

 **AMERICAN LUNG ASSOCIATION®**
**State of Lung Disease in
Diverse Communities: 2007**

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AIR QUALITY

ASTHMA

**CHRONIC OBSTRUCTIVE
PULMONARY DISEASE (COPD)**

CYSTIC FIBROSIS

HIV/AIDS

INFLUENZA AND PNEUMONIA

LUNG CANCER

**OBSTRUCTIVE SLEEP APNEA (OSA) OR
SLEEP-DISORDERED BREATHING (SDB)**

OCCUPATIONAL LUNG DISEASE

**RESPIRATORY DISTRESS SYNDROME (RDS)
ACUTE AND INFANT**

RESPIRATORY SYNCYTIAL VIRUS (RSV)

SARCOIDOSIS

SUDDEN INFANT DEATH SYNDROME (SIDS)

TOBACCO USE

TUBERCULOSIS (TB)

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Introduction

The Many Faces of Lung Disease – Reaching out to Communities in Need

THE AMERICAN LUNG ASSOCIATION IS WORKING TO ENSURE that we are the most powerful enemy of lung disease that we can be. As part of our fight, we continue to take a hard look at who needs our help the most. Some groups are especially hard hit by the suffering caused by asthma, lung cancer, tuberculosis and other forms of lung disease. Some populations are at increased risk because they suffer elevated exposure to indoor-air contaminants. They may have higher than average smoking rates. Some groups are at higher risk because they do not have equal access to health education or quality medical services. Or they may live in substandard housing in cities. And some minority groups may be at increased risk of certain lung diseases simply because they are genetically predisposed to these conditions.

These are frightening facts, but facts that need to be disseminated in order to raise awareness with the ultimate goal of reversing negative trends that are affecting diverse communities. The *American Lung Association State of Lung Disease in Diverse Communities: 2007* is intended to inform local communities and organizations about these health disparities in an effort to assist them in influencing local policy and public health practice.

The American Lung Association is dedicated to being the premiere organization engaged in lung health research, education and advocacy. We fund innovative research that has the promise of impacting lung health. This report features some of the ongoing research that leading scientists are conducting in each subject area. The work highlighted in this publication is representative of or dedicated to communities of color.

Our health education programs make a difference in people's lives. We provide people with the skills they need to manage or treat lung disease. Our programs educate people about making positive behavior changes, from teaching children with asthma to recognize the symptoms of an asthma attack, to educating chronic obstructive pulmonary disease patients about ways they can improve their daily lives. For example, the American Lung Association's new adult asthma program, *Breathe Well, Live Well*, helps participants increase their asthma knowledge as well as learn asthma self-management. Freedom From Smoking (FFS) and Not-On-Tobacco (N-O-T) are American Lung Association programs that have been proven to provide adult and teenage smokers with the tools they need to successfully quit smoking. The American Lung Association collaborates with volunteers and community organizations nationwide. Our programs are taught by local residents, who help us in serving diverse communities.

Policy change provides some of the fastest, most far-reaching and highest impact interventions in the fight against lung disease. Those individuals disproportionately affected by lung disease often enjoy great benefits from policy changes. The American Lung Association's advocacy efforts include: tobacco control policy advocacy, aggressive efforts to clean up air pollution, support of research and public health programs and work in coalitions with other organizations with similar goals.

Our vision of a world free of lung disease and its suffering drives each of us in the American Lung Association, both volunteers and staff. We are united across the country in a common cause and we are committed to reducing the pain and suffering caused by lung disease.

Executive Summary

THE AMERICAN LUNG ASSOCIATION IS WELL AWARE of the health disparities among racially and ethnically distinct communities and has created the *American Lung Association State of Lung Disease in Diverse Communities: 2007* as a resource to those who have been affected by asthma, lung cancer, SIDS, RSV and other lung diseases. The report provides members of these communities with much needed health information that can be used in the fight against lung disease and risk factors that cause or contribute to lung disease. It provides statistics, background material and ongoing research about important lung health issues such as asthma, smoking and clean air as they relate to racially and ethnically diverse communities.

METHODOLOGY

This report contains data on lung diseases gathered through various surveys and reports and analyzed by the Epidemiology and Statistics Unit of the American Lung Association. Prevalence data are derived from the National Health Interview Survey (NHIS), the Behavioral Risk Factor Surveillance System (BRFSS) and other surveys such as the Youth Risk Behavior Survey and Youth Tobacco Survey. Mortality data are available through the Centers for Disease Control and Prevention's (CDC) Wonder web site and through the National Center for Health Statistics. Additional data sources include the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program for data on lung cancer incidence, and the National Hospital Discharge Survey and the National Hospital Ambulatory Medical Care Survey for data on hospital discharges, emergency department visits, outpatient visits and doctor visits. Research articles and the CDC's Morbidity and Mortality Weekly reports provide data on other lung diseases not included in surveys. Unpublished data were specially requested from the agencies involved. The U.S. Census Bureau provides population estimates used in calculating the percentage of each racial or ethnic group living in the United States. A complete list of references is available at the end of the report. Please note that data on lung diseases by specific group are often not available at the local level, as these surveys are most often conducted to be representative of the national U.S. population. Additionally, often these surveys are not able to adequately sample the smaller-sized racial or ethnic populations. Therefore, reliable estimates cannot always be established.

REPORT HIGHLIGHTS

The following are highlights from the report:

- **Both indoor and outdoor air pollution are linked to breathing problems and communities of color are especially vulnerable.**

Studies have linked air pollution to heart disease, cancer, asthma and other respiratory illnesses, even death. Children, the elderly and those with chronic lung and heart disease are most vulnerable to the adverse effects of air pollution. Communities of color are more likely to reside near industrial sources of air pollution.¹ This report shows that certain communities of color have higher prevalence and death rates from some of the most common respiratory illnesses, such as asthma, and most often reside in high-pollution areas.

- **Puerto Ricans have the highest asthma prevalence.**

Asthma is found in all populations, but some racial and ethnic groups experience it at higher rates, particularly the inner-city African American and Puerto Rican communities. Presently, Puerto Ricans living in the U.S. have the highest asthma prevalence of any population.²

- **African Americans are less likely to develop or die from chronic obstructive pulmonary disease (COPD), yet they have more emergency room visits and similar disease severity when compared to Whites who have smoked cigarettes over a longer period of time and are heavier smokers.**

COPD is the fourth leading cause of death in the United States.³ Smoking is the main cause of the disease, but other risk factors including air pollution, occupational exposures and secondhand smoke can worsen the condition. White Americans in the United States are more likely to develop the disease than other racial or ethnic groups.

- **Native Americans have the second highest incidence rate of cystic fibrosis; Whites have the highest.**

Cystic fibrosis is a lifelong hereditary disease that is most common among White babies, but Native Americans have the second highest incidence.

- **African Americans represent half of all HIV diagnoses. HIV/AIDS is the leading cause of death among African American women aged 25 to 34.**

Since the beginning of the HIV epidemic, individuals of color have constituted 61 percent of AIDS cases. Hispanics with HIV are more likely than Whites and African Americans to have their condition turn into AIDS within 12 months of diagnosis. Because the lung is the major target of infection in HIV/AIDS patients, some persons infected with HIV are in danger of contracting various forms of lung disease, such as pneumonia or tuberculosis, especially XDR TB, strains resistant to usual and second-line drugs in the treatment of TB.⁴

- **Influenza/pneumonia is the fourth leading cause of death among Asian Americans/Pacific Islanders over the age of 65.**

Within the Asian/Pacific Islander population, influenza and pneumonia ranks as the sixth leading cause of death overall. Surveys show that African Americans over age 65 are less likely to receive an influenza or pneumonia vaccine than their White counterparts. Approximately 72.5 percent of all influenza and pneumonia deaths in African Americans occur in this age group.⁵

- **Lung cancer kills more African Americans and American Indians/Alaska Natives than any other cancer.**

In 2007, an estimated 213,380 new cases of lung cancer and an estimated 160,390 deaths from lung cancer will occur in the United States.⁶ American Indians/Alaska Natives had higher mortality rates (33.1 per 100,000) for lung cancer than Asian Americans (27.2 per 100,000) and Hispanics (23.9 per 100,000). Asian Americans are more likely than any other racial or ethnic group to develop and die from lung cancer although they have lower overall exposure to tobacco smoke.⁷

- **African American children are more than three times more likely than children of other races to develop sleep disordered breathing.**

Sleep apnea or sleep disordered breathing occurs in all age groups and both sexes, but is most common in males and those over the age of 40. It is also more common among people who are moderately overweight to obese. Strong evidence suggests that obesity may increase the risk of obstructed breathing during sleep. Lack of awareness by the public and healthcare professionals has resulted in the vast majority of people with the illness remaining undiagnosed and, therefore, untreated.⁸

- **Hispanics are more likely to be employed in high-risk occupations than any other racial or ethnic group.**

Traditionally, certain racial and ethnic groups have been overexposed to occupational respiratory hazards because they are more likely to be employed in industries associated with lung disease. Occupational asthma is the most prevalent occupational lung disease in the United States with approximately 15 to 23 percent of new onset asthma cases in the U.S. attributed to occupational exposure.⁹

- **American Indians/Alaska Natives have high rates of respiratory syncytial virus (RSV).**

One study found that age-adjusted RSV hospitalization rates among Navajo and White Mountain Apache children less than 1 year old to be three times higher than rates reported for other children of the same age group in the United States.¹⁰

- **African Americans have the highest prevalence rates of sarcoidosis in the United States.**

In 2003, the mortality rate from sarcoidosis was 13 times higher among African Americans than Whites.¹¹ The cause of the disease is still a mystery, but researchers have several theories, including genetic predisposition to increased susceptibility and progression of the disorder.¹²

- **American Indians/Alaska Natives have sudden infant death syndrome (SIDS) rates over two times higher than the overall U.S. population.**

SIDS is the third leading cause of death among infants under 1 year of age. Infants of American Indian and Alaska Native mothers have the highest SIDS rates of all racial and ethnic groups. American Indian infants were 2.5 times more likely than White babies to die of SIDS. The cause of the disease remains unknown, but research has found that maternal smoking during pregnancy could double the risk of an infant developing the disease.¹³

- **Smoking prevalence is highest among American Indians, but Chinese American males and Lesbian, Gay, Bisexual and Transgender (LGBT) communities also have high rates.**

About 8.6 million people in the United States have at least one serious illness caused by smoking. Exposure to tobacco smoke is projected to cause to some 438,000 deaths each year.¹⁴ Data indicate smoking prevalence is highest among American Indians. In addition, recent studies indicate there is widespread occurrence of smoking in LGBT (Lesbian, Gay, Bisexual and Transgender) communities, which puts them at an increased risk for lung cancer, COPD and coronary heart disease.¹⁵

- **TB case rates are dramatically higher among Asians/Pacific Islanders than other racial groups.**

The highest TB case rates in the U.S. population occur in persons of Asian and Native Hawaiian/Other Pacific Islander descent (25.8 and 13.8 per 100,000, respectively). Asian Americans also have the highest percentage of new TB cases among foreign-born persons living in the U.S. African Americans account for the highest percentage of TB cases in the U.S.-born population. African Americans accounted for 28 percent of new TB cases in 2005, while Asian Americans accounted for 23 percent.¹⁶

Important Definitions

TERMINOLOGY USED BY THE U.S. PUBLIC HEALTH SERVICE IN DEFINING RACIAL AND ETHNIC COMMUNITIES. The terminology used by the U.S. Public Health Service, and other federal agencies for the most part, reflects the categories employed by the U.S. Census Bureau. These designations can sometimes be unclear or overlap. The Census Bureau makes use of the following racial and ethnic categories: American Indian or Alaska Native, Black or African American, Asian, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, White and multi-racial. In this report, we use these same categories and focus on lung diseases with data on one or more of these racial/ethnic groups. This report only contains information on lung diseases that have race-specific and/or ethnicity-specific data available. It is important to note that other lung diseases do impact minority communities, however if no specific data could be found, the disease could not be included in this report.

DEMOGRAPHICS. In 2005, there were approximately 288.4 million people living in the United States: 73.1 million children under 18 years, 180.4 million working-age adults (18 to 64 years) and 34.7 million persons aged 65 years and older.¹⁷

AFRICAN AMERICANS make up approximately 12.1 percent of the U.S. population. The majority of African Americans reside in the South (55.8%), 18.3 percent live in the Midwest, 17.0 percent live in the Northeast and 8.7 percent live in the West. In 2005, 30.9 percent of the African American population was under age 18. The African American population is as diverse as other ethnic and racial groups, and includes people from Africa, the West Indies and other parts of the Caribbean.¹⁸

HISPANICS/LATINOS represent 14.5 percent of the U.S. population. The Hispanic/Latino population is a mosaic of cultures and its various subgroups reflect profound differences in race, culture and origin. This population covers the racial spectrum: Hispanics can be of any race; White, Black, Native Hawaiian/Pacific Islander, Asian or Native American/Alaska Native. Moreover, the diversity extends to nationality, customs, heritage, lifestyles and socioeconomic status. While similarities among Hispanic/Latino groups do exist, particularly in language (most are Spanish-speaking) and religion (most are Catholic), there are important differences in cultural background and life experience that may impact their overall health status. As such, caution should be taken in making broad generalizations about the Hispanic/Latino population. It is estimated that by 2050, Hispanics/Latinos will represent almost a quarter of the U.S. population. More than half of all Hispanics/Latinos in the United States are of Mexican origin (64%), 9 percent are of Puerto Rican origin, 3.5 percent are people of Cuban origin and 23.5 percent are of other Hispanic/Latino origin. Hispanics of other origin include Dominicans (2.7%), Central Americans (7.3%) and others.¹⁹

ASIAN AMERICANS make up 4.3 percent of the U.S. population. “Asian American” refers to persons whose familial roots originate from many countries, ethnic groups and cultures of the Asian continent, including the Indian subcontinent and Southeast Asian populations. According to U.S. Census Bureau data, the Asian American population is 23.1 percent Chinese, 18.3 percent Filipino, 6.7 percent Japanese, 18.6 percent Asian Indian, 10 percent Korean and 11.4 percent Vietnamese. Asian Americans of other national ancestry comprise an additional 11.9 percent.²⁰

NATIVE HAWAIIANS AND OTHER PACIFIC ISLANDERS include people of Polynesian, Micronesian and Melanesian ancestry. Though usually grouped with Asian Americans for data collection, Native Hawaiians/Pacific Islanders were assigned a distinct category in the 2000 U.S. Census and made up 0.14 percent of the country's total population in 2005. This small subgroup includes more than 25 distinct groups with variations in historical background, language and cultural traditions. Among Pacific Islanders in the United States, Native Hawaiians are the largest group (38.2%), followed by Guamanian/Chamorros (19.1%), Samoans (14.2%) and other Pacific Islanders (28.2%). Nearly 78 percent of Native Hawaiians/Pacific Islanders live in the West, with a majority living in California and Hawaii. Native Hawaiians/Pacific Islanders are a relatively young population with a median age of 30.6 years (compared to a national average of 36.4 years) and an average family size of four. Poverty rates are higher among Pacific Islanders, who have a per capita income 30 percent below the national average.²¹

NATIVE AMERICANS/ALASKA NATIVES are descendents of the various indigenous peoples of the United States. This category includes persons living on reservations and in sovereign communities, as well as those who identify themselves as Native American, American Indian, Eskimo, Aleut or Inuit. American Indians and Alaska Natives account for less than 1 percent (0.8%) of the U.S. population. According to the U.S. Census Bureau, approximately two million American Indians and Alaska Natives currently live in the United States. Since July 1, 1990, the U.S. population of American Indians and Alaska Natives has increased by 10.4 percent. The number of American Indians and Alaska Natives is expected to increase steadily to 3.1 million in 2020 and 4.4 million in 2050. Major subgroups in this population are American Indians, Eskimos and Aleuts.²²

WHITES account for 74.7 percent of the U.S. population and are defined as any of the original peoples of Europe, the Middle East or North Africa who have immigrated to the U.S. since the 1600s.²³

HEALTH STATUS AMONG DIVERSE COMMUNITIES. The health of Americans continues to improve overall in many respects, thanks to advances in medical technology, including diagnostic imaging techniques, research, resources devoted to public health and education and new prescription drugs. Life expectancy in the United States continues a long-term upward trend. However, even as progress is made, it is accompanied by increased prevalence of chronic conditions and their associated pain and disability.

The progress seen in recent years in areas such as reduced prevalence of risk factors including smoking, and a decline in infant mortality and morbidity from chronic conditions, has not been as rapid as in the past. In some cases, the trends have started to move in the wrong direction. Even more disturbing is the fact that improvements have not been equally distributed by income, race, ethnicity, education and geography. The socioeconomic differences among racial and ethnic groups in the U.S. will continue to influence future patterns of disease, disability and healthcare.

There are still many disparities that need to be addressed. For example, the gap in life expectancy between the African American and White populations has narrowed but still persists. Hispanic and American Indian persons under 65 years are more likely to be uninsured than those in other racial or ethnic groups, and statistics from 2003 indicate that infant mortality rates were highest for infants of non-Hispanic Black, American Indian and Puerto Rican mothers.²⁴

MORTALITY is deaths. Rates are per 100,000 population.

MORBIDITY is the term used to refer to illness.

PREVALENCE is the number of existing cases of a particular condition, disease or other occurrence (e.g., persons smoking) at a given time. Chronic disease prevalence is per 1,000 population.

INCIDENCE is the number of new cases occurring in the population during a particular period of time (e.g., 100 cases of TB from 1998 to 2002).

INCIDENCE RATE is the number of new cases occurring in a particular population, per a quantity (e.g., 10 cases per hundred thousand) during a specified time. Incidence rates are per 100 or per 100,000 population.

AGE-ADJUSTED MORTALITY RATE is a figure that is statistically adjusted to remove the distorting effect of age when comparing populations with different age structures. Most rates are age adjusted to the 2000 U.S. standard population.

Notes:

- *All statistics in this document apply to the United States unless otherwise noted and are for the most recent available year. Factors used in expressing these data, as determined by the collecting agencies.*
- *Hospital discharge rates are per 10,000 population.*

Lung Disease Data at a Glance

Air Quality

- Over the past 20 years, the air quality levels for pollutants have improved in the United States. However, about 141 million tons of air pollution were released into the air in 2005 and approximately 122 million people in the United States lived in counties that did not meet standards set by the U.S. Environmental Protection Agency (EPA).
- African Americans are disproportionately exposed to hazardous air pollution. One study found that in 2002, 71 percent of African Americans lived in counties that violated federal air pollution standards, compared to 58 percent of the White population.
- Pollution from power plants affects all people, but 68 percent of African Americans live within 30 miles of a coal-fired power plant, compared to 56 percent of Whites.
- One report found that in 2004 more than 19 million (50 percent) of Hispanics lived in areas that violated the federal air pollution standard for ozone, one of the major triggers of asthma attacks. In particular, the incidence of asthma in children of Hispanic mothers is two-and-a-half times that of non Hispanic White children.

Air Quality

Outdoor Air Pollution

AIR QUALITY is a major public health concern. Unfortunately, millions of Americans live in areas where the pollution in the outdoor air all too often puts their health and even their lives at risk. Studies have tied air pollution to heart disease, cancer, asthma and other respiratory illnesses, and even death.

The Clean Air Act provides the principal framework for air quality in the United States, including national air quality standards that safeguard the public against the following six damaging pollutants:²⁵

- **OZONE (O₃)** is a highly reactive form of oxygen that results from sunlight mixing with volatile organic compounds (including hydrocarbons) and nitrogen oxides released in fuel combustion. New research shows that breathing ozone over a short period, even at levels currently considered safe, increases the risk of premature death.^{26,27,28,29} Exposure to ozone can cause shortness of breath and coughing, trigger asthma attacks and reduce lung function, often leading to hospital admissions and emergency room visits. Ozone is the main component of smog.³⁰
- **PARTICULATE MATTER AIR POLLUTION (PM)** is a complex mixture of substances, including carbon-based particles, dust and acid aerosols. Exposure to particle pollution is associated with increased risk of premature death, heart attacks and lung cancer, and can trigger asthma attacks, wheezing, coughing and lung irritation in people with sensitive airways.³¹
- **NITROGEN DIOXIDE (NO₂)** forms when fossil fuels are burned at high temperatures. It can irritate the lungs and lower one's resistance to lung infections such as influenza. Exposure to concentrations that are higher than normal may increase the rate of acute respiratory illness in children. Nitrogen oxides are also a key ingredient in the formation of ozone and some particle pollution.³²
- **SULFUR DIOXIDE (SO₂)** forms during the burning of fuel containing sulfur (mainly coal and oil), and during metal smelting and other industrial processes. Major health concerns associated with exposure to high concentrations of SO₂ include difficulty breathing, lung illness, changes in pulmonary defenses and aggravation of existing heart disease. Sulfur dioxide is a key ingredient in the formation of some particle pollution as well.³³
- **CARBON MONOXIDE (CO)** is colorless and odorless, but at high levels it can be deadly. CO forms when carbon in fuel does not burn completely. It can cause harmful health effects by reducing oxygen delivery to the body's organs and tissues. At low levels of exposure, CO can be poisonous, creating headaches, nausea and sleepiness. At higher levels, which can develop indoors, CO can be life-threatening. CO exposure may also cause injury to the eyes, cause reduced work capacity, difficulty doing manual and complex tasks and poor learning ability.³⁴
- **LEAD** is a highly toxic metal found naturally in the environment as well as in manufactured products. Due to the phase out of leaded gasoline between 1975 and 1986, outdoor lead levels have decreased by more than 90 percent. While the primary impact is not on the lungs, the respiratory system is the major route of entry into the body for lead particles. Lead harms the brain and nervous system and damages the kidneys, liver and other organs. High levels of exposure to lead can cause seizures, behavioral disorders and death. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and children 6 years and under. They are most at risk because their bodies are growing quickly.^{35,36}

In addition to these six major pollutants, there are other hazardous or toxic air pollutants that may not be as widespread but can be found in high concentrations, especially in industrial areas or near roadways and coal-fired power plants. These include pollutants known to cause cancer, such as benzene, and others that damage the nervous system or brain, such as mercury.

Much outdoor air pollution stems from burning fossil fuels, whether from generating electricity, operating industrial processes or driving the family car. Over the past 20 years, the national air quality and emission levels for all six principal pollutants have improved. Despite this progress, about 141 million tons of air pollution were released into the air in the United States in 2005. Approximately 122 million people lived in counties that did not meet EPA standards for at least one of the pollutants.³⁷

Indoor Air Pollution

THE AIR INDOORS CAN BE SERIOUSLY POLLUTED as well. EPA studies of human exposure to air pollutants indicate that indoor air levels of many pollutants may be two to five times higher than outdoor levels and, in some cases, 100 times higher. These high levels of indoor pollutants are of particular concern because research estimates that most people spend as much as 90 percent of their time indoors.³⁸ Areas in which continuous and long-term exposure may occur – such as the home, school and workplace – are of greatest concern.

Indoor pollutants that have been increasingly recognized as threats to lung health include:

- **SECONDHAND SMOKE.** All the perils posed by smoking apply not only to the smoker but also to those in the smoker's environment. Secondhand smoke is estimated to cause 3,400 deaths from lung cancer and some 22,000 to 69,600 deaths from cardiovascular diseases in nonsmokers annually. In addition, secondhand smoke triggers asthma attacks and causes lower respiratory tract infections, pneumonia and many other harmful conditions. Studies have estimated that secondhand smoke may significantly worsen symptoms of asthma for 400,000 to 1,000,000 children each year.³⁹
- **RADON** is a naturally occurring gas that results from the radioactive decay of uranium. Radon breaks down into odorless and colorless particles that are often present in the home. Exposure to radon is the leading cause of lung cancer in nonsmokers. Smokers exposed to radon substantially increase their risk of developing lung cancer compared to exposed nonsmokers. The chief sources of radon pollution are rocks and soil that lie beneath buildings. Radon enters structures through openings such as foundation cracks. Studies estimate that 21,000 people die annually of lung cancer caused by radon exposure. Any home in any community can have high levels of radon.⁴⁰
- **COMBUSTION PRODUCTS** (aside from tobacco smoke) include carbon monoxide, nitrogen dioxide, sulfur dioxide and particle pollution. Sources of combustion products include stoves, furnaces, fireplaces, heaters and dryers. Carbon monoxide, which is both colorless and odorless, can be particularly dangerous. Fatal and near-fatal carbon monoxide poisonings occur most often during the winter months as a result of misused or malfunctioning heating devices. An average of 480 people die from, non-fire-related CO exposure annually.⁴¹ Venting the smoke exhaust to the outside is essential anytime anything is burned indoors.
- **BIOLOGICALS** include substances such as pet dander, pollen, molds, mildew, dust mites, bacteria and viruses. Biologicals cause many allergic reactions and worsen asthma. They can live in bedding and carpeting as well as in damp places. They may be a source of serious, potentially life-threatening diseases, such as legionella. In office buildings, heating, cooling and ventilation systems are frequent sources of biologicals.⁴²

- **VOLATILE ORGANIC COMPOUNDS** are emitted as gases from solids or liquids. Sources include formaldehyde-containing building materials, as well as an array of home and office products ranging from cosmetics, paints and cleaners to pesticides, copiers and printers, glues and adhesives and craft supplies.
- **LEAD DUST** is a particular danger to children and unborn babies. It can affect physical and mental development, and cause acute illness in both children and adults. In older buildings (often found in poor urban areas), lead dust comes from old, lead-based paint that is still on the walls. An estimated 83 percent of privately-owned housing units and 86 percent of public units still contain some lead-based paint. While small children nibbling on chips of lead paint dust has been the most widely publicized image of lead poisoning, children inhaling lead dust is the most devastating reality.⁴³
- **ASBESTOS** is found in older homes and buildings, but it is most dangerous in schools and industrial settings. It was once widely used in shingles, fireproofing, heating systems and floor and ceiling tiles in older buildings. When asbestos-containing material is damaged or disintegrates, microscopic fibers are dispersed into the air. The risk of lung cancer from inhaling asbestos fibers is also greater to smokers. While most asbestos-associated cancers are related to the intensity and duration of exposure, the symptoms of the disease do not usually appear until about 20 to 30 years after the first exposure to asbestos. Removal of asbestos-containing materials is not always wise because the fibers can be released into the air during the removal process. The EPA requires removal only in order to prevent significant exposure. A management program for intact asbestos-containing materials is often recommended instead.⁴⁴

The National Academy of Sciences/Institute of Medicine issued a report on asthma and indoor air quality, confirming that dust mites and other allergens, microorganisms and some chemicals found indoors are triggers for asthma. In addition, the report stated that there was sufficient evidence to suggest links between secondhand smoke, house dust mites and the development of asthma in preschool-aged children.⁴⁵

More than half of Americans breathe polluted air on a regular basis. Millions of people in the United States live in counties with unhealthy levels of either ozone or particle pollution. To see how air pollution is affecting the air in your area, visit <http://www.stateoftheair.org>.

Environmental Injustice

EXPOSURE TO INDOOR OR OUTDOOR AIR POLLUTION can pose a wide range of health risks for many populations. Those most vulnerable include children, the elderly and people with chronic lung disease. For example, people who suffer from asthma may experience periodic attacks of breathing difficulty and lung inflammation, often in response to environmental irritants.

Communities of color in the United States have higher prevalence and death rates of the most common respiratory illnesses than do predominantly White communities. They also are more often affected by debates over environmental health and government efforts to improve it. For example, asthma occurs disproportionately in low-income and urban communities, especially in inner-city African American and Hispanic populations. Therefore, controlling exposures to outdoor and indoor air pollution is an important protective measure, especially for these groups.

Furthermore, communities of color experience greater exposure to substandard indoor and outdoor air quality. In particular, research indicates that minorities live in greater concentrations both in areas that do not meet federal air quality standards and in areas with above-average numbers of air-polluting facilities.⁴⁶

People of color were found to be more likely to live near industrial sources of air pollution in two recent separate investigations looking at 1990 data on toxic air pollutants. African Americans were found to be more likely than Whites to live in areas with higher toxic air pollutants in every large metropolitan area in the country.⁴⁷ In studies of three specific industrial areas, researchers found that a higher percentage of African Americans than Whites lived closer to industrial sources of air pollution, including toxic emissions, and were more likely to live near multiple sources of such emissions.^{48,49}

More recent studies have been concerned with power plants and the release of nitrogen oxides and sulfur dioxide, which form particle pollution. Exposure to these pollutants has been linked to more than 550,000 asthma attacks and 23,600 premature deaths nationwide.⁵⁰ Pollution from power plants affects all Americans, but 68 percent of African Americans live within 30 miles of a coal-fired power plant, compared to only 56 percent of Whites.⁵¹

Communities of color and low income are also disproportionately located near freeways and other areas with heavy diesel truck traffic. Diesel emissions are also released in the process of fuel production, refining, distribution and dispensing. Diesel refining, distribution and storage facilities are often located in these communities, which are already burdened by major air pollution and toxic risks. Use of diesel fuel increases toxic air pollution, raising the risk of lung cancer and other lung diseases in these communities.^{52,53}

A study published in *Lancet* in 2007 found that children who lived within 500 yards of freeways in Southern California faced risks of lifelong harm to their lungs from pollution, even if they lived in an otherwise clean community.⁵⁴

Racial/Ethnic Differences

African Americans

AFRICAN AMERICANS ARE DISPROPORTIONATELY EXPOSED to hazardous air pollution. One study found that in 2002, 71 percent of African Americans lived in counties that violated federal air pollution standards, compared to 58 percent of the White population.⁵⁵

A 2003 national study found that African American, Hispanic and Asian/Pacific Islander females who were pregnant were much more likely than pregnant White females to live in areas with higher levels of air pollution. This exposure is associated with low birthweight, premature birth and infant mortality.⁵⁶

Researchers compared 86 cities in the U.S. and found that infants who lived in a highly polluted city during their first two months of life had a higher mortality rate than infants living in the city with the cleanest air. High particulate matter levels increase the risks of SIDS and respiratory mortality. As African Americans disproportionately live in more polluted areas, this puts them at greater risk.⁵⁷

There is evidence to suggest that African Americans are exposed to environmental tobacco smoke, or secondhand smoke, more than Whites or Mexican Americans. In a national study that measured blood and urine samples, non-Hispanic Blacks were found to have higher levels of a key marker for exposure to secondhand smoke than non-Hispanic Whites or Mexican Americans.⁵⁸

In an analysis of five power plants in the Washington, DC area, emissions of particulate matter, nitrate and sulfate fine particles were correlated with respiratory illnesses. The pollutants were estimated to trigger nearly 20,000 asthma attacks, almost 4,000 emergency room visits and nearly 300 hospitalizations. Accordingly, the modeled results showed that while only 21 percent of the children in the study were African American, they accounted for 64 percent of the reduced pediatric asthma emergency room visits when the best available emissions controls were applied on the five power plants.⁵⁹

Hispanics/Latinos

AMBIENT AIR POLLUTION, worker exposure to chemicals and indoor air pollution are all areas in which indicators point to elevated risk for Hispanic populations. According to the National Coalition of Hispanic Health and Human Services Organizations, Hispanics may have an elevated risk for developing acute and chronic responses to exposure to air pollution since a disproportionate number of Hispanics live in areas failing to meet one or more national standards for air pollutants.

One report found that in 2004 more than 19 million (50%) of Hispanics lived in areas that violated the federal air pollution standard for ozone, one of the major triggers of asthma attacks. In particular, the incidence of asthma in children of Hispanic mothers is two-and-a-half times that of non-Hispanic White children.⁶⁰

A 2004 study suggested that people of Puerto Rican descent were at increased risk for multiple indoor and outdoor allergies compared to White children. In particular, Puerto Rican children were found to be three times more likely to be allergic to cockroaches than White children. African American children were also found at increased risk for allergies, primarily outdoor allergies. Such children were found to be at least twice as likely as White children to be allergic to mixed tree pollen, mixed grass pollen, ragweed and mugwort/sage. Among all children, the study found an outdoor allergy predicted the degree of allergen sensitization. For example, grass pollen-allergic children were much more likely than nonallergic children to have at least four positive skin tests to other allergens. Asthma is a significant public health problem among Puerto Ricans, but the extent to which this population is affected by allergies is not completely understood.⁶¹

Asian Americans and Native Hawaiians/Pacific Islanders

THERE ARE LIMITED DATA available on outdoor and indoor air pollution in Asian American communities.

However, one study revealed that Hispanic, African American and Asian American/Pacific Islander mothers experienced higher mean levels of air pollution and were more than twice as likely to live in the most polluted counties compared to White mothers. Additional risk of residing in areas with poor air quality may exacerbate health problems of infants and children already at increased risk for poor health.⁶²

American Indians/Alaska Natives

THERE ARE LIMITED DATA available on outdoor and indoor air pollution in Native American communities.

When the Clean Air Act was amended in 1990 to include implementation of the Clean Air Act Program on Indian reservations, only a handful of tribes had running air quality management programs. In 2005, 64 tribes were located in the areas not meeting the federal 8-hour standard for ozone and 35 tribes were located in areas not meeting federal standards for particulate matter.

Today, over 100 tribes are currently managing air quality programs, maintaining air pollution emissions and working toward more sophisticated air quality monitoring strategies.⁶³

Lung Disease Data at a Glance

Asthma

- African Americans have the highest asthma prevalence of any racial or ethnic group with the exception of Puerto Ricans. The current asthma prevalence rate in African Americans is 11.5 percent higher than that in non-Hispanic Whites. The difference between races is significant.
- African Americans represent 12.1 percent of the U.S. population; they account for 25 percent of all asthma deaths.
- The age-adjusted death rate for asthma in the African American population is three times the rate in Whites. African American women had the highest mortality rate due to asthma in 2003 (3.4 per 100,000 persons).
- The asthma age-adjusted death rate in African American males was 3.0 per 100,000 compared to 0.9 per 100,000 in non-Hispanic White males.
- African Americans are hospitalized for asthma at more than three times the rate of Whites.
- The asthma age-adjusted mortality rate in Hispanic females (1.4 per 100,000 population) was lower than African American females (3.4 per 100,000), and slightly higher than non-Hispanic White females (1.3 per 100,000).
- Hispanics generally have lower prevalence rates of asthma than African Americans or Whites. Studies have shown, however, that Puerto Ricans have higher asthma prevalence rates than other Hispanic subgroups and non-Hispanic Whites.
- Mexican Americans have the lowest asthma mortality and prevalence rates compared to all racial and ethnic groups and subgroups.
- Data from some studies indicate that Asian Americans have lower rates of asthma than most racial and ethnic groups, including Native Hawaiians.
- Data from some studies indicate that American Indians/Native Americans may have equal if not greater rates of asthma than other racial groups.

Asthma

ASTHMA IS CHARACTERIZED by reversible airway obstruction caused by inflammation of the lung's airways, often as a response to various triggers. Asthma triggers vary from person to person, but may include cigarette and other smoke, mold, pollens, dust, animal dander, exercise, cold air, household and industrial products, air pollutants and infections. The airways of asthma sufferers are almost continuously inflamed and hyperactive, but these and other kinds of triggers can lead to spasms in the lungs, causing asthma attacks. Asthma symptoms include coughing, wheezing and shortness of breath, and can be life-threatening if not properly managed.

Although asthma is found in all populations, it occurs at especially high rates among communities of color, particularly inner-city African American and Hispanic populations. Scientists have different explanations for the high asthma rates among communities of color. Some believe that inner-city living and socioeconomic factors such as poverty, stress and low access to proper healthcare may contribute to asthma among urban minorities. Others believe that genetic factors are the main cause.

Studies on both socioeconomic and genetic factors have yielded inconclusive results. For example, Harvard University researchers found that children under the age of 26 months who lived in areas with higher levels of violent crime were up to twice as likely to have physician-diagnosed asthma as those who lived in low-crime areas. Children under the age of 26 months living in areas with high levels of violent crime were also 40 percent more likely to have physician-diagnosed asthma than children over the age of two living in the same neighborhood.⁶⁴

Results from the National Institute of Allergy and Infectious Diseases (NIAID) National Cooperative Inner-City Asthma Study suggested that there was a link between exposure to cockroaches and episodes of asthma. The NIAID researchers found that children who were both allergic and exposed to higher cockroach allergen levels were hospitalized for their asthma 3.3 times more often than allergic children who were not exposed to high levels of cockroach allergens.⁶⁵

Asthma rates vary widely among different subsets of minority populations. *Table 1* displays current asthma prevalence and mortality estimates among racial and ethnic populations.

Table 1: Asthma Current Prevalence and Mortality^{1,2}

	Total		Non-Hispanic White		Non-Hispanic Black		Hispanic ³		Non-Hispanic All Others ⁴	
ADULT										
Prevalence (2004)	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
Males	5,147,689	49.7	3,892,485	52.6	636,661	59.1	485,304	35.3	133,239	26.4
Females	9,210,441	82.5	6,971,568	86.7	1,268,892	94.0	677,397	51.9	292,584	62.3
Total	14,358,130	66.7	10,864,053	70.4	1,905,553	78.5	1,162,701	43.4	425,823	43.7
CHILDREN UNDER 18										
Prevalence (2004)										
Total	6,186,706	84.7	3,611,359	68.9	1,449,615	81.9	961,199	127.7	164,533	44.7
Mortality 2003										
	Total		Non-Hispanic White		Non-Hispanic Black		Hispanic ³		Non-Hispanic	
Males	1,493	1.1	831	0.9	439	3.0	131	1.1	1,356	1.2
Females	2,606	1.6	1,758	1.3	580	3.4	168	1.4	2,430	1.6
Total	4,099	1.4	2,589	1.3	1,019	3.2	299	1.3	3,786	1.4

Sources: - National Center for Health Statistics: National Health Interview Survey, 2004 and National Vital Statistics Report: Report on Final Mortality 2003. Calculations by the Epidemiology and Statistics Unit of the American Lung Association.

Notes: 1 Due to rounding, numbers across may not sum up to totals.

2 Prevalence rates are per 1,000 population and age-adjusted mortality rates are per 100,000 population, age-adjusted to the 2000 U.S. standard population.

3 Hispanics are not mutually exclusive from Whites, African Americans, Asians/Pacific Islanders, and American Indians/Alaska Natives.

4 Does not include Non-Hispanic Whites and Blacks.

Racial/Ethnic Differences

ACCORDING TO THE CENTERS FOR DISEASE CONTROL AND PREVENTION, asthma prevalence increases with age, but healthcare use is highest among the youngest children. Boys have higher asthma prevalence and death rates compared with girls throughout childhood. Of additional concern is the fact that non-Hispanic Black and Puerto Rican children have higher prevalence rates compared to non-Hispanic White children. Puerto Rican children have the highest prevalence of all groups, 140 percent higher than non-Hispanic White children, whereas Mexican children have low reported rates. Black children have higher mortality rates compared with White children. The disparity in asthma mortality between Black and White children has increased in recent years. American Indian/Alaska Native children have current asthma prevalence rates 25 percent higher and Black children 60 percent higher than White children. Asian American children have the lowest prevalence rates. While data for prevalence, healthcare use and mortality are major indicators of the impact of asthma on children, asthma symptoms that are unrecognized or not severe enough to warrant emergency care or hospitalization can still lower quality of life.⁶⁶

Concern has also been raised that asthma may be underdiagnosed, particularly among minority children who have more restricted access to high-quality healthcare. A recent study examined racial/ethnic differences among currently symptomatic children in acquiring an asthma diagnosis to determine if relative under-diagnosis among children of color exists. Among those reported to have wheezed in the past year, 83 percent of Puerto Rican, 71 percent of non-Hispanic Black and 65 percent of Mexican American children were diagnosed with asthma compared with 57 percent of non-Hispanic White children. Using non-Hispanic White children as the reference group, the approximate adjusted relative risk for physician diagnosis of asthma-given wheezing in the past year was 1.43 for Puerto Rican, 1.22 for non-Hispanic Black and 1.19 for Mexican American children. Minority children were reported to have more severe wheezing symptoms. Even after accounting for this increased severity, children in racial and ethnic minority groups were as likely or more likely to have a reported asthma diagnosis than non-Hispanic White children.⁶⁷

African Americans

AFRICAN AMERICANS HAVE HIGHER RATES OF ASTHMA than any other group with the exception of Puerto Ricans. In 2004, the asthma prevalence rate in African Americans was 11.5 percent higher than among Whites. The prevalence rate was also 81 percent higher in African Americans than in Hispanics, except Puerto Ricans. In 2004, an estimated 4.9 million African Americans had been diagnosed with asthma in their lifetime; 3.5 million of them currently have asthma and 2 million said they experienced an asthma attack in the past year. African Americans also have higher rates of asthma mortality. In 2003, African Americans were almost three times more likely to die from asthma than were Whites (3.2 per 100,000 versus 1.3 per 100,000 respectively).⁶⁸

Several studies point to racial differences in health services for patients with asthma. In 2004, African Americans were three times more likely to be hospitalized for asthma than Whites and five times more likely to seek care at an emergency room.⁶⁹

In 2003, the risk of hospitalization for adult and pediatric asthma was highest among non-Hispanic Blacks. Data showed that Blacks were 3.8 times more likely to be admitted for pediatric asthma and three times more likely to be admitted for adult asthma, as compared with non-Hispanic Whites.⁷⁰

Being non-Hispanic Black appears to be associated, independently from low income and low education, with an increased risk of mortality from asthma.⁷¹

A 1999 Cleveland Clinic Foundation study of managed care patients hospitalized for asthma found that African American patients made more asthma-related emergency department visits (45.2%) than White patients (22.4%) during the year after their initial hospitalization. During the same year, Whites made more asthma-related visits to their primary care doctor (70.2%) and specialist visits (38.8%) than African Americans, 47.6 percent of whom visited a primary care doctor and 27 percent of whom visited a specialist. Regular care from a primary care physician or asthma specialist can help patients keep their asthma under control and help prevent emergency room visits associated with asthma attacks. The Ohio researchers noted in their study that education programs are needed for low-income African American patients to improve asthma healthcare.⁷²

A possible explanation for this disparity may be genetic differences between races. A study conducted by the National Heart Lung and Blood Institute identified several genes for asthma and for responsiveness to allergens, some of which may be more common among African Americans.⁷³

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Consider the Differences...

- African Americans represent 12.1 percent of the U.S. population; they account for 25 percent of all asthma deaths.
- The age-adjusted death rate for asthma in the African American population (3.2 per 100,000) was three times the rate in the White population (1.1 per 100,000). African American women had the highest mortality rate due to asthma in 2003 (3.4 per 100,000 persons).
- The asthma age-adjusted death rate in African American males was 3.0 per 100,000 compared to White males at 0.9 per 100,000 in 2003.
- African Americans were hospitalized for asthma at more than three times the rate of Whites (33.9 versus 10.0 per 10,000) in 2004.
- The asthma prevalence rate in African Americans was 11.5 percent higher than in Whites in 2004. African American women also have the highest prevalence rates (94.0 per 1,000 persons) of any group.

Hispanics/Latinos

IN 2004, OVER 3.4 MILLION HISPANIC AMERICANS had been diagnosed with asthma in their lifetime. Over 2.1 million Hispanic Americans reported that they currently have asthma and 1.2 million experienced an asthma attack in the past year. Asthma prevalence rates in Hispanics were significantly lower than rates in non-Hispanic Blacks and non-Hispanic Whites.⁷⁴

Studies suggest that Puerto Ricans may have higher asthma prevalence rates than non-Hispanic Whites and any other Hispanic subgroup, while Mexican Americans may have the lowest rates of all groups. A study of more than 3,000 Hispanics in New York, found that Puerto Ricans reported a 13.2 percent asthma prevalence rate, compared to 5.3 percent among Dominicans and other Latinos, including Mexicans. The study noted that differences among Hispanic groups were not explained by location, household size, use of home remedies, education level or by the country in which their education was completed.⁷⁵

Puerto Rican children have the highest asthma prevalence of all groups, 140 percent higher than non-Hispanic White children; whereas Mexican American children have low reported rates.⁷⁶

A recent study compared asthma-related clinical characteristics among 684 Mexican and Puerto Rican people with asthma recruited from San Francisco, New York City, Puerto Rico and Mexico City. Researchers found that Puerto Ricans with asthma had lower lung function, higher risk of emergency department visits and longer asthma duration than Mexicans. The researchers also found that Puerto Ricans with asthma responded less to medications, such as albuterol, than Mexicans with asthma.⁷⁷

Another study compared children with asthma among a population of school-age children in New York City with the highest rates of asthma and found that the prevalence of current asthma was significantly higher among Puerto Ricans, who had higher symptomatic frequency and greater diagnosis rates. Prevalence of current asthma in Puerto Rican children was 35 percent versus 23 percent for other children in Harlem. Although all children with asthma in the East Harlem study appear to be sensitive to selected indoor environment risk factors, only Puerto Rican children with asthma appear to be sensitive to the presence of rodents in their buildings. Additionally, their higher school absence rate suggests problems with routine asthma management that could be addressed by improved medical management, programs to help parents manage their children's asthma or school staff assistance with medications.⁷⁸

In addition to high asthma prevalence rates, Puerto Ricans may also have higher asthma death rates compared to other Hispanic groups, and non-Hispanic Whites and non-Hispanic Blacks, especially in the northeast. According to a recent study, Puerto Ricans had an age-adjusted death rate of 40.9 per million, followed by Cuban Americans (15.8 per million) and Mexican Americans (9.2 per million). Death rates among non-Hispanic Whites and non-Hispanic Blacks were 14.7 per million and 38.1 per million, respectively.⁷⁹

CHANGING THE FACE OF ASTHMA RESEARCH

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In 2003, 299 Hispanics died of asthma, an age-adjusted death rate of 1.3 per 100,000. The age-adjusted death rate in Hispanics was 66 percent lower than the rate in non-Hispanic Blacks, but almost the same as the rate in non-Hispanic Whites (1.1 per 100,000). However, studies have suggested that Puerto Ricans had higher age-adjusted death rates than all the other Hispanic subgroups and non-Hispanic Whites and Blacks.⁸⁰ There is no ready explanation for why asthma mortality rates for Hispanics are strikingly different from African Americans.

Other studies have also shown that Latinos have a higher prevalence of asthma. A profile of Southeastern Pennsylvania (SEPA) residents with asthma found that prevalence among children is higher in Philadelphia than in the surrounding suburban counties of SEPA (13.7 % versus 9.1%, respectively). This is especially true among the Latino population in the city, in which it was reported that 18.1 percent of children have asthma compared with only 7.3 percent of Latino children living in the suburbs.⁸¹

In 2003, data showed that Hispanics ages 65 and older had the highest rate of hospitalization for asthma.⁸²

Just as in the African American community, Hispanics are also less likely than Whites to receive adequate healthcare and preventive medicine. A recent article found that Hispanic children received fewer asthma medications than White children after adjusting for patient race, age, gender, insurance status, symptom severity and the number of primary care visits for asthma.⁸³ The researchers reported that, overall, 94 percent of Hispanic children had not used preventive medications in the past year compared to 73 percent of White children.

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Consider the Differences...

- In 2003, Hispanic males had a lower age-adjusted mortality rate from asthma of 1.1 per 100,000 population compared to African American males (3.0 per 100,000).
 - The 2003 asthma age-adjusted mortality rate in Hispanic females (1.4 per 100,000 population) was significantly lower than in African American females (3.4 per 100,000), but only slightly higher than for White females (1.3 per 100,000).
 - Hispanics generally have lower asthma prevalence and death rates than African Americans or Whites, but studies have shown that Puerto Ricans may have higher asthma prevalence rates than other Hispanic subgroups and non-Hispanic Whites. Puerto Ricans may also have higher death rates than other Hispanic subgroups and non-Hispanic Whites and African Americans. Puerto Rican children have the highest prevalence of all groups, 140 percent higher than non-Hispanic White children.
 - Mexican Americans may have the lowest mortality and prevalence rates compared to all groups, with the exception of Asian Americans.
-

Asian Americans and Native Hawaiians/Pacific Islanders

THERE ARE LIMITED DATA AVAILABLE on asthma for Asians or Hawaiians/Pacific Islanders. Major national health surveys recently began collecting data for this group but because of small sample sizes, estimates are not considered statistically accurate and are not published or released. Analysts usually group Asian Americans and Native Hawaiians/Pacific Islanders with Native Americans into the category called Other Races.

However, states with high Asian or Native Hawaiian populations, such as California and Hawaii, can provide some estimates on asthma among Asians/Pacific Islanders.

According to the 2003 California Health Interview Survey, Asian Americans were significantly less likely to have ever been diagnosed with asthma than all other racial or ethnic groups except Hispanics. Approximately 1 in 9 Asian children (11.2%) and 1 in 10 Asian adults (9.7%) had been diagnosed with asthma at some point in their lives in California. The survey also found that 10 percent of Asian adults and 13 percent of Hispanic adults suffer from asthma symptoms, compared to 34 percent of American Indian/Alaska Native adults and 19 percent of White adults.⁸⁴

Other studies have also shown that Asians have a lower prevalence of asthma. A profile of southeastern Pennsylvania residents with asthma found Latinos are most likely to have asthma (13.9 %) compared to African Americans (12.5%), Whites (8.1%) and Asians (3.3%).⁸⁵

In Los Angeles, the Department of Health Services sponsored a survey on the effects of asthma on Los Angeles County children and found that Asian/Pacific Islander children (8.7%) and Hispanics (6%) were least likely to have asthma compared to African Americans (16.1%) and Whites (8.95%).⁸⁶

According to the 2005 Hawaii Health Survey, Native Hawaiians had a lifetime asthma prevalence rate of 139.8 per 1,000, which is almost twice that of Whites and higher than any other ethnic group living in Hawaii. Females had higher rates than males (100.7 per 1,000 versus 96.5 per 1,000, respectively). The survey also reported that among subgroups, Whites living in Hawaii had the lowest lifetime asthma prevalence rates (76.4 per 1,000) followed by the Filipino community (91.4 per 1,000) and Japanese (102.3 per 1,000). An alarming finding is that 30 percent of Japanese persons aged 15-17 had asthma in Hawaii, indicating the need for more research on this specific population.⁸⁷

Native Americans/Alaska Natives

DUE TO THEIR SMALL NUMBERS in terms of the U.S. population, available data on asthma among Native Americans/Alaska Natives are limited. Major national health surveys collect data on this group, but because of small sample sizes estimates are not statistically accurate. In order to use this data, analysts group Native Americans/Alaska Natives with Asian Americans/Pacific Islanders in the category called Other Races.

Individual studies and state-based surveys indicate that asthma morbidity among Native Americans/Alaska Natives may be higher than other racial or ethnic groups. For example, according to the 2003 California Health Interview Survey, American Indians/Alaska Natives had the highest rates of lifetime asthma compared to all the other racial and ethnic groups. The survey found that slightly more than 1 in 5 (21.7%) Native American/Alaska Native children and 1 in 5 (18.7%) American Indian adults had been diagnosed with asthma in their lifetime, compared to 1 in 5 (22.8%) African American children. The survey also found asthma diagnosed in slightly less than 1 in 6 (16.4%) African American adults, 1 in 7 (14%) White children and adults, 1 in 8 (12.6%) Hispanic children, 1 in 11 (8.7%) Hispanic adults, 1 in 9 (11.2%) of Asian children and 1 in 10 (9.7%) of Asian adults.⁸⁸

Consider the Differences...

- Not much is known about asthma morbidity and mortality among Native Americans and Alaska Natives, but preliminary data show that this group may have equal if not greater rates of asthma than other racial groups.
- Beliefs about asthma and asthma medications have a significant effect on treatment of asthma among Native Americans and Alaska Natives. Some studies show that these populations may be hesitant to use long-term medications or delay the use of medications during episodes because it was hoped that the body would “heal” itself.

Beliefs about asthma and asthma medications have a significant effect on treatment of the illness, including when and how often medicines are taken and one’s use of healthcare services. A study among pediatric Navajo asthma patients found that the majority of families were hesitant to use long-term medications, especially when they were not experiencing symptoms. This is because they consider asthma to be a series of acute episodes rather than a chronic disease. Only one-third of participants reported use of inhaled steroids or other anti-inflammatory medications. Because bronchodilators were perceived to be immediately effective, these drugs were used by most of the respondents. Medication use was often avoided or delayed during episodes because it was hoped that the body would “heal” itself. Researchers also found that nebulized medications available only in the emergency room were considered by the participants to be the strongest therapy available. As a result, visits to the emergency room were found to be common among respondents (79%), as were hospital admissions (57%).⁸⁹

A recent study found that chronic respiratory symptoms are very common among Alaska Native children. Among 377 Alaska Native children, 40 percent reported chronic respiratory disease; 7.4 percent reported physician-diagnosed asthma, 11.4 percent reported asthma-like symptoms without an asthma diagnosis and 21.5 percent reported chronic productive cough without asthma. Chronic productive cough is an important non-asthmatic respiratory condition in this population. The differing patterns of respiratory illness within this region may help to elucidate the specific risk factors for asthma and chronic bronchitis in children.⁹⁰

Asma

EL ASMA ESTÁ CARACTERIZADA POR UNA OBSTRUCCIÓN reversible de las vías respiratorias causada por inflamación de las vías aéreas de los pulmones, a menudo como una reacción a diversos factores desencadenantes. Los factores desencadenantes del asma varían de una persona a otra, pero pueden incluir el humo de los cigarrillos y otros humos, los hongos, los pólenes, el polvo, la caspa de los animales, el ejercicio físico, el aire frío, productos domésticos e industriales, contaminantes del aire e infecciones. Las vías respiratorias de los asmáticos están inflamadas e hiperactivas casi continuamente, pero estos factores desencadenantes y otros pueden conducir a espasmos en los pulmones, causando ataques de asma. Los síntomas del asma incluyen toser, sibilancias y falta de aire. Si no se los maneja correctamente pueden poner en peligro la vida.

Si bien el asma se encuentra en todas las poblaciones, ocurre con índices especialmente elevados en las comunidades de color, especialmente entre los afroamericanos e hispanos que viven en los barrios urbanos marginados. Los científicos tienen diferentes justificativos de la alta incidencia de asma en las comunidades de color. Algunos creen que es probable que la vida en los barrios urbanos marginados y factores socioeconómicos, como la pobreza, el estrés y el acceso limitado a la atención de la salud contribuyan a la incidencia de asma en las minorías urbanas. Otros creen que los principales causantes son factores genéticos.

Estudios de factores socioeconómicos y genéticos no han dado resultados concluyentes. Por ejemplo, investigadores de la Universidad de Harvard hallaron que niños menores de 26 meses de edad que vivían en zonas con niveles elevados de delitos violentos tenían el doble de probabilidad de tener asma diagnosticada por un médico que los que vivían en zonas con bajos índices de delincuencia. Los niños menores de 26 meses de edad que vivían en zonas con niveles elevados de delitos violentos también tenían una probabilidad 40 por ciento mayor de tener asma diagnosticada por un médico que los niños mayores de dos años de edad que vivían en el mismo barrio.ⁱ

Resultados del Estudio Nacional Cooperativo del Asma en Ciudades del Instituto Nacional de Alergia y Enfermedades Infecciosas (NIAID) sugirieron que había un vínculo entre la exposición a las cucarachas y los episodios de asma. Los investigadores del NIAID hallaron que los niños que eran alérgicos y estaban expuestos a mayores niveles de alérgicos de cucarachas estuvieron hospitalizados por asma 3.3 veces más a menudo que los niños alérgicos que no estuvieron expuestos a niveles elevados de alérgicos de cucarachas.ⁱⁱ

Los índices de asma varían mucho entre los diferentes subconjuntos de poblaciones minoritarias. La *Tabla 1* muestra los cálculos de incidencia y mortalidad del asma entre poblaciones raciales y étnicas.

Tabla 1: Incidencia y mortalidad del asma en la actualidad^{1,2}

ADULTOS	Total		Blancos (no hispanos)		Negros (no hispanos)		Hispanos ²		Todos los demás ⁽³⁾ (no hispanos)	
	NÚMERO	TASA	NÚMERO	TASA	NÚMERO	TASA	NÚMERO	TASA	NÚMERO	TASA
Incidencia (2004)										
Hombres	5,147,689	49.7	3,892,485	52.6	636,661	59.1	485,304	35.3	133,239	26.4
Mujeres	9,210,441	82.5	6,971,568	86.7	1,268,892	94.0	677,397	51.9	292,584	62.3
Total	14,358,130	66.7	10,864,053	70.4	1,905,553	78.5	1,162,701	43.4	425,823	43.7
NIÑOS menores de 18 años de edad										
Incidencia (2004)										
Total	6,186,706	84.7	3,611,359	68.9	1,449,615	81.9	961,199	127.7	164,533	44.7
	Total		Blancos (no hispanos)		Negros (no hispanos)		Hispanos ²		Otros (no hispanos)	
Mortalidad 2003	NÚMERO	TASA	NÚMERO	TASA	NÚMERO	TASA	NÚMERO	TASA	NÚMERO	TASA
Hombres	1,493	1.1	831	0.9	439	3.0	131	1.1	1,356	1.2
Mujeres	2,606	1.6	1,758	1.3	580	3.4	168	1.4	2,430	1.6
Total	4,099	1.4	2,589	1.3	1,019	3.2	299	1.3	3,786	1.4

Fuentes: - Centro Nacional de Estadísticas de Salud: Encuesta Nacional de Entrevistas Sobre la Salud, 2004, e Informe Nacional Sobre Estadísticas Demográficas Informe Final sobre Mortalidad, 2003. Cálculos de la Unidad de Epidemiología y Estadísticas de la American Lung Association.

Notas: 1 Debido al redondeo, los números pueden no sumar los totales exactos.

2 Las tasas de incidencia son por 1,000 habitantes y las tasas de mortalidad ajustadas a la edad son por 100,000 habitantes; ajustadas por edad a la población de los EEUU en el año 2000.

3 Los hispanos no son mutuamente exclusivos de blancos, afroamericanos, asiáticos e isleños del Pacífico, ni de los indígenas norteamericanos y nativos de Alaska. Incluyen todas las razas, aparte de blancos y negros.

4 No incluye a los no hispanos, blancos, ni a los afroamericanos.

Diferencias raciales y étnicas

SEGÚN LOS CENTROS PARA EL CONTROL Y LA PREVENCIÓN DE LAS ENFERMEDADES, la incidencia de asma aumenta con la edad, pero el uso de servicios de atención de la salud es mayor entre los niños más pequeños. Los varones tienen una mayor incidencia de asma y mayores índices de mortalidad comparados con los de las niñas durante toda la niñez. Preocupa todavía más el hecho de que los niños negros no hispanos y puertorriqueños tienen mayores incidencias de asma que los niños blancos no hispanos. Los niños puertorriqueños tienen la mayor incidencia de todos los grupos, un 140 por ciento más que los niños blancos no hispanos, mientras que los niños mexicanos han indicado bajas incidencias. Los niños negros tienen mayores índices de mortalidad que los niños blancos. La disparidad en la mortalidad del asma de niños negros y blancos ha aumentado en años recientes. En la actualidad, los niños indígenas norteamericanos y nativos de Alaska tienen incidencias de asma 25 por ciento mayores y los niños negros, 60 por ciento mayores que los niños blancos. Los niños estadounidenses de origen asiático tienen la menor incidencia de asma. Si bien los datos de incidencia, uso de atención de la salud y mortalidad son indicadores importantes del impacto del asma sobre los niños, los síntomas de asma que no se reconocen o que no son suficientemente fuertes como para causar atención en salas de emergencia u hospitalización igual pueden afectar adversamente la calidad de vida.ⁱⁱⁱ

También se ha expresado preocupación de que el asma pueda estar insuficientemente diagnosticada, especialmente en los niños minoritarios con un acceso más restringido a atención de la salud de alta calidad. Un estudio reciente examinó las diferencias raciales y étnicas entre niños sintomáticos en la adquisición de un diagnóstico de asma, con el propósito de determinar si el asma realmente se diagnostica insuficientemente en los niños de color. Entre los que informaron que tuvieron sibilancias durante el año anterior, el 83 por ciento de los puertorriqueños, el 71 por ciento de los negros no hispanos y el 65 por ciento de los niños estadounidenses de origen mexicano fueron diagnosticados con asma, comparados con el 57 por ciento de los niños blancos no hispanos. Empleando a los niños blancos no hispanos como el grupo de referencia, el riesgo relativo ajustado aproximado de diagnóstico de asma de niños con sibilancias realizado por médicos en el año anterior fue del 1.43 para los niños puertorriqueños, del 1.22 para los niños negros no hispanos y del 1.19 para los niños estadounidenses de origen mexicano. Se informó que los niños minoritarios tenían síntomas

de sibilancias más pronunciados. Incluso después de tener en consideración esta mayor intensidad de los síntomas, los niños en grupos raciales y étnicos minoritarios tenían la misma o una mayor probabilidad de haber informado diagnóstico de asma que los niños blancos no hispanos.^{1v}

Afronorteamericanos

Los afronorteamericanos tienen mayores tasas de asma que todos los demás grupos, con la excepción de los puertorriqueños. En 2004, la tasa de incidencia de asma de los afronorteamericanos fue 11.5 por ciento más elevada que la de los blancos. La tasa de incidencia también fue 81 por ciento más elevada en los afronorteamericanos que en los hispanos, con la excepción de los puertorriqueños. En 2004, unos 4.9 millones de afronorteamericanos habían sido diagnosticados con asma en algún momento de sus vidas, unos 3.5 millones de ellos eran asmáticos y unos 2 millones de ellos dijeron que habían tenido un ataque de asma el año anterior. Los afronorteamericanos también tienen mayores tasas de mortalidad del asma. En 2003, los afronorteamericanos tuvieron una probabilidad casi tres veces mayor de morir de asma que los blancos (3.2 por 100,000, comparados con 1.3 por 100,000, respectivamente).^v

Varios estudios indican diferencias raciales en los servicios de atención de la salud de pacientes con asma. En 2004, los afronorteamericanos tenían una probabilidad tres veces mayor de ser hospitalizados por asma que los blancos y una probabilidad cinco veces mayor de acudir a una sala de emergencia para obtener atención médica.^{vi}

En 2003, los adultos y niños asmáticos en mayor riesgo de ser hospitalizados eran los negros no hispanos. Los datos mostraron que los negros tenían una probabilidad 3.8 mayor de ser internados en un hospital por asma pediátrica y 3.0 veces mayor de ser internados en un hospital por asma adulta, comparados con los blancos no hispanos.^{vii}

Ser negro no hispano parece estar vinculado, independientemente de los bajos ingresos y de los bajos niveles educativos, a un mayor riesgo de mortalidad del asma.^{viii}

Un estudio realizado en 1999 por la Fundación Clínica de Cleveland de pacientes con atención administrada de la salud que fueron hospitalizados por asma halló que los pacientes afronorteamericanos fueron más veces a salas de emergencia por motivos vinculados al asma (el 45.2%) que los pacientes blancos (el 22.4%) en el año posterior a su hospitalización inicial. En ese mismo año, los blancos fueron más veces al consultorio de su médico de atención primaria (el 70.2%) y de especialistas (el 38.8%) por motivos vinculados al asma que los afronorteamericanos, el 47.6 por ciento de los cuales fue al consultorio de un médico de atención primaria y el 27 por ciento de los cuales fue al consultorio de un especialista. La atención a intervalos regulares de un médico de atención primaria o de un especialista en asma puede ayudar a los pacientes a mantener el asma bajo control y a prevenir visitas a la sala de emergencia vinculadas a ataques de asma. Los investigadores de Ohio señalaron en su estudio que es necesario contar con programas educativos para los pacientes afronorteamericanos de bajos ingresos para mejorar la atención del asma.^{ix}

CAMBIO DEL ROSTRO DE LA INVESTIGACIÓN DEL ASMA

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Una posible explicación de esta disparidad puede ser diferencias genéticas entre las razas. Un estudio realizado por el Instituto Nacional del Corazón, los Pulmones y la Sangre identificó varios genes de asma y de reacción a alérgicos, algunos de los cuales pueden ser más comunes entre los afroamericanos.^x

Considérense las diferencias...

- Los afroamericanos representan el 12.1 de la población de los Estados Unidos, pero representan el 25 por ciento de todas las muertes por asma.
- La tasa de asma ajustada a la edad en la población afroamericana (3.2 por 100,000) fue tres veces mayor que la de la población blanca (1.1 por 100,000). En 2003, las mujeres afroamericanas tuvieron la mayor tasa de mortalidad de asma (3.4 por cada 100,000 personas).
- La tasa de asma ajustada a la edad en los hombres afroamericanos fue de 3.0 por 100,000, comparada con la de los hombres blancos, que en 2003 fue del 0.9 por 100,000.
- En 2004, los afroamericanos fueron hospitalizados por asma a una tasa más de tres veces mayor que la de los blancos (33.9, comparada con 10 por 10,000).
- En 2004, la tasa de incidencia de asma de los afroamericanos fue 11.5 por ciento mayor que la de los blancos. Las mujeres afroamericanas también tienen las mayores tasas de incidencia de asma (94 por 1,000) de todos los demás grupos.

Hispanos-latinos

EN 2004, MÁS DE 3.4 MILLONES DE ESTADOUNIDENSES DE ORIGEN HISPANO habían sido diagnosticados con asma en algún momento de su vida. Más de 2.1 millones de estos informaron que eran asmáticos y 1.2 millón de ellos habían tenido un ataque de asma durante el año anterior. Las tasas de incidencia de asma entre los hispanos fueron significativamente menores que las tasas de los negros no hispanos y de los blancos no hispanos.^{xi}

Los estudios sugieren que los puertorriqueños pueden tener mayores tasas de incidencia de asma que los blancos no hispanos y que todos los demás subgrupos hispanos, mientras que los estadounidenses de origen mexicano pueden tener las menores tasas de todos los grupos. Un estudio de más de 3,000 hispanos en Nueva York halló que los puertorriqueños informaron una tasa de incidencia de asma del 13.2 por ciento, comparada con una tasa del 5.3 por ciento entre los dominicanos y otros latinos, incluyendo los mexicanos.

El estudio señaló que las diferencias entre los grupos hispanos no estaban explicadas por ubicación, tamaño de la familia, uso de remedios caseros, nivel educativo o el país en el que completaron su educación.^{xii}

Los niños puertorriqueños tienen la mayor incidencia de asma de todos los grupos, 140 por ciento más elevada que la de los niños blancos no hispanos. Se informó que los niños estadounidenses de origen mexicano tienen bajas tasas de incidencia.^{xiii}

Un estudio reciente comparó las características clínicas vinculadas al asma entre 684 mexicanos y puertorriqueños asmáticos reclutados en las ciudades de San Francisco, Nueva York, Ciudad de México, y Puerto Rico. Los investigadores hallaron que los puertorriqueños asmáticos tenían una función pulmonar más reducida, un mayor riesgo de tener que ir a la sala de emergencia y una mayor duración de los ataques de asma que los mexicanos. Los investigadores también hallaron que los puertorriqueños asmáticos respondieron menos a los medicamentos, como albuterol, que los mexicanos asmáticos.^{xiv}

Otro estudio comparó a los niños con asma en una población de niños en edad escolar en la Ciudad de Nueva York con las mayores tasas de asma y halló que la incidencia de asma era significativamente mayor entre los puertorriqueños, que tenían una mayor frecuencia sintomática y mayores tasas de diagnóstico. En ese entonces, la incidencia de asma en niños puertorriqueños era del 35 por ciento, comparada con el 23 por ciento entre otros niños de Harlem. Si bien todos los niños asmáticos en el estudio de East Harlem parecen ser sensibles a ciertos factores de riesgo en edificios, sólo los niños puertorriqueños con asma parecían ser sensibles a la presencia de roedores en sus edificios. Además, su mayor tasa de ausentismo escolar sugiere problemas con el manejo de rutina del asma que podrían ser resueltos mejorando el manejo médico y con programas para ayudar a los padres a manejar el asma de sus hijos o hacer que el personal de las escuelas los ayude con los medicamentos.^{xv}

Además de altas tasas de incidencia de asma, es posible que los puertorriqueños también tengan mayores tasas de muerte por asma, comparados con otros grupos hispanos, con blancos no hispanos y con negros no hispanos, especialmente en el noreste del país. Según un estudio reciente, los puertorriqueños tenían una tasa de mortalidad ajustada a la edad de 40.9 por millón, seguidos por los estadounidenses de origen cubano (15.8 por millón) y los estadounidenses de origen mexicano (9.2 por millón). Las tasas de muerte entre los blancos no hispanos y los negros no hispanos fueron de 14.7 por millón y 38.1 por millón, respectivamente.^{xvi}

En 2003, 299 hispanos murieron de asma, una tasa de mortalidad ajustada a la edad de 1.3 por 100,000. La tasa de mortalidad de los hispanos ajustada a la edad fue 66 por ciento menor que la tasa de los negros no hispanos, pero casi igual a la tasa de los blancos no hispanos (1.1 por 100,000). Sin embargo, ciertos estudios han sugerido que los puertorriqueños tienen tasas de mortalidad ajustadas a la edad mayores que las de todos los demás grupos hispanos y que las de los blancos no hispanos y de los negros no hispanos.^{xvii} No hay ninguna explicación disponible del hecho que las tasas de mortalidad del asma de los hispanos sean tan diferentes a las de los afroamericanos.

Otros estudios también han demostrado que los latinos tienen una mayor incidencia de asma. Un estudio de los habitantes asmáticos del sudeste de Pensilvania halló que la incidencia entre los niños es mayor en Filadelfia que en los condados suburbanos del sudeste de Pensilvania (13.7% comparado con el 9.1%). Esto es especialmente cierto en la población latina de la ciudad, sobre la que se informó que el 18.1 por ciento de los niños tiene asma, comparado con sólo el 7.3 por ciento de los niños latinos que viven los suburbios.^{xviii}

En 2003, datos mostraron que los hispanos de 65 años de edad y mayores tuvieron las mayores tasas de hospitalización por asma.^{xix}

Al igual que en la comunidad afroamericana, los hispanos también tienen una menor probabilidad que los blancos de obtener atención de la salud y medicina preventiva adecuadas. En un artículo reciente se

dijo que los niños hispanos recibieron menos medicamentos para el asma que los niños blancos después de haberse hecho ajustes por raza, edad, sexo, tipo o carencia de seguro de salud y gravedad de los síntomas de los pacientes y por el número de visitas a profesionales de atención primaria de la salud por asma.^{xx} Los investigadores informaron que, en general, el 94 por ciento de los niños hispanos no había empleado medicamentos preventivos el año anterior, comparado con el 73 por ciento de los niños blancos.

Considérense las diferencias...

- En 2003, los hombres hispanos tuvieron una menor tasa de mortalidad por asma ajustada a la edad, del 1.1 por 100,000 habitantes, que los hombres afronorteamericanos (3.0 por 100,000).
- En 2003, la tasa de mortalidad del asma ajustada a la edad de las mujeres hispanas (1.4 por 100,000 habitantes) fue significativamente inferior a la de las mujeres afronorteamericanas (3.0 por 100,000), pero sólo ligeramente más elevada que la de las mujeres blancas (1.3 por 100,000).
- En general, los hispanos tienen una menor incidencia y menores tasas de mortalidad de asma que los afronorteamericanos o los blancos, pero ciertos estudios han demostrado que los puertorriqueños pueden tener tasas de incidencia de asma más elevadas que las de otros subgrupos hispanos y que las de los blancos no hispanos. Los puertorriqueños también tienen mayores tasas de mortalidad que otros subgrupos hispanos y que los blancos no hispanos y los afronorteamericanos no hispanos. Los niños puertorriqueños tienen la mayor incidencia de todos los grupos, 140 por ciento más elevada que la de los niños blancos no hispanos.
- Es probable que los estadounidenses de origen mexicano tengan las menores tasas de mortalidad y de incidencia de todos los demás grupos, con excepción de los estadounidenses de origen asiático.

Estadounidenses de origen asiático y hawaianos nativos e isleños del Pacífico

HAY DATOS LIMITADOS SOBRE EL ASMA en asiáticos o hawaianos e isleños del Pacífico. Las grandes encuestas nacionales de salud han empezado recientemente a recopilar datos para este grupo, pero debido al tamaño reducido de las muestras, los cálculos no se consideran estadísticamente precisos y no se publican ni se divulgan. Por lo general, los analistas agrupan a los estadounidenses de origen asiático y a los hawaianos nativos e isleños del Pacífico con las poblaciones indígenas norteamericanas en la categoría llamada “Otras razas”.

No obstante, los estados con grandes poblaciones asiáticas o hawaianas nativas, como California y Hawái, pueden ofrecer algunos datos aproximados sobre el asma entre los asiáticos y los isleños del Pacífico.

Según la Encuesta de Entrevistas Sobre la Salud realizada en California en 2003, los estadounidenses de origen asiático tenían una probabilidad significativamente menor de ser diagnosticados con asma que todos los demás grupos raciales o étnicos, con la excepción de los hispanos. Aproximadamente 1 en 9 niños asiáticos (el 11.2%) y 1 en 10 adultos asiáticos (el 9.7%) fueron diagnosticados con asma en algún momento de sus vidas en California. La encuesta también halló que el 10 por ciento de los adultos asiáticos y el 13 por ciento de los adultos hispanos sufren de síntomas de asma, comparados con el 34 por ciento de los adultos indígenas americanos y nativos de Alaska y el 19 por ciento de los adultos blancos.^{xxi}

Otros estudios también han demostrado que los asiáticos tienen una menor incidencia de asma. Un estudio de residentes del sudeste de Pensilvania con asma halló que los latinos son los que tienen la mayor probabilidad de tener asma (el 13.9%), comparados con los afroamericanos (el 12.5%), los blancos (el 8.1%) y los asiáticos el (3.3%).^{xxii}

En Los Angeles, el Departamento de Servicios de Salud patrocinó una encuesta sobre los efectos del asma en los niños del Condado de Los Angeles y halló que los niños asiáticos e isleños del Pacífico (el 8.7%) y los niños hispanos (el 6%) eran los que tenían la menor probabilidad de tener asma, comparados con los afroamericanos (el 16.1%) y los blancos (el 8.95%).^{xxiii}

Según la Encuesta de Salud de Hawái de 2005, los nativos hawaianos tenían una tasa vitalicia de incidencia de asma del 139.8 por 1,000, casi el doble de la de los blancos y mayor que la de ningún otro grupo étnico residente en Hawái. Las mujeres tuvieron mayores tasas que los hombres (100.7 por 1,000, comparadas con 96.5 por 1,000, respectivamente). La encuesta también indicó que entre los subgrupos, los blancos residentes en Hawái tenían las menores tasas vitalicias de incidencia de asma (76.4 por 1,000), seguidos por la comunidad filipina (91.4 por 1,000) y la japonesa (102.3 por 1,000). Un dato alarmante es que el 30 por ciento de los japoneses de 15 a 17 años de edad tenía asma en Hawái, lo que señala la necesidad de que se haga más investigación en esta población específica.^{xxiv}

Indígenas norteamericanos y nativos de Alaska

DEBIDO A SUS PEQUEÑOS NÚMEROS en la población general de Estados Unidos, los datos disponibles de asma entre los indígenas norteamericanos y los nativos de Alaska son limitados. Las grandes encuestas nacionales de salud obtienen datos sobre este grupo, pero debido al pequeño tamaño de las muestras, los cálculos no son estadísticamente precisos. Para poder usar estos datos, los analistas agrupan a los indígenas norteamericanos y los nativos de Alaska con los estadounidenses de origen asiático y los isleños del Pacífico en la categoría titulada “Otras razas”.

Estudios individuales y encuestas realizadas en estados indican que la morbilidad del asma entre los indígenas norteamericanos y los nativos de Alaska puede ser más elevada que la de otros grupos raciales o étnicos. Por ejemplo, según la Encuesta de Entrevistas Sobre la Salud de California realizada en 2003, los indígenas norteamericanos y los nativos de Alaska tenían las mayores tasas de asma vitalicia, comparadas con las de todos los demás grupos raciales y étnicos. La encuesta halló que ligeramente más de 1 en 5 (el 21.7%) de los niños indígena norteamericanos y nativos de Alaska y 1 en 5 (el 18.7%) de los adultos indígena norteamericanos había sido diagnosticado con asma en algún momento de su vida, comparados con 1 en 5 (el 22.8%) de los niños afroamericanos. La encuesta también halló asma diagnosticada en ligeramente menos que 1 en 6 (el 16.4%) de los adultos afroamericanos, 1 en 7 (el 14%) de los niños y adultos blancos, 1 en 8 (el 12.6%) de los niños hispanos, 1 en 11 (el 8.7%) de los adultos hispanos, 1 en 9 (el 11.2%) de los niños asiáticos y 1 en 10 (el 9.7%) de los adultos asiáticos.^{xxv}

Considérense las diferencias...

- No se sabe mucho sobre la morbilidad y la mortalidad del asma entre los indígenas norteamericanos y los nativos de Alaska, pero datos preliminares muestran que este grupo puede tener iguales o mayores tasas de asma que otros grupos raciales.
- Las creencias sobre el asma y los medicamentos del asma tienen un efecto significativo sobre el tratamiento del asma entre los indígenas norteamericanos y nativos de Alaska. Algunos estudios muestran que estas poblaciones pueden mostrarse reacias a emplear medicamentos a largo plazo o que pueden tender a demorar el uso de medicamentos durante episodios por creer que el cuerpo se curará a sí mismo.

Las creencias sobre los medicamentos del asma tienen un efecto significativo sobre el tratamiento de la enfermedad, incluyendo cuándo y con qué frecuencia se toman los medicamentos y el uso de los servicios de atención de la salud. Un estudio entre los pacientes navajos pediátricos de asma halló que la mayoría de las familias se mostraban reacias a emplear medicamentos a largo plazo, especialmente cuando no tenían síntomas. Eso se debe a que consideran que el asma es una serie de episodios agudos en lugar de una enfermedad crónica. Sólo la tercera parte de los participantes (el 34%) informó emplear esteroides inhalados u otros medicamentos antiinflamatorios. Debido a la percepción de que los broncodilatadores tenían un efecto inmediato, esos eran los medicamentos más empleados por los que respondieron a la encuesta. El uso de medicamentos a menudo se evitaba o se demoraba durante los episodios porque se esperaba que el cuerpo se “curara” a sí mismo. Los investigadores también hallaron que los participantes consideraban que los medicamentos nebulizados que sólo se hallaban disponibles en salas de emergencia eran la terapia más fuerte disponible. A causa de ello, se halló que las visitas a la sala de emergencia eran comunes entre los que respondieron a la encuesta (el 79%), como también lo eran las internaciones en hospitales (el 57%).^{xxvi}

Un estudio reciente halló que los síntomas respiratorios crónicos eran muy comunes entre los niños nativos de Alaska. El 40 por ciento de 377 niños nativos de Alaska informó tener enfermedades respiratorias crónicas; el 7.4 por ciento informó tener asma diagnosticada por un médico, el 11.4 por ciento indicó tener síntomas similares a los del asma sin un diagnóstico de asma y el 21.5 por ciento informó tener tos crónica productiva sin asma. La tos crónica productiva es un trastorno respiratorio no asmático significativo en esta población. Los diferentes patrones de enfermedades respiratorias en esta región pueden ayudar a aclarar los factores de riesgo específicos de asma y bronquitis crónica en niños.^{xxvii}

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Lung Disease Data at a Glance

Chronic Obstructive Pulmonary Disease (COPD)

- Chronic Obstructive Pulmonary Disease (COPD) refers to emphysema and chronic bronchitis characterized by a blocking of airflow in and out of the lung. In 2004, approximately 11.4 million American adults had COPD. About 3.6 million people had emphysema and 9.0 million had chronic bronchitis. Both conditions can coexist with COPD.
- COPD is the fourth leading cause of death in the United States, claiming 122,283 American lives in 2003. It is the only disease-related cause of death among the top five that is on the rise. Heart disease, cancer and stroke are all on the decline.
- Unlike other lung diseases, White Americans in the United States are more prone to COPD than other racial or ethnic groups. Not only are they more at risk to develop the disease, but they are also more likely to die from it.
- African Americans are less likely to die from COPD, yet African Americans with COPD have more emergency room visits than Whites who have smoked cigarettes over a longer period of time and are heavier smokers.
- The chronic bronchitis prevalence rate for Hispanics (25.0 per 1,000) was significantly lower than for both Whites (44.1 per 1,000) and African Americans (36.4 per 1,000) in 2004.
- There are limited data available on COPD among Asians and Native Hawaiians/Pacific Islanders, but some research suggests that Asians may have a genetic component that reduces their risk of COPD.
- There are limited data available on COPD among Native Americans and Alaska Natives. Some data show that American Indians had similar but slightly higher COPD hospital admission rates compared to Hispanics in 2003, but much lower hospital rates than African Americans and Whites.

Chronic Obstructive Pulmonary Disease (COPD)

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) is a term that refers to emphysema and chronic bronchitis, which are the most common forms of COPD and frequently coexist. While asthma is not included in this definition of COPD, people with asthma may develop COPD over time.

EMPHYSEMA causes irreversible lung damage. The walls between the air sacs in the lungs lose their ability to stretch and recoil. They become weakened and break. Lung tissue is no longer elastic and stale air becomes trapped in the air sacs. The loss of lung substance makes the exchange of oxygen and carbon dioxide more difficult. Also, the support of the airways is lost, which results in the blocking of airflow. Patients with emphysema usually have shortness of breath and develop cough and sputum during a respiratory infection or in later stages of the illness. In 2004, about 3.6 million people in the United States reported having emphysema.

CHRONIC BRONCHITIS is less well known than emphysema but is much more common. In 2004, it was estimated that 9.0 million Americans reported a physician diagnosis of the disease within that year. In clinical terms, chronic bronchitis is the presence of a chronic productive cough for three months within the span of two years, provided that other causes of chronic cough have been ruled out. Like emphysema, people who suffer from chronic bronchitis have obstructed breathing, when the airways of the lungs become inflamed and clogged with mucus, often in response to environmental irritants. Patients with chronic bronchitis usually have cough and sputum for many years before they develop shortness of breath. Both emphysema and chronic bronchitis can coexist.

COPD is easily diagnosed with pulmonary function tests such as spirometry, yet the disease still remains underdiagnosed. In fact, only half of the estimated 24 million U.S. adults with evidence of impaired lung function have reported physician-diagnosed COPD.⁹¹ This is probably due to the fact that COPD can be present with or without serious physical problems or symptoms. The disease is often silent and unrecognized until half a person's lung function is morbidly impaired. COPD lung damage is irreversible, but there are treatments that can improve a patient's quality of life.

COPD is the fourth leading cause of death in the United States claiming 122,283 Americans in 2003. In addition, 2003 marked the fourth year in which the number of women dying from COPD surpassed the number of men dying from COPD.

Smoking is the main cause of COPD, but other risk factors, including air pollution, occupational exposures and secondhand smoke, can worsen the condition. Heredity also plays a role in patients with alpha-1 antitrypsin deficiency, which accounts for 5 percent of emphysema patients. An estimated 100,000 Americans in the U.S. have alpha-1 antitrypsin deficiency emphysema.⁹²

Table 2 displays statistics on COPD in adults, by race/ethnicity and gender.

Table 2: COPD Current Adult Prevalence and Mortality^{1,2,5}										
	Total⁴		Non-Hispanic White		Non-Hispanic Black		Hispanic²		Non-Hispanic All Others³	
Prevalence 2004	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
Chronic Bronchitis										
Males	2,756,777	26.6	2,289,987	31.0	204,902	19.0	196,167	14.3	65,721	13.0
Females	6,290,704	56.3	5,012,119	62.3	694,936	51.5	473,192	36.3	110,457	23.5
Total	9,047,481	42.0	7,302,106	47.3	899,838	37.1	669,359	25.0	176,178	18.1
Emphysema										
Males	1,871,241	18.1	1,635,993	22.1	135,837	12.6	70,359	5.1	29,052	5.8
Females	1,704,443	15.3	1,450,093	18.0	102,897	7.6	84,952	6.5	66,501	14.1
Total	3,575,684	16.6	3,086,086	20.0	238,734	9.8	155,311	5.8	95,553	9.8
	Total		Non-Hispanic White		Non-Hispanic Black		Hispanic²		Non-Hispanic	
Mortality 2003	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
COPD										
Males	59,221	51.2	52,762	54.5	3,763	42.1	1,566	26.0	57,492	52.5
Females	63,062	36.2	58,190	40.5	2,850	18.9	1,309	14.4	61,618	37.5
Total	122,283	41.9	110,952	45.9	6,613	27.3	2,875	18.9	119,110	43.3

Source: - National Center for Health Statistics, National Vital Statistics Report, Deaths Final Data 2003, Vol. 54(13), April 2006. National Health Interview Survey, 2004. Calculations by the Epidemiology and Statistics Unit of the American Lung Association.

- Notes:
- 1 Rates are per 100,000 population and age-adjusted mortality rates are per 100,000 population.
 - 2 Hispanics are not mutually exclusive from Whites, African Americans, Asians/Pacific Islanders and American Indians/Alaska Natives.
 - 3 Does not include non-Hispanic Whites and Blacks.
 - 4 COPD totals take into account the overlap of persons with both diseases. Therefore, COPD totals will be lower than the sum of chronic bronchitis and emphysema estimates.
 - 5 Chronic bronchitis estimates indicate period prevalence and emphysema estimates represent lifetime prevalence.

CHANGING THE FACE OF COPD RESEARCH

Guy SooHoo, M.D., M.P.H. and Yun M. Shim, M.D.

Guy SooHoo, M.D., M.P.H. has been a volunteer with the American Lung Association of California since 1992 in positions of leadership at both the state and local levels. He first became involved with the Lung Association after being part of a Lung Association-sponsored Research Grant to support work in the field of non-invasive ventilation in patients with COPD.

The muscles involved in breathing are impaired in people with COPD and get tired easily. Dr. SooHoo has discovered ways to help COPD patients breathe more comfortably and with less effort.

“The American Lung Association funds researchers in their early and middle years, whose work serves as building blocks to larger studies,” says Dr. SooHoo, a native of Gallup, NM and Director of the Medical Intensive Care Unit at the West Los Angeles Healthcare Center of the VA Greater Los Angeles Healthcare System.

Yun M. Shim, M.D. is an American Lung Association 2006-2007 grant recipient working to identify opportunities to create effective COPD therapies based on the cause of illness. Specifically, Dr. Shim is trying to establish the relationship between leukotrienes (fat molecules utilized by the body in immune response) and the risk of developing COPD from cigarette exposure. Specifically, he is investigating the impact of inflammation (leukotrienes and interleukin-13) in patients with emphysema, chronic bronchitis, smokers without lung problems and in nonsmokers without lung problems to see how they differ. The goal of Dr. Shim’s study is to act as a foundation for future populations-based studies that could uncover ways to treat COPD. For more information on the American Lung Association Research Program, visit www.lungusa.org.

Racial/Ethnic Differences

African Americans

THE AGE-ADJUSTED COPD MORTALITY RATE in African Americans was 27.3 per 100,000 in 2003, which was 60 percent of the rate among non-Hispanic Whites. African American men had an age-adjusted death rate that was 23 percent less than that in non-Hispanic White men, while African American women were half as likely to die from COPD as were non-Hispanic White women.

The prevalence of COPD among African Americans is lower than that among Whites. In 2004, almost 3.1 million non-Hispanic Whites (18.0 per 1,000) and over 238,000 African Americans (9.0 per 1,000) had emphysema. Emphysema prevalence rates reported between Whites and African Americans were significantly different. In addition, gender may influence the prevalence of emphysema. For example, in the African American population, men had a higher rate of emphysema than women (12.6 versus 7.6 persons per 1,000, respectively).⁹³

Historically, African Americans have had lower chronic bronchitis prevalence rates than Whites. In 2002, chronic bronchitis rates among African Americans were slightly higher than the rates for Whites for the first time. The difference between rates was not statistically significant. In 2003, the rates reverted to their original pattern. In 2004, 7.3 million Whites (47.3 per 1,000) and almost 900,000 African Americans (37.1 per 1,000) had chronic bronchitis. Women of all races had higher rates of chronic bronchitis than same-race males.⁹⁴

Although African Americans have lower COPD mortality and prevalence rates than Whites, they tend to have higher rates of hospitalization and emergency room visits due to COPD. A recent study found that even though African American COPD patients started smoking later in life and smoked fewer total pack-years than White patients, their rates of airflow limitation were identical, with African Americans presenting similar disease severity at an early age. Although more research is needed, the results of the study led the authors to suggest that some African Americans may be highly susceptible to cigarette smoking and acquire more severe obstructive lung disease for a given degree of smoking than susceptible Whites.⁹⁵

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Consider the Differences...

- African Americans are less likely to have or die from COPD, yet they have more emergency room visits and similar COPD disease severity as Whites who are heavier and long-term smokers.

- In 2004, 7.3 million non-Hispanic Whites (47.3 per 1,000) and almost 900,000 African Americans (37.1 per 1,000) had chronic bronchitis. Almost 3.1 million non-Hispanic Whites (20.0 per 1,000) and over 238,000 African Americans (9.8 per 1,000) had emphysema.

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Hispanics/Latinos

IN 2003, 2,875 HISPANICS DIED OF COPD, a mortality rate of 18.9 per 100,000. Rates of COPD among Hispanics were significantly lower than in other ethnic groups. More than 155,000 Hispanics (5.8 per 1,000) have been diagnosed with emphysema. The prevalence rate among Hispanic Americans was much lower than in Whites (20.0 per 1,000) and African Americans (9.8 per 1,000). Close to 700,000 Hispanic Americans (25.0 per 1,000 persons) were diagnosed with chronic bronchitis in 2004.⁹⁶

Occupational exposure is one risk factor of COPD. A recent article found that Mexican Americans who worked in office building services, agriculture, construction and personal services (hairdressers and cosmetologists) were two to four times more likely to develop COPD than those not working in those industries.⁹⁷

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Consider the Differences...

- The chronic bronchitis prevalence rate seen in Hispanics (25.0 per 1,000) was significantly lower than that of Whites (47.3 per 1,000) and African Americans (37.1 per 1,000).

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Asian Americans and Native Hawaiians/Pacific Islanders

THERE ARE LIMITED DATA AVAILABLE on COPD among Asian Americans or Native Hawaiians/Pacific Islanders. Major national health surveys recently began collecting data for this group, but because of small sample sizes, estimates are not considered statistically accurate and are not published. However, analysts usually group the Asian American/Pacific Islander population with Native American into the category called Other Races. The category “Non-Hispanic All Others” refers to these groups.

According to a recent article, Asians may have a genetic component that reduces their risk of COPD regardless of their smoking habits. Cigarette smoking is a major risk factor for developing COPD. Chinese Americans have lower rates of smoking than other ethnic groups and studies have shown that COPD is not common in this group. However, COPD is also low in China, despite the fact that close to one-third of the population smokes.⁹⁸ In fact, in 2003, Asians were 60 percent less likely to be hospitalized for COPD than non-Hispanic Whites. However, the hospitalization rate of admission for COPD was similar among non-Hispanic Whites (1.0), non-Hispanic Blacks (1.0) and Hispanics (0.85).⁹⁹

The article also stated that in Hawaii, the prevalence of COPD in Japanese Americans smoking more than 20 cigarettes daily was 7.9 percent compared to 16.7 percent in a White group. More studies are needed on different ethnic groups to further explore these differences.¹⁰⁰

American Indians/Alaska Natives

Due to their small numbers in the United States population, there are limited data available on COPD among Native Americans/Alaska Natives. Major national health surveys collect data on this group, but because of small sample sizes, estimates are not statistically accurate. In order to use this data, analysts group

Native Americans/Alaska Natives with Asian Americans/Pacific Islanders in the category called Other Races. The category “Non-Hispanic All Others” refers to these groups.

Lung Disease Data at a Glance

Cystic Fibrosis (CF)

- Approximately 30,000 Americans have cystic fibrosis (CF) and approximately 1,000 new cases are diagnosed each year. It occurs equally in male and female babies and affects nearly every race.
- Cystic fibrosis is more common among White babies – it occurs in roughly one in every 3,200 live White births, compared to one in every 3,900 live births of all Americans.
- One in 14,000 to 17,000 African Americans and one in 11,500 Hispanics have cystic fibrosis. Asian Americans are least likely to have the disease, as only one in 25,500 have cystic fibrosis. Native Americans have the second highest incidence rate behind Whites (1 in 10,500).
- Cystic fibrosis is a genetically transmitted disease.

Cystic Fibrosis (CF)

CYSTIC FIBROSIS (CF) is a lifelong, hereditary disease that causes thick, sticky mucus to form in the lungs, pancreas and other organs. In the lungs, this mucus tends to block the airways, causing lung damage and making breathing difficult. In the pancreas, it clogs the pathways leading to the intestines, interfering with the digestive processes that help break down and absorb food.

Approximately 30,000 Americans have CF and there are approximately 1,000 new cases diagnosed each year. It occurs equally in males and females and affects nearly every race. Cystic fibrosis is more common among White babies – it occurs in roughly one in every 3,200 live White births, compared to one in every 3,900 live births of all Americans. More than 80 percent of patients are diagnosed by age of three, and nearly 10 percent of newly diagnosed cases are aged 18 or older.¹⁰¹

Although CF begins at conception, symptoms may not appear for several years. Diagnosis is sometimes delayed for decades because of the mildness of the symptoms or failure to recognize them. Only about 10 to 15 percent of babies with cystic fibrosis have symptoms at birth. Typical symptoms include:

- wheezing,
- persistent cough and excessive mucus,
- repeated bouts of pneumonia,
- abnormal bowel movements,
- salty-tasting skin (which parents often notice when they kiss their child),
- failure to gain weight despite a good appetite,
- swollen belly accompanied by abdominal gas and discomfort and
- broadening of the fingertips and toes.

Diagnosis for CF is confirmed by measuring the salt content in sweat and testing blood samples for the cystic fibrosis gene.

More than 10 million Americans are unknowing, symptomless carriers of the defective cystic fibrosis gene. An individual must inherit a defective gene from each parent to have cystic fibrosis. Each time two carriers of the defective gene conceive, there is a 25 percent chance that their child will have cystic fibrosis; a 50 percent chance that the child will be a carrier of the gene and a 25 percent chance that the child will be a non-carrier. The odds remain the same with each child.¹⁰²

In 2003, 451 Americans died of cystic fibrosis.¹⁰³ Treatment of the disease has improved substantially over the past 25 years. The median age of survival in 2005 was nearly 37 years compared to 25 years in 1985, 14 years in 1969 and 5 years in 1955.¹⁰⁴ Much of this demonstrated improvement in survival is due to fewer lung complications. Although there is still no cure for cystic fibrosis, a variety of treatments can ease its symptoms. Options include physical or pulmonary therapy (draining of the lungs), exercises to help loosen mucus and stimulate coughing and medications, such as bronchodilators, that improve the passage of air into the lungs. Mucus-thinning medications and antibiotics have also shown to ease symptoms and improve prognosis.

Today, more than 40 percent of the cystic fibrosis population is aged 18 or older. With the advances in treatment, however, adults with cystic fibrosis experience additional health challenges including CF-related diabetes, osteoporosis and male infertility.¹⁰⁵

A cure for CF is now believed to be possible. It is hoped that a normal gene can be introduced into lung cells. The specific gene responsible for the disease was identified in 1989 and since then, more than 600 mutations and DNA sequence variations have been identified in the cystic fibrosis transmembrane conductance regulator (CFTR) gene. The delta F508 mutation is the most common and is found in almost all racial and ethnic groups. There are about 15 to 20 other “common” mutations, which account for 2 to 15 percent of CF alleles or genes depending on the ethnicity of the patient group studied. Most of the remaining mutations are rare.¹⁰⁶

Genetic testing is available for CF but it is not commonly used and only has a detection rate of 70 to 75 percent of potential defective genes. It does not show all the mutations. Newborn and prenatal screening tests are also available. Theoretically, gene therapy is possible – delivering a “healthy” gene to the victim to replace the defective one.

Recently, the Centers for Disease Control and Prevention recommended that all states should consider routine screening for CF in all newborns. Most people with cystic fibrosis can lead active lives – depending upon the severity of their disease. Some environmental factors in daily life can damage lung health. For instance, secondhand smoke is particularly harmful to people with cystic fibrosis. Not smoking and keeping the environment smokefree are two ways to help keep airways healthier.¹⁰⁷

Racial/Ethnic Differences

African Americans

ONE IN 14,000 to 17,000 African Americans has cystic fibrosis compared to one in 3,200 Whites.¹⁰⁸ The delta F508 mutation accounts for 48 percent of African American cystic fibrosis alleles. This is compared to 70 percent in Whites. According to the American Society of Human Genetics, genetic tests can detect about 75 percent of Delta F508 and other common mutations in African Americans.¹⁰⁹ Of the 451 Americans who died of cystic fibrosis in 2003, only 25 were African American or Black.¹¹⁰

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Consider the Differences...

- Of the 22,714 patients in the Cystic Fibrosis Foundation Registry, 95.3 percent are White compared with 6.7 percent Hispanic and 4.0 percent African American. Hispanics may describe themselves as being of any race.
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Hispanics/Latinos

ONE IN 11,500 HISPANICS HAS CYSTIC FIBROSIS, compared to one in 3,200 Whites.¹¹¹ The delta F508 mutation accounts for 46 percent of Hispanic cystic fibrosis alleles. Despite having a relatively high incidence, available genetic tests only detect 57 percent of cystic fibrosis mutations among Hispanics.¹¹²

Asian Americans and Native Hawaiians/Pacific Islanders

IT IS NOT KNOWN WHY, but Asian Americans, when compared to other racial/ethnic groups, are least likely to have cystic fibrosis. Only one in 25,500 Asian Americans has cystic fibrosis.¹¹³ The delta F508 mutation is found in only 30 percent of Asian American cystic fibrosis patients. According to the American Society of Human Genetics, genetic tests have a sensitivity of 30 percent in Asians, which is a relatively weak detection rate.¹¹⁴

Native Americans/Alaska Natives

NATIVE AMERICANS HAVE THE SECOND HIGHEST INCIDENCE RATES of cystic fibrosis. One in 10,500 Native Americans has cystic fibrosis, compared to one in 3,200 Whites.¹¹⁵ The Delta F508 mutation has not been found in any Native American cystic fibrosis patient. According to the American Society of Human Genetics, genetic tests can detect about 94 percent of those mutations found in Native Americans.¹¹⁶

Recent surveys conducted on specific Native American Indian populations found even higher incidences: 1 in 3,970 in the Pueblo Indian people and 1 in 1,580 among the Zuni Indians.¹¹⁷

Lung Disease Data at a Glance

HIV/AIDS

- Individuals of color have made up 61 percent of all AIDS cases since 1981, when the epidemic began.
- In the United States, African Americans represented half (49 percent) of all HIV/AIDS diagnoses in 2005; Whites accounted for 31 percent.
- African Americans account for 42 percent of all AIDS cases diagnosed since the beginning of the HIV/AIDS epidemic
- At the end of 2005, 185,988 African Americans were living with AIDS.
- In 2005, 6,782 (18%) of the HIV/AIDS cases were among Hispanics.
- By the end of 2005, 78,054 Hispanics were living with AIDS (19 % of all AIDS cases).
- By the end of 2005, 4,276 Asian/Pacific Islanders were living with AIDS (less than 1% of all AIDS cases).
- The number of AIDS cases among American Indians/Alaska Natives increased 10 percent between 2001 and 2005, but they represent less than 1 percent of AIDS cases.
- At the end of 2005, 1,581 American Indians/Alaska Natives were living with AIDS.
- A person infected with both HIV and TB has a 10 percent chance per year of developing active TB compared to a 10 percent lifetime chance in people infected with TB without HIV.

HIV/AIDS

HUMAN IMMUNODEFICIENCY VIRUS (HIV) is the virus that causes acquired immunodeficiency syndrome (AIDS). HIV kills an important kind of white blood cell called the CD4 T-lymphocyte that is necessary for the human immune system to function properly. As these cells die off the body becomes more and more vulnerable to other diseases. When CD4 cells are severely depleted, pathogenic (germs that ordinarily cause disease) and non-pathogenic germs can invade the body and cause infections.

The lung is a major target of infection in HIV and AIDS patients. Some of the most common lung diseases seen in HIV and AIDS patients are *pneumocystis carinii pneumonia*, tuberculosis, *mycobacterium avium* complex, fungal infections, and viral and bacterial pneumonia.

Lung Disease and AIDS

- **PNEUMOCYSTIS CARINII PNEUMONIA** is the first sign of illness in more than half of all persons with AIDS in the United States. Without preventive medicine, over 80 percent of people infected with both TB and HIV will likely get *Pneumocystis carinii pneumonia*. However, it can be successfully prevented and treated.¹¹⁸
- **TUBERCULOSIS (TB)** is caused by the bacillus *Mycobacterium tuberculosis*. The AIDS epidemic was a major contributing factor in the increased number of TB cases in the early 1990s in the United States. An individual who is infected with both HIV and TB has a 10 percent chance per year of developing active TB compared to a 10 percent lifetime chance for people infected with TB without HIV.¹¹⁹
- **MYCOBACTERIUM AVIUM COMPLEX (MAC)** afflicts 20 to up to 30 percent of HIV-infected persons. MAC bacteria exist throughout the environment but rarely cause illness in healthy people. MAC is a group of germs that attacks a body that has a severely impaired immune system.¹²⁰ In the presence of HIV, MAC causes lung disease, anemia and swollen lymph nodes. It also causes hepatitis and other serious problems.
- **FUNGAL INFECTIONS** such as candidiasis may cause illness in the non-AIDS population, however these infections are more common, severe and difficult to treat in HIV/AIDS patients.
- **VIRAL AND BACTERIAL PNEUMONIA** are easily contracted by persons with HIV and AIDS. Major causes of viral pneumonia in persons infected with HIV/AIDS are members of the herpes virus family, which can be resistant to treatment. However, bacterial pneumonia can also be caused by various bacteria strains such as *Haemophilus influenzae*, which are easily treated with antibiotics.

Usually it takes many years for HIV to weaken the body's immune system to the point of AIDS diagnosis. A normal healthy adult has between 600 and 1,200 CD4 cells in circulation. However, someone with HIV may have fewer. If the CD4 cell count drops to 200 or less, the person is at a much greater risk of contracting opportunistic infections. HIV medications and prophylactic antibiotics will be prescribed to help prevent these infections.

Anti-HIV drugs are available to help people with HIV infection live longer and healthier lives. Even when a person already has AIDS, these drugs can still help. Combinations of these powerful medicines work

very well, but they often have serious side effects, such as vomiting, diarrhea and fatigue. People with HIV must take these drugs every day for the rest of their lives.

Currently, researchers are conducting a phase III trial on an experimental AIDS vaccine. Unfortunately, initial results suggest that the vaccine failed to protect high-risk people in general. However, it seems that African American and Asian volunteers produced higher levels of antibodies against HIV than White and Hispanic volunteers.¹²¹ Unfortunately, results from a nationwide study by the Agency for Healthcare Research and Scientific Affairs and Quality reported that African American and Hispanic HIV patients are only about half as likely as non-Hispanic Whites to participate in clinical trials of medications designed to slow the development of the disease.¹²²

AIDS is a worldwide epidemic. Most cases are in Africa, but the disease is spreading most rapidly in Eastern Europe and Asia. In the United States, HIV/AIDS is distributed unevenly in communities of color. Since the epidemic began in 1981, racial and ethnic minority populations have constituted 61 percent of AIDS cases. Injection drug use is a major factor in the spread of HIV in minority communities. Other factors contributing to the spread include homosexual and heterosexual contact transmission.^{123,124}

Table 3 displays HIV/AIDS statistics among racial/ethnic groups in 2005 in the United States.

Table 3: HIV/AIDS Incidence, Prevalence and Mortality						
	Total ²	White, Non-Hispanic	Black, Non-Hispanic	Hispanic ⁴	Asian American/Pacific Islander	American Indian/Alaska Native
HIV/AIDS Diagnoses (2005) ¹	37,331	11,559	18,121	6,782	417	195
2004 cases that progressed to AIDS ≥1 year after diagnosis of HIV infection	21,178	6,675	10,485	3,577	194	110
2004 cases that progressed to AIDS ≤1 year of HIV infection	13,795	3,953	6,890	2,661	155	78
AIDS Diagnoses (2005) ^{3,5}	40608	11,780	20,187	7,676	483	182
Adult or Adolescent Males	29,776	10,027	13,048	5,949	389	137
Adult or Adolescent Females	10,774	1,747	7,093	1,714	92	45
Children under 13 Years	68	6	46	13	1	0
Cumulative through 2005	952,629	385,537	397,548	155,179	7,659	3,238
AIDS Deaths (2005) ⁵	16,316	5,006	8,562	2,444	97	81
Cumulative through 2005	530,756	235,879	211,559	77,125	3,383	1,657
Persons Living with AIDS (2005)	421,873	149,658	185,988	78,054	4,276	1,581
Adult or Adolescent Males	322,125	130,464	123,803	61,416	3,556	1,193
Adult or Adolescent Females	95,959	18,641	59,689	15,953	700	375
Children under 13 Years	3,787	551	2,497	686	20	13

Source: - Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report, Cases of HIV Infection and AIDS in the United States and Dependent Areas, 2005. Vol. 17. Revised June 2007.

- Notes:
- 1 Based on 33 states with confidential name-based HIV infection reporting.
 - 2 Values in each row do not sum to the row total as row totals were calculated independently of the values for the subpopulations.
 - 3 AIDS diagnosis and age group/sex breakdowns were based on different point estimates.
 - 4 Hispanics can be of any race.
 - 5 Data is for 50 States and District of Columbia.

Racial/Ethnic Differences

African Americans

IN THE UNITED STATES, even though 12.1 percent of the population is African American, they account for 47 percent of people living with HIV/AIDS.¹²⁵

In the United States, African Americans represented almost half (49%) of all HIV/AIDS cases in 2005. Of the 17,375 HIV infections diagnosed among African Americans in 2004, 40 percent developed into AIDS within 12 months after diagnosis of HIV infection.¹²⁶

African Americans accounted for 397,548 (42%) of the 952,629 estimated AIDS cases diagnosed since the beginning of the epidemic. Between 2001 and 2005, AIDS incidence increased among African Americans by 4 percent.¹²⁷

In 2005, African Americans accounted for about 20,187 (50%) of the 40,608 estimated new AIDS cases diagnosed, a case rate of 54.1 per 100,000. Non-Hispanic Whites accounted for 11,780 (29%) of cases.¹²⁸

African American men are twice as likely to be diagnosed with AIDS as African American females. In 2005, women accounted for a one-fourth of new AIDS cases and 18 percent of new AIDS cases occurred in women and children of African American descent.¹²⁹

HIV/AIDS is the seventh leading cause of death among African Americans and the leading cause of death among African American women ages 25 to 34. Up until 2005, the percentage of deaths due to the AIDS virus since the start of the epidemic was highest in non-Hispanic Whites (44.5%); African Americans represent 40 percent.¹³⁰

At the end of 2005, 185,988 African Americans were living with AIDS, accounting for 44 percent of all AIDS cases in the United States.¹³¹

Race and ethnicity are not, in themselves, risk factors for HIV infection. According to the CDC, African Americans are more likely to have multiple HIV risk factors, such as poverty, denial and discrimination, partners at risk, substance abuse and sexually transmitted diseases.¹³²

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Consider the Differences...

- In 2005, the AIDS case rate of African Americans was nine times greater than the rate reported among non-Hispanic Whites (54.1 per 100,000 vs. 5.9 per 100,000).
 - In 2005, the rates of new AIDS diagnoses for minority populations ranged from 54.1 per 100,000 for African Americans to 3.6 per 100,000 for Asians/Pacific Islanders.
-

Hispanics /Latinos

(The following information and statistics for Hispanics/Latinos, Asian Americans and Native Hawaiians/Pacific Islanders is derived from the Centers for Disease Control's HIV/AIDS Surveillance Report entitled "Cases of HIV Infection and AIDS in the United States and Dependent Areas, 2005". Revised June 2007 except where noted otherwise.)

In 2005, 6,782 (19%) of the 37,331 HIV/AIDS diagnoses occurred among Hispanics. Hispanics with HIV were more likely than Whites and African Americans to have their condition progress to AIDS within 12 months of diagnosis. In 2005, 39 percent of HIV cases in Hispanics progressed to AIDS within 12 months after diagnosis.

In 2005, Hispanics accounted for 19 percent of the total number of new U.S. AIDS cases reported that year (7,676 out of 40,608 cases). The AIDS incidence rate per 100,000 persons among Hispanics was 18.0, which was more than three times the rate for Whites (5.9 per 100,000), but three times lower than the rate for African Americans (54.1 per 100,000). Hispanic men are over three times more likely to have AIDS than Hispanic women.

Hispanics represent 14.5 percent of the 530,756 deaths due to AIDS since the start of the epidemic. In 2005, 2,444 Hispanics died from AIDS.

At the end of 2005, 78,054 Hispanics were living with AIDS, representing 19 percent of all AIDS cases.

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Consider the Differences...

- Hispanics with HIV were more likely than Whites and African Americans to have their condition progress to AIDS within 12 months after diagnosis.
 - The AIDS incidence rate among Hispanics was 18 per 100,000, which was more than three times the rate for Whites (5.9 per 100,000) but three times lower than the rate for African Americans (54.1 per 100,000).
-

Asian Americans and Native Hawaiians/Pacific Islanders

ASIAN AMERICANS/PACIFIC ISLANDERS represented less than 1 percent of all HIV/AIDS diagnosed in 2005. Of the 350 HIV infections among Asian Americans/Pacific Islanders in 2004, about 44 percent developed AIDS within 12 months of their HIV diagnosis.

Although Asian Americans/Pacific Islanders had the lowest case rate of AIDS (3.6 per 100,000) compared to all other minority groups in 2005, the number of AIDS cases in this group actually increased 29 percent between 2001 and 2005.

Since the beginning of the epidemic, an estimated 7,659 AIDS cases have been diagnosed in the Asian American/Pacific Islander population. In 2005, Asian/Pacific Islanders accounted for about 483 (1.2%) of all AIDS cases.

Asian American/Pacific Islander men were 4.5 times more likely to be diagnosed with AIDS than Asian American/Pacific Islander women.

In 2005, only 97 Asian Americans/Pacific Islanders died of AIDS, representing less than 1 percent of all AIDS fatalities in 2005.

At the end of 2005, 4,276 Asian Americans/Pacific Islanders were living with AIDS, therefore this minority group accounted for approximately 1 percent of all persons living with AIDS in that year.

As of December 2005, a cumulative total of 359 AIDS cases in Hawaiians and Pacific Islanders had been reported to the Hawaiian Department of Health's Hawaii HIV/AIDS Surveillance Program. Native Hawaiian and Pacific Islander cases made up 12.6 percent of all AIDS cases reported to the surveillance program since the beginning of the epidemic. Rates do not appear to be disproportionately high as 12.1 percent of the population of Hawaii is of Hawaiian or Pacific Islander descent.

Of the 359 cases reported, 313 (87.2%) were Hawaiian or part Hawaiian; 25 (7.0%) were Samoan; 5 (1.4%) were Marshallese; 5 (1.4 percent) were Micronesian; and 11 (3.1%) were Pacific Islander. The death rate of AIDS is slightly higher in Hawaiians and Pacific Islanders than all other populations living in Hawaii (58.8% vs. 53.5%). Males accounted for 306 (85.2%) while females accounted for 53 (14.8%) of the 359 total cases in Hawaiians and Pacific Islanders. While these numbers follow the differential trend between genders seen throughout the U.S. population, significantly more AIDS cases were observed in females of Hawaiian or Pacific Islander descent than in females of other ethnicity living in Hawaii (14.8% vs. 6.9%).¹³³

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Consider the Differences...

- In 2005, Asian Americans/Pacific Islanders had the lowest rates of AIDS diagnosis compared to all other racial or ethnic groups (3.6 per 100,000).
 - Asian Americans/Pacific Islanders have seen the largest increase in the number of cases recently as between 2001 and 2005 the number of cases increased 29 percent.
-

American Indians/Alaska Natives

AMERICAN INDIANS/ALASKA NATIVES represented about 1 percent of all HIV/AIDS diagnoses in 2005. In addition, in 2004 over 41 percent of HIV cases in American Indians progressed to AIDS within 12 months.¹³⁴

The number of AIDS cases among American Indians/Alaska Natives has increased 10 percent between 2001 and 2005. In 2005, American Indians/Alaska Natives had a case rate of 7.4 per 100,000 persons.¹³⁵

In 2005, 81 American Indians/Alaska Natives died of AIDS, representing less than 1 percent of all AIDS deaths in the U.S.¹³⁶

At the end of 2005, 1,581 American Indians/Alaska Natives were living with AIDS.¹³⁷

LGBT Community

HIV was first recognized in the male gay community over 20 years ago, which initially led many people to think of it mistakenly as a “gay disease.” As numbers of heterosexual people infected with HIV/AIDS continue to rise, this misconception has faded, although discrimination against gay men on the grounds that they are associated with HIV/AIDS still persists. Today, when most health experts talk about prevention for gay men, they focus on groups that have traditionally been hard to reach with safer-sex information: young gay men and gay men of color. From 2001 through 2005, the estimated number of HIV/AIDS cases increased among men who have sex with men. Of the estimated 341,524 male adults and adolescents living with HIV/AIDS in 2005, 61 percent had been exposed through male-to-male sexual contact. Thirteen percent had been exposed through high-risk heterosexual contact. Of the 126,964 estimated female adults and adolescents living with HIV/AIDS, 72 percent had been exposed through high-risk sexual contact.¹³⁸

Lung Disease Data at a Glance

Influenza and Pneumonia

- About 10 to 20 percent of the U.S. population gets sick with influenza, also commonly called the flu, each year.
- Each year, approximately 226,000 people in the U.S. are hospitalized with complications from influenza and an average of 36,000 die from the virus and its complications.
- Surveys collecting data on influenza and pneumonia often combine them in their reported data. In 2004, influenza and pneumonia combined were ranked as the eighth leading cause of death in the United States and the sixth leading cause in people over 65.
- Close to 90 percent of deaths due to influenza and pneumonia occur in people aged 65 and over.
- In 2004, influenza and pneumonia cost the U.S. economy \$37.5 billion, including \$5.6 billion in indirect costs and \$31.9 billion in direct costs.
- According to the Behavioral Risk Factor Surveillance System (BRFSS) in 2005, only 65.7 percent of American adults aged 65 years or older were immunized for influenza and only 65.9 percent for pneumonia. Individuals from communities of color are less likely to receive these vaccines.
- Influenza/pneumonia ranked as the eleventh leading cause of death in the African American population in 2003. Approximately 72.5 percent of all influenza and pneumonia deaths in African Americans occurred in the 65 and over age group.
- Hispanics have the lowest age-adjusted mortality rates due to influenza and pneumonia among all racial/ethnic groups. Influenza/pneumonia ranked as the ninth leading cause of death in Hispanics in 2003 and the sixth in the over 65 Hispanic population. Seventy-seven percent of all influenza/pneumonia deaths in Hispanics occurred in this age range.
- Influenza/pneumonia ranked as the sixth leading cause of death among Asian American/Pacific Islanders in 2003 and the fourth leading cause of death in those over 65.
- Influenza/pneumonia ranked as the eighth leading cause of death among American Indians/Alaska Natives in 2003 and the sixth leading cause of death in those over 65.

Influenza and Pneumonia

INFLUENZA

INFLUENZA IS A HIGHLY CONTAGIOUS VIRAL INFECTION that is one of the most severe illnesses of the winter season. Influenza is spread easily from person to person, usually when an infected person coughs or sneezes. About 10 to 20 percent of the population contracts influenza each year. Influenza in the United States generally strikes between December and March, although it may appear a little earlier. Each year, approximately 226,000 people in the U.S. are hospitalized with complications from influenza and an average of 36,000 die from the virus and its complications. Influenza deaths have increased substantially in the last two decades, in part because of the aging population.¹³⁹

Influenza is largely preventable with vaccines. There are two vaccine options available in the United States for influenza: the inactivated influenza shot (recommended for use in people older than six months, including healthy people and people with chronic medical conditions) and the influenza nasal spray (recommended only for healthy people between the ages of 5 and 49). The Advisory Committee on Immunization Practices (ACIP) recommends influenza vaccination for all children aged six months or older, unless contraindications are present. Health experts recommend immunization against influenza for all persons aged 50 and over, for people at risk due to chronic conditions and for people who come into contact with those at risk. October or November are the best times to get vaccinated, but getting vaccinated in December or even later may still be beneficial since influenza virus activity peaks in February or March. Influenza season can begin as early as October and last through May.¹⁴⁰

Influenza, pneumonia and other respiratory viruses can be deadly for children with asthma. Asthma is the most common chronic illness in childhood. It affects 6.2 million U.S. children younger than 18 years, is the third leading cause of hospitalization among children younger than 15 years and accounts for more than 640,000 annual emergency department visits in children under the age of 15. It is estimated that 12.8 million school days are lost as the result of asthma.¹⁴¹ The American Lung Association Asthma Clinical Research Centers (ACRC) is a network of 20 clinical centers in the United States. The first ACRC study was published by *The New England Journal of Medicine* in November 2001 and found that the inactivated influenza vaccine is safe for both children and adults with asthma, regardless of asthma severity. For more information on the ACRC, visit www.lungusa.org.¹⁴²

While influenza-associated deaths are most common in elderly persons, they do occur in children. During a recent influenza season, 153 influenza-associated deaths in children were reported to the Centers for Disease Control.¹⁴³

PNEUMONIA

PNEUMONIA IS A SERIOUS INFECTION or inflammation of the lungs. The air sacs in the lungs fill with pus and other liquid, which block oxygen from reaching the bloodstream. If there is too little oxygen in the blood, the body's cells cannot work properly, which can lead to death. Pneumonia can have over 30 different causes. There are five main causes of pneumonia: various chemicals, bacteria, viruses, mycoplasmas and other infectious agents, such as *pneumocystis* (fungi). In May 2004, the U.S. Surgeon General added pneumonia to the list of diseases caused by smoking. Pneumonia can strike anyone at any time of the year.

The major form of pneumonia is controllable with the pneumococcal vaccine that is generally given once. However, revaccination after five years should be considered for children at highest risk of pneumococcal infection and those with nephrotic syndrome, asplenia or sickle cell anemia who would be 11 years old or younger at revaccination. The pneumococcal polysaccharide vaccine is not effective in children under 2 years old and is less effective in preventing pneumococcal pneumonia. It is recommended for adults over 65 years old with normal immune systems, and those over 2 years old with chronic illnesses such as diabetes, anatomic or functional asplenia, immunocompromised systems such as HIV or cancer patients and those who work or live in settings with increased risk. Revaccination should also be considered for adults at highest risk who received the 23-valent vaccine equal to or greater than 6 years before and for those shown to have rapid decline in pneumococcal antibody levels (e.g., patients with nephrotic syndrome, renal failure or transplant recipients).¹⁴⁴

INFLUENZA AND PNEUMONIA COMBINED

INFLUENZA AND PNEUMONIA ARE SIGNIFICANT CAUSES OF ILLNESS and death. In 2004, these conditions together were ranked as the eighth leading cause of death in the United States and the sixth leading cause in people over 65.¹⁴⁵ Along with other respiratory conditions, such as the common cold and acute bronchitis, these disorders are major contributors to days lost from work and school. The persons most at risk for these infections and their complications are those with weakened defenses against disease. They include very young and very old people; those suffering from chronic respiratory, circulatory problems or diabetes and those whose immune systems have been compromised by medications (including some cancer drugs) or AIDS.

In 2004, the age-adjusted death rate for influenza and pneumonia was 20.4 per 100,000. Overall, 61,472 deaths from these diseases were recorded in 2004. Of these, pneumonia caused the majority of deaths (60,207). Close to 90 percent of influenza and pneumonia deaths occurred in persons aged 65 and over. Influenza and pneumonia are also most likely to require hospitalization in those over 65. In fact, data from 2004 show that persons aged 65 and older accounted for 60 percent of the total number of hospital discharges from influenza and pneumonia.¹⁴⁶

The gap between immunization rates in White and non-White populations has narrowed, but there are still disparities among many racial, ethnic and underserved populations. Vaccination disparities lead to even lower immunization rates among children of color, a group that experiences higher illness and death from asthma. Studies show that children living below the poverty level have lower immunization coverage rates. This disparity is of great concern in large urban areas with underserved populations because of the potential for outbreaks of vaccine-preventable diseases.¹⁴⁷

Influenza and pneumococcal vaccination rates among persons 65 years and older are significantly below the national objective of 90 percent, particularly among African Americans and Hispanics. A national telephone survey among adults aged 65 years and older, during the 2004-2005 influenza season found that influenza vaccine coverage was 67.8 percent and pneumococcal vaccination was 60 percent. Coverage among African Americans and Hispanics was more than 15 percent of that for Whites. Just over 50 percent of adults who had not received the pneumococcal vaccination were aware that it was recommended for persons their age and less than 10 percent of adults had received a recent physician recommendation for pneumococcal vaccination. Concern about side effects and not thinking that they needed the vaccine were the most frequently cited reasons for not receiving influenza vaccination. Among each racial and ethnic group, prevalence of potential missed opportunities was higher than prevalence of potential vaccine refusal.¹⁴⁸

Table 4 displays influenza and pneumonia statistics by race/ethnicity and age.

Table 4: Influenza and Pneumonia Vaccination and Mortality ^{I, III}										
Mortality (2003) Influenza and Pneumonia	Total		Non-Hispanic White		Non-Hispanic Black		Hispanic		Non-Hispanic	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
Total ²	65,163	22.4	54,617	22.0	5,798	23.6	2,948	18.4	62,042	22.2
65+ ³	57,670	160.6	49,693	167.4	4,205	142.0	2,284	111.1	**	**
Vaccination (2004) ^I	Total		Non-Hispanic White		Non-Hispanic Black		Hispanic		Non-Hispanic All Others ^{II}	
	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
Influenza (flu shot)										
Total	62,495,064	29.0	50,479,598	32.7	4,842,342	19.9	4,620,786	17.2	2,552,338	26.2
65+	21,985,931	63.5	19,060,389	66.2	1,257,225	44.1	1,138,048	53.9	530,269	61.8
Pneumonia										
Total	34,357,995	16.0	28,819,746	18.7	2,861,819	11.8	1,727,860	6.4	948,570	9.7
65+	18,896,747	54.6	16,848,428	58.6	1,047,578	36.7	679,901	32.2	320,840	37.4

Sources: 1 National Center for Health Statistics: National Health Interview Survey, 2004.
 2 National Vital Statistics Report: Deaths: Report on Final Mortality, 2003.
 3 National Vital Statistics Report: Deaths: Leading Causes for 2003, Vol. 55 (10).

Notes: ** Data not available
 I Hispanics are not mutually exclusive from Whites, African Americans, Asian Americans/Pacific Islanders, and American Indians/Alaska Natives.
 II Does not include Non-Hispanic Whites and Blacks.
 III Mortality rates are per 100,000 population, age-adjusted to the 2000 U.S. standard population.

Racial/Ethnic Differences

African Americans

NON-HISPANIC BLACKS WERE SEVEN PERCENT MORE LIKELY to die from influenza or pneumonia than were non-Hispanic Whites in 2003. Influenza/pneumonia ranked as the eleventh leading cause of death in non-Hispanic Blacks in 2003 and the seventh leading cause of death in the over 65 African American population.¹⁴⁹ Approximately 72.5 percent of all influenza and pneumonia deaths in African Americans occurred in this age group.

Data from the 2005 Behavioral Risk Factor Surveillance System (BRFSS) indicates 68 percent of Whites and 47 percent of African Americans over 65 years of age received the influenza shot and 68 percent of Whites and 51 percent of African Americans over 65 received the pneumonia shot.¹⁵⁰ Although estimates from the BRFSS were higher than those from the National Health Interview Survey (NHIS), the two surveys show that African Americans over age 65 are much less likely to receive the flu shot or pneumonia vaccine than their White counterparts. Equally disturbing is the fact that both vaccines are covered by Medicare and are available to seniors.¹⁵¹ Although the reasons for differences in vaccine rates are poorly understood, researchers have suggested that the following factors may play a role:

- Unequal access to healthcare related to low socioeconomic status and/or lack of health insurance coverage.
- Low motivation of primary care providers to recommend immunization.

- Family factors (e.g., low education level, large family size, poverty, language barriers, inadequate knowledge about vaccines and disease prevention and preconceived ideas about vaccines as being ineffective).
- Missed opportunities to get vaccinated.¹⁵²

Low socioeconomic status and lack of health insurance coverage could affect the proportion of African Americans receiving vaccinations. However, a study analyzing data from the 2000-2001 NHIS found differences between non-Hispanic Blacks and Whites, despite the amount of contact they had with healthcare providers. This suggests that access to care might not be a key factor.¹⁵³ Another study found that differences existed even in prepaid health plans, which in most cases have a financial incentive to increase delivery of preventive services. Researchers found that although managed care was associated with higher rates of influenza vaccination for both Whites and African Americans than in fee-for services plans, racial disparity in vaccination was not reduced.¹⁵⁴

Focus groups with physicians have revealed some disturbing results. According to these groups, some physicians do not consider influenza shots as “revenue generators” and will not recommend them since reimbursement for such services is low.¹⁵⁵ In addition, some health professionals have the perception that vaccines protect against only minor illnesses. In fact, a recent study found that only 36 percent of healthcare workers receive influenza vaccinations each year for themselves.¹⁵⁶

A focus group conducted by the National Immunization Program at the CDC found that African American patients who did not want to be immunized believed that the vaccine actually gives people the flu. They also felt that they could prevent infection by taking the traditional anti-cold and “stay healthy” precautions, such as hand washing, taking vitamins, eating right and getting enough sleep. Others expressed a strong distrust of the government, physicians and drug companies, and demonstrated a firm belief that they could control their own health status and outcomes.¹⁵⁷

Missed vaccination opportunities seem to contribute to poor vaccination coverage in communities of color. A recent study found that elderly African American and Hispanic patients in a preadmission testing unit were less likely to be immunized against pneumonia than were Whites. Healthcare-associated pneumonia is now more common in surgical patients than wound infections. However, the study found that 71 percent of the minority patients who were not vaccinated against pneumonia had not been offered immunization although 64 percent of them said they would have taken it if it had been offered. Researchers concluded that nurses have an important role in reducing surgical patients’ risks of developing healthcare-associated pneumonia by assessing the patient’s immunization status and helping surgical patients obtain the appropriate vaccinations.¹⁵⁸

Another study found that even with illnesses requiring numerous healthcare visits, such as diabetes, heart conditions and cancer, African American patients have a lower rate of influenza vaccination than White patients.¹⁵⁹

Consider the Differences...

- Less than half of the non-Hispanic Black population over age 65 received an influenza shot (44.1%) compared to 66.2 percent of non-Hispanic Whites over age 65.
 - Only 36.7 percent of non-Hispanic Blacks over age 65 received a pneumonia vaccination in 2004, compared to 58.6 percent of non-Hispanic Whites over age 65.
-

Hispanics/Latinos

HISPANICS HAVE THE LOWEST AGE-ADJUSTED MORTALITY RATES DUE TO INFLUENZA AND PNEUMONIA among all races and ethnicities. Hispanics were almost 6 percent less likely to die from influenza or pneumonia than non-Hispanic Whites in 2003. However, in 2003 influenza/pneumonia ranked as the ninth leading cause of death in Hispanics and the sixth in the over 65 Hispanic population.¹⁶⁰ Approximately 77 percent of all influenza and pneumonia deaths in Hispanics occurred in this age group.

According to the 2004 National Health Interview Survey, Hispanics over 65 were one of the least likely groups to receive an influenza or pneumonia vaccination. Only 53.9 percent of Hispanics in this age group received a flu shot compared to 44.1 percent of non-Hispanic Blacks and 66.2 percent of non-Hispanic Whites in 2004.¹⁶¹

Consider the Differences...

- Approximately half of the Hispanic population over age 65 received an influenza shot, compared to 66.2 percent of non-Hispanic Whites over 65.
 - Only 32.2 percent of Hispanics over age 65 received a pneumonia vaccination in 2004, compared to 58.6 percent of non-Hispanic Whites.
 - Pneumonia vaccination rates in Hispanics were significantly lower than in non-Hispanic Blacks and Whites.
 - Influenza vaccination rates in Hispanics were only slightly lower than those in non-Hispanic Whites.
-

Asian Americans and Native Hawaiians/Pacific Islanders

DUE TO SMALL SAMPLE SIZES, data on deaths among Asians/Pacific Islanders are not reliable enough to compare to other races. Within the Asian/Pacific Islander population, however, influenza and pneumonia ranked as the sixth leading cause of death overall and the fourth leading cause of death in those over 65.¹⁶²

There are limited data available on influenza and pneumonia vaccination rates for Asians and Native Hawaiians/Pacific Islanders. Major national health surveys recently began collecting data on this group, but because of small sample sizes, estimates are not considered statistically accurate and are not published or released. Analysts usually group the Asian American and Native Hawaiian/Pacific Islander population with Native American into the category called Other Races. The category “Non-Hispanic All Others” refers to these groups.

American Indians/Alaska Natives

DATA ON DEATHS AMONG AMERICAN INDIANS/ALASKA NATIVES are not reliable enough to compare to other races, due to small sample sizes. Within the American Indian/Alaska Native population, influenza and pneumonia ranked as the eighth leading cause of death overall and the sixth leading cause of death in those over 65.¹⁶³

A recent study compared non-indigenous people with indigenous people in first world countries and found that indigenous people have had much higher rates of many vaccine-preventable diseases, including influenza. In the United States, ethnic-specific health services such as the Indian Health Service that provide vaccination programs for indigenous populations devastated by infections in the past now show this to be a way of reducing disease in indigenous populations. Among the most successful programs has been one addressing viral diseases including influenza type B disease. Geographic targeting of all persons in certain regions with high disease rates has been successful, as has targeting of indigenous populations in regions where they comprise larger proportions of the population. However, universal vaccination programs are not always possible, as in the regions targeting only indigenous people, it was difficult to achieve high coverage, particularly in urban areas. Nationally-funded vaccination programs are clearly the most effective way of reducing disease in indigenous populations as well as reducing racial disparities.¹⁶⁴

Due to the small proportion that they occupy within the U.S. population, limited data are available on influenza and pneumonia vaccination among Native Americans/Alaska Natives. Major national health surveys collect data on this group, but because of small sample sizes, estimates are not statistically accurate. In order to use this data, analysts group Native Americans/Alaska Natives with Asian Americans/Pacific Islanders in the category called Other Races. The category “Non-Hispanic All Others” in the table refers to these groups.

Lung Disease Data at a Glance

Lung Cancer

- Lung cancer is the leading cause of cancer-related deaths for both men and women. An estimated 213,380 new cases of lung cancer and an estimated 160,390 deaths from lung cancer are expected to occur in the United States in 2007.
- Direct medical cost for treatment of lung cancer is approximately \$5 billion annually.
- Smoking is responsible for 90 percent of lung cancer cases.
- Lung cancer is the second most common cancer among African American men, third among African American women and kills more African Americans than any other cancer.
- Between 2000 and 2003, African American men were 37 percent more likely to develop lung cancer than White men. Lung cancer incidence rates among African American women are equal to that of White women, although rates of smoking in African American women are much lower.
- Between 2000 and 2003, the lung cancer mortality rate in the African American population was 12 percent higher than that of the White population. The age-adjusted death rate in females was similar between both races.
- Between 1996 and 2002, the lung cancer survival rate was only 12.8 percent for African Americans while it was 15.8 percent for Whites.
- Lung cancer death rates are 2.5 times higher for Hispanic/Latino men than women.
- Lung cancer rates among Hispanic subgroups vary in the United States. Lung cancer death rates are higher among Cuban Americans than Puerto Ricans and Mexicans.
- Among Asian/Pacific Islander men, lung cancer is the second most common cancer, while it is the third most common among women of Asian/Pacific Islander descent.
- Lung cancer is the leading cause of cancer death among American Indians and Alaska Natives.

Lung Cancer

LUNG CANCER IS the uncontrolled growth of abnormal cells in one or both of the lungs. While normal lung tissue cells reproduce and develop into healthy lung tissue, in cancer these abnormal cells reproduce rapidly and fail to grow into normal lung tissue. Lumps of cancer cells (tumors) then form and disturb the lung, making it difficult for the organ to work properly.

There are two major types of lung cancer: non-small cell lung cancer and small cell lung cancer. Non-small cell lung cancer is much more common and accounts for 80 percent of all lung cancer cases. It usually spreads to different parts of the body more slowly than small cell lung cancer. Small cell lung cancer, also called “oat cell cancer,” accounts for the remaining 20 percent of all lung cancers. This type of lung cancer grows more quickly and is more likely to spread to other organs in the body. However, it is possible that a cancer may have characteristics of both non-small cell and small cell lung cancer. These cancers are classified as mixed small cell/large cell carcinoma.

Smoking is the main cause of both types of lung cancer; active smoking accounts for about 90 percent of lung cancer cases.¹⁶⁵ Specifically, in 2007 it is predicted that there will be 213,380 new cases of lung cancer and 160,390 deaths resulting from lung cancer in the United States.¹⁶⁶ Trends predict that a disproportionate number of deaths will occur in minority groups.

The financial costs of cancer are staggering. According to the National Institutes of Health, cancers cost the United States an overall \$210 billion in 2005. It is estimated that direct medical cost for treatment of lung cancer is approximately \$5 billion.¹⁶⁷

Unfortunately, efforts to detect lung cancer early have not led to a reduction in lung cancer deaths as many techniques have limited effectiveness in detecting cancer. However, if lung cancer is found relatively early, treatment—surgery, radiation, drug therapy or a combination of approaches—are sometimes effective. The choice of treatment and prognosis depend upon the specific type of tumor.¹⁶⁸

CHANGING THE FACE OF LUNG CANCER RESEARCH

Weiguo Han, M.D., Ph.D.

The vast majority of lung cancers are associated with cigarette smoking, yet only 10 to 15 percent of lifetime smokers develop lung cancer. In addition, lung cancer cases are known to cluster in families and there is evidence that female smokers are at higher risk than males. Weiguo Han, M.D., Ph.D., a researcher at the New York State Department of Health, is studying how people may differ in their genetic and gender-related vulnerability to lung cancer. He is using genetics research to understand the relationship between cancer-causing substances in tobacco, diet and hormones. Dr. Han’s work may eventually make it possible to develop a screening test that identifies high-risk people. It may also advance treatment of lung cancer with regard to smoking cessation, diet and early detection. To read about other research on lung cancer being conducted by American Lung Association awardees, visit www.lungusa.org.

CHANGING THE FACE OF LUNG CANCER RESEARCH

Targeting of Heat Shock Proteins in Lung Cancer

Lung Cancer Discovery Awardee Ravi Salgia is currently studying a novel approach targeting receptor tyrosine kinases, which has been shown to improve survival as a second-line treatment for lung cancer. In addition, heat shock proteins have been recently identified as important therapeutic targets for lung cancer treatment. For more information visit www.lungusa.org.

Table 5 displays the age-adjusted incidence and mortality rates for lung cancer by race/ethnicity and gender from 2000-2003.

Table 5: Lung and Bronchus Cancer Incidence and Mortality^{1,2}					
<i>Incidence (2000-2003)</i>	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Alaska Native
Male	81.7	112.2	44.7	55.7	55.5
Female	54.7	53.1	24.0	27.3	33.8
Total	66.0	76.9	32.6	39.6	43.1
Mortality (2000-2003)					
Male	73.4	97.2	36.6	38.6	41.4
Female	42.2	39.8	14.7	18.6	26.8
Total	55.3	62.5	23.9	27.2	33.1

Source: - National Cancer Institute, SEER Cancer Statistic Review 1978-2003.

Notes: 1 Rates are per 100,000 persons and age-adjusted to the 2000 U.S. standard population.

2 Hispanic and non-Hispanic are not mutually exclusive from Whites, Blacks, Asian Americans/ Pacific Islanders, and American Indians/ Alaska Natives.

Racial/Ethnic Differences

African Americans

ACCORDING TO the American Cancer Society, approximately 63,110 African Americans died of cancer in 2005. An estimated 15,500 deaths in African Americans were the result of lung cancer. Lung cancer accounts for the largest number of new cancer deaths among African American men and women (28.4% and 20.5%, respectively).¹⁶⁹

African Americans are more likely to develop and die from lung cancer than persons of any other racial or ethnic group. The age-adjusted lung cancer incidence rate among African American men is approximately 37 percent higher than the rate for White men. The incidence rates in females between these races are comparable.¹⁷⁰

The reason for higher lung cancer incidence rates among African American males remains unclear. Racial differences in smoking habits such as the use of menthol cigarettes and social factors, like socioeconomic status, which impact diet choices, occupational opportunity and access to medical care, all have been suggested to play a role in increasing the lung cancer risk in African Americans.¹⁷¹

A recent study found a remarkable variation in the incidence of lung cancer among racial and ethnic groups in the United States. Among cigarette smokers, African Americans and Native Hawaiians are more susceptible to lung cancer than Whites, Japanese Americans and Latinos. However, smoking behavior varied widely among these ethnic and racial groups, therefore certain culturally defined smoking behaviors may also influence the development of lung cancer.¹⁷²

African American men and women also have lower lung cancer survival rates than Whites. The five-year survival rate for African Americans is only 13 percent, while the rate for Whites is slightly higher at 16 percent. Furthermore, even when accounting for age at diagnosis African Americans have poorer survival rates for lung cancer than do Whites.¹⁷³

According to another study, social factors also are likely to contribute to lower survival rates among African Americans with advanced non-small cell lung cancer. Upon initial examination researchers found that the one-year survival rate for African American patients was 22 percent compared to 30 percent for non-African Americans. However, this racial disparity disappeared when the researchers only compared persons that obtained surgical care to treat their cancer. This finding suggested that the racial differences observed in survival rates was a result of African Americans seeking medical care later and being less likely to have surgery to stop the progression of cancer. Therefore, social factors such as lack of insurance and low socioeconomic status may influence the lung cancer rate of African Americans as the delay of identification and treatment means that cancer is not detected at treatable stages.¹⁷⁴

Consider the Differences...

- Lung cancer is the second most common cancer among African American men, third among African American women. It kills more African Americans than any other cancer.
- The percentage of African American men that smoke (26.7%) was slightly higher than the number of Whites that smoke (24.0%). However African American men are 37 percent more likely than White men to develop lung cancer.
- Lung cancer incidence rates among African American women are equal to that of White women, although the prevalence of smoking in African American females is much lower.
- Between 2000 and 2003, African American men had an age-adjusted lung cancer death rate that was 32 percent higher than that for White males (death rates of 97.2 versus 73.4 per 100,000, respectively). However, the age-adjusted death rate in females was similar for both races.
- The lung cancer survival rate is only 13 percent for African Americans, while it is 16 percent for Whites.

Hispanics/Latinos

STUDIES CONDUCTED IN THE LATE 1970s and early 1980s strongly suggested that Hispanics were at reduced risk for lung cancer compared to other ethnic groups. The difference was especially dramatic among women, however was also observed in Hispanic men. These limited data appeared to be directly linked to the lower rate of cigarette smoking among Hispanics compared to non-Hispanic Blacks and non-Hispanic Whites.¹⁷⁵ In fact, the 50 percent lower rate of lung cancer observed in Hispanics is due to their lower rate of cigarette smoking compared with non-Hispanic Whites.

As the tobacco industry aggressively targets Hispanics, along with other minority groups, those figures have changed somewhat. Lung cancer is the leading cause of cancer death among Hispanic men (21% of cancer deaths) and second among Hispanic women (14% of cancer deaths). An estimated 4,070 deaths from lung cancer were expected to occur among Hispanics in 2006. Between 1994 and 2003, the mortality rate for Hispanic men declined by 2.2 percent per year, however the death rate remained unchanged in Hispanic women. The reduction of lung cancer mortality in men is associated with the reduction in their smoking prevalence.¹⁷⁶

An estimated 5,750 Hispanics were expected to be diagnosed with lung cancer in 2006.¹⁷⁷ Lung cancer is the third most commonly diagnosed cancer within this population.¹⁷⁸

The lung cancer incidence rate for Hispanics between 2000 and 2003 was 44.7 per 100,000 for men and 24.0 per 100,000 for women. Over the same three-year period, the incidence rates in non-Hispanic White men and women were 1.8 and 2.4 times greater, respectively, than the incidence rates of their Hispanic counterparts. Furthermore, the mortality rates in Hispanic men and women were 36.6 per 100,000 and 14.7 per 100,000, respectively. The lung cancer mortality rate in Hispanic men and women was two and three times lower, respectively, than those of their non-Hispanic White counterparts.¹⁷⁹ Studies have shown that lung cancer death rates are higher among Cuban Americans than among Puerto Ricans and Mexicans residing in the U.S.¹⁸⁰

Consider the Differences...

- Lung cancer death rates were 2.5 times higher for Hispanic men (36.6 per 100,000) than for Hispanic women (14.7 per 100,000) between 2000 and 2003.
- Lung cancer is one of the most common types of cancer found in Hispanic men and women.
- Studies have shown that lung cancer death rates are higher among Cuban Americans than among Puerto Ricans and Mexicans residing in the U.S.

Asian Americans and Native Hawaiians/Pacific Islanders

IN THE UNITED STATES, LUNG CANCER IS the second leading cause of cancer among Asian American/Pacific Islander men and third among Asian American and Pacific Islander women.^{181,182} Data reported from the Surveillance, Epidemiology and End Results (SEER) program for 2000-2003 indicate the following incidence rates for Asian American/Pacific Islanders: 55.7 per 100,000 in males, 27.3 per 100,000 in females and 39.6 per 100,000 overall. Mortality rates were 38.6 per 100,000 for males, 18.6 per 100,000 for females and 27.2 per 100,000 overall.¹⁸³

Asian Americans and Pacific Islanders have lower incidence and mortality rates compared to Whites and African Americans than all other racial and ethnic groups except Hispanics. Again, cultural differences in tobacco use may explain the lower mortality rates in Asians.¹⁸⁴

Although Asians develop lung cancer at lower rates, typically Asians postpone going to the doctor after lung cancer symptoms develop. A study found that Asian patients with lung cancer sought medical attention on average about 4.4 months after developing symptoms, like coughing up blood, compared to only 1.7 months for non-Asian patients. As such, only 14 percent of Asian lung cancer patients lived two years after their initial diagnosis as compared to 43 percent of non-Asians. Therefore, Asians are much less likely to be alive two years after lung cancer diagnosis than non-Asian lung cancer patients.¹⁸⁵

Most cancer surveillance tools combine data for Asian Americans and Pacific Islanders. Because of the many cultures and ethnicities included in the Asian/Pacific Islander category, one would expect variation in lung cancer rates between subgroups. Only a few studies have separated data for Asians and Pacific Islanders. These studies have found that Native Hawaiians have the highest lung cancer mortality rates among Asians/Pacific Islanders.^{186,187} Filipino men and women tend to have the lowest rates of lung cancer deaths among the Asian/Pacific Islander group. Another study found that Southeast Asians living in the United States had lung cancer rates that were 18 percent higher than for Whites.¹⁸⁸

Although not all people living in Hawaii are native Hawaiians, nearly 78 percent of Native Hawaiians/Pacific Islanders live in the West, with a majority living in California and Hawaii. Data from Hawaii show that lung cancer was the leading cause of death among all types of cancer in Hawaii (along with the nation overall in 2003). Hawaii and the mainland United States have experienced an 8 percent drop in lung cancer death rates since 1990. In Hawaii, there have been year-to-year fluctuations, although from the 1998-2003 period, there does appear to be an improving trend with death rates declining from 45.0 to 36.5 per 100,000 population.¹⁸⁹

American Indians/Alaska Natives

THERE ARE OVER 560 federally-recognized Indian tribes and over 100 state-recognized tribes in the United States, and each has its own unique culture. Therefore, there is great diversity within the American Indian and Alaska Native demographic in political, social, cultural and spiritual contexts. Thus, different subcommunities have different lung cancer risk factors. For example, lung cancer is common among Alaska Natives and Northern Plains tribes but is not a major cause of mortality among Southwestern tribes. The Native American death rates from lung cancer range from 7.3 and 13.3 per 100,000 women and men in the Southwest region to as high as 43.2 and 77.1 per 100,000 women and men in the Northern tribes. Not surprising is the fact that smoking rates are highest in Alaska and the North Plains and lowest in tribes living in the Southwest. Therefore, differences in tobacco use may explain why lung cancer mortality rates are greater in Northern Plains tribes.¹⁹⁰

Lung cancer is the leading cause of cancer death among American Indians and Alaska Natives age 55 years and older. Yet of over 200 native languages spoken today most, if not all, do not include a word for “cancer” in their vocabularies.^{191,192}

According to SEER program data from 2000 to 2003, the incidence rate for lung cancer among American Indians/Alaska Natives was 43.1 per 100,000 overall, 33.8 per 100,000 for women and 55.5 per 100,000 for men. Although lung cancer is the most common type of cancer causing death among American Indians and Alaska Natives, studies show that different native communities have different cancer mortality rates when examined individually. The mortality rate of 33.1 per 100,000 in Alaska Natives and American Indians was higher than the mortality rates from lung cancer seen in Asian American/Pacific Islanders (27.2 per 100,000) and Hispanics (23.9 per 100,000).¹⁹³

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Consider the Differences...

- Lung cancer is the leading cause of cancer death among American Indians and Alaska Natives.
- American Indians/Alaska Natives had higher mortality rates (33.1 per 100,000) for lung cancer than Asians (27.2 per 100,000) and Hispanics (23.9 per 100,000).
- Between 2000 and 2003, the lung cancer incidence rate for American Indians/Alaska Natives was lower than all racial/ethnic groups except Hispanics.

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Lung Disease Data at a Glance

Obstructive Sleep Apnea (OSA) or Sleep-Disordered Breathing (SDB)

- Sleep apnea occurs in all age groups and both sexes, but it is more common in males and in those over the age of 40.
- Estimates suggest that as many as 12 million Americans have sleep apnea.
- Risk factors for sleep-disordered breathing include being overweight and having heart failure, under-active thyroid or some physical abnormality in the nose, throat or other parts of the upper airway. In children, these abnormalities may include enlarged tonsils and adenoids. Sleep apnea also seems to run in some families, suggesting a possible genetic basis.
- African American children are more than three times as likely as children of other races to develop sleep-disordered breathing.
- Elderly African Americans are more than twice as likely as elderly Whites to suffer from sleep-disordered breathing.
- Data on Hispanics are limited, but Mexican Americans may have a higher prevalence of sleep apnea than other Hispanic subgroups.

Obstructive Sleep Apnea (OSA) or Sleep-Disordered Breathing (SDB)

OBSTRUCTIVE SLEEP APNEA (OSA) is a disorder in which the throat repeatedly narrows, either partially or totally blocking the airway during sleep. This blocking of the airways can cause a person to stop breathing or breathe uneasily. The partial blocking leads the person to snore loudly and the apnea causes them to wake up often. As a result, affected persons have restless sleep and excessive daytime sleepiness.

Sleep apnea occurs in all age groups and both sexes, but it is more common in males and in those over age 40. An estimated 4 percent of middle-aged men and 2 percent of middle-aged women have sleep apnea along with excessive daytime sleepiness.¹⁹⁴ Other risk factors include being overweight and having heart failure, underactive thyroid or some physical abnormality in the nose, throat or other parts of the upper airway. Sleep apnea also seems to run in some families, suggesting a possible genetic basis. Sleep apnea is more common in African Americans, Hispanics and Pacific Islanders than in Whites.¹⁹⁵ Sleep apnea can be made worse by the use of alcohol and sleeping pills.

Estimates suggest that over 12 million Americans have sleep apnea. Because of the lack of awareness by the public and healthcare professionals, however, the vast majority of people with the illness remain undiagnosed and therefore untreated.¹⁹⁶ Untreated, sleep apnea can cause high blood pressure and other heart diseases, depression, irritability, learning and memory difficulties, weight gain, impotence and headaches. Moreover, untreated sleep apnea may be responsible for injuries on the job and deadly car crashes. In fact, a recent study found that more than 800,000 drivers were involved in vehicle crashes related to sleep apnea in 2000, at a cost of nearly \$16 billion and 1,400 lives.¹⁹⁷

Fortunately, sleep apnea can be diagnosed and treated. Several treatment options exist, and research into additional options continues. Therapy for sleep apnea is tailored to the individual patient based on medical history, physical examination and the results of polysomnography, which is a test that records different body functions during sleep. Continuous positive airway pressure (CPAP) is the most common effective treatment for sleep apnea. Nasal CPAP prevents the airways from closing by delivering air through a mask that forces the air out through the nasal passages.

Surgery to increase the size of the airway and behavioral therapy, such as smoking cessation and nutrition counseling, are also used but are less common. Sedatives and alcohol may increase the number and length of sleep apnea episodes and decrease the amount of oxygen in the blood. Anesthesia does so as well. General anesthesia suppresses upper airway muscle activity and it may impair breathing by allowing the airway to close. Attention to sleep apnea should continue after any kind of operation because the remaining sedative effects of the anesthesia on the lungs can pose difficulty, as can some pain relievers.

The overwhelming majority of sleep apnea cases have probably not been identified. For this reason, it is not enough to simply ask if a patient has sleep apnea. Before making decisions on patient care, health care professionals must screen their patients, especially those at risk for sleep apnea and children undergoing a tonsillectomy and adenoidectomy. Medications and use of oxygen are generally not adequately effective in the treatment of sleep apnea.

Racial/Ethnic Differences

African Americans

SLEEP APNEA MAY BE MORE PREVALENT IN AFRICAN AMERICANS at least in part because obesity, a strong risk factor, tends to be more common among this group. Strong evidence suggests that obesity can affect the upper airway structure and possibly cause the airway to collapse. Being overweight does increase the risk of obstructed breathing during sleep. In addition to the severe problem of obesity in adults, the prevalence of childhood obesity is rapidly increasing.

According to a recent study that looked at risk factors for sleep-disordered breathing, African American children were more than three times as likely as children of other races to develop SDB. The researchers also found that the increased risk among African Americans may be independent of the effects of obesity or respiratory problems.¹⁹⁸

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Consider the Differences...

- African American children were more than three times as likely as children of other races to develop sleep-disordered breathing.

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According to another study, elderly African Americans are more than twice as likely as elderly Whites to suffer from sleep-disordered breathing. Researchers at the University of California, San Diego studied 54 African Americans and 346 Whites aged 65 and older. They found that 17 percent of the African American subjects had sleep apnea compared to 8 percent of the Whites.¹⁹⁹

Hispanics/Latinos. Data on Hispanics are limited.

Asian Americans and Native Hawaiians/Pacific Islanders. Data are not available for Asian Americans. Pacific Islanders may have a high prevalence of sleep apnea, but formal studies with comparison groups have not been performed.²⁰⁰

American Indians/Alaska Natives. Data are not available for American Indians/Alaska Natives.

Lung Disease Data at a Glance

Occupational Lung Disease

- Occupational lung disease is the number one cause of work-related illness in the United States in terms of frequency, severity and preventability.
- Worldwide, about 20 to 30 percent of the male and 5 to 20 percent of the female working-age population may have been exposed to agents that cause cancer in the lungs during their working lives.
- Occupational asthma is the most prevalent occupational lung disease in the United States. Approximately 15 to 23 percent of new-onset asthma cases in the United States are due to occupational exposures. These exposures within the workplace can also aggravate pre-existing asthma.
- The direct cost of occupational injuries and illnesses are estimated at \$45.8 billion a year, and the indirect cost may range up to \$229 billion. In 2005, more than 4.2 million new non-fatal injuries and illnesses were reported in private industry. Also, 5,702 work-related injury deaths, or approximately 16 per day, occurred in the U.S. that year.
- A total of 2,591 work-related respiratory illnesses with days away from work (2.5 per 100,000 workers) occurred in private workplaces in 2004. The highest total for days away from work due to respiratory illnesses occurred in the manufacturing sector.
- In 2005, African Americans made up 29.3 percent of the 70,000 textile workers in the United States. Exposure to dusts generated while processing cotton can cause byssinosis, a chronic condition that results in blocked airways and impaired lung function. Between 1990 and 1999, African American males had an age-adjusted mortality rate due to byssinosis that was 80 percent greater than White males.
- It is estimated that African Americans accounted for 18.3 percent of the 2.1 million building cleaning jobs, which involve exposure to noxious chemicals and biological contaminants.
- African American males were twice as likely to die of silicosis as White males between 1990 and 1999.
- Hispanics are more likely to be employed in high-risk occupations than any other racial or ethnic group.
- Asian Americans account for a very low percentage of workers in high-risk industries.
- In Colorado and New Mexico, a high number of Native Americans are employed in uranium mines, work that has been associated with their high rate of lung cancer due to exposure to radon byproducts. Navajo uranium miners run a risk of developing lung cancer that is 28 times as great as those Navajos not exposed to uranium.

Occupational Lung Disease

OCCUPATIONAL LUNG DISEASE is the number one cause of work-related illness in the United States in terms of frequency, severity and preventability. It is mainly caused by long-term exposure to irritating or toxic agents in the workplace (mineral and/or organic dusts, smoke, fumes, gases, mists, sprays and vapors). It is possible, however, to develop occupational lung disease from several single exposures. There are two broad categories of occupational lung disease:

- Diseases that are not occupation-specific, but are aggravated at work.
- Diseases related to a specific occupation such as asbestosis, coal worker's pneumoconiosis (black lung), silicosis, berylliosis, byssinosis (brown lung) and farmer's lung. Adult-onset asthma, COPD and lung cancer can also be triggered by workplace exposures.

Occupation-Specific Lung Diseases

Mesothelioma

MESOTHELIOMA IS A RARE FORM OF CANCER that involves the cells that line the lungs, abdominal organs and heart. It is usually caused by asbestos exposure. People exposed to asbestos fibers for just a short period of time (a few weeks) or even to a small amount may be at risk. On average, 35 to 40 years lapse between exposure and onset of disease. Early symptoms resemble pneumonia, including shortness of breath, difficulty breathing, persistent cough and chest and abdominal pain. Depending on the person's health, time of diagnosis and other factors, the survival time is about 4 to 12 months from the onset of symptoms. However, occasionally people may live longer. For more information on mesothelioma, visit www.lungusa.org.

Occupational Asthma

OCCUPATIONAL ASTHMA IS THE MOST PREVALENT occupational lung disease in the United States. Approximately 15 to 23 percent of asthma cases in the United States are due to occupational exposures.²⁰¹ According to one study, men working in forestry and with metals and women in the service industries (waitresses, cleaners and dental workers) have the highest risk for occupational asthma.²⁰²

An estimated 11 million workers in a wide range of industries and occupations are exposed to at least one of numerous agents known to be associated with occupational asthma. Occupational asthma is a lung disease in which the airways overreact to dusts, vapors, gases or fumes that exist in the workplace. Sometimes the worker will only have a cough or mild symptoms. Symptoms usually occur while the worker is exposed at work. In some cases, the symptoms develop several hours after the person leaves work and then subside before the worker returns to the job the next day. In later stages of the disease, symptoms may occur away from work after exposure to common lung irritants. Occupational asthma is usually reversible, but permanent lung damage can occur if exposure continues. In highly sensitive persons, even very low levels of exposure may cause an episode. For more information, visit: <http://www.lungusa.org/oldfs>.

Silicosis

SILICOSIS, ONE OF THE OLDEST OCCUPATIONAL DISEASES, still kills thousands of people every year, everywhere in the world. In the United States, it is estimated that approximately one to two million workers are

occupationally exposed to free crystalline silica dusts (more than 100,000 of these workers are sandblasters), of whom some 59,000 will eventually develop silicosis. It is estimated that each year in the U.S. about 300 people die from it, but the true number is not known.²⁰³

Silicosis is an incurable lung disease caused by inhalation of dust containing free crystalline silica. Free crystalline silica, SiO₂, is one of the most common minerals in the earth's crust. It is found in sand, many rocks such as granite, sandstone, flint and slate and in some coal and metallic ores. The three most common forms are quartz, tridymite and cristobalite.

The three primary industries associated with silica exposure include mining, construction and manufacturing. According to the U.S. Bureau of Labor Statistics, in 2004, 47 percent of Hispanics, 20.1 percent of African Americans and 7.2 percent of Asians were employed in these industries.²⁰⁴ This creates a high risk for conditions such as pulmonary fibrosis and emphysema among these groups.²⁰⁵

Asbestosis

TEN THOUSAND AMERICANS DIE each year from diseases caused by asbestos – a rate approaching 30 deaths per day – according to a detailed analysis of government mortality records and epidemiological studies by the Environmental Working Group Action Fund. Asbestos kills thousands more people than skin cancer each year, and nearly the number that are slain in assaults with firearms. The suite of diseases linked to asbestos exposure overwhelmingly affects older men.²⁰⁶

Sick Building Syndrome

PEOPLE WHO WORK IN OFFICE BUILDINGS – from cleaning staff to CEOs – are not immune to occupational lung diseases. When a substantial number of building occupants experience symptoms that do not fit the pattern of any particular illness and are difficult to trace to any specific source, the problem may be “sick building syndrome.” Sick building problems may arise because of poorly designed or maintained heating, ventilating and air conditioning (also known as HVAC) systems, office equipment, furniture and supplies and operations in the building.

To save rising energy costs, new buildings are tightly sealed and modern ventilation systems recycle a large portion of inside air. If the system is not carefully designed or maintained, fresh air may not reach the worker. For example, use of flexible office partitions in large open spaces can interfere with air distribution. Energy costs in older buildings are reduced by adding insulation, caulking and weatherstripping. Windows are made airtight and outside air dampers are closed.

Whether a building is old or new, the same recirculated air is breathed again and again by the people working in these buildings. The problem is made worse by increasing numbers and varieties of pollutants from furnishings, air conditioning, heating and ventilating systems, modern office equipment and supplies, humidifiers and dehumidifiers and secondhand tobacco smoke. In fact, according to the National Institute of Allergy and Infectious Diseases, poorly ventilated office spaces aid in the transmission of pneumonia to three million people annually.²⁰⁷

Smoking can increase the severity of these diseases. Smokers who are exposed to cancer-causing agents, such as asbestos and radiation, greatly increase their chances of getting lung cancer and other lung diseases.

Worldwide, about 20 to 30 percent of the male and 5 to 20 percent of the female working-age population may have been exposed to agents that cause cancer in the lungs during their working lives. These

occupational exposures account for about 10.3 percent of cancer of the lung, trachea and bronchus, the most frequent occupational cancer.²⁰⁸ Workplace exposures have also been associated with deaths from respiratory diseases other than cancer.²⁰⁹

The direct costs of occupational injuries and illnesses in the U.S. are estimated at \$45.8 billion annually and indirect costs range up to \$229 billion.²¹⁰

Although occupational lung diseases are often not curable, they are always preventable. Improving ventilation, wearing protective equipment, changing work procedures and educating workers are key factors for prevention.

Table 6 displays a sample list of occupational lung diseases and related exposures. Extra protection is necessary for people exposed to these hazardous materials at work. Industries at risk are those in agriculture, mining, construction, manufacturing, cleaning and building services and farming.

Table 6: Occupational Lung Disorders or Disease Symptoms Caused by Exposure to Inhaled Materials

Inhaled Material	Lung Diseases
Ammonia, chlorine, nitrogen dioxide, sulfur dioxide, hydrogen sulfide, ozone, phosgene, formalin vapors	Lung irritation
Animal pelts and hair	Furrier's lung
Asbestos	Asbestosis, Lung Cancer, Mesothelioma
Avian dropping or feathers	Bird fancier's/breeder's/handler's lung
Beryllium dust or fumes	Beryllosis
Cadmium fumes	COPD
Cloth wrappings or mummies	Mummy disease
Coal dust	Coal worker's pneumoconiosis
Coffee beans	Coffee worker's lung
Contaminated sauna bath water	Sauna taker's disease
Contaminated water in humidification and air-conditioning systems	Humidifier or air-conditioner lung
Cotton dust	Byssinosis
Fish meal	Fish meal worker's lung
Maple tree logs or barks	Maple bark stripper's disease
Moldy bagasse (sugar cane)	Bagassosis
Moldy barley	Malt worker's lung
Moldy cheese	Cheese washer's lung
Moldy cork dust	Suberosis
Moldy hay, grain silage	Farmer's lung
Moldy paprika pods	Paprika slicer's disease
Moldy wood pulp	Paper mill worker's lung and pulpwood handler's disease
Mushroom compost	Mushroom worker's lung
Nitrogen dioxide, sulfur dioxide, hydrogen sulfide	Bronchitis, cough, dyspnea
Nitrogen dioxide, sulfur dioxide, hydrogen sulfide, phosgene, cadmium fumes, zinc oxide fumes	Pulmonary edema
Oak, cedar, mahogany	Woodworker's lung
Radioactive gases	Lung cancer
Redwood sawdust	Sequoiosis
Silica dust	Silicosis
Toluene diisocyanate, polyvinyl chloride vapor, formalin vapors, several others	Asthma
Wheat flour containing weevils	Wheat thresher's lung
Zinc oxide fumes	Metal fume fever

Source: Martin, Lawrence. *Breathe Easy: A Guide to Lung and Respiratory Diseases for Patients and Families*. 1997.

Racial/Ethnic Differences

CERTAIN RACIAL AND ETHNIC GROUPS are traditionally employed in lower-wage sectors of the workforce where they are overexposed to occupational respiratory hazards. They are more likely to be employed in industries such as agriculture, mining (coal, silica), textiles, demolition, manufacturing (asbestos) and service maintenance (cleaning supplies) – all of which have been associated with lung disease.

African Americans

AFRICAN AMERICANS MADE UP 29.3 percent of the nation's 70,000 textile workers in 2005. Exposure to textile dusts such as hemp, flax and cotton dust cause a chronic condition known as byssinosis. Byssinosis blocks the small airways, severely weakening lung function. Between 1990 and 1999, African American males had an age-adjusted mortality rate due to byssinosis that was 80 percent greater than White males (0.18 versus 0.10, respectively).²¹¹

Similarly, it is estimated that African Americans account for 27.3 percent of the 2.1 million building cleaning jobs.²¹²

Overall, African American males were twice as likely to die of silicosis as White males between 1990 and 1999 (5.27 versus 2.81, respectively).²¹³ Silicosis is caused by exposure to silica dust in mines, foundries, blasting operations, stone, clay and glass manufacturing industries. About 20 percent of African Americans worked in the mining (4.8%), manufacturing (9.4%) and construction (5.9%) industries in 2004.²¹⁴

Hispanics/Latinos

DATA SHOW THAT HISPANICS ARE MORE LIKELY to be employed in high-risk occupations such as mining, construction and manufacturing than any other racial or ethnic group. Approximately 47 percent of Hispanics work in industries that put them at higher risk for occupational diseases.

Currently, Hispanics represent 14.5 percent of the total population but account for 35.7 percent of the 70,000 textile workers, 27.3 percent of the 2.1 million building cleaning workers, 26.8 percent of the 9.1 million construction workers and 40.3 percent of the 976,000 workers in the farming, forestry and fishing industries.²¹⁵

Asian Americans and Native Hawaiians/Pacific Islanders

A LIMITED AMOUNT OF DATA ARE AVAILABLE on occupational illnesses among the Asian American/Pacific Islander population in the United States. One possible reason is that Asian Americans account for a very low percentage of workers in high-risk industries. In 2004, 1.0 percent of Asians worked in agricultural and related industries, 1.3 percent in construction, 5.1 percent in manufacturing and 3.1 percent in the building and grounds cleaning industry. Close to 70 percent of Asians either worked in management, professional, sales or office occupations.²¹⁶

Native Americans/Alaska Natives

A HIGH PERCENTAGE OF Native Americans are employed in uranium mines in Colorado and New Mexico.

This employment trend has been associated with high rates of lung cancer among Native Americans in these states due to exposure to radon byproducts. Radon results from radioactive decay of radium, which is in turn a decay product of uranium. A 1969-1993 study found that Navajo uranium miners were 28 times more likely to develop lung cancer than Navajos not exposed to uranium.²¹⁷

A more recent study concluded that Native Americans working in uranium mines also have a higher risk for getting certain occupational lung diseases in addition to lung cancer than any racial or ethnic group. To confound the problem, they are also less likely to receive compensation for mining-related disease.²¹⁸

CHANGING THE FACE OF OCCUPATIONAL LUNG DISEASE RESEARCH

Kitaw Demissie, M.D., Ph.D.

Medical experts have not been able to determine the difference between lung cancer caused by exposure to asbestos and those caused by cigarette smoking. Dr. Kitaw Demissie, M.D., Ph.D., from the University of Medicine and Dentistry of New Jersey – School of Public Health, is working on the problem by studying genes in the lungs of surgery patients. Dr. Demissie's work holds promise for preventing and treating lung cancer.

Lung Disease Data at a Glance

Respiratory Distress Syndrome (RDS)

- Infant respiratory distress syndrome (RDS) occurs in 60 percent of those babies born at less than 28 weeks' gestation, 30 percent of those born at 28 to 34 weeks and fewer than 5 percent of those born after 34 or more weeks.
- Mortality associated with RDS has decreased from nearly 100 percent to less than 10 percent. In 2003, RDS affected an estimated 23,214 infants.
- Annual RDS deaths decreased from 25,000 in the 1960s to 877 in 2004. In 2004, it was the seventh leading cause of death in infants under 1 year of age in the United States and accounted for 3.2 percent of all infant deaths.
- The incidence of infant RDS among African Americans (6.5 per 100,000) is similar to that of non-Hispanic Whites (6.2 per 100,000). However, the difference between African Americans and non-Hispanic Whites in RDS mortality rates is almost threefold.
- RDS was the sixth leading cause of death among African American infants under 1 year of age in 2004.
- RDS was ranked as the seventh leading cause of death for Hispanic infants under 1 year of age in 2004.
- Puerto Rican infants were twice as likely to die from RDS as Mexican and Central and South American infants.
- Asian/Pacific Islander infants had the lowest RDS mortality rates of all racial or ethnic groups. It was the eighth leading cause of infant death among the Asian/Pacific Islander population.

Respiratory Distress Syndrome (RDS)

RESPIRATORY DISTRESS SYNDROME (RDS) is a life-threatening lung disorder that mainly affects premature infants. Babies with RDS have lungs that are immature and cannot survive outside the womb. It is also known as hyaline membrane disease.

Infant respiratory distress syndrome has some similarities with adult respiratory distress syndrome, but its causes and treatments are different. RDS is caused by a lack of pulmonary surfactant, a chemical that normally appears in mature lungs. Surfactant keeps the air sacs in the lungs from collapsing and allows them to inflate with air more easily. In respiratory distress syndrome, the air sacs collapse and prevent the child from breathing properly. Symptoms usually appear shortly after birth and become more severe over time. This condition used to be known as “hyaline membrane disease,” for the glassy appearance of certain membranes in the lungs.

Risk factors for RDS are premature birth, diabetes in the mother and stress during delivery that produces acidosis in the newborn at birth. RDS is characterized by rapid breathing, nasal flaring, a grunting noise with each breath and blueness around the lips and nail beds, which indicates a lack of oxygen. RDS infants may develop several complications, such as an infection of the bloodstream (sepsis) due to their lung problems, as well as other problems related to premature birth, such as bleeding into the brain. These and other complications can cause convulsions, shocklike states and, in some cases, death.

The incidence of RDS correlates with the amount of time a child stays in the womb. RDS occurs in 60 percent of babies born at less than 28 weeks’ gestation, 30 percent of those born at 28 to 34 weeks and fewer than 5 percent of those born after 34 or more weeks. Full-term pregnancy is defined as lasting between 37 and 42 weeks, but babies born after 35 weeks rarely develop RDS. Mortality associated with RDS has decreased from nearly 100 percent to less than 10 percent in recent years. Surfactant therapy at birth has led to this dramatic decrease in mortality.²¹⁹ In 2003, RDS affected 23,214 infants.²²⁰

CHANGING THE FACE OF RDS RESEARCH

Mary Ellen Avery, M.D.

Mary Ellen Avery, M.D., a former American Lung Association Research Grant awardee, is a pioneer in lung research. She was part of the research team that discovered that the lungs of babies with respiratory distress syndrome lack the fatty substance, surfactant – a discovery that changed the face of treatment for RDS and that earned her the National Medal of Science in 1991. Dr. Avery is a past president and current board chair of the American Association for the Advancement of Science. One of four women in the class of 1952 at Johns Hopkins University Medical School, she was physician-in-chief at Boston Children’s Hospital from 1974 to 1985, Thomas Morgan Rotch Distinguished Professor of Pediatrics at Harvard and a council member of both the Institute of Medicine and the National Academy of Sciences.

A generation ago, most babies born with RDS did not survive. By the late 1960s and early 1970s, researchers made three lifesaving discoveries. One discovery was that certain components of surfactant can be found before birth in the amniotic fluid surrounding the fetus. These components can indicate whether delivery will need to be delayed and if a medical rescue team needs to be called. The second discovery was that giving the mother adrenal hormones – notably, dexamethasone – could speed up the baby’s lung development. The third was that administering surfactant in infants at birth could help the baby survive. Those findings, combined with mechanical ventilation, substantially improved survival of RDS babies. Annual RDS deaths decreased from 25,000 in the 1960s to 877 in 2004, a mortality rate of 21.3 per 100,000. In 2004, RDS was the seventh leading cause of death in infants under 1 year of age in the United States and accounted for 3.2 percent of all infant deaths.²²¹

Table 7 displays the limited available data related to RDS among racial/ethnic communities.

Table 7: Respiratory Distress Syndrome Incidence and Mortality¹				
INFANTS UNDER 1 YEAR				
Race/Ethnicity	Incidence (2003)²		Mortality (2004)¹	
	NUMBER	RATE	NUMBER	RATE
Total	23,214	6.0	877	21.3
White	18,626	6.2	398 ^{III}	17.3
Black	3,702	6.5	302	49.4
Hispanic ^{II}	**	**	160	16.9
American Indian/Alaska Native	**	**	7 ^{IV}	*
Asian American/Pacific Islander	**	**	14 ^{IV}	*

- Sources: 1 National Vital Statistics Report (NVSr). Minino A, Heron A, Smith B. Deaths: Preliminary Data for 2004, Vol. 54, No. 19, June 28, 2006.
 2 NVSR. Martin J, Brady H, Sutton P, Ventura S, Menacker F, Munson, M. Division of Vital Statistics; Births: Final Data for 2003, Vol. 54, No. 2, September 2005.
- Notes: I Infant incidence rates are per 1,000 population. Mortality rates are per 100,000 population.
 II Hispanics are not mutually exclusive from Whites, African Americans, Asian Americans/Pacific Islanders and American Indians/Alaska Natives.
 III Non-Hispanic
 IV Mortality number is from 2002. Latest data available for this group.
 * Unreliable: based on fewer than 20 deaths.
 ** Data not available.

Racial/Ethnic Differences

African Americans

The incidence of infant respiratory distress syndrome among African Americans (6.5 per 100,000) was similar to that of Whites (6.2 per 100,000) in 2003. However, the difference between these races in RDS mortality rates is almost threefold. In 2004, 49.4 per 100,000 African American infants died from RDS compared to 17.3 per 100,000 non-Hispanic White infants. It is possible that this difference is due to the higher rate of premature births among African American women. According to the 2003 birth data, 13.5 percent of African American women, as opposed to 7.0 percent of White women, delivered low-birthweight babies (under 2,500 grams).²²² In fact, African American infants had the highest mortality rates from low-birthweight; the rate for African American infants was 1.4 times the rate for White mothers.²²³ In 2004, RDS was the sixth leading cause of deaths among African American infants under 1 year of age.²²⁴

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Consider the Differences...

- The incidence of infant respiratory distress syndrome (RDS) among African Americans (6.5 per 100,000) was similar to that of Whites (6.2 per 100,000) in 2003.
 - The difference between African Americans and Whites in RDS mortality rates is almost threefold. In 2004, 49.4 per 100,000 Black infants died from RDS compared to 17.3 per 100,000 non-Hispanic White infants.
 - RDS is the sixth leading cause of deaths among African American infants under 1 year of age.
-

Hispanics/Latinos

RELIABLE INCIDENCE FIGURES for RDS are not available for Hispanics; however, mortality rates are available.

In 2004, 160 Hispanic infants died from RDS. RDS was ranked the seventh leading cause of death for Hispanic infants under 1 year of age. The death rate in Hispanic infants was 16.9 per 100,000, 2 percent lower than the mortality rate among White infants (17.3 per 100,000).²²⁵

As with asthma, RDS mortality rates vary among Hispanic subgroups. In 2001 (latest year data reported), Puerto Rican infants were twice as likely to die from RDS (43.4 per 100,000) as Mexican (21.1 per 100,000), and Central and South American infants (17.3 per 100,000).²²⁶

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Consider the Differences...

- The RDS death rate in Hispanic infants was 16.9 per 100,000, two percent lower than the mortality rate among White babies (17.3 per 100,000).
 - Puerto Rican infants were twice as likely to die from RDS as other Hispanic subgroups.
-

Asian Americans/Pacific Islanders

RELIABLE INCIDENCE DATA FOR RDS are not available for Asian Americans/Pacific Islanders.

RDS was the eighth leading cause of infant deaths among the Asian American/Pacific Islander population.²²⁷

American Indians/Alaska Natives

RELIABLE INCIDENCE AND MORTALITY FIGURES for RDS are not available for American Indians/Alaska Natives.

Of all racial or ethnic groups, American Indians/Alaska Natives had the fewest deaths from RDS (7) in 2002.²²⁸

Lung Disease Data at a Glance

Acute Respiratory Distress Syndrome (ARDS)

- The incidence of acute respiratory distress syndrome (ARDS) has been difficult to determine, but various estimates range from 1.5 to 75 cases per 100,000 persons over 1 year of age.
- ARDS has a case fatality rate of approximately 30 to 40 percent.

Acute Respiratory Distress Syndrome (ARDS)

ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS) is the rapid onset of breathing failure that can occur in critically ill persons of any age over 1 year of age. It is associated with illnesses such as sepsis (a toxic condition resulting from the spread of bacteria), trauma (such as a severe head injury) and severe pulmonary infection (such as pneumonia). Onset occurs within 24 hours to three days of the original illness or injury. As blood vessels in the lungs are damaged by infection, injury, blood loss or inhalation injury, fluid leaks into the lungs, preventing the transfer of oxygen from the air into the body and carbon dioxide out of the body into the air.

Other clinical conditions that are associated with ARDS include:

- **MULTIPLE TRANSFUSIONS.** The incidence of ARDS increases with the number of units of blood transfused. Preexisting liver disease or blood abnormalities further contribute to this risk.
- **PATIENTS WHO HAVE NEARLY DROWNED.** Development of ARDS is slightly more common for people who have inhaled salt as opposed to fresh water. Hypoxia, when oxygen does not reach living tissues, tends to occur within 12 to 24 hours of the initial accident, and patients who have symptoms after 6 hours of observation generally do well. Inhaling water is particularly damaging to lung tissue.
- Smoke inhalation causes **LUNG TISSUE DAMAGE** from direct heat, toxic chemicals and tiny particles carried into the lower lung. Patients with smoke inhalation may not show symptoms at first. Those with airway burns or exposure to carbon monoxide or toxic fumes should be monitored closely for development of ARDS, even if symptoms are absent at first.
- **OVERDOSES OF NARCOTICS** (e.g., heroin), salicylates, tricyclic antidepressants and other sedatives have been associated with ARDS. Overdoses of tricyclic antidepressants are the most common.

The incidence of ARDS has been difficult to determine partly because of the variety of causes, clinical manifestations and differing criteria used to define it. Various published estimates have ranged from 1.5 to 75 cases per 100,000 persons. The National Heart, Lung and Blood Institute estimates that approximately 150,000 Americans are affected by ARDS each year.²²⁹

Despite advances in therapies, such as mechanical ventilators and supplemental oxygen, ARDS still has a fatality rate of approximately 30 to 40 percent. Deaths usually result from multisystem organ failure due to the lack of oxygen, rather than lung failure alone.²³⁰ The cause of a patient's ARDS helps predict their chances for survival. Younger people and those with fewer chronic health problems are more likely to recover. It is known that people with milder forms of ARDS tend to have a better chance of recovering than those with a more severe form of the illness. For example, patients who develop ARDS due to sepsis usually do not do as well as patients whose ARDS is related to trauma or pulmonary infection.²³¹

Lung function in most survivors of ARDS will return to normal or near normal within several months. However, conditions related to areas outside the lung, such as muscle wasting and weakness, may still exist one year after hospitalization.²³²

There are limited data related to ARDS among racial and ethnic communities. *Table 8* displays the available data.

Race^{III}	<i>Incidence^I (2003)</i>		<i>Mortality² (2003)</i>	
	NUMBER	RATE	NUMBER	RATE
Total	150,000	1.5 – 75.0	1,765	0.6
White	**	**	1,496	0.7
Black	**	**	220	0.5
Other	**	**	49	0.5

Sources: 1 National Health Lung, Blood Institute. What is ARDS? *Fact Sheet*. Available at www.nhlbi.nih.gov/health/dci/Diseases/Ards/Ards_Whatis.html. Accessed 3/02/07.
 2 Centers for Disease Control and Prevention. CDC Wonder. Available at: www.wonder.cdc.gov/wonder/cgi-bin/asp/MortRates.asp?ARCHIVE=FPS1=00000&SF. Accessed 2/28/07.

Notes: I Mortality rates are per 100,000, age-adjusted to the 2000 U.S. standard population. Latest data available.
 II Acute respiratory distress syndrome incidence rates are per 100,000 population.
 III Non-Hispanics
 ** Data not available.

Racial/Ethnic Differences

African Americans

THE ANNUAL ARDS MORTALITY RATE is slowly declining in the United States. Mortality rates have been continuously higher for African Americans than Whites. In 2003, however, 0.5 out of every 100,000 African Americans died from ARDS compared to 0.7 per 100,000 Whites. A higher percentage of the African American ARDS deaths were reported in younger age categories. Among deaths of persons less than 35 years of age, 27 percent were African American.²³³

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Consider the Differences...

- Acute respiratory distress syndrome (ARDS) mortality rates have been continuously higher for African Americans than Whites. In 2003, however, 0.5 per 100,000 African Americans died from ARDS compared to 0.7 per 100,000 Whites.
-

Hispanics/Latinos. Reliable incidence figures for ARDS are not available for Hispanics/Latinos.

Asian Americans/Pacific Islanders. Reliable incidence and mortality figures for ARDS are not available for Asian Americans/Pacific Islanders.

American Indians/Alaska Natives. Reliable incidence and mortality figures for ARDS are not available for American Indians/Alaska Natives.

THE MOST SERIOUS INCIDENCE OF ARDS in the American Indian population was due to the Hantavirus pulmonary syndrome (HPS) outbreak in 1993. HPS is the name given to an infectious lung disease that first appeared as a “mystery” illness in the Southwest United States in the spring of 1993. By the end of that year, 53 cases had been reported from 14 states.²³⁴

The hantavirus infection triggers an illness at first similar to a severe cold or flu, including fever and muscle aches. It quickly leads to severe respiratory difficulties and acute respiratory distress syndrome, which may be fatal. Through 2007, a total of 465 cases of HPS were reported in the United States. Among minority groups, American Indians accounted for about 19 percent of cases, African Americans for 2 percent and Asians for 1 percent. Whites accounted for 78 percent of all cases and about 14 percent of HPS has been reported among Hispanics. About 75 percent of the patients have been residents of rural areas.²³⁵

Lung Disease Data at a Glance

Respiratory Syncytial Virus (RSV)

- Respiratory syncytial virus (RSV) is the most common cause of severe respiratory infections in children.
- In the United States, an estimated 51,000 to 82,000 young children (the majority of them less than six months old) are hospitalized annually due to RSV.
- RSV infection is also increasingly recognized as a cause of hospitalization among older adults. More than 78 percent of RSV-associated underlying respiratory and circulatory deaths occurred among people aged 65 years or older.
- American Indians and Alaska Natives have been documented to have high rates of RSV. One study found that the age-adjusted RSV-specific hospitalization rates among Navajo and White Mountain Apache children younger than 1 year was three times higher than the rates reported for similarly aged children in the general U.S. population and more than twice the rate of inner-city Medicaid children.

Respiratory Syncytial Virus (RSV)

RESPIRATORY SYNCYTIAL VIRUS (RSV) is the most common cause of severe lower respiratory tract infections in children. RSV may cause bronchiolitis, an inflammation of the small airways, or cold-like illnesses in both children and adults. RSV infections occur throughout the year, but widespread outbreaks typically occur during the winter months, peaking in January and February. The timing and severity of outbreaks in a community vary from year to year. RSV is spread through close contact with infected persons or contact with contaminated surfaces or objects – when infectious material comes in contact with the eyes, mouth or nose or through inhaling droplets from a sneeze or cough. RSV spreads easily among children during outbreaks, and most children will have evidence of RSV infection in their blood by the time they reach 2 years of age.

RSV begins most frequently with fever, runny nose, cough and sometimes wheezing. During their first RSV infection, between 25 and 40 percent of infants and young children have signs or symptoms of bronchiolitis or pneumonia, and 0.5 to 2 percent require hospitalization. Most children recover from the illness in 8 to 15 days, but RSV can be more serious in infants and children born prematurely (35 weeks gestation or less). Premature infants often have underdeveloped lungs and have not received enough antibodies from their mother to help them fight off RSV. High-risk children who are infected with RSV disease often need to be hospitalized. In the United States, more than 51,000 to 82,000 young children (the majority of them under 6 months old) are hospitalized due to RSV and approximately 2 percent die each year.²³⁶

Although RSV is most common among infants and children under 1 year of age, it can cause serious respiratory infections throughout one's life, especially among the elderly and those with weak immune systems, or heart or lung problems. In fact, a study found that more than 78 percent of RSV-associated deaths with underlying heart and lung complications occurred among people aged 65 years or older.²³⁷

Racial/Ethnic Differences

African Americans

A RECENT STUDY FOUND that a child's age at the time of RSV infection and whether that child lives with a smoker could mean the difference between the sniffles and the intensive care unit. The study also reported that African American children tended to have less serious infections than White children. The researchers found the results surprising because RSV infection is linked to childhood asthma. African Americans are more likely to suffer from asthma and to be hospitalized because of it. It was hypothesized that African American children would be at increased risk for serious RSV infection. However, the study proved just the opposite.²³⁸

A study in California measured the rate of infant hospitalizations related to respiratory syncytial virus and investigated risk factors of RSV hospitalizations by race or ethnicity, and payer source. The study reported that between 1999 and 2002, an average of 12.3 percent of all hospitalized infants had an RSV-associated illness, making RSV the leading cause of infant hospitalizations. The crude odds ratios for RSV associated hospitalizations by ethnicity were: non-Hispanic African Americans 2.8 (2.7-3.0), Hispanics 2.7 (2.6-2.8), non-Hispanic Whites 2.3 (2.2-2.4) and American Indians 1.6 (1.3-2.0). RSV hospitalization rates were highest among African American and MediCal-insured infants. Charges totaled approximately \$500 million over the study period.²³⁹

Hispanics/Latinos, Asian Americans and Native Hawaiians/Pacific Islanders. No data on RSV exists for Hispanics/Latinos, Asian Americans and Native Hawaiians/Pacific Islanders.

American Indians/Alaska Natives

AMERICAN INDIANS AND ALASKA NATIVES have been documented to have high rates of RSV. One study found that the age-adjusted RSV hospitalization rates among Navajo and White Mountain Apache children less than 1 year old were three times higher than the rates reported for children of the same age group in the general U.S. population (91.3 per 1,000 versus 31.2 per 1,000). In addition, this group had more than twice the hospitalization rate of inner-city Medicaid children (91.3 per 1,000 versus 40.8 per 1,000). A lower threshold for hospitalization or underlying chronic conditions that predispose American Indians and Alaska Natives to severe RSV disease does not seem to fully explain high RSV hospitalization rates in this population.²⁴⁰

A study found that American Indian and Alaska Native infants living in the Southwest and Alaska regions are at especially high risks for hospitalization due to RSV infection. In 2000–2001, RSV disease was listed as a diagnosis for 14.4 percent of all American Indian/Alaska Native infant hospitalizations, with bronchiolitis attributable to RSV infection (12.2%) being among the top five listed diagnoses. The RSV-specific hospitalization rate was 34.4 per 1,000 infants for American Indian and Alaska Native infants and 27.4 per 1,000 births for the general U.S. infant population. The hospitalization rates for American Indian and Alaska Native infants living in the Southwest and Alaska regions (70.9 and 48.2 per 1,000 infants, respectively) were much higher than the overall rate for infants in the U.S.²⁴¹

Bronchiolitis is an inflammation of the bronchioles (small passages in the lungs) and is usually caused by a viral infection. The disease usually affects children under the age of 2, with a peak age of 3 to 6 months. It is a common, sometimes severe illness. Respiratory syncytial virus is one common cause. Because of the association between the two infections, bronchiolitis is a good indicator of RSV disease. Approximately half of all lower respiratory tract infection-associated hospitalizations are caused by bronchiolitis, with RSV accounting for 50 to 80 percent of all bronchiolitis cases.²⁴²

Rates of bronchiolitis-associated hospitalization for American Indian/Alaska Native children are approximately double that for the general population of U.S. children. During 1996 to 2000, among American Indian/Alaska Native infants less than 1 year old, rates were 75.5 versus 39.1 per 1,000 children and rates for children less than 5 years old were 4.7 versus 2.4, respectively. Among American Indian/Alaska Native children, those from two of the six Indian Health Service regions (Alaska and Southwest) had high hospitalization rates (25.3 and 23.9, respectively) and the other three regions had low rates that were similar to the overall rate for U.S. children. During 1996 to 2000, hospitalization rates for the Southwest and Alaska regions increased significantly, as did the overall rate for U.S. children. Possible risk factors associated with higher rates of bronchiolitis in American Indian/Alaska Native children include household crowding and underventilation, smoke exposure and lack of breast-feeding.²⁴³

CHANGING THE FACE OF RSV RESEARCH

Richard Lockey, M.D.

An allergist and immunologist, Richard Lockey, M.D., is the Principal Investigator of the ACRC at the University of South Florida. He conducts clinical trials for new asthma medications and oversees a molecular biology research lab, a clinical research lab and an indoor allergen research lab, which is investigating everything from soybean allergens to dust mites.

Dr. Lockey is exploring the link between respiratory syncytial virus (RSV) and asthma. RSV causes approximately 51,000 to 82,000 hospitalizations and 2,500 deaths each year in both infants and young children. He is also investigating new immunizations to turn off the allergic response and, in the process, possibly cure asthma, or at least reduce its severity.

Many of the patients Dr. Lockey sees have complications that increase the risk of asthma, including sinusitis, rhinitis, gastroesophageal reflux (GERD), obesity and osteoporosis. Factors contributing to an increase in patients' asthma symptoms include busy families who do not have time to clean their homes appropriately, leaving allergens that cause breathing problems.

Lung Disease Data at a Glance

Sarcoidosis

- Sarcoidosis is the most common fibrotic lung disorder in the United States. That is, it is the most common lung disease that involves scarring of the lung.
- Pulmonary sarcoidosis usually occurs in adults from the ages of 20 to 40, although all ages can be affected. The peak incidence occurs in the third decade of life. Newer research suggests that a second peak occurs in patients over 50 years old, especially in women.
- Sarcoidosis is usually not disabling and most people with the disease can live normal lives. About 20 to 30 percent, however, are left with some permanent lung damage, and in 10 to 15 percent of patients the disease is chronically disabling.
- In the U.S. today, approximately 5 per 100,000 Whites and 40 per 100,000 African Americans have sarcoidosis. While this data indicates that the disease affects more African Americans than Whites, gender may also impact risk. African American women are twice as likely to develop sarcoidosis as African American men.
- African Americans, Swedes and Danes have the highest prevalence rates of sarcoidosis in the world. In the United States, the lifetime risk of sarcoidosis is estimated to be approximately three times higher among African Americans than Whites.
- The mortality rate for sarcoidosis among African Americans, although low, is approximately 13 times that of Whites.
- Sarcoidosis is rarely reported in Central and South America. In Spain, only 1.2 per 100,000 persons is infected.
- Puerto Ricans and Mexicans are much more likely than other Hispanic subgroups to report sarcoidosis.
- Among Asian American and Native Hawaiian/ Pacific Islander populations, sarcoidosis mainly affects Japanese people. The disease is rare in Southeast Asian, Korean, Chinese and Indian populations.
- The disease rarely occurs in American Indians and Alaska Natives.

Sarcoidosis

SARCOIDOSIS IS A DISEASE THAT CAUSES INFLAMMATION of the body's tissues. This inflammation produces granulomas (small lumps), that can be either inside the body or on its exterior, as sores on the face or shins. Sarcoidosis can occur in almost any organ and almost always affects more than one of the body's systems. However, sarcoidosis is most frequently found in the lungs where granulomas can appear on the walls of the alveoli (small air sacs) or on the walls of the bronchioles (breathing tubes). Pulmonary sarcoidosis can decrease lung volume (the amount of air the lungs can hold) and it can cause abnormal lung stiffness. Most commonly, sarcoidosis primarily affects the lymph nodes in the chest.

Sarcoidosis is usually not disabling and most people with the disease can live normal lives. In the majority of cases, the condition appears temporarily and disappears on its own without treatment. In cases where the lumps do not heal and disappear, the tissues remain inflamed and become scarred. About 20 to 30 percent of people with sarcoidosis are left with some permanent lung damage. In 10 to 15 percent of patients, the disease is progressive. Although not common, death from sarcoidosis can occur if the disease causes serious damage to a vital organ other than the lung.

The cause of sarcoidosis is not yet known. Most researchers agree that sarcoidosis involves an altered immune system, but do not know the source of the problem and what triggers such a response. Some researchers believe that sarcoidosis may result from a respiratory infection caused by a virus, bacteria or an unidentified environmental toxin.

Several studies have explored occupational and environmental risk factors for sarcoidosis. Researchers have noted higher rates of sarcoidosis among healthcare workers. In the 1940s, cases in women in the fluorescent light industry in Salem, MA, led to the recognition of beryllium exposure as the cause of "Salem sarcoid," now identified as berylliosis. Researchers have also identified an increased risk for sarcoidosis among people who have worked on a U.S. Navy aircraft carrier. It is not known whether the high diagnosis rates are the result of the more frequent routine screening for tumors in this setting. More research is needed to better understand how environmental and occupational exposures may increase the risk of sarcoidosis.²⁴⁴

Increases in the prevalence of sarcoidosis in the rural southeastern and mid-Atlantic United States led to studies that looked at possible causes in soil, plants and pollen, proximity to forests, water supply, use of firewood, proximity to lumbering and wood milling and exposure to pets and farm animals, among others. No studies have proven these possible causes.

Sarcoidosis can run in families, which suggests that genetics play a role. One study found that the risk for sarcoidosis was increased 4.6 times in parents and siblings of patients with the disease.²⁴⁵

Many sarcoidosis cases do not show symptoms and therefore are never reported. Despite the difficulties in identifying this disease, sarcoidosis is known to be the most common fibrotic lung disorder (i.e., scarring of the lung) in the United States.²⁴⁶

Sarcoidosis affects mostly people between 20 to 40 years of age, but it can occur at any age. Historically, the peak incidence is in the third decade of life.²⁴⁷ New research suggests that a second peak incidence occurs in patients over 50 years of age.²⁴⁸ Additionally, sarcoidosis appears to be more common in nonsmokers and women than in smokers or men.

This mysterious disease is found throughout the world, in all races and in both sexes. However, no one knows why persons of African American (especially young African American women), Scandinavian, German, Irish or Puerto Rican origin are more prone to sarcoidosis than persons of other ethnic backgrounds.²⁴⁹

Racial/Ethnic Differences

African Americans

AFRICAN AMERICANS, SWEDES AND DANES have the highest prevalence rates of sarcoidosis in the world. In the U.S., the lifetime risk of sarcoidosis is approximately three times higher among African Americans than Whites.²⁵⁰

Because sarcoidosis can escape diagnosis or be mistaken for several other diseases, the prevalence of the disease can only be estimated. Today, approximately 5 per 100,000 Whites and 40 per 100,000 African Americans have the disease in the U.S. However, both gender and ethnicity may impact disease risk as African American women are two times more likely to have sarcoidosis than African American men.²⁵¹

Incidence rates not only differ among races; they also appear to differ between genders. A recent study found that African Americans had about a threefold higher age-adjusted annual incidence rate (35.5 per 100,000) than Whites (10.9 per 100,000). This study conducted by a health maintenance organization in Detroit also found that the annual age-adjusted incidence rate was highest in African American females (39.1 per 100,000), followed by African American males (29.8 per 100,000), White females (12.1 per 100,000) and White males (9.6 per 100,000). African American females aged 30 to 39 years were at greatest risk with an annual incidence of 107 per 100,000.²⁵²

The mortality rate among African Americans, although low, is approximately 13 times that of Whites. In 2003, 577 African Americans (1.3 deaths per 100,000 cases) died from sarcoidosis as compared to only 295 Whites (0.1 deaths per 100,000 cases), in the same year.²⁵³

Several studies also suggest that in addition to higher prevalence rates of sarcoidosis, African Americans have more severe forms of the disease than Whites, who are more likely to have symptom-free forms. African Americans tend to suffer from more advanced forms of sarcoidosis at an earlier age and have a greater chance of developing a whole range of involvement outside the lung, such as chronic uveitis (inflammation of the eye, which can lead to adhesions, glaucoma, cataracts and blindness) and lupus pernio (skin lesions associated with discoloration of the nose, cheeks, lips and ears). They also tend to have worse long-term prognoses and higher relapse rates than do Whites. Young African American men between the ages of 25 to 34 tend to suffer from severe forms of sarcoidosis and have the highest mortality rate.²⁵⁴

A study found that siblings and parents of African Americans with sarcoidosis have a two-and-a-half to three times increased risk of developing the disease than the general African American population. By age 70, this increased risk would result in two to three more cases of sarcoidosis for every 100 siblings and parents than would be expected for the general African American population.²⁵⁵

A study investigating sarcoidosis among Whites and African Americans shows that overall rates are higher in the southeastern United States. More specifically, rates for African Americans were higher along the Atlantic coastline, while no such pattern was detected for Whites. There were no significant differences in the socioeconomic status, healthcare access, diagnostic practices or disease severity between Whites and African

CHANGING THE FACE OF SARCOIDOSIS RESEARCH

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Americans. Therefore, these findings indicate that the disease may be associated with a geographically-based risk factor for African Americans. However, additional studies are needed to identify the specific risk factor.²⁵⁶

Patients with sarcoidosis, many of whom are African American, may require lung transplantation. A recent study found that among 4,721 lung transplant patients, which included 133 lung transplants for sarcoidosis patients, approximately 83 percent of patients with sarcoidosis survived following lung transplants compared to 91 percent of persons undergoing transplantation for other reasons. Both recipient race and donor race significantly affected short-term survival. African American patients were nearly 50 percent more likely to die. The difference based on race persisted after excluding heart-lung recipients and after controlling for recipient-donor racial mismatch. The most frequent cause of death for patients with sarcoidosis was graft failure, while infection was the primary cause of death among other lung transplants. Patients with sarcoidosis do not do as well as patients undergoing lung transplants for other diseases. This study concludes race is an important factor affecting survival after lung transplants.²⁵⁷

Another study examined whether certain occupations and occupationally-related exposures were associated with a history of sarcoidosis in African American siblings. Occupational data collected from 921 African Americans in 273 sibling subgroups that had been identified through a sarcoidosis case revealed that individuals who work in occupations with potential metal exposures or in workplaces with high humidity may be at increased risk for sarcoidosis, but the complexity of occupationally-related exposures makes it difficult to identify specific agents by using job titles as a surrogate for exposure.²⁵⁸

Hispanics/Latinos

SARCOIDOSIS IS RARELY REPORTED in Central and South America. In Spain, the infection rate is only 1.2 per 100,000 persons.²⁵⁹

Puerto Ricans and Mexicans are much more likely than other Hispanic subgroups to report sarcoidosis. Like Whites, Puerto Ricans and Mexicans, particularly women of childbearing age, have a greater likelihood of developing a skin condition with lesions known as *Erythema nodosum*. The lesion consists of raised, red, tender bumps or nodules on the front side of the legs, and nearby joints are usually sore and swollen. Erythema nodosum usually goes away within six to eight weeks.²⁶⁰

Asian Americans and Native Hawaiians/Pacific Islanders

WITHIN THESE POPULATIONS, sarcoidosis primarily affects Japanese people. The disease is rare in Southeast Asian, Korean, Chinese and Indian populations. There are no sarcoidosis data on Asian Americans/Pacific Islanders.

Studies have shown that sarcoidosis of the heart and eyes appear to be more common in Japan, where the most frequent cause of death for sarcoid patients is related to heart problems. In other countries, mortality is due most commonly to lung failure.²⁶¹

A study with participants from central Japan found a significant difference between the genes of healthy control subjects and those of patients with sarcoidosis. The results suggest that certain genes might be a risk factor for sarcoidosis.²⁶²

American Indians/Alaska Natives. There are no data on this subgroup.

Lung Disease Data at a Glance

Sudden Infant Death Syndrome (SIDS)

- Sudden infant death syndrome (SIDS) is the third leading cause of death in infants between 1 month and 1 year of age. Of the 27,835 infant deaths in 2004, about 8 percent were due to SIDS.
- Potential risk factors for SIDS include: young maternal age, high live birth order, late or no prenatal care, prematurity, low birthweight, bed sharing, soft sleep surfaces and loose bedding, overheating and being male. The most important risk factors are maternal smoking during pregnancy, prone sleep position (lying face down) and exposure to secondhand smoke.
- Maternal smoking during pregnancy is estimated to double the risk of SIDS.
- After the CDC implemented its “Back to Sleep” campaign, the frequency of prone sleeping decreased from 70 to 20 percent and the SIDS mortality rate decreased by more than 50 percent.
- In 2004, SIDS ranked as the third leading cause of death for African American infants under 1 year of age.
- Although overall rates have plummeted, African American infants were 2.3 times more likely to die than White infants.
- The Hispanic SIDS mortality rate was the lowest rate of all racial and ethnic groups in 2003.
- Among Hispanic subgroups, the SIDS mortality rate was lowest among Central and Southern Hispanics and highest among Puerto Ricans.
- American Indian/Alaska Native infants have SIDS rates that are 2.5 times higher than rates in non-Hispanic White infants, and almost five times higher than rates in Hispanic infants.
- Indians in the Northern Plains and Alaska have the highest rates of SIDS. These areas also have higher maternal smoking rates, a risk factor for SIDS.

Sudden Infant Death Syndrome (SIDS)

SUDDEN INFANT DEATH SYNDROME (SIDS), often called crib death, is a mysterious disease. It is defined as the sudden death of an infant under 1 year of age that remains unexplained after a thorough case investigation, including an autopsy, a death scene investigation, review of the infant's health status before dying and a family medical history. SIDS is the third leading cause of death in infants between one month and 1 year of age. Of the 27,835 infant deaths in 2004, about 8 percent were due to SIDS.²⁶³

Most SIDS cases occur between the ages of 2 and 4 months. The actual cause of SIDS is unknown, but some health experts suspect that SIDS babies are born with brain abnormalities that make them unable to awaken from sleep when exposed to high carbon dioxide or low oxygen levels, which leads to abnormal breathing or heart function. In a recent study, researchers found that infants who died from SIDS tended to arouse less by the end of the night than a control group. The babies who died from SIDS also had incomplete arousals more frequently and for a longer period of time in the first part of the night (between 9 p.m. and 12 a.m.) and fewer full arousals during the latter part of the night (between 3 a.m. and 6 a.m.).²⁶⁴

There are many potential risk factors for SIDS, including young maternal age, late or no prenatal care, premature birth or low birthweight, bed sharing, soft sleep surfaces and loose bedding, overheating and being male. However, the most important risk factors to be aware of are:²⁶⁵

- Maternal smoking during pregnancy;
- Prone sleep position (lying face down), which can cause the baby to breath in too much carbon dioxide and not enough oxygen; and
- Exposure to secondhand smoke.

Maternal smoking during pregnancy is estimated to double the risk of SIDS. A large multi-center study recently investigated the link between SIDS and maternal smoking in Sweden and in five U.S. racial/ethnic groups. The researchers found that SIDS incidence was highest in teenage mothers, lowest for mothers in their 30s and 40s and higher among infants with low birthweight (less than 1,500 grams or 3.3 lbs.). For all population groups, SIDS risk was found to be significantly higher among smokers than the nonsmoking mothers, and rose with the number of cigarettes smoked per day. The link between SIDS and maternal smoking remained strong even after controlling for maternal age, birth order and birthweight, and was found in both Sweden and the United States despite differences in race, ethnicity, nationality and health-care system.²⁶⁶ The excess SIDS risk may be prevented if expectant mothers, especially teenage girls, stop smoking.

In 1992, the American Academy of Pediatrics recommended that infants be placed to sleep on their backs to reduce the risk of SIDS. In 1994, the CDC initiated a national "Back to Sleep" education campaign to encourage healthcare providers and the public to make sure all infants sleep on their backs or sides. This campaign has been so successful that the frequency of prone (face down) sleeping has decreased from 70 to 20 percent and the SIDS mortality rate has decreased by more than 50 percent in the United States. In 2004, 2,109 infants died of SIDS – a death rate of 51.2 per 100,000.²⁶⁷

Table 9 displays data on SIDS mortality by race or ethnicity between selected years 1992 and 2001.

Table 9: SIDS Mortality ^{1,2,1}								
Race	1992		1995		1998		2001	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
Total	4,891	120.3	3,402	87.2	2,827	71.7	2,236	55.5
White	3,239	101.2	2,241	72.3	1,857	59.5	1,449	45.6
African American	1,471	218.4	1,005	166.6	841	137.9	688	113.5
Hispanic/Latino ^{II}	**	**	324	47.7	275	37.4	232	27.1
American Indian/Alaska Native	**	**	77	206.6	61	151.5	61	145.7
Asian American/Pacific Islander	**	**	80	49.9	68	39.4	37	18.5

Sources: 1 Centers for Disease Control and Prevention. SIDS – U.S., 1983-1994. *Mortality and Morbidity Weekly Report*. Vol. 45(40); Oct. 1996.

2 National Vital Statistics Reports: Infant Mortality Statistics from the 2001, 1998, 1995 Period Linked Birth/Infant Death Data Set.

Notes: I Mortality rates are per 100,000 population.

II Hispanics are not mutually exclusive from Whites, African Americans, Asian Americans/Pacific Islanders and American Indians/Alaska Natives.

** Data not available.

Table 10 displays data on SIDS mortality by race or ethnicity between 2002 and 2004.

Table 10: SIDS Mortality by Hispanic Subgroup ¹						
Race	2002 ¹		2003 ²		2004 ³	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
Total	2,295	57.1	2,162	52.9	2,109	51.2
Non-Hispanic White	1,269	55.2	1,173	50.5	1,123	48.8
Non-Hispanic Black	642	110.9	627	108.8	683 ^{II}	111.5
Hispanic	260	29.7	234	25.6	241	25.5
Puerto Rican	31	54.3	31	53.1	**	**
Mexican	181	28.8	162	24.8	**	**
Central and South American ²	26	20.8	27	19.9	**	**
American Indian/Alaska Native	52	123.3	53	124.0	**	**
Asian American/Pacific Islander	51	24.3	61	27.7	**	**

Sources: 1 Mathews TJ, MacDorman MF. National Vital Statistics Reports: Infant Mortality Statistics from the 2002 Period Linked Birth/Infant Death Data Set, Vol. 53, No. 10, November 24, 2004.

2 Mathews TJ, MacDorman MF. National Vital Statistics Reports: Infant Mortality Statistics from the 2003 Period Linked Birth/Infant Death Data Set, Vol. 54, No. 16, May 3, 2006.

3 Minino AM, Heron MP, Smith BL. National Vital Statistics Reports: Deaths: Preliminary data for 2004, Vol. 54, No. 19, June 28, 2006.

Notes: I Mortality rates are per 100,000 population.

II Total Black.

** Not Available

In 2003 and 2004, SIDS was the third leading cause of death among all racial and ethnic groups except for Hispanics, in whom SIDS ranked as the fourth leading cause of death.

Although the overall rate of SIDS in the United States has declined by more than 50 percent since 1990, rates have not declined as much among non-Hispanic Black and American Indian and Alaska Native infants.

SIDS mortality rates in 2003 for infants of non-Hispanic Blacks (108.8 per 100,000) and American Indians/Alaska Natives (124.0), were more than double the rate for non-Hispanic Whites (50.5), and quadruple the rate for Hispanics (25.6).

Racial/Ethnic Differences

African Americans

SIDS RANKED AS THE THIRD LEADING CAUSE OF DEATH for African American infants under one year of age, in 2004. African American babies were 2.3 times more likely than non-Hispanic White babies to die of SIDS. The rate for White babies was 48.8 per 100,000, while the rate for African American babies was 111.5 per 100,000.

African American parents are more than twice as likely as White parents to place infants on their stomachs. Researchers believe that this stems from generations of myths that babies sleep better on their stomachs. In fact, a 2000 national survey conducted by the U.S. Consumer Product Safety Commission (CPSC) and Gerber Products Company found that while almost half of Whites say they get information about sleep positions from their physician or a nurse, African Americans tend to get such information more from family members such as a grandmother. Only 31 percent of African American parents were found to have placed their infants on their backs as recommended by CPSC and the American Academy of Pediatrics.²⁶⁸ Another study found that only 28 percent of African American parents believed that prone sleeping definitely increased the risk of SIDS.²⁶⁹

A recent study has also suggested that the racial disparity between African Americans and Whites may not be due to sleep position alone, but to bed sharing and nonstandard bed use. The researchers found that bed sharing deaths were nearly twice as common in African Americans as non-African Americans, as were deaths on nonstandard sleep surfaces. Forty-nine percent of all infants who died while bed sharing were found on their backs or sides compared with 20.4 percent of infants who were not bed sharing. Overall, the fraction of infants found lying on their backs was not different for African American infants and non-African American infants. Therefore, the authors concluded that public health information tailored for the African American community should emphasize the risks of bed sharing as well as avoidance of the prone position.²⁷⁰

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Consider the Differences...

- Although overall SIDS rates have plummeted, African American infants were 2.3 times more likely to die from SIDS than White infants.
 - Almost half of Whites say they get information about sleep positions from their physician or a nurse. African Americans tend to get such information more from family members such as a grandmother.
 - Bed sharing may be as great of a risk factor as prone sleeping in African Americans.
-

Hispanics/Latinos

IN 2004, 241 HISPANIC INFANTS died from SIDS. It was ranked as the fourth leading cause of death for Hispanic infants under 1 year of age. Hispanic babies were 1.7 times less likely to die of SIDS than White babies. The rate for White babies was 48.8 per 100,000, while the rate for Hispanic infants was 25.5 per 100,000. Since 1995, the SIDS mortality rate has decreased 47 percent among Hispanics.²⁷¹

SIDS rates tend to vary within Hispanic subgroups. Puerto Ricans have significantly higher rates than any other Hispanic group. Central and South American Hispanics had the lowest rate of all with a rate of 19.9 per 100,000 infants in 2003. This SIDS rate was less than half of that of non-Hispanic Whites (48.8) in 2004. In 2003, 53.1 per 100,000 Puerto Ricans died from SIDS compared to 24.8 per 100,000 Mexicans and 50.5 per 100,000 non-Hispanic Whites. In 2004, SIDS was the fourth leading cause of death among infants less than 1 year of age born to Puerto Rican and Mexican American mothers, and the fifth leading cause among infants born to Central and South American mothers.²⁷²

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Consider the Differences...

- The Hispanic SIDS mortality rate (25.5 per 100,000) was lower than non-Hispanic Whites (48.8 per 100,000) and African Americans (111.5 per 100,000).
 - Among Hispanic subgroups, the SIDS mortality rate was lowest among Central and Southern Americans (19.9 per 100,000) and highest among Puerto Ricans (53.1 per 100,000). The Mexican American SIDS mortality rate was 24.8 per 100,000.
 - The CDC's Back to Sleep campaign has been more successful in Hispanics than in non-Hispanic Whites and African Americans.
-

Asian Americans and Native Hawaiians/Pacific Islanders

ASIAN AMERICANS HAVE A LOWER RATE of SIDS than any other group besides Central and South American Hispanics. In 2003, 61 Asian American/Pacific Islander babies died from SIDS in the United States, a mortality rate of 27.7 per 100,000. SIDS rates for Asian/Pacific Islander mothers were approximately half those for non-Hispanic White mothers. It is not known why Asian mothers and babies have a lower risk of SIDS.²⁷³

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Consider the Differences...

- Asian American/Pacific Islander infants had one of the lowest SIDS rates (27.7 per 100,000) among all ethnic groups.
-

American Indians/Alaska Natives

AMONG NATIVE AMERICANS, SIDS was ranked as the second leading cause of death in infants under 1 year of age. American Indian families lose a child to SIDS at more than twice the rate of the general population. In 2003, 53 American Indian babies died from SIDS, a mortality rate of 124.0 per 100,000. Infants of American Indian and Alaska Native mothers have the highest SIDS rates of all race and ethnic groups. American Indian infants were 2.5 times more likely than White babies to die of SIDS.²⁷⁴

Depending on location for American Indians and Alaska Natives the rate of SIDS is two to four times greater than for the entire U.S. population. The Northern Plains Indians, especially tribes in South Dakota, and Alaska Natives have the highest rates of SIDS within the Indian Health Service areas.²⁷⁵

Many factors contribute to the high rate of SIDS among Native Americans, such as lack of awareness about safe sleep practices, maternal smoking and late or no prenatal care. In fact, Native American women have the highest rates of smoking compared with any other race or ethnic group. Northern Plain Indians and Alaska Natives have the highest rates of smoking among all Indian communities.

A recent study found that among Northern Plains Indian infants, sleep position was not a major risk factor for SIDS because most babies do not sleep on their stomachs. However, lack of prenatal visits with a public health nurse and wearing more than two layers of clothing to bed was found to increase risk of SIDS 0.2 to 6 times. The most serious risk factor associated with SIDS was maternal drinking. Binge drinking (five or more drinks at a time) during the mother's first three months of pregnancy was found to increase SIDS risk eight times. Any maternal alcohol use during the three months before pregnancy or during the first trimester was associated with a six times increased risk of SIDS.²⁷⁶

Another study found that almost 98 percent of all SIDS deaths in Alaska were associated with prone sleeping, bed sharing or sleeping outside of a crib.²⁷⁷

Due to the different cultures in the American Indian/Alaska Native population, strategies to increase SIDS awareness need to be identified and developed within the communities themselves in order to lower the number of infant SIDS deaths, especially in the hard-hit regions of the Northern Plains and Alaska.

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Consider the Differences...

- American Indians in the Northern Plains and Alaska have the highest rates of SIDS. These areas also have higher maternal smoking rates, a risk factor for SIDS.
 - American Indian/Alaska Native infants have SIDS rates five times higher than Hispanic infants and approximately two times higher than the United States as a whole.
-

Lung Disease Data at a Glance

Tobacco Use

- Tobacco use remains the number one cause of preventable disease and death in the United States.
- About 8.6 million people in the United States have at least one serious illness caused by smoking, and exposure to tobacco smoke is projected to contribute to some 438,000 deaths each year.
- Among current smokers, chronic lung disease accounts for 73 percent of smoking-related conditions and among former smokers, 50 percent of smoking-related conditions.
- Overall smoking prevalence among U.S. adults has decreased by almost 50 percent since the first Surgeon General's Report in 1964 that linked smoking with various lung diseases.
- Smoking levels among high school students are declining. Between 2000 and 2005, the high school cigarette smoking rate dropped from 28 to 23 percent.
- An estimated 21.5 percent of African Americans smoke, compared to 21.9 percent of Whites. African Americans have lower overall exposure to tobacco smoke, but are more susceptible to developing smoking-related illnesses.
- Hispanics smoke less than all racial and ethnic groups except for Asians. Only 11.1 percent of Hispanic females reported smoking, compared to 21.1 percent of Hispanic men.
- In 2005, 21.1 percent of Hispanic men smoked, compared to 24.0 percent of non-Hispanic White men and 26.7 percent of African American men.
- Hispanic women smoke at a much lower rate than non-Hispanic White women (11.1% versus 20.0%, respectively).
- Asian Americans have the lowest smoking prevalence in adults among all racial/ethnic age groups (13.3%).
- Smoking rates among Native Americans vary greatly by region. Alaska Natives and tribes in the Northern Plains states smoke far more than the general U.S. population, while tribes in the Southwest smoke far less. In 2005, 32 percent of Native Americans smoked, 37.5 percent of men and 26.8 percent of women, respectively, more than any other ethnic group.
- Research documenting tobacco use prevalence among lesbian, gay, bisexual and transgender (LGBT) populations indicates that gay men and lesbians tend to smoke more than their heterosexual counterparts.

Tobacco Use

TOBACCO USE REMAINS THE NUMBER ONE CAUSE of preventable disease and death in the United States. Cigarette smoke contains over 4,800 chemicals, 69 of which are known to cause cancer.²⁷⁸ Active and passive exposure to tobacco smoke is projected to contribute to approximately 438,000 deaths in the United States each year.²⁷⁹ Most smoking-related deaths are due to lung cancer, coronary heart disease and chronic obstructive pulmonary disease (COPD).²⁸⁰

Many more people are harmed by tobacco use than what is indicated by death rates alone. About 8.6 million people in the United States have at least one serious illness caused by smoking. That means that for every person who dies of a smoking-related disease, there are 20 more people who suffer from at least one serious illness associated with smoking. Among current smokers, chronic lung disease accounts for 73 percent of smoking-related conditions. Even among smokers who have quit smoking, chronic lung disease accounts for 50 percent of smoking-related conditions.²⁸¹

Heart disease, lung cancer and chronic lung disease are not the only illnesses that are worsened or caused by smoking. Conditions such as sudden infant death syndrome (SIDS), acute lung infections, asthma and occupational or environmental lung disease, can be caused or irritated by direct or indirect exposure to smoke. Smoking has also been linked to slowed wound healing, hearing loss, impotence, infertility, peptic ulcer disease, ectopic pregnancy (when the fetus grows outside the uterus), miscarriages and decreased bone density in women.

As smoking rates decline among the non-Hispanic White population, the tobacco industry has been specifically targeting cultural and ethnic minorities through product development, packaging, pricing, advertising and promotional activities. In 2005, the five largest cigarette companies spent \$13.11 billion dollars, or more than \$35 million dollars per day, advertising and marketing their products. As cigarette sales decline in this country, expenditure on advertising and promotion increase. In 1981, sales peaked at 636.5 billion cigarettes, or nearly 32 billion packs, while advertising and promotion expenditures that year were \$1.5 billion. By 2005, sales had decreased to 351.6 billion cigarettes, but advertising and promotional expenditures had increased by \$11.61 billion dollars. The largest single category of advertising expenditures in 2005 by far was price discounts paid to cigarette retailers or wholesalers to reduce the cost of cigarettes to the consumer. This category accounted for 74.6 percent (\$9.78 billion) of expenditures.²⁸²

Table 11 displays the current prevalence of smoking among adults by race/ethnicity. Mortality data by race/ethnicity are not available.

Table 11: Cigarette Smoking Prevalence, 2005^{1,2}

	Total	Non-Hispanic White	Non-Hispanic Black	Hispanic/Latino	Asian American	American Indian/Alaska Native
Adults						
Male	23.9%	24.0%	26.7%	21.1%	20.6%	37.5%
Female	18.1%	20.0%	17.3%	11.1%	6.1%	26.8%
Total	20.9%	21.9%	21.5%	16.2%	13.3%	32.0%

Source: - Centers for Disease Control and Prevention. Tobacco Use Among Adults—U.S., 2005. Mortality and Morbidity Weekly Report. Vol. 42(42):1145-1148, October 2006.

Notes: 1 Persons 18 years and older.

2 Does not include Native Hawaiians or other Pacific Islanders.

Overall smoking prevalence among adults in the United States has decreased by almost 50 percent since the first Surgeon General's report was issued in 1964, linking smoking with lung cancer, emphysema and other lung diseases. However, 45.1 million Americans continue to smoke.²⁸³

Racial/Ethnic Differences

African Americans

OVERALL, 21.5 PERCENT OF NON-HISPANIC BLACKS SMOKE compared to 21.9 percent of non-Hispanic Whites. Since 1950, African American men have had considerably higher rates of cigarette smoking than White males. In recent years, smoking prevalence among African American men has been similar to that among White men. In 2005, 26.7 percent of non-Hispanic Black men smoked compared to 24.0 percent of non-Hispanic White men.²⁸⁴

Although the prevalence of smoking has been historically higher among African American men (by about 20%), their overall exposure to tobacco smoke seems to be lower than that of White men. On average, White men tend to consume more cigarettes (about 30 to 40 percent more) than African American men.²⁸⁵ Such differences in exposure to smoke will be even more pronounced as rates of smoking between the two races continue to become similar. Despite their lower exposure, however, African American men are 37 percent more likely than White men to develop lung cancer.²⁸⁶

In 2005, non-Hispanic Black women were 14 percent less likely to be current smokers than non-Hispanic White women (17.3% versus 20.0%). They also smoked half the number of cigarettes on a daily basis as did White women.²⁸⁷ However, like African American men, African American women are more likely to develop and die from lung cancer.

In 2005, 16.8 percent of African American high school students smoked any form of tobacco.²⁸⁸ African American high school students were significantly less likely than White and Hispanic students to report current smoking. Among middle school students in 2004, rates were relatively equal, with about 1 in 10 White (11.3%), African American (12.4%) and Hispanic (15.1%) students currently smoking. However, Hispanic middle school students had the highest level of current use of any tobacco products.²⁸⁹

During the last decade, the tobacco industry has aggressively increased its advertising and promotional campaigns targeted at minorities.

African American communities have been bombarded with cigarette advertising. Since the Master Settlement Agreement (MSA), the average youth in the United States is annually exposed to 559 tobacco ads, every female adult 617 advertisements and every African American adult 892 ads.²⁹⁰ Expenditures for magazine advertising of mentholated cigarettes, popular with African Americans, increased from 13 percent of total ad expenditures in 1998 to 49 percent in 2005.²⁹¹

Among African Americans, as with other U.S. populations, the prevalence of smoking declines as education level increases. In 2003, smoking rates were over three times higher among African American males over age 25 who have less than a high school education (37.4%) compared to those with a college education (10.3%). Smoking rates are also higher in African American females over age 25 who have less than a high school education (26.9%) compared to those with a college education (11.4%).²⁹²

The rate of cigarette smoking increased 80 percent among African American high school students from 1991 to 1997. However, between 1997 and 2005, the smoking rate declined 43 percent from 22.7 to 12.9

percent.²⁹³ African American high school students were significantly less likely than White and Hispanic students to report current smoking. In 2004, 7.6 percent of African American middle school students smoked cigarettes. This percentage was relatively equal to other racial/ethnic groups except for Asians who had the lowest percentage (2.3%).²⁹⁴

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Consider the Differences...

- African Americans have similar rates of cigarette smoking as Whites and lower overall exposure to tobacco smoke, but are more susceptible to developing and dying from lung cancer.
 - In 2005, 8.4 percent of African American women of reproductive age smoked while pregnant, compared to 13.8 percent of White women and 2.6 percent of Hispanic or Latina women.
 - Although African American smokers are more likely than White smokers to quit for at least one day, White smokers are 1.5 times more likely to succeed in quitting than African Americans.
-

Hispanics/Latinos

In 2005, 16.2 PERCENT OF HISPANICS SMOKED compared to 21.9 percent of non-Hispanic Whites. Hispanics smoke less than all racial/ethnic groups except for Asians. This is mainly due to the very small proportion of Hispanic women who reported smoking. Only 11.1 percent of Hispanic females reported smoking, compared to 21.1 percent of Hispanic men.²⁹⁵

Studies suggest that among Hispanic subgroups, Puerto Ricans have higher smoking prevalence rates than Mexican Americans, Cuban Americans, Central and South Americans and other Latinos. One study found that Puerto Rican and Cuban smokers were much more likely to be heavy smokers. The study also reported that Puerto Rican women were nearly twice as likely to smoke as women of other Hispanic groups.²⁹⁶

In 2005, 24.9 percent of Hispanic high school students smoked any form of tobacco, while in 2004, 15.1 percent of Hispanic middle school students smoked tobacco products. Hispanic high school students smoked more than African American students, but less than non-Hispanic White students. Middle school smoking rates in Hispanics were higher than both African Americans and non-Hispanic Whites.^{297,298}

The smoking rate for Hispanic expectant mothers is generally low (2.6%). However, like smoking prevalence, rates differ considerably within subgroups. In 2004, the rate of smoking during pregnancy was highest among Puerto Rican women (8.5%), intermediate in Cuban (6.4%) and Mexican (2.0%) women and lowest among Central and South American women (1.2%).²⁹⁹

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Consider the Differences...

- In 2005, 21.1 percent of Hispanic men smoked, compared to 24.0 percent of non-Hispanic White men and 26.7 percent of non-Hispanic Black men.
 - Hispanic women smoke at a much lower rate than non-Hispanic White women (11.1% versus 20.0%).
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Asian Americans and Native Hawaiians/Pacific Islanders

ASIAN AMERICANS HAVE THE LOWEST ADULT SMOKING prevalence of all racial and ethnic groups, which is likely due to the low rate of smoking among Asian American women. In 2005, 13.3 percent of Asian Americans smoked compared to 21.9 percent of non-Hispanic Whites, 21.5 percent of non-Hispanic Blacks, 32 percent of American Indians/Alaska Natives and 16.2 percent of Hispanics. Only 6.1 percent of Asian American females smoke. This rate is almost half of the smoking rate in Hispanic women and approximately one-third of the rate in non-Hispanic Black and White women. Asian American males have smoking rates similar to men of other racial and ethnic groups.³⁰⁰

New research indicates that smoking prevalence among Chinese American men may even be higher than the rate among African American adults. In 2002, researchers published the results of a survey conducted in Chicago's Chinatown in which they used a Chinese-language questionnaire based on the National Health Interview Survey (NHIS). The NHIS makes annual estimates of cigarette smoking in small samples of English-speaking Asians and Pacific Islanders, most of whom are of Chinese descent. The authors found that 34 percent of Chinese men smoked compared to 18.5 percent of Asian/Pacific Islander males in the NHIS.³⁰¹

Among racial and ethnic groups, Asians have the lowest death rate for lung cancer and coronary heart disease. This may be due to the fact that unlike their White and African American counterparts, Chinese American smokers seem to take in less nicotine per cigarette and actually metabolize the drug more slowly.³⁰² Nicotine may be responsible for the activation of several cancer-causing agents that are specific to lung cancer.

Smoking during pregnancy is less common among Asian American or Pacific Islander women than in most other racial and ethnic groups, with rates of 0.7 percent to 3.8 percent reported for Chinese, Japanese, Filipino and other Asian mothers. Only Hawaiian women had a relatively high smoking rate during pregnancy (14.8%). Caution should be exercised in interpreting the data on smoking for Asian mothers (except Hawaiian women). Maternal tobacco use is not reported on birth certificates in California, which accounts for a large proportion of births in each Asian subgroup. However, the data are believed to be generally reliable because other studies have also found that the smoking rates for Asian mothers are low. The smoking rate during pregnancy among Asian Americans/Pacific Islander women declined by 60 percent, from 5.5 percent in 1990 to 2.2 percent in 2005.³⁰³

In 2004, 13.3 percent of Asian high school students and 5.1 percent of Asian middle school students smoked some form of tobacco.³⁰⁴

Although Asian Americans have the lowest smoking prevalence rates among adults of all racial and ethnic groups, studies show they are exposed to higher levels of involuntary secondhand smoke. A recent study explored differences in knowledge, attitude and tolerance of exposure to secondhand smoke among Asian American subgroups in the Delaware Valley region of Pennsylvania and New Jersey. Exposure to secondhand smoke remains a common public health hazard among Asian Americans, with 38 percent reporting exposure at home and 40 percent at their workplace. Both knowledge and tolerance levels differed significantly by ethnic groups, gender, education and smoking status. This presents an urgent need for a smokefree policy at home, in the workplace and in public areas. Tobacco prevention/intervention and cessation programs for Asian Americans should emphasize the adverse health effects of secondhand smoke and promote a smokefree environment.³⁰⁵

Tobacco companies are developing specific promotion strategies to target the Asian population. Tobacco industry representatives have agreed that Asian smokers are a key market since smoking prevalence in most Asian countries is considerably higher than in the United States.³⁰⁶ In fact, over 300 million men in China – equivalent to the entire U.S. population – are smokers.³⁰⁷

There are limited data available on smoking rates among Native Hawaiians and Pacific Islanders. A survey found that 11 percent of Hawaiian/other Pacific Islander youth aged 12 to 17 years were current smokers.³⁰⁸

A recent study examined the association between depressive symptoms and smoking behaviors in Chinese American smokers who reside in Northern California. Multiple regression analysis suggested female gender, unemployment, major depression or dysthymia (mild depression) within the past year, previous experience with nicotine withdrawal syndrome and high temptation to smoke under negative mood situations are associated with a higher level of depressive symptoms. The level of depressive symptoms among Chinese American smokers is comparable with that observed in other U.S. populations. In the current sample study, elevated depressive symptoms were more prominent among women or those who were unemployed and smokers who reported significant nicotine withdrawal at previous quit attempts. Also, a high temptation to smoke when experiencing negative emotions was found. These findings support further examination of the role of depression in smoking among Chinese Americans and underscore the importance of addressing depressive symptoms when treating tobacco use in Chinese smokers.³⁰⁹

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Consider the Differences...

- In 2005, 20.6 percent of Asian American men smoked compared to 24.0 percent of non-Hispanic White men. However, Asian American women (6.1%) were significantly less likely to smoke than were non-Hispanic White women (20.0%).
 - Current smoking rates are much higher among Asian American men than among Asian American women, regardless of country of origin.
 - Southeast Asian and Chinese men have higher rates of smoking than other Asian subgroups.
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American Indians/Alaska Natives

AMERICAN INDIANS AND ALASKA NATIVES continue to maintain high rates of non-traditional tobacco use, especially cigarette smoking, despite continuous warnings about the addictive nature of nicotine and its association with smoking-related diseases. The population in the Northern Plains overall have higher rates of current smoking while the Southwest tribes overall have lower smoking prevalence compared to the general U.S. population. The reason for the differences is unclear, but the fact that smoking-related diseases are leading causes of death in these specific American Indian populations makes understanding each tribe's differences necessary when developing culturally appropriate prevention and treatment programs.³¹⁰

Smoking rates among Native Americans vary greatly by region. Alaska Natives and tribes in the Northern Plains states smoke far more than the general population, while tribes in the Southwest smoke far less. In 2005, 32 percent of Native Americans smoked (37.5% of men and 26.8% of women), more than any other ethnic group.³¹¹

American Indian and Alaska Native lands are sovereign nations and are not subject to state laws prohibiting the sale and promotion of tobacco products to minors. As a result, most American Indian and Alaska Native youth have access to inexpensive tobacco products at a very young age. Many tribes consider tobacco a sacred gift and use it during religious ceremonies and as traditional medicine.³¹²

American Indian/Alaska Native youth had the greatest cigarette smoking prevalence (23.1%) of all ethnic/racial groups between 2002 and 2004.³¹³

In 2004, American Indian and Alaska Native women had the highest rate of smoking during pregnancy (18.2%) compared to non-Hispanic White (13.8%) and non-Hispanic Black (8.4%) women.³¹⁴

Alaska's 2005 *Youth Risk Behavior Survey* reported that Alaska Native male and female high school students are 1.5 times more likely to have ever taken a puff of a cigarette, and three to five times more likely to smoke or smoke frequently compared to their non-Native peers. The report showed a particularly large racial disparity among high school girls who use smokeless tobacco. Alaska Native girls are nine times as likely to use smokeless tobacco as are non-Native girls. Not only are Alaska Native high school students more likely than non-Native students to use tobacco, but they also appear to start tobacco use at an earlier age. By the ninth grade, 42 percent of Alaska Native students reported having smoked cigarettes at least one day in the past month compared to only 7 percent of non-Native students. Among Alaska Native high school students, 1 in 5 reported having begun smoking before age 13 compared to only five percent of non-Native students reported having started smoking by the same age.³¹⁵

Another survey reported that in 2000, Alaska Native women (29%) were twice as likely as White women (14%) to have smoked during the last three months of their pregnancy. The survey also noted that even though data showed consistently higher prevalence of smoking among Alaska Natives compared with non-Natives, there is some evidence that suggests that Alaska Native smokers smoke less than non-Native smokers.³¹⁶

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Consider the Differences...

- American Indians have the highest rates of smoking among all racial and ethnic groups. However, this data may be difficult to interpret since surveys typically do not separate ceremonial tobacco use from misuse of commercial tobacco.
 - American Indian women had the highest rate of smoking during pregnancy (18.2% compared to 13.8% of non-Hispanic White women and 8.4% of non-Hispanic Black women).
 - Smoking rates among American Indians/Alaska Natives vary by region and state. They are highest in Alaska (45.1%) and the Northern Plains (44.2%) and lowest in the Southwest (17.0%).³¹⁷
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Smoking during Pregnancy

WHEN A PREGNANT WOMAN SMOKES, HER BABY DOES TOO. Smokers inhale poisons like carbon monoxide and nicotine. These poisons travel to the growing baby and keep the baby from getting enough food and oxygen. Smoking during pregnancy increases the chance of miscarriage (loss of the pregnancy). A pregnant woman who smokes is also more likely to have a baby that is born too soon or weighs less than they should. These babies usually have lots of health problems and often require special care. As they get older, children born to women who smoked during pregnancy are more likely to develop asthma and other lung problems and they may learn more slowly.

In 2004, of all racial and ethnic groups, American Indian women had the highest rate of smoking during pregnancy (18.2%) followed by non-Hispanic Whites (13.8%), non-Hispanic Blacks (8.4%) and Hispanics or Latinas (2.6%). Caution should be exercised in interpreting the data on smoking for Asian mothers, as maternal tobacco use was not reported on the birth certificates of California, which accounts for a large proportion of the births in each Asian subgroup. However, the data are believed to be generally reliable because other studies have also found that the smoking rate for Asian mothers is low.³¹⁸

Table 12 displays the current prevalence of mother who smoked during pregnancy in 2004.

Table 12: Cigarette Smoking During Pregnancy^{1,2,3,5,6}					
	Non-Hispanic White	Non-Hispanic Black	Hispanic/Latina	Asian American⁷/ Pacific Islander	American Indian/ Alaska Native⁸
Total	13.8	8.4	2.6	2.2	18.2
(Subgroups ⁴ by percentage: Mexican, 2.0; Puerto Rican, 8.5; Cuban, 6.4; Central and South American, 1.2)					

Sources: - Centers for Disease Control and Prevention. National Center for Health Statistics. Health, United States, 2006 with Chartbook on Trends in the Health of Americans.

- CDC. National Vital Statistics Report. Infant Mortality Statistics from the 2003 Period Linked/Birth Death Data Set. Vol. 54, No.16; May 2006.

Notes: 1. Persons 18 years and older. 2. Native Hawaiians are not included. 3. Mothers who smoked cigarettes during pregnancy, U.S. 2004. 4. Mothers who smoked cigarettes during pregnancy, U.S. 2003. 5. Reporting areas that have adopted the 2003 revision of the U.S. Standard Certificate of Live Birth are excluded because maternal tobacco use and education data based on the 2003 revision are not comparable with data based on the 1989 and earlier revisions of the U.S. Standard Certificate of Live Birth. In 2003, Pennsylvania and Washington adopted the 2003 revision; in 2004, Florida, Idaho, Kentucky, New Hampshire, New York State (excluding NYC), South Carolina and Tennessee adopted the 2003 revision. In addition, California did not require recording of tobacco use during pregnancy. 6. Data from states that did not require the reporting of Hispanic origin of mother on the birth certificate are not included. Reporting of Hispanic origin increased from 47 states in 1989 to include all 50 states and DC by 1993. 7. Maternal tobacco use during pregnancy was not reported on the birth certificates of California, which in 2004 accounted for 30 percent of the births to Asian American or Pacific Islander mothers. Starting with 2003 data, estimates are not shown for Asian or Pacific Islander subgroups during the transition from single race to multiple race reporting. 8. Wide variances on estimates reflect the small sample size.

Smoking among Racial/Ethnic Youth

SMOKING LEVELS AMONG HIGH SCHOOL STUDENTS have peaked and are now declining. Between 2000 and 2005, the rate of smoking among high school students dropped from 28 to 23 percent.³¹⁹ Factors that may have contributed to this decline include: increases in the retail price of cigarettes, the more widespread use of tobacco control programs and the implementation of smokefree laws and policies. However, there has yet to be a similar national decline in the smoking levels among middle school students.

Between 2002 and 2004, American Indian/Alaska Native youths had the greatest cigarette smoking prevalence (23.1%), followed by non-Hispanic Whites (14.9%), Hispanics (9.3%), non-Hispanic Blacks (6.5%) and Asians (4.3%). Among Asian subpopulations, smoking prevalence ranged from 2.2 percent for Vietnamese to 6.8 percent for Koreans. Among Hispanic populations, prevalence ranged from 7.3 percent for Central and South Americans to 11.2 percent for Cubans. However, none of the differences among Asian subpopulations and Hispanic subpopulations were statistically significant. Except for non-Hispanic White youths, among whom females had a greater prevalence of cigarette smoking (16.0%) than males (13.4%), no other significant differences were observed between male and female youths in any of the major populations or subpopulations.³²⁰

A wide range in susceptibility to start smoking was observed among youth who had never smoked (overall, 22.2% were susceptible to start smoking). Youths in the Mexican subpopulation were significantly more susceptible (28.8%) to start smoking than non-Hispanic White (20.8%), non-Hispanic Black (23.0%), Cuban (16.4%), Asian Indian (15.4%), Chinese (15.3%) and Vietnamese (13.8%) youths.³²¹

Table 13 displays the current prevalence of smoking among youth by race/ethnicity and gender.

Table 13: Prevalence of Tobacco Use among Youth by Race/Ethnicity^{1,1,2}

	Any Tobacco		Cigarettes		Cigars		Smokeless Tobacco		Pipes		Bidis		Kreteks	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
High School														
SEX														
Male	30.7	31.7	21.6	22.9	18.4	19.2	9.9	13.6	4.8	**	3.7	**	3.4 ^{II}	**
Female	24.1	25.1	21.8	23.0	7.6	8.7	1.2	2.2	1.5	**	1.6	**	1.6	**
RACE / ETHNICITY														
Non-Hispanic White	30.8	32.5	24.8	25.9	13.7	14.9	6.9	10.2	3.1	**	2.4	**	2.5	**
Non-Hispanic Black	16.8 ^{II}	16.5	10.9	12.9	10.0	10.3	1.4	1.7	1.7 ^{II}	**	2.1	**	1.3	**
Hispanic	25.7	24.9	20.5	22.0	13.5 ^{II}	14.6	3.2	5.1	4.8	**	4.8 ^{II}	**	3.6	**
Asian	13.3	**	11.3	**	6.2	**	2.0	**	2.1	**	2.1	**	1.3	**
TOTAL	27.4	28.4	21.7	23.0	12.9	14.0	5.5	8.0	3.2	**	2.7	**	2.5	**
Middle School														
SEX														
Male	12.7	**	7.9 ^{II}	**	6.7	**	3.9	**	3.5 ^{II}	**	3.0	**	2.0 ^{II}	**
Female	10.9	**	8.8	**	3.8	**	1.9	**	1.9	**	1.8	**	1.2	**
RACE / ETHNICITY														
Non-Hispanic White	11.3	**	8.5	**	4.4	**	3.1	**	2.3	**	1.9	**	1.3	**
Non-Hispanic Black	12.4	**	7.6	**	6.9	**	1.8	**	2.2 ^{II}	**	2.9	**	1.6	**
Hispanic	15.1	**	9.9	**	8.2 ^{II}	**	3.7	**	5.3	**	4.3 ^{II}	**	2.9	**
Asian	5.2 ^{II}	**	2.7 ^{II}	**	1.2 ^{II}	**	1.0	**	1.5 ^{II}	**	1.1 ^{II}	**	1.5 ^{II}	**
TOTAL	11.8	**	8.4	**	5.3	**	2.9	**	2.7 ^{II}	**	2.4	**	1.6	**

Sources: 1 Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance, U.S. 2005; *Morbidity and Mortality Report*. Vol. 55(SS05); 1-108, June, 2006.

2 Centers for Disease Control and Prevention. Corrected Data Tables: Tobacco Use, Access, and Exposure to Tobacco in Media Among Middle and High School Students, U.S. 2004. *Morbidity and Mortality Report*. Vol. 54(12):297-301, April 2005.

Notes: ** Data not available.

I Middle school data available even years only. High school data available odd years only.

II Significant difference ($p < 0.05$), 2004 versus 2002.

Environmental Tobacco Smoke or Secondhand Smoke

SECONDHAND SMOKE IS A MIXTURE of the smoke given off by the burning end of a cigarette, pipe or cigar and the smoke exhaled from the lungs of smokers. Secondhand smoke contains more than 250 chemicals known to be toxic or cancer causing, including formaldehyde, benzene, vinyl chloride, arsenic, ammonia and hydrogen cyanide.³²²

Environmental tobacco smoke is a known human carcinogen, causing approximately 3,400 lung cancer deaths and between 22,700 to 69,600 heart disease deaths in adult nonsmokers in the United States each year and the exacerbation of hundreds of thousands of asthma cases and lower respiratory tract infections.³²³

Infants and young children are especially susceptible as their lungs are still developing. Childhood exposure to secondhand smoke results in decreased lung function and children who breathe secondhand smoke are more likely to suffer from cough, wheeze, phlegm and breathlessness.³²⁴

In children, exposure to secondhand smoke exacerbates 400,000 to 1 million cases of asthma in the United States. New evidence suggests that secondhand smoke is a risk factor for new cases of asthma among children and adolescents.³²⁵

Currently, fifteen states — Arizona, California, Colorado, Connecticut, Delaware, Hawaii, Maine, Massachusetts, New Jersey, New Mexico, New York, Ohio, Rhode Island, Washington and Vermont — as well as the District of Columbia and Puerto Rico prohibit smoking in almost all public places and workplaces, including restaurants and bars. Illinois, Maryland, Minnesota, Montana, New Hampshire, Oregon and Utah have passed legislation prohibiting smoking in almost all public places and workplaces, including restaurants and bars, but the laws have not taken full effect yet.³²⁶

Lesbian, Gay, Bisexual and Transgender (LGBT) Populations

ALTHOUGH THERE IS LITTLE RESEARCH documenting tobacco use prevalence among lesbian, gay, bisexual and transgender (LGBT) populations, preliminary studies indicate that gay men and lesbians tend to smoke more than their heterosexual counterparts.³²⁷ Several small studies show that smoking rates among gays and lesbians are high and are increasing rapidly.

For example, preliminary results from the Urban Men's Health Study, a telephone interview conducted in Los Angeles, San Francisco, New York and Chicago, showed that smoking rates in men 18 to 44 years old were 32 percent to 42 percent among MSM (men having sex with men), compared to 13 to 28 percent among heterosexual men.³²⁸

Lesbian adults have been found to smoke more than heterosexual women. Data from the Institute of Medicine (IOM) show that two times as many lesbians reported heavy smoking than heterosexual women. The IOM report suggested that although this issue remains understudied, the high smoking rate among lesbians might be due to increased levels of psychosocial stress that may be complicated by low socioeconomic status.³²⁹

No empirical data on tobacco use among transgender populations exist to date. However, it is believed that smoking may be highly prevalent among transgender persons.

Factors that appear to contribute to increased rates of smoking among LGBT adults include the role of bars and dance clubs as primary social outlets, reduced access to healthcare and targeted smoking efforts by the tobacco industry. However, none of these risk factors have been studied adequately.³³⁰

While little is known about tobacco use among LGBT adults, even less is known about smoking among LGBT adolescents. Researchers believe that LGBT adolescents may be especially vulnerable because of stress related to identity issues; increased feelings of being an outsider; less support from friends, family and community and exposure to environments that support smoking.³³¹

Although young people have become a major focus of tobacco control efforts in recent years, LGBT youth and their specific risks have not been identified for preventive interventions. This may be due to the fact that mainstream research on adolescent smoking has failed to collect relevant information on sexual orientation and gender identification.³³²

There are conflicting reports on whether cigarette smoking accelerates HIV infection. However, recent studies have found an association between cigarette smoking and an increased risk for certain opportunistic infections such as bacterial pneumonia and PCP, or *pneumocystis carinii pneumonia*.³³³

Due to the high prevalence of smoking, LGBT populations tend to have increased risk of lung cancer and chronic obstructive pulmonary disease (COPD), and an increased risk for other cancers, such as throat cancer.³³⁴

Lung Disease Data at a Glance

Tuberculosis (TB)

- Nearly two billion people – one-third of the world's population – have latent TB infection and it is estimated that 1 in 10 of them will develop active TB at some point in their lives.
- Since 1993, the number of TB cases in the United States has decreased by approximately 44 percent. During 2005, 14,097 TB cases were reported (a case rate of 4.8 per 100,000), a record low.
- Despite the decline in TB nationwide, rates among communities of color and foreign-born persons have increased. These groups accounted for 81 percent of all TB cases reported in 2005. The rate of TB per 100,000 was about 20 times greater in Asians, about 13 times greater in Native Hawaiians or Other Pacific Islanders, over 8 times greater in non-Hispanic Blacks, 7 times greater in Hispanics and over 5 times greater in American Indians/Alaska Natives than in non-Hispanic Whites (1.3 per 100,000).
- TB cases reported among persons born outside the United States and its territories account for 55 percent of total reported cases in the U.S. The TB case rate among foreign-born persons was almost nine times greater than that of U.S.-born persons.
- In 2005, 15 states and the District of Columbia reported that most of the new TB cases occurred in non-Hispanic Blacks.
- In 2005, there were 4,043 new TB cases diagnosed among Hispanics.
- Nearly 91 percent of TB cases in non-Hispanic Asians occurred in cities with populations greater than 500,000 persons.
- TB rates are dramatically higher for Asians and Native Hawaiians/Other Pacific Islanders than for other racial groups.

Tuberculosis (TB)

TUBERCULOSIS (TB) IS A BACTERIAL INFECTION that usually affects the lungs, although other organs are sometimes involved. The disease is airborne and is spread from person to person through coughing. Infection usually requires close contact with someone with active TB over a long period of time. Most people who are infected with the disease will never become sick or have symptoms, but some will develop active TB. Nearly two billion people – one-third of the world’s population – have latent TB infection.³³⁵

TB is caused by the bacteria *Mycobacterium tuberculosis* and can take active or inactive form in the body. It is important to understand the difference between being infected with TB and having active TB. Only people with active TB can infect others. Someone with the inactive form, known as latent tuberculosis, cannot infect others and does not appear sick. However, persons with latent TB do risk developing active TB if they do not receive treatment as untreated TB can eventually over take the immune system. Therefore, even persons suspected of having latent TB need to be tested and seek treatment as latent TB is often a precursor to active TB.³³⁶

Someone with active TB (referred to as TB) is sick and can spread the disease to other people. A person who suspects he or she has TB should get tested and notify their doctor or local health department. Such precautions allow a person to determine their TB status, to notify persons they may have been infected and to obtain treatment.

However, even if someone is exposed to TB it does not mean that they will definitely develop TB. In fact, most people who are exposed to TB bacteria do not become infected as their bodies’ defenses are able to destroy TB. However, persons with weak immune systems, such as the elderly, young children and HIV/AIDS patients are considered to be at high risk of developing TB. A person co-infected with both HIV and TB has a 10 percent chance of developing active TB each year versus a 10 percent chance per lifetime for those not co-infected with HIV.³³⁷

Tuberculosis has been with us since ancient times. In the first half of the 20th century, it was generally spoken of as “consumption” – an often fatal illness that led to long stays in special hospitals called sanitoriums.



American Lung Association History Beginning with Tuberculosis

The American Lung Association was founded in 1904 as the National Association for the Study and Prevention of Tuberculosis and was the first organization to successfully unite science and citizens for the advancement of public health. Founded at a time when there was no public health system, no network of clinicians and researchers, no public or patient education services and no end in sight for the seemingly incurable TB epidemic, the American Lung Association created a model for public health service that has stood the test of time.



Tuberculosis in the United States

TB WAS THOUGHT TO BE UNDER CONTROL with the introduction of antibiotics in the 1950s, but made a comeback as a serious public health problem for the United States in the mid-1980s to early 1990s.

Reasons for this resurgence included:

- the HIV/AIDS epidemic;
- increases in the number of persons in the United States who were born in other countries with high TB rates;
- increases in poverty, injection drug use and homelessness leading to overcrowded shelters and prisons;
- resistance to traditional TB drugs and
- increases in the number of people living in long-term care facilities.

TB treatment is dependent on the type of TB and therefore treatment differs in persons with active TB or latent TB.³³⁸

A person with latent TB may be given therapy to prevent the onset of active TB. The preventive therapy aims to kill germs that are not doing any damage right now, but do have the potential to do so. If a doctor decides a person should receive preventive therapy, the usual prescription is a daily dose of isoniazid (INH) for nine months to a year. Latent TB patients are encouraged to have periodic checkups with medical professionals to make sure that medicine is taken as prescribed.

Treating active TB requires a different approach. TB patients usually take a combination of several drugs, most frequently INH, rifampin (RIF), pyrazinamide (PZA) and ethambutol (EMB) to kill the TB bacteria. This is called combination therapy and usually TB patients feel better after only a few weeks of treatment. However, it is very important that all TB medications are taken correctly for the full length of treatment as not completing treatment puts patients at risk of becoming sick again and sicker than before. This means that patients must take all prescribed medications correctly for six months to a year to ensure all TB bacteria have been killed.

However, studies have found it is difficult for patients to complete TB treatment as it is long and requires strict adherence. As a result, public health authorities have recommended using Directly Observed Therapy (DOT) to increase treatment completion. DOT uses healthcare workers to ensure that the patient takes his or her medicine correctly for the duration of treatment. Even though DOT is costly, it is an important tool in combating the TB epidemic. If treatment is not completed, the patient can become sick with TB a second time and, unfortunately, often the new round of TB is harder to treat because it has become drug resistant. When a strain becomes resistant to drugs, the TB germs in the body are unaffected by conventional treatment and continue to cause disease.

Multi-drug resistant (MDR) and extensively-drug resistant (XDR) TB are very dangerous forms of tuberculosis because the medications effective against these strains are limited. MDR and XDR strains are a result of patients not completing TB treatment. Therefore, patients should make sure they take all of their medicine correctly for the prescribed length of time.³³⁹

Regular checkups are necessary to determine how treatment is progressing. Sometimes the drugs used to treat TB can cause side effects. It is important, both for people undergoing preventive therapy and people being treated for TB disease, to immediately let a doctor know if they begin having any unusual symptoms.

Fortunately, TB is once again on the decline due to improved treatment and prevention programs among HIV-infected persons, added federal government support for state public health facilities and increased screening and therapy for people who are considered high-risk. Between 1993 and 2005, the number of TB cases decreased 44 percent. During 2006, 13,767 (4.6 per 100,000) new TB cases were reported in the United States, representing a 3.2 percent decline from 2005.³⁴⁰

Despite the decline in TB nationwide, rates among communities of color and foreign-born persons have increased. These groups account for over 80 percent of all TB cases. The TB incidence rate was 20 times greater in Asians (25.8 per 100,000), 12.5 times greater in Native Hawaiians or Other Pacific Islanders (16.8 per 100,000), over 8 times greater in non-Hispanic Blacks (10.9 per 100,000), 7 times greater in Hispanics (9.5 per 100,000) and over 5 times greater in American Indians/Alaska Natives (6.9 per 100,000) than in non-Hispanic Whites (1.3 per 100,000). Several factors likely contribute to the uneven TB burden on minority groups, including unequal distribution of TB risk factors such as HIV infection and low socioeconomic status, particularly overcrowding.³⁴¹

Tuberculosis cases reported among persons born outside the United States and its territories (i.e., foreign-born persons) account for 55 percent of total reported cases in 2005. The TB case rate among foreign-born persons was over eight times greater than that for U.S.-born persons. Most cases of active TB disease among foreign-born persons residing in the United States result from infection with the tuberculosis germ in the person's country of birth. Of the foreign-born cases reported in 2005, five countries (Mexico, Philippines, Vietnam, India and China) accounted for approximately 55 percent of these cases.³⁴²

Table 14 displays tuberculosis data by race and ethnicity.

Incidence 2005	Total ^{II}		Non-Hispanic White		Non-Hispanic Black		Hispanic		Asian ^{III}		Native Hawaiian/ Other Pacific Islander ^{IV}		American Indian/ Alaska Native	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
U.S. Born	6,371	2.5	2,146	**	2,887	**	982	**	131	**	40	**	146	**
Foreign Born	7,693	21.9	434	**	1,063	**	3,044	**	3,074	**	16	**	7	**
TOTAL ^{II}	14,097	4.8	2,581	1.3	3,954	10.9	4,043	9.5	3,209	25.8	56	13.8	153	6.9
Mortality 2003	Total ^{II}		Non-Hispanic White		Non-Hispanic Black		Hispanic		Non-Hispanic Other ^{IV}					
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE				
	662 ³	0.2	347	0.1	168	0.6	89	0.4	617	0.2				

- Sources: I Centers for Disease Control and Prevention. Reported tuberculosis in the U.S. 2005.
 2 National Vital Statistics Report. Hoyett D, Heron P, Murphy L, Kung H. Division of Vital Statistics. Deaths: Final Data for 2003, Vol. 54, No. 13, April 19, 2006.
 3 National Vital Statistics Report. Deaths Preliminary Data. Vol. 54, No. 19, June 2006.
- Notes: I Mortality rates are per 100,000 population.
 II Totals include unknown or missing.
 III Asians first reported in 2003, separately from Pacific Islanders.
 IV Native Hawaiians or Other Pacific Islanders first reported in 2003, separately from Asians.
 ** Data not available.

Racial/Ethnic Differences

African Americans

NON-HISPANIC BLACKS accounted for 28 percent of TB cases in the U.S. in 2005. They accounted for 45 percent of U.S.-born cases and 14 percent of cases among foreign-born persons. Also, non-Hispanic Blacks accounted for the highest percentage of TB cases in the U.S.-born population.³⁴³

The TB case rate among non-Hispanic Blacks (10.9 per 100,000) was over eight times higher than non-Hispanic Whites (1.3 per 100,000), but was half of the case rate among Asian (25.8 per 100,000) and Native Hawaiian/Pacific Islander (13.8 per 100,000) populations.³⁴⁴

In 2005, 15 states and the District of Columbia reported that the most TB cases occurred in non-Hispanic Blacks. Nebraska reported 17 cases of TB in both non-Hispanic Blacks and Hispanics, while Rhode Island reported 22 TB cases in both non-Hispanic Blacks and Whites. The greatest number of reported TB cases in metropolitan areas with populations greater than 500,000 persons was seen in non-Hispanic Blacks (3,109), followed by Hispanics (3,191), Asians (2,918), non-Hispanic Whites (1,656), American Indians/Alaska Natives (44) and Native Hawaiians/Pacific Islanders (41).³⁴⁵

Consider the Differences...

- The TB case rate among non-Hispanic Blacks was over eight times higher than non-Hispanic Whites. However, the case rate for non-Hispanic Blacks was more than half of the case rate of Asians.
- In 2005, 15 states in addition to the District of Columbia reported that most of the new TB cases occurred in non-Hispanic Blacks.

Hispanics/Latinos

IN 2005, HISPANICS accounted for 29 percent of TB cases in the United States, 15 percent of cases among persons born in the U.S. and 40 percent among foreign-born persons. Over one-fourth of foreign-born TB cases occurred in persons from Mexico.³⁴⁶

In 2005, there were 4,043 TB cases diagnosed among Hispanics. The TB case rate in Hispanics (9.5 per 100,000) was about seven times higher than in non-Hispanic Whites (1.3 per 100,000).³⁴⁷

Consider the Differences...

- Overall, Hispanics had the highest number of TB cases in 2005 with 4,043. The TB case rate in Hispanics was about seven times higher than in non-Hispanic Whites.

Asians and Native Hawaiians/Other Pacific Islanders

ASIANS ACCOUNTED for 23 percent of all TB cases in the United States in 2005. Specifically, persons of Asian descent accounted for 2 percent of cases in the U.S.-born and 40 percent of cases in the foreign-born population. Furthermore, three of the top five birth countries for foreign-born patients with TB were in Asia.³⁴⁸

In 2005, the TB case rate in Asians was 25.8 per 100,000 population, which was the highest rate among all racial and ethnic groups. In fact, the TB case rate was 20 times greater in Asians (25.8 per 100,000) than in non-Hispanic Whites (1.3 per 100,000).³⁴⁹

While Native Hawaiians and Other Pacific Islanders accounted for less than 1 percent of all TB cases in 2005, the overall rate of TB per 100,000 was almost 11 times greater in Native Hawaiians/Other Pacific Islanders (13.8 per 100,000) than in non-Hispanic Whites (1.3 per 100,000).³⁵⁰

In 2005, 91 percent of TB cases in Asians occurred in cities with populations greater than 500,000. It was also observed that 79 percent of cases occurring in Hispanics and in non-Hispanic Blacks, 73 percent of cases in Native Hawaiians/Other Pacific Islanders, 64 percent of cases in non-Hispanic Whites and 29 percent of cases in American Indians/Alaska Natives were also in large metropolitan areas.³⁵¹

TB is a disease that affects Asians and Native Hawaiian/Other Pacific Islander communities disproportionately. The highest TB case rates in the U.S. population occur in persons of Asian and Native Hawaiian/Other Pacific Islander descent (25.8 and 13.8 per 100,000, respectively).³⁵²

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Consider the Differences...

- The 2005 TB case rate was 20 times greater in Asians (25.8 per 100,000) than in non-Hispanic Whites (1.3 per 100,000).
 - The 2005 TB rate per 100,000 was about 11 times greater in Native Hawaiians/Other Pacific Islanders (13.8 per 100,000) than in non-Hispanic Whites (1.3 per 100,000).
 - In 2005, 91 percent of TB cases in Asians occurred in cities with populations greater than 500,000 persons. It was also observed that 79 percent of cases occurring in Hispanics and in non-Hispanic Blacks, 73 percent of cases in Native Hawaiians/Other Pacific Islanders, 64 percent of cases in non-Hispanic Whites and 29 percent of cases in American Indians/Alaska Natives were also in large metropolitan areas.
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Native Americans/Alaska Natives

NATIVE AMERICANS/ALASKA NATIVES ACCOUNTED for 1.0 percent of TB cases in 2005. Since 1993, the TB case rate in American Indians has decreased by 50.4 percent. However, the TB case rate is over five times greater in American Indians/Alaska Natives (6.9 per 100,000) than in non-Hispanic Whites (1.3 per 100,000).³⁵³

Alaska and Oklahoma saw the greatest number of TB cases among American Indians/Alaska Natives in 2005. However, in North Dakota and Montana, half of the TB cases reported were in persons of American Indian/Alaska Native heritage.³⁵⁴

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Consider the Differences...

- The TB case rate was over five times greater in American Indians/Alaska Natives (6.9 per 100,000) than in non-Hispanic Whites (1.3 per 100,000).
 - Alaska and Oklahoma saw the greatest number of cases among American Indians/Alaska Natives in 2005. However, in North Dakota and Montana, half of all TB cases reported were in American Indians/Alaska Natives.
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**CHANGING THE FACE OF
TB RESEARCH**

Kurt A. Heldwein, Ph.D.

The American Lung Association funds researchers studying tuberculosis and other lung diseases. Kurt Heldwein, Ph.D., has a Research Training Fellowship from the American Lung Association to study new ways to control TB when antibiotics do not work. He is investigating an immune system-based approach to TB treatment that could augment existing antibiotic-based treatment. It also may provide a means to control antibiotic-resistant TB.

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Beginning our second century, the American Lung Association works to prevent lung disease and promote lung health. Lung diseases and breathing problems are the leading causes of infant deaths in the United States today, and asthma is the leading serious chronic childhood illness. Smoking remains the nation's leading preventable cause of death. Lung disease death rates continue to increase while other leading causes of death have declined.

The American Lung Association has long funded vital research on the causes of and treatments for lung disease. It is the foremost defender of the Clean Air Act and laws that protect citizens from secondhand smoke. The Lung Association teaches children the dangers of tobacco use and helps teenage and adult smokers overcome addiction. It educates children and adults living with lung diseases on managing their condition. With the generous support of the public, the American Lung Association is "Improving life, one breath at a time."

For more information about the American Lung Association or to support the work it does, call 1-800-LUNG-USA (1-800-586-4872) or log on to www.lungusa.org.

