# Childhood Asthma

*Asthma disproportionately affected African American children.*

- African American children were most likely to be hospitalized for asthma.
- Boys were more likely to be hospitalized for asthma than girls.
- African American children in California were more likely to be diagnosed with asthma than California children overall.

## Hospitalizations

Between 2005–2007, there were 1,021 asthma hospitalizations among Contra Costa children 0-14 years old. This means that, on average, there were 340 hospitalizations in Contra Costa due to childhood asthma each year. Contra Costa's age-adjusted asthma hospitalization rate for children (16.1 per 10,000) was higher than California's age-adjusted rate (13.2 per 10,000).

### Table 1 ■ Childhood asthma hospitalization by race/ethnicity

Contra Costa County Children Age 0–14, 2005–2007

| | Boys | Girls | Total | Percent | Rate |
|---|---|---|---|---|---|
| African American | 170 | 123 | 293 | 28.7% | 43.7* |
| White | 193 | 96 | 289 | 28.3% | 11.1** |
| Hispanic | 167 | 83 | 250 | 24.5% | 12.9** |
| Asian/Pacific Islander | 39 | 28 | 67 | 6.6% | 9.8** |
| **Total** | **657** | **364** | **1,021** | **100.0%** | **16.1** |

These are age-adjusted rates per 10,000 residents 0-14 years.
Total includes children in racial/ethnic groups not listed above.
* Significantly higher rate than county children overall.
** Significantly lower rate than county children overall.

In Contra Costa, the greatest number of hospitalizations for asthma was among African American children (293), followed by white (289), Hispanic (250), and Asian/Pacific Islander children (67).

African American children had the highest age-adjusted rate of asthma hospitalizations (43.7 per 10,000); significantly higher than the rates for county children overall (16.1 per 10,000) and all racial/ethnic groups listed. White (11.1 per 10,000), Hispanic (12.9 per 10,000), and Asians/Pacific Islander (9.8 per 10,000) children had significantly lower rates of asthma hospitalization than county children overall.

Boys had a higher number (657) and age-adjusted rate (20.2 per 10,000) of asthma hospitalizations than girls (364 and 11.7 per 10,000). Boys had higher numbers of asthma hospitalizations than girls in every racial/ethnic group listed.

## Table 2 ■ Childhood asthma hospitalizations by gender

Contra Costa County Children Age 0–14, 2005–2007

| | Cases | Percent | Rate |
|---|---|---|---|
| Boys | 657 | 64.3% | 20.2* |
| Girls | 364 | 35.7% | 11.7 |
| **Total** | **1,021** | **100.0%** | **16.1** |

These are age-adjusted rates per 10,000 residents 0-14 years.

* Significantly higher rate than county girls age 0-14.

Twelve ZIP codes comprised more than two-thirds (68.3%) of the childhood asthma hospitalizations in the county: 94565, 94509, 94806, 94804, 94801, 94513, 94531, 94520, 94547, 94572, 94803 and 94583. Each of these ZIP codes accounted for more than 30 cases. Three ZIP codes had significantly higher age-adjusted childhood asthma hospitalization rates than the county overall: 94804, 94547 and 94572. These three ZIP codes were all located in the western part of the county.

Three ZIP code areas had significantly lower age-adjusted rates of childhood asthma hospitalizations than the county overall: 94513, 94553 and 94521.

Because childhood asthma hospitalization is relatively rare, age-adjusted rates and confidence intervals could not be calculated for many ZIP codes. In order to get a more complete picture of how asthma hospitalization varies across the county, age-specific rates for age 0–14 were used for the map of rates by ZIP code. A stable age-specific rate could not be calculated for ZIP codes with fewer than 20 cases. If denominator data was available, statistical testing generated a confidence interval for these ZIP codes to determine whether the age-specific rate range was lower, higher or similar to the county age-specific rate and the area was shaded accordingly on the map.

## Table 3 ■ Childhood asthma hospitalizations by ZIP code

Contra Costa County children age 0–14, 2005–2007

| | Cases | Percent | Rate |
|---|---|---|---|
| 94506 | 6 | 0.6% | NA |
| 94507 | 7 | 0.7% | NA |
| 94509 | 97 | 9.5% | 20.0 |
| 94513 | 48 | 4.7% | 11.4** |
| 94514 | 10 | 1.0% | NA |
| 94517 | 8 | 0.8% | NA |
| 94518 | 17 | 1.7% | NA |
| 94519 | 5 | 0.5% | NA |
| 94520 | 40 | 3.9% | 13.9 |
| 94521 | 25 | 2.4% | 10.0** |
| 94523 | 20 | 2.0% | 11.2 |
| 94526 | 21 | 2.1% | 12.0 |
| 94530 | 25 | 2.4% | 25.2 |
| 94531 | 46 | 4.5% | 12.6 |
| 94547 | 36 | 3.5% | 30.8* |
| 94549 | 12 | 1.2% | NA |
| 94553 | 27 | 2.6% | 10.7** |
| 94556 | 5 | 0.5% | NA |
| 94561 | 28 | 2.7% | 10.9 |
| 94563 | 10 | 1.0% | NA |
| 94564 | 21 | 2.1% | 21.2 |
| 94565 | 104 | 10.2% | 15.7 |
| 94572 | 32 | 3.1% | 56.1* |
| 94582 | 14 | 1.4% | NA |
| 94583 | 31 | 3.0% | 14.1 |
| 94596 | 11 | 1.1% | NA |
| 94597 | 8 | 0.8% | NA |
| 94598 | 11 | 1.1% | NA |
| 94801 | 53 | 5.2% | 19.1 |
| 94803 | 31 | 3.0% | 21.7 |
| 94804 | 86 | 8.4% | 29.9* |
| 94805 | 20 | 2.0% | 23.7 |
| 94806 | 93 | 9.1% | 21.5 |
| **Total** | **1,021** | **100.0%** | **16.1** |

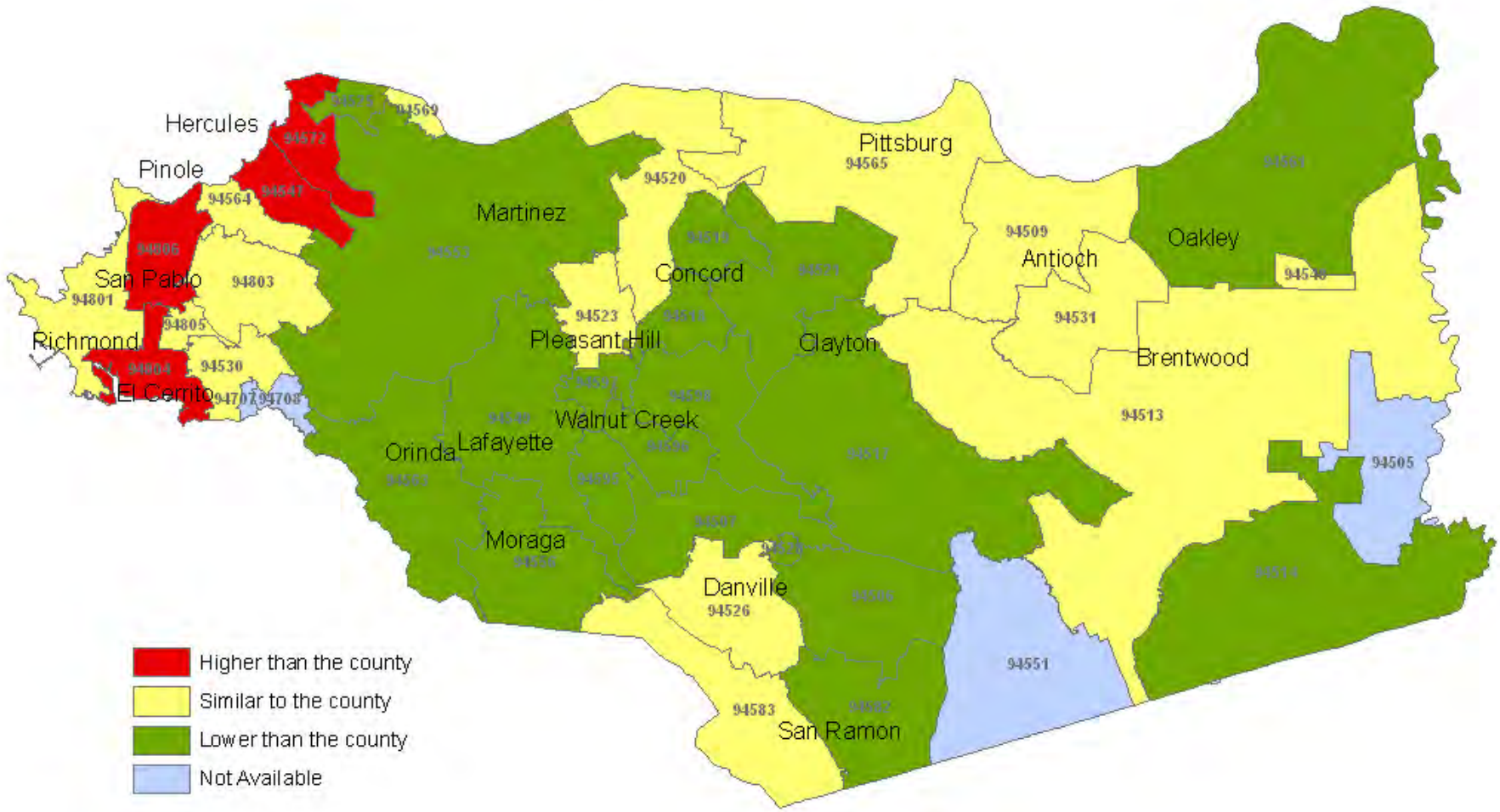
These are age-adjusted rates per 10,000 children 0-14 years.

Total includes children in ZIP codes not listed above.

* Significantly higher rate than county children overall.

** Significantly lower rate than county children overall.

# Asthma Hospitalization Rates Age 0 - 14 by Zip Code



## Estimated Childhood Asthma Cases

To understand the impact of asthma on children's health, it is important to assess both hospitalizations and prevalence (estimated cases). Hospitalizations represent the most severe asthma cases. However, for every child hospitalized, many others are treated at emergency rooms and outpatient clinics and some children are not treated at all. Asthma diagnosis provides a more complete picture but it, too, underestimates the number of children currently living with asthma since some people with asthma are never diagnosed.

According to the 2007 California Health Interview Survey, approximately 39,000 children 1–14 years in Contra Costa County had ever been diagnosed with asthma. The percentage of all children who have been diagnosed with asthma in Contra Costa (19.0%) was similar to California (13.8%). *(Note: Although the percentage for Contra Costa appears higher than that for California, it was not statistically significantly higher.)*

### Table 4 ■ Asthma ever diagnosed

Children Ages 1–14, 2007

| | Children | Prevalence |
|---|---|---|
| California | 1,051,000 | 13.8% |
| Contra Costa | 39,000 | 19.0% |

Estimates are not age-adjusted.

**Editor's note:** Analyses of Contra Costa asthma cases for children 1–14 years by gender and race/ethnicity were not possible due to small sample size, but we can look to California data for an indication of how asthma affects our community disproportionately.

### Table 5 ■ Asthma ever diagnosed by race/ethnicity

California Children Ages 1–14, 2007

| | Children | Prevalence |
|---|---|---|
| Latino | 479,000 | 12.8% |
| White | 313,000 | 13.2% |
| Asian/Pacific Islander | 109,000 | 14.5% |
| African American | 87,000 | 20.8%* |
| **Total** | **1,051,000** | **13.8%** |

Estimates are not age-adjusted.
Total includes children in racial/ethnic groups not listed above.
* Significantly higher rate than state children overall.

At the state level, the greatest number of children who had ever been diagnosed with asthma were Latino (479,000), followed by white (313,000), Asian/Pacific Islander (109,000), African American (87,000) and two or more races (56,000). Even though African American children had fewer diagnosed cases of asthma, a significantly higher percentage were diagnosed with asthma (20.8%) than the state overall (13.8%).

### Table 6 ■ Asthma ever diagnosed in children by gender

California Children Ages 1–14, 2007

| | Children | Prevalence |
|---|---|---|
| Male | 644,000 | 16.6%* |
| Female | 407,000 | 10.9% |
| **Total** | **1,051,000** | **13.8%** |

Estimates are not age-adjusted.

* Significantly higher rate than state females age 1-14.

Boys (644,000) accounted for more than half the number of asthma cases diagnosed in California (1,051,000) and had a significantly higher percentage with diagnosed asthma (16.6%) than girls (10.9%).

## What is asthma?

Asthma is a chronic respiratory disease caused by the inflammation and narrowing of small airways in the lungs. A person diagnosed with asthma has it all the time, but an "episode" or "attack" comes on when something bothers the lungs, and the airways become so swollen and clogged that the person has trouble breathing.[1] An asthma attack can range in severity from inconvenient to life-threatening, and may include any of the following signs and symptoms: shortness of breath, wheezing, breathlessness, chest pain or tightness, and nighttime or early morning coughing.[2,3]

## Why is it important?

Asthma is one of the leading chronic childhood diseases in the United States and a major cause of childhood disability. The prevalence of childhood asthma more than doubled between 1980 to the mid-1990s and remains at historically high levels.[4] In 2008, 7 million U.S. children had asthma.[5] In 2005, asthma was the third leading cause of hospitalizations in children younger than 15 years, accounting for 200,000 hospital visits, and was responsible for 7 million doctors visits.[6]

Asthma limits a child's ability to play, learn and develop to their full potential.[7] Asthma is the leading cause of school absenteeism, impairing the child's education and, for some schools, attendance-based funding.[8] Asthma places a burden on the affected child's family because managing asthma requires potentially complex treatments, constant monitoring and changes to the home environment.[9]

## Who does it impact the most?

Asthma prevalence increases with age, but healthcare use is highest among the youngest children.

Boys have a higher prevalence of asthma and more asthma deaths throughout childhood than girls.[9]

Asthma disproportionately impacts some racial/ethnic groups more than others. African American children are more likely to ever have been diagnosed with asthma than Hispanic, white and Asian children.[5] African American children are five times more likely to die from asthma and have three times higher asthma-related hospitalization and emergency room visit rates than white children.[3] Latino children have higher rates of asthma-related emergency room visits and hospitalizations than whites.[3]

These differences may be explained by genetics, but other social inequities contribute to the disparity as well. Factors such as exposure to traffic pollution, tobacco smoke, pollutants and environmental allergens (for example, house dust mites, cockroach particles, cat and dog dander, and possibly mold); a lack of access to quality medical care; and a lack of financial resources to manage asthma effectively on a long-term basis may contribute to the differences seen among racial/ethnic groups.[10,11]

### What can we do about it?

While we still don't know why some children acquire asthma and others do not, we do know what factors may "trigger" an asthma attack: allergens and irritants like "secondhand" tobacco smoke, dust mites, outdoor air pollution, cockroaches and pets; exercise; changes in weather; and infections.[12] Direct patient care and community strategies can help reduce triggers, prevent attacks or lessen their severity and frequency.

*Patient Care* Children with asthma require regular doctor visits. Access to quality medical care and prescription medication is important in treating chronic illnesses, like asthma. Health insurance coverage is crucial.[13] An individual's asthma-management plan should be developed with a physician, parents and other caregivers. The plan should be guided by the severity of the child's asthma, the benefits and drawbacks of each treatment, and opportunities to reduce asthma triggers.[2] Families also need to know what actions to take if faced with an asthma emergency.

*Community Prevention* To improve outcomes for children with asthma and to help reduce health disparities, efforts should be made to ensure that literacy and language are not barriers to receiving effective asthma care.[14] Schools should be active partners in a family's asthma-management plan. This includes emergency plans in case of asthma attacks at school and efforts to improve classroom air quality.[8] Asthma sufferers would also benefit from communitywide efforts to improve housing conditions and lessen air pollution such as diesel exhaust emitted by trucks, buses and trains.[10]

## Data Sources: Childhood Asthma

#### TABLES

Tables 1–3: These tables include total hospitalizations for asthma among children 0–14 years and age-adjusted average annual hospitalization rates per 10,000 residents 0-14 years for 2005–2007. Childhood asthma hospitalization data from the California Office of Statewide Health Planning and Development (OSHPD) Patient Discharge Data files 2005–2007, http://www.oshpd.ca.gov/, Healthcare Quality and Analysis Division, Health Care Information Resource Center.

OSHPD data includes only those hospitalizations for which asthma was listed as the primary diagnoses (ICD-9 code 493). They do not include treatment that takes place in a doctor's office, health clinic or emergency room. A single child can be counted multiple times for multiple asthma hospitalizations.

Tables 1, 2: Any analyses or interpretations of the data were reached by the Community Health Assessment, Planning and Evaluation (CHAPE) Unit of Contra Costa Health Services and not the California Department of Public Health (CDPH) or California Office of Statewide Health Planning and Development (OSHPD). Data presented for Hispanics include Hispanic residents of any race. Data presented for whites, Asians/Pacific Islanders and African Americans include non-Hispanic residents. Not all race/ethnicities are shown but all are included in totals for the county and for each gender.

Population estimates for Contra Costa and its subpopulations (by age, gender, race/ethnicity) for 2005–2007 were provided by the Urban Strategies Council, Oakland, CA. January, 2010. Data sources used to create these estimates included: U.S. Census 2000, Neilsen Claritas 2009, Association of Bay Area Governments (ABAG) 2009 Projections, and California Department of Finance Population Estimates for Cities, Counties and the State 2001-2009, with 2000 Benchmark.

California population estimate for state level rate from the State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001–2009, with 2000 Benchmark. Sacramento, California, May 2009.

Table 3: Age-adjusted rates for asthma hospitalizations by Contra Costa ZIP codes were provided by the California Environmental Health Investigations Branch (EHIB) using OSHPD data and the Environmental Systems Research Institute (ESRI) Community Sourcebook of ZIP Code Demographics. Data was not available for all ZIP codes. ZIP codes with fewer than five hospitalizations are not shown in order to protect anonymity. Rates were not calculated for any group with fewer than 20 cases due to unstable estimates and are marked "NA" in the table.

Map: Age-specific rates for asthma hospitalization were calculated using OSHPD data and the Environmental Systems Research Institute (ESRI) Community Sourcebook of ZIP Code Demographics. Although stable rates could not be calculated for ZIP codes with fewer than 20 hospitalizations, statistical testing generated confidence intervals for these ZIP codes to determine whether the rate range was lower, higher or similar to the county age-specific rate and the ZIP codes were shaded accordingly. Neither rates nor shading were determined for ZIP codes that extended to areas outside of Contra Costa (94551, 94707 and 94708) or for ZIP codes for which no denominator was available (94505). ZIP codes that are assigned to P.O. boxes only, while included in the Table 3, could not be mapped. For several ZIP codes (94513, 94561 and 94806) the conclusions for the age-specific rates, represented by the shading in the map, are different from those for the age-adjusted rates included in Table 3.

Tables 4-6: These tables include total estimated cases of asthma among children 1-14 years and crude prevalence percentages for 2007. Local data about asthma from the California Health Interview Survey's AskCHIS data query system, copyright© 2007 the Regents of the University of California, all rights reserved, available online at: http://www.chis.ucla.edu/. Data analysis performed March 17, 2010. Any analyses or interpretations of the data were reached by the Community Health Assessment, Planning and Evaluation (CHAPE) unit of Contra Costa Health Services. Data presented for Latinos include Latino residents of any race. Data presented for whites, Asians/Pacific Islanders and African Americans include non-Latino residents. Not all race/ethnicities are shown but all are included in the gender, city, county and state total. Ask CHIS data are generated from a telephone survey that asks questions to a randomly selected group of residents in Contra Costa and other counties in California. Responses are then weighted to represent the county, region and state as whole. The question used for analysis was "Has a doctor ever told you that you have asthma?" This question was asked about all respondents 1 year of age and older.

## TEXT

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