates in this publication are based on counts of cancer deaths compiled by the NCHS and population data from the US Census Bureau.[259] Long-term death trends (1992-2012) presented in Figure 4, page 6, exclude data from New Hampshire and Oklahoma, as these states did not collect data on Hispanic origin for some years. The average annual percentage change in death rates from 2003 to 2012 and the 5-year average annual

age-adjusted incidence rates for 2008-2012 includes data from all 50 states and Washington, DC. All death rates in this publication are age adjusted to the 2000 US standard population. It is important to note that Hispanic cancer incidence and mortality rates are not directly comparable because the amount by which surveillance data underestimate these two statistics is different.[261, 262]

Important note about estimated cancer cases and deaths for the current year: The estimated numbers of new cancer cases and deaths in 2015 should be interpreted with caution. The projection method is model-based, so the estimated numbers may vary from previous years for reasons other than changes in cancer occurrence. Therefore, while 3-year-ahead projections provide a reasonably accurate estimate of the cancer burden in 2015, we strongly discourage the use of our estimates to track changes in cancer occurrence. Age-adjusted incidence and mortality rates reported by the SEER program and the NCHS, respectively, are the preferred statistics to track cancer trends in the US. Rates from state cancer registries are useful for tracking local trends.

Survival: This report presents cause-specific survival rates from patients diagnosed in 17 registries of the SEER program to describe cancer survival.[263] All five-year survival statistics presented in the tables and text of this publication are for diagnosis years 2005 to 2011, with all patients followed through 2012.

National Health and Nutrition Examination Survey (NHANES): The CDC's NHANES is a national survey that assesses the health and nutritional status of adults and children in the US. Three cycles of the survey were conducted between 1971 and 1994; the most recent and third cycle (NHANES III) was conducted from 1988 to 1994. Beginning in 1999, the NHANES was implemented as a continuous annual survey. The survey is designed to provide prevalence estimates on the health and nutritional status of US adults and children, such as prevalence of major diseases, nutritional disorders, and potential risk factors of diseases. Data are gathered through in-person interviews and direct physical exams in mobile examination centers. Questions regarding diet and health are asked in the interview; the physical exam consists of medical and dental exams, physiological measurements, and laboratory tests.

NHANES website: cdc.gov/nchs/nhanes.htm

Complete citation: National Center for Health Statistics. National Health and Nutrition Examination Survey, 2011-2012. Public-use data file and documentation. http://www.cdc.gov/nchs/nhanes.htm. 2013.

National Health Interview Survey (NHIS): The CDC's NHIS has monitored the health of the nation since 1957. The survey is designed to provide national prevalence estimates on personal, socioeconomic, demographic, and health characteristics (such as cigarette smoking and physical activity) of US adults. Data are gathered through a computer-assisted personal interview of adults 18 years of age and older living in households in the US.

NHIS website: cdc.gov/nchs/nhis.htm

Complete citation: National Center for Health Statistics. National Health Interview Survey, 2013 and 2014. Public-use data file and documentation. cdc.gov/nchs/nhis.htm.

Youth Risk Behavior Surveillance System (YRBSS): This biennial survey of the CDC's NCCDPHP began in 1991. It is designed to provide national, state, and local prevalence estimates on health risk behaviors, such as tobacco use, unhealthy dietary behaviors, physical inactivity, and others 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 state and local surveys are of variable data quality, and caution should be used when comparing data among them. Data from states and local areas with an overall response rate of 60% and appropriate documentation are considered weighted and are generalized to all public and private high school students in grades nine through 12 in the respective jurisdiction. However, data from states and local areas without an overall response rate of 60% and those with inadequate documentation are reported as unweighted and are only applicable to students participating in the survey. Beginning with the 2003 survey, state data that do not meet the weighting requirements described above are no longer publicly available through the CDC.

YRBSS website: cdc.gov/HealthyYouth/yrbs/index.htm

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