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Asthma among Children in New Mexico, 2007-2015

Mary Shepherd, Ph.D., M.S.
Epidemiology and Response Division
New Mexico Department of Health

Asthma is a common chronic condition in which inflammation and constriction of the airways causes shortness of breath, coughing, and wheezing. Control of asthma symptoms is essential for quality of life and to prevent life-threatening asthma attacks that require urgent care or hospitalization. The national asthma guidelines[1] emphasize the importance of effective asthma control through both medical management and prevention, by expanding access to intensive self-management education and decreasing environmental exposures that can trigger asthma symptoms. The Community Preventive Services Task Force recommends multi-trigger, multicomponent interventions with a focus on environmental management for children and adolescents with asthma that is not well-controlled. Home visitation by trained personnel, including community health workers, is recommended to provide intensive asthma self-management education and identification and elimination of indoor asthma triggers.[2] Asthma is one of the six health conditions targeted by the Centers for Disease Control and Prevention (CDC) in the 6|18 Initiative[3] to partner with health care purchasers, payers, and providers to improve access to evidence-based interventions that will contribute to achieving the triple aim of improving population health, improving the quality of care for asthma patients, and controlling costs. This report provides information on trends over time and demographic characteristics associated with prevalence of asthma among children under the age of 18 years in NM. Also reported are asthma control rates, asthma attack rates, school absences, prevalence of indoor environmental exposures and home modifications among children with asthma, and access to care.

Methods

The Behavioral Risk Factor Surveillance System (BRFSS) is a random digit dialing telephone survey of adults sponsored by the CDC. The annual survey includes questions about general health status, health care access, and detailed information on chronic diseases and risk behaviors. Respondents living with children under the age of 18 years are asked the asthma status of one randomly selected child in the household, and are asked for permission to call back to complete a survey specifically about the child's asthma. The Asthma Call Back Survey is sponsored by the CDC and includes detailed information on environmental exposures and care and management of asthma. Asthma prevalence among children under 18 years of age from the 2007-2015 BRFSS were analyzed as two-year running averages. Prevalence data for the two-year period 2014-2015 were analyzed by demographic factors. Detailed data on children with asthma from the Asthma Call Back Survey were analyzed for the years 2011-2013, which are the most recent data available from CDC.

Hospitalization and emergency department (ED) data, which include all non-federal hospitals in the state, were analyzed from 2012 to 2014 among children with a primary diagnosis of asthma. These data are collected by the NM Department of Health's Epidemiology and Response Division. Hospitalization data also included data from Indian Health Service facilities and Texas facilities where NM residents were admitted.

Results

Asthma Prevalence. Child asthma prevalence has not changed significantly over the past decade in either NM or the United States (Figure 1). An estimated 39,000 (7.7%) children under 18 years of age per year in NM had asthma in 2014-2015 compared to 8.9% of children nationwide.[2] Asthma prevalence rates among children were generally lower in NM than in the U.S. over the past decade. A greater percentage of boys in NM had current asthma in 2014-2015 than did girls: 9.1% (95% CI 7.5-10.9) among boys vs. 6.3% (95% CI

4.9-8.2) for girls. This gender disparity is also found nationally, and begins to close in the teen years after puberty, when rates among girls begin to increase. The rate of current asthma among boys under age five years was 3.8% (95% CI 2.0-7.1) compared to 2.7% (95% CI 1.1-6.4) among girls in the same age group. In the 5-11 year-old age group, 11.5% (95% CI 8.4-15.6) of boys had asthma compared to 6.7% (95% CI 4.3-10.3) of girls, and in the 12-17 year-old age group, 12.2% (95% CI 9.5-15.4) of boys and 9.2% (95% CI 6.6-12.8) of girls had asthma.

Analysis of child asthma prevalence rates by race/ethnicity showed that African Americans had the highest rates at 17.4% (95% CI 7.1-36.7), followed by Hispanics at 7.8% (95% CI 6.3-9.6), Whites at 7.2% (95% CI 5.4-9.6), American Indians at 5.7% (95% CI 3.9-8.3), and Asian or Pacific Islanders at 4.1% (95% CI 1.1-14.7). African American children have also been found to have the highest rates nationally.[4] Current asthma rates were found to be higher among children living in households with lower income levels. Children living in households with less than $25,000 in annual income had a rate of 9.2% (95% CI 7.1-11.9) in 2014-15. The rate was 5.5% (95% CI 3.9-7.7) among those with household incomes of $25,000-$49,999, and 7.4% (95% CI 5.8-9.3) among children living in households earning $50,000 or more annually. Eight and a half percent of children living in the Northwest region of the state had current asthma in 2014-15, 8.2% of children in the Southeast region had current asthma, 7.7% in the Central region, 7.6% in the Southwest region, and 6.8% in the Northeast region had current asthma (Table 1). Lifetime prevalence (those who had ever had asthma) was highest in the Southeast and Northwest regions, 13.1% and 12.9%, respectively.

Asthma ED Visits and Hospitalizations. The asthma prevalence rate in the Southeast region was comparable to the other regions of the state, but the ED visit rate (117 per 10,000) and the hospitalization rate (31 per 10,000) were both 50% higher than in the Northwest region, the region with the next highest rates.

Asthma Control and Impairment. The level of asthma control among children with asthma was measured based on the following components: frequency of symptoms, nighttime awakenings, and daily rescue medication use. Sixty-two percent of children with asthma in NM were found to have well-controlled asthma in 2011-2013, 20% had asthma that was not well-controlled, and 18% had very poorly controlled asthma. The percentages were similar to those found in 2007-2010.[5] Boys were found to have worse asthma control than girls. Asthma was well-controlled for 55.5% of boys vs. 71.8% of girls. Children aged 5-11 years had the lowest rate of well-controlled asthma (50.9%) compared to 75.2% of children 12-17 years old. The asthma attack prevalence in the past 12 months among children with current asthma was 59.8% (95% CI 49.4-69.3). Sixty-five percent (95% CI 51.3-76.7) of boys had an asthma attack in the past 12 months, as did 53.0% (95% CI 38.1-67.8) of girls. Multiple asthma attacks in the past 3 months were reported for 29.9% of children: 36.1% of boys and 21.2% of girls. Twenty-two percent of children were reported by their parent/guardian to have visited an ED or urgent care center in the past 12 months: 25.6% of boys and 17.1% of girls. Absences from school in the past 12 months due to asthma were reported for 37.2% of children ages 5 to 17 years with current asthma in 2011-2013, a decrease from the previous estimate of 46.2% in 2007-2010. Boys were more likely to miss school (43.0%) compared to girls (29.9%).

Environmental Triggers & Modifications. The majority of children with current asthma were exposed to potential triggers in their home. Seventy-one percent had carpet/rugs in their bedroom, 60% of the homes had a gas stove, 42% had pets allowed in the child's bedroom, 23% had a woodstove or fireplace. Forty-two percent reported that a health care provider had advised them to change the home environment to improve their child's asthma. Home modification to control trigger exposure had increased since 2007-2010. In 2011-2013, exhaust fans were used in the kitchen in 69% of homes, and in the child's bath in 62% of homes. Half (49%) of children with current asthma slept in sheets washed in hot water, 28% used pillow covers, and 34% used mattress covers. No increase was seen in use of air purifiers (27%) or dehumidifiers (15%).

Asthma Self-Management. Less than half (47.2%) of parents of children with current asthma reported that they had been given an asthma action plan by a health care provider. Few parents (13.6%) reported that they or their child had attended a class to learn how to manage asthma. Just over half (52.3%) of 5-17 year-olds had been taught how to use a peak flow meter.

Access to Care. Routine follow-up with a health care provider is recommended at least every 6 months to monitor impairment and risk and provide the appropriate stepwise therapy to achieve and maintain asthma control. Only 37.0% of children with current asthma had two or more routine checkups with a health care provider in the prior 12 months during 2011-2013, while 33.7% had one checkup, and 29.2% had no routine checkups. This was an improvement from 2007-2010 when 39% had no checkups, and 26% had one checkup. There was an increase in influenza vaccination among children with asthma in 2011-13 (69.8%) compared to 2007-2010 (49.1%). Four percent of children with current asthma had no health coverage, 42% were covered by Medicaid or CHIP, 48% had insurance through their parent's employer, and 6% were covered by other plans. Five percent reported that cost was a barrier to compliance after referral to a specialist, 4.5% reported that cost was a barrier to receiving primary care, and 9.5% reported cost was a barrier to obtaining needed medications for their child's asthma.

Discussion

The findings from the Asthma Call Back Survey indicate that further preventive care is needed for children with asthma in NM. Asthma is not well-controlled for more than one-third of the children with asthma. Every child with asthma attending school, by law, must have an asthma action plan on file with the school, yet less than half of parents reported having received one. Indoor air quality assessment, trigger identification, and remediation in the home environment are important elements of quality care,[6] yet asthma triggers in the home remain a common problem. Health plans should consider providing coverage for home-based comprehensive asthma services, which have been shown to improve outcomes and decrease costs.

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Table 1. Asthma Statistics for Children 0-17 Years of Age, by Region, New Mexico

	Region of New Mexico				
	Northwest	**Northeast**	**Central**	**Southeast**	**Southwest**
Lifetime Asthma Prevalence, 2014-15	12.9%(10.5-15.6)	10.1%(7.5-13.4)	10.3%(8.0-13.1)	13.1% (10.2-16.6)	11.4%(8.7-14.8)
Current Asthma Prevalence, 2014-15	8.5% (6.6-11.0)	6.8% (4.7-9.8)	7.7% (5.7-10.3)	8.2% (6.1-10.9)	7.6% (5.4-10.6)
Asthma ED Visit Rate*, 2012-14	78.8 (74.9-82.8)	57.7 (54.3-61.2)	49.7 (48.0-51.5)	116.8 (112.4-121.1)	58.0 (55.2-60.8)
Asthma Hospitalization# Rate, 2012-14	20.0 (18.1-22.1)	12.8 (11.2-14.5)	18.6 (17.6-19.7)	30.6 (28.4-33.0)	17.6 (16.0-19.2)
Asthma Deaths (Rate per 100,000), 1999-2015	0 (0.0)	1 (0.1)	8 (0.2)	6 (0.5)	0 (0.0)

*Emergency Department visits for a primary diagnosis of asthma, per 10,000 population aged 0-17 years.

#Hospitalizations for a primary diagnosis of asthma, per 10,000 population aged 0-17 years. Includes data from federal and non-federal hospitals, and Texas Department of State Health Services hospitalization data for New Mexico residents.

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Michael G. Landen, M.D., M.P.H.
State Epidemiologist & Editor

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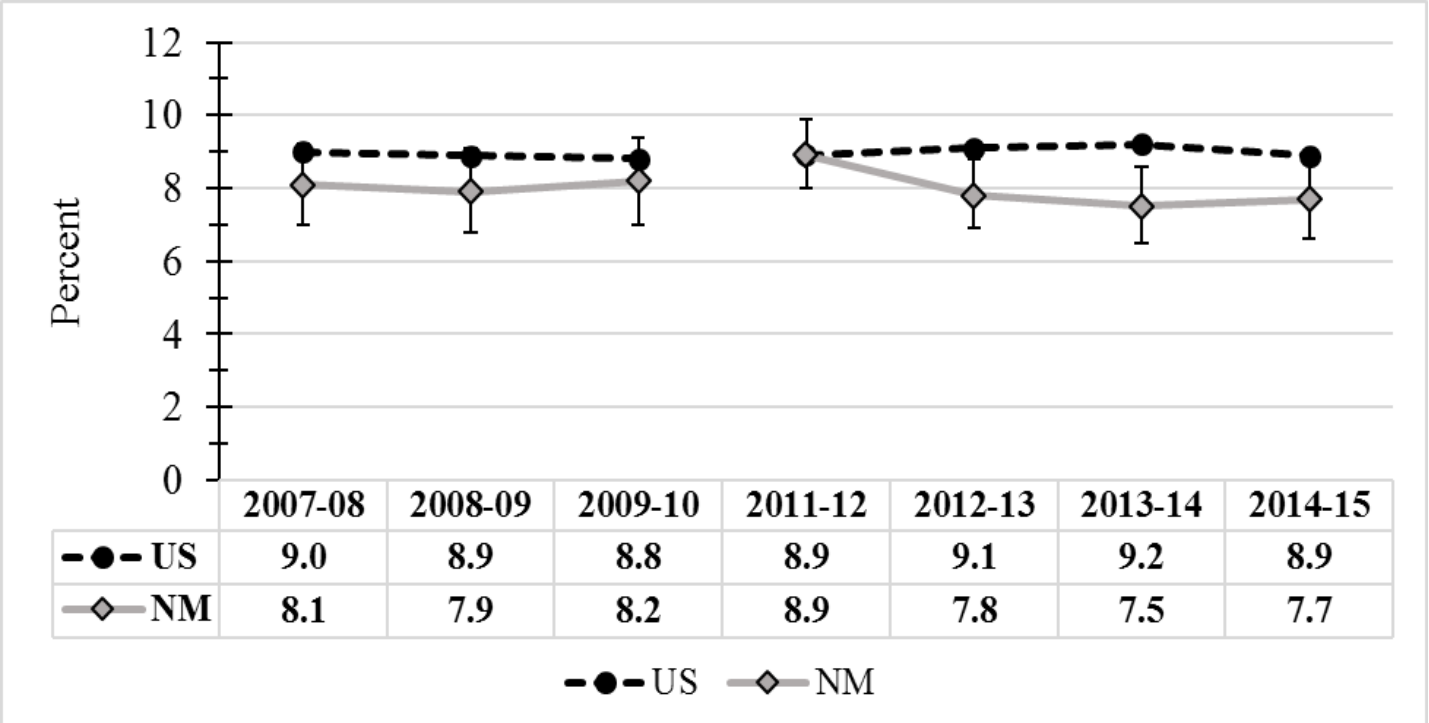
Figure 1. Current Asthma among Children 0-17 Years of Age, Two-Year Moving Average, New Mexico and U.S., 2007-2015



	2007-08	2008-09	2009-10	2011-12	2012-13	2013-14	2014-15
US	9.0	8.9	8.8	8.9	9.1	9.2	8.9
NM	8.1	7.9	8.2	8.9	7.8	7.5	7.7

* Due to changes in BRFSS survey methodology, estimates after 2010 should be compared to prior year estimates with caution.