

Summary

This report describes the burden of asthma in Connecticut by providing information on asthma prevalence, health care utilization, disproportionately affected populations, and asthma mortality. Six data sources are used to provide information about asthma in Connecticut from 2005 to 2010. They include: 1) the Behavioral Risk Factor Surveillance System (BRFSS); 2) Connecticut Hospital Information Management Exchange (CHIME); 3) Healthcare for Uninsured Kids & Youth Part A (HUSKY A); 4) School-based Asthma Surveillance System (SBASS); 5) Occupational Illness and Injury Surveillance System (OISS); and 6) Connecticut Death Registry.

Asthma Prevalence

Adults

BRFSS data collected in 2010 showed that approximately 246,100 (9.2%) of Connecticut adults had asthma. From 2005 - 2010, asthma prevalence for adults was highest among women, non-Hispanic Blacks, and 18 - 24 year olds. BRFSS data for 2008 - 2010 show that the current asthma prevalence for adults with annual household incomes less than \$15,000 was almost double the prevalence for adults with annual household incomes of \$75,000 and greater. The BRFSS data also show that among adults, current asthma prevalence was highest for residents of Windham County and lowest for residents of Litchfield and Fairfield counties.

Children

Approximately 89,300 (11.3%) of Connecticut children (0 - 17 years old) had asthma in 2010 according to BRFSS data. From 2005 - 2009, current asthma prevalence in Connecticut children was highest among boys and children aged 5 and older. BRFSS data for 2008 - 2010 show that current asthma prevalence among children in households with annual incomes less than \$15,000 was twice that of children living in households with annual incomes of \$75,000 and above. The BRFSS data also show that current asthma prevalence was highest for children residing in Windham county and lowest for those living in New London County.

Living with Asthma

BRFSS findings for 2008 - 2010 show that among adults with current asthma, approximately 10.2% were current smokers and 9.1% were former smokers. Also, an estimated 12.8% were obese and 8.5% were overweight. The BRFSS data also show that among obese children in Connecticut, 19.6% had current asthma.

The 2007 - 2009 Asthma Call-back Survey (ACBS) data show that among persons with current asthma in Connecticut:

- Approximately 54% limited their usual activities because of asthma.
- In the past 12 months, an adult was unable to work or conduct usual activities because of asthma for approximately 5.1 days. A child who attended day care or school missed approximately 2.3 days because of asthma.
- Overall, asthma was considered not well-controlled for approximately 48.2% and very poorly controlled for approximately 17.8%. Persons with annual household incomes of \$15,000 - \$24,999 were least likely to have well-controlled asthma compared to households with greater annual incomes.
- An estimated 45,700 or 13.9% lived in households with a current tobacco smoker. Among children with current asthma in Connecticut, approximately 22.3% lived in a household with at least one adult smoker. That almost a quarter of Connecticut children with current asthma are exposed in their dwellings to environmental tobacco smoke (ETS) and potential third-hand smoke (THS) is of great concern.

Asthma Self-Care, Knowledge, and Management

According to 2007 - 2009 ACBS data for Connecticut residents with current asthma:

- An estimated 239,800 (73.6%) had ever been taught to recognize early asthma signs or symptoms.
- Approximately 274,900 (83%) had ever been taught what to do during an asthma attack.
- More than half (65.7%) had never been given an Asthma Action Plan (AAP) to help them to better manage their condition, even though an AAP is a key component of asthma management.
- Approximately 211,300 (63.8%) used at least one type of complementary or alternative care (e.g., breathing techniques, vitamins, aromatherapy).

Asthma and Healthcare Utilization

ACBS data for 2007 - 2009 show that approximately 67.9% of persons with current asthma had a prescription for asthma medication. Within the past 12 months, approximately 242,800 (73.3%) of persons with current asthma had spoken to a doctor or other healthcare professional about their asthma, and 197,200 (59.9%) had had at least one routine checkup.

Asthma Hospitalizations

With appropriate diagnosis, medical management, and patient education about asthma self-management, asthma hospitalizations and ED visits can be avoided. Between 2005 and 2009,

there was a 13.2% increase from 12.9 per 10,000 persons to 14.6 per 10,000 persons in hospitalizations for which asthma was the primary diagnosis. Overall, asthma hospitalization rates for 2005 - 2009 were highest among: females, children less than five years old, non-Hispanic Blacks, and Hispanics. If non-Hispanic Blacks, Hispanics, and non-Hispanic Others had experienced asthma hospitalization at the same rate as non-Hispanic Whites in 2009, there would have been about 2,000 fewer asthma hospitalizations in that year.

Adults

Female adults were hospitalized for asthma at twice the rate of male adults and asthma hospitalization rates were highest for persons aged 65 years and older. In 2005 - 2009, Hispanics experienced 5.2 times the rate of asthma hospitalizations as non-Hispanic Whites. The largest increase in asthma hospitalization rates among racial/ethnic groups was among non-Hispanic Blacks, for whom there was a 28.9% increase in hospitalization rates from 2005 - 2009.

Children

From 2005 - 2009, asthma hospitalization rates were higher for boys than girls. The average asthma hospitalization rate among non-Hispanic Blacks was 4.7 times that of non-Hispanic Whites, 1.6 times that of Hispanics, and 2.7 times that of Other non-Hispanics. The greatest increase in the rate of asthma hospitalizations among children was for Hispanics, for whom the hospitalization rate for asthma as a primary diagnosis increased 21% between 2005 and 2009.

Geography

In 2009, non-rural Connecticut residents had twice the asthma hospitalization rate as rural residents (15.4 per 10,000 versus 7.6 per 10,000). New Haven County residents experienced the highest rate of asthma hospitalizations overall (22.9 per 10,000 persons). The combined asthma hospitalization rate for the five largest Connecticut cities - Bridgeport, Hartford, New Haven, Stamford, and Waterbury - was 35.3 per 10,000 for the year 2009, 3.4 times greater than the combined asthma hospitalization rate for the rest of the state. City of New Haven residents had the highest asthma hospitalization rate, with 74.6 events of asthma hospitalization per 10,000 persons.

Asthma Emergency Department Visits

From 2005 to 2009, there were on average 22,133 emergency department (ED) visits each year for Connecticut residents with a primary diagnosis of asthma. Overall, asthma ED visit rates for 2005 to 2009 were highest among children, females, and Hispanics. If Hispanics had ED visits for which asthma was the primary diagnosis at the same rate as non-Hispanic Whites in 2009, there would have been 6,358 fewer asthma ED visits among Hispanics. Likewise, there would have

been 3,208 and 144 fewer asthma ED visits among non-Hispanic Blacks and non-Hispanic Others, respectively.

Children

Asthma ED visit rates were consistently higher for children than adults from 2005 - 2009. Compared to all other age groups, children less than four years old had the highest rates of asthma ED visits. From 2005 - 2009, they experienced a 38.2% increase in the rate of asthma ED visits. From 2000 to 2009, Hispanic children had the highest asthma ED visit rates of all race/ethnicity subgroups and non-Hispanic Black children experienced the second highest asthma ED visit rates for that ten-year period. There was a 50.9% increase in asthma ED visits for Hispanic children from 146.6 per 10,000 in 2005 to 225.4 per 10,000 in 2009.

Adults

Among adults, there was an inverse relationship between age and the rate of asthma ED visits. Persons aged 65 years and older had the lowest rates of asthma ED visits of any age group. Hispanics had highest asthma ED visit rates among adults from 2000 to 2009. The rate of asthma ED visits for Hispanic adults was almost five times greater than the rate for non-Hispanic White adults in 2008.

Geography

The rate of asthma ED visits was lower for rural areas than for non-rural areas in 2009. In 2009, the highest rate of asthma ED visits was among residents of New London County. The combined, five largest cities-rate of asthma ED visits per 10,000 in the year 2009 was 156.4, almost three times that of the rest of the state. The asthma ED visit rate was highest amongst city of Hartford residents at 253.4 per 10,000.

Asthma Emergency Department Visits that Result in Hospitalization

On average, 4,079 asthma ED visits resulted in hospital admission each year from 2006 - 2009. Such events were more frequent for adults than children. In 2009, 13.7% of asthma ED visits resulted in asthma hospitalizations. Hispanics were less likely than non-Hispanic White, non-Hispanic Blacks, and non-Hispanic Others to be admitted as hospital inpatients. Non-Hispanic Blacks were almost twice as likely to be hospitalized for asthma from the ED as Hispanics (19.1% versus 10.8%). Persons \geq 65 years old had the highest percentage of asthma hospitalizations from the ED (46.8%) while 18 - 24 year olds had the lowest percentage, 4.9%, of asthma hospital admission from the ED.

New Haven county residents had the highest percent of asthma hospitalizations from the ED (17.5%). Among the five largest Connecticut cities, New Haven had the largest percentage of

asthma hospitalizations from the ED (25.7%) followed by: Bridgeport (14.3%); Stamford (12.4%); Hartford (11.7%); and Waterbury (9.1%). For the rest of Connecticut cities and towns combined, the percent of asthma ED visits that resulted in hospitalization was 13%.

Asthma Hospital Healthcare Charges

Hospital healthcare charges for asthma increased each year. In 2009, the hospital healthcare charges (i.e., charges of both inpatient and ED care) for asthma in Connecticut were \$112,854,345, almost 1% of total hospital healthcare charges in that year. From 2005 - 2009, there was a 19.8% increase in asthma hospitalization and ED visit charges from \$94,199,808 to \$112,854,345. On average, from 2005 - 2009 asthma inpatient hospitalization charges were 2.6 times that of asthma ED charges.

From 2005 - 2009, asthma hospital healthcare charges for adults were 3.4 times greater than the charges for children. In 2009, adults aged 65 years or older accounted for 28.5% of all asthma hospital healthcare charges. Inpatients aged 65 years or older accounted for 20.3% of the charges, the largest proportion of charges across all hospitalization types and age groups. Hospital healthcare charges for females receiving inpatient services were twice the charges for males.

In 2009, total asthma inpatient charges were highest for non-Hispanic Whites at \$37,885,112. Asthma ED charges were highest for Hispanics at \$10,624,952. Overall, 13.4% of the total asthma hospital healthcare charges in 2009 would not have occurred if non-Hispanic Blacks, non-Hispanic Others, and Hispanics had the same hospital healthcare utilization rates for asthma treatment as non-Hispanic Whites. The greatest potential avoidance of charges would have resulted from fewer asthma hospitalizations among Hispanics and non-Hispanic Blacks, and fewer asthma ED visits among Hispanics.

In 2009, public insurance (Medicare or Medicaid), was the source of payment for 73.8% of asthma hospitalizations, 60% of asthma ED visits and 69.6% of inpatient hospitalizations that resulted from ED visits for which asthma was the primary diagnosis. The average cost of inpatient services paid by public insurance was \$16,524 per hospitalization, \$2,933 more than the average cost of inpatient services paid for by private insurance.

Asthma in HUSKY A/Medicaid Recipients (2007)

The estimated prevalence of asthma in the HUSKY A population less than age 21 for 2007 was 11.3%. Asthma prevalence was higher among males (12.8%) compared to females (9.8%). Asthma was most prevalent among children aged one to five years old (12.7%) compared to participants less than one year old (6.1%), 6 - 14 year olds (11.8%), and 15 - 20 year olds (8.5%). Among

race/ethnicity groups, asthma prevalence was highest among Hispanic children (12.1%) compared to non-Hispanic Blacks (11.5%), non-Hispanic Whites (10.8%), and non-Hispanic Others (8.4%).

Approximately 3% of children with asthma were hospitalized at least once. Among children who were ever hospitalized for asthma, 18% were hospitalized more than once. Only about half of the children hospitalized for asthma or an asthma-related diagnosis received follow-up care within the recommended two weeks of discharge, per the *Guidelines for the Management and Diagnosis of Asthma*.

Approximately 2,741 HUSKY A children with asthma had asthma ED visits in 2007. Of these, less than one in four (24.4%) received follow-up care within two weeks of their ED visit in accordance with national treatment guidelines.

Asthma in School Children (2006 - 2009)

Based on School-based Asthma Surveillance System (SBASS) data, the calculated asthma prevalence rates among the school-aged children in the participating Connecticut public and private schools for the 2006 - 2007, 2007 - 2008, and 2008 - 2009 school years were 13.2%, 13.2%, and 13.1%, respectively. Overall, asthma prevalence rates were higher among students in pre-kindergarten (PK) or kindergarten (K) when compared to students in grades 6 or 7, and grades 9, 10, or 11. Asthma prevalence rates were higher for males than females for each of the three school years considered. School districts in Bridgeport, Hartford, New Haven, and Waterbury had the highest asthma rates. An Asthma Action Plan (AAP) was on file for only one out of every 20 student asthma cases reported.

Work-Related Asthma

Data from the Occupational Illness and Injury Surveillance System (OISS) show that from 1992 to 2008, 497 cases of work-related asthma (WRA) in Connecticut residents were reported. Females, whites, and individuals 35 - 54 years old were the most frequently affected by WRA during this time period. White females represented the majority (42.3%) of all reported WRA cases.

Asthma Mortality

Asthma deaths are preventable; nonetheless, from 2005 to 2009, asthma was the underlying cause of death for 197 Connecticut residents. Females, Black non-Hispanics, persons aged 65 years and older, and residents of Connecticut's five largest cities experienced higher rates of asthma death compared to other state residents. Asthma deaths during 2005 - 2009 among

residents of Bridgeport, Hartford, New Haven, Stamford, and Waterbury occurred at a rate of 18.9 per 1,000,000 compared to 8.3 per 1,000,000 for the rest of Connecticut.

Progress on Healthy People 2010 Objectives

Comparing the 2001 - 2005 reporting period to the 2005 - 2009 reporting period, decreases in the five-year average asthma mortality rate were observed among children less than five years of age, 15 - 34 year olds, 35 - 64 year olds, and persons aged 65 years and older. Among children 5 - 14 years old, the five-year average mortality rate increased 23.8% from 2.1 per million to 2.6 per million. Asthma hospitalization indicators increased across all age groups (<5 years, 5 - 64 years, and > 65 years).

Moving Forward

The increase in asthma prevalence, hospitalizations, and ED visits in Connecticut, in concert with underuse of AAPs and late/no post hospitalization/ED follow-up care, indicate that more efforts to improve the asthma self-management education of individuals and encourage clinicians and healthcare systems to adhere to national asthma management guidelines are needed.

In addition, gaps in our understanding of asthma in Connecticut point to the need for data sources beyond the ones that are currently available. More sociodemographic data, like primary language, are needed. As the Connecticut Department of Public Health moves toward integrating chronic disease programs and focuses on the elimination of health inequities, there will be opportunities to collect richer, more accurate information on the Connecticut populations which are disproportionately affected by asthma.