

Lifetime Asthma Prevalence

Lifetime asthma prevalence is the proportion of people in a population who were ever diagnosed with asthma by a health care provider. Data are obtained from the California Health Interview Survey (CHIS). The CHIS is conducted by the UCLA Center for Health Policy Research in collaboration with the California Department of Public Health, the Department of Health Care Services, and the Public Health Institute. It is funded by public agencies and private organizations. The CHIS is a statewide telephone survey administered to over 45,000 households. Adults and teens (11-17) were asked, "Has a doctor ever told you that you have asthma?" Asthma prevalence for children was asked through their parent/guardian using the question, "Has a doctor ever told you that your child has asthma?" (<http://www.chis.ucla.edu>). Dashes in the table indicate data are unavailable. Overall prevalence for all ages is available on www.californiabreathing.org.

Asthma Management Plans

National guidelines recommend that healthcare providers give patients with asthma a written self-management plan that should include instructions for: 1) daily management, and 2) how to recognize and handle worsening asthma. Information about asthma management plans was derived from the CHIS survey. Respondents with lifetime asthma were asked: "Has a doctor or other health professional ever given you an asthma management plan [for child]?"

Work-Related Asthma

Work-related asthma (WRA) is asthma that is caused or made worse by conditions or substance in the workplace. There are currently over 350 substances known to cause new onset WRA. However, WRA is very often unrecognized and therefore not always diagnosed. Research shows that health care providers rarely ask about workplace factors when diagnosing or treating adult asthma.

The American Thoracic Society estimates that 15% of adult asthma is related to workplace exposure. We applied this proportion to the number of adults with current asthma in each county, derived from CHIS data, to estimate the number of adults who may have work-related asthma in that county. In the CHIS, an individual is considered to have current asthma if they were ever diagnosed with asthma by a health care

provider (i.e., have lifetime asthma) and either responded yes to the question, "Do you still have asthma", or reported having had an asthma attack in the past year.

Asthma Risk Factors

Smoking

Many studies have shown smoking and secondhand smoke exposure to worsen asthma. Information about smoking was obtained from the CHIS survey. Adults who reported having smoked at least one cigarette in the past 30 days were considered to be current smokers. Respondents who said that smoking was present inside their home were considered to be exposed to secondhand smoke in their homes.

Obesity

Adults who are obese and adolescents who are overweight are more likely to have asthma. These weight categories are determined by an individual's body mass index (BMI), a measurement used to determine the weight status of a person accounting for his/her height. The equation for calculating BMI is:

$$BMI = \left(\frac{\text{Weight in Pounds}}{(\text{Height in Inches}) \times (\text{Height in inches})} \right) \times 703$$

An adult is considered obese if his/her body mass index (BMI) is 30 or higher. In adolescents, BMI varies by gender and age because the adolescent is still developing. Therefore, we look at an adolescent's BMI relative to others in the same gender and age group. An adolescent is considered overweight if his/her BMI is in the 95th percentile or higher.

Poverty

Conditions of poverty are associated with more adverse asthma outcomes. Information about poverty in each county was obtained from the U.S. Census Bureau (<http://quickfacts.census.gov/qfd/index.html>). The Census classifies individuals as living below the Federal Poverty Level if their household income is less than the poverty threshold specified for family size, age of householder, and number of children in the household. The Census does not determine poverty status for institutionalized people (e.g., people in military group quarters, dormitories, prisons) and individuals age 15 and under. These groups are excluded from the numerator and denominator when calculating the percent of persons below poverty.

Outdoor Air Pollutants

Data on air pollutants are from the California Air Resources Board (CARB) Aerometric Data Analysis and Measurement System (ADAM). Particulate matter (PM) and ozone are pollutants in the air that can cause a worsening of asthma symptoms. PM10 and PM2.5 (particles less than 10 microns or 2.5 microns in diameter, respectively) pose the greatest health concern because they can pass through the nose and throat and get into the lungs. Ozone is a gas that at ground level reacts chemically with lung tissue and people with asthma are vulnerable to its effects.

There are three measurements shown for particulate matter. The annual average is the average of the year's local measurements. The maximum 24-hour average is the highest local daily average observed within the year. The estimated days over the 24-hour standard is the estimated number of days in the year that the state or national standard would have been exceeded had sampling occurred every day of the year. Therefore, the statistics may include data that are related to an exceptional event. There are two measurements shown for ozone. The maximum 8-hour average is the highest 8-hour average ozone concentration in the year. The number of days over the national 8-hour standard is the number of days in each year that the maximum 8-hour average concentration was greater than or equal to 0.085 parts per million. Dashes in the table indicate unavailable data.

The placement of air monitors is determined based on regulatory purposes, not public health purposes. The number of monitors reported represents those with available data for 2007. For more information on outdoor air pollutants or to find the location of air monitors please visit www.arb.ca.gov.

Asthma Emergency Department Visits and Hospitalizations

Hospitalization and emergency department (ED) visit data include rates (number per 10,000 residents), average charges, and the expected source of payment. ED visits include those that resulted in a hospital admission. Data were obtained from 2006 Emergency Department and Patient Hospital Discharge Databases provided by the California Office of Statewide Health Planning and Development (OSHPD). These databases contain information on each patient admitted to an ED or discharged from a licensed acute

care hospital. Asthma hospitalizations and ED visits are identified by principal diagnosis code using ICD-9 code 493. Rates were calculated using yearly population estimates in the denominator, provided by the California Department of Finance. Rates were age-adjusted to the 2000 U.S. population obtained from the U.S. Census Bureau. The groups for rates calculated by race/ethnicity are: Non-Hispanic White, Non-Hispanic Black, Hispanic, and Non-Hispanic Asian/Pacific Islander. Dashes in the tables and missing bars in the charts indicate unavailable data. Overall rates for all ages and by race/ethnicity are available on www.californiabreathing.org.

Average Charges per Hospitalization

The average charges measures the average cost associated with each hospitalization (this data is not available for ED visits). This is presented for adults and children. It is important to note that not all hospitals report charges to OSHPD. Kaiser Foundation and Shriners' Hospital are exempt from reporting charges.

Expected Source of Payment

Insurance status or expected source of payment measures the source from which the hospital expected to receive payment for charges incurred from the hospitalization or ED visit. This measure is presented for all ages. For the purpose of this analysis, sources of payment were grouped into the following four categories:

- Medicare = Medicare (including HMO/PPO)
- Medi-Cal = Medi-Cal (including HMO/PPO)
- Private Insurance = private insurance company, HMO, PPO, Blue Cross/Blue Shield, Self-Pay
- Other = workers' compensation, county indigent program, veteran's affairs, charity care, no charge, and other governmental sources.

Healthy People 2010

Healthy People 2010 (HP2010) is a set of disease prevention and health promotion objectives developed by the U.S. Department of Health and Human Services for the nation to achieve by the year 2010. Decreasing asthma deaths, hospitalizations, emergency department visits, activity limitations, and school/work missed, and increasing asthma education and proper asthma care are some of the HP2010 objectives for asthma. However, only the objectives for asthma hospitalizations, and ED visits can be accurately measured in California counties using currently



available surveillance data. More information about HP2010 can be found at: <http://www.healthypeople.gov>. Missing bars indicate rates are unavailable. Data in table format (with exact counts and rates) are available at www.californiabreathing.org.

Asthma Deaths

Asthma deaths are presented as counts and rates (number of deaths per million residents). Because it is a relatively rare event, we combined asthma deaths for the years 2003 through 2005. Asthma death data were from the California Death Public Use Tape that contains information collected from death certificates. These data were provided by the California Department of Public Health, Center for Health Statistics. For analysis, we selected all deaths where asthma was coded as the underlying cause of death based on the ICD-10 codes J45-J46. Rates were calculated using yearly population estimates in the denominator, provided by the California Department of Finance. Rates were age-adjusted to the 2000 U.S. population obtained from the U.S. Census Bureau. Dashes in the table indicate unavailable data. Overall rates for all ages are available at www.californiabreathing.org.

Missing Data

When data are based on very small cell sizes, they are considered statistically unstable and not included. These are signified by dashes in the County Asthma Profiles. In the disparities and HP2010 graphs, missing bars indicate that numbers were too small to calculate stable rates. For outdoor air pollutant data, dashes signify that the data was not available (rather than too small to calculate).

Data obtained from the CHIS survey are determined to be statistically unstable based on the size of the standard error of each estimate. For asthma ED, hospitalization, and death data, rates are considered statistically unstable if based on less than 20 events. Counts of less than five are not shown due to issues of confidentiality. For counties where most of the data for HP2010, asthma disparities, and mortality are missing due to small numbers, these charts and tables are excluded from the profile.

For some small counties, data from CHIS are only available as aggregated data for county groups. These groups are as follows:

- Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, and Tuolumne (Eastern Counties)
- Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, and Trinity (Northern Counties).
- Colusa, Glenn, and Tehama

More Information

For more information on data sources and limitations as well as how to interpret 95% confidence intervals, please see www.californiabreathing.org or the Technical Notes chapter of *The Burden of Asthma in California: A Surveillance Report* (also available on our web site).