

## The Burden of Asthma: Hospitalization and Emergency Department Visits in New Mexico, 2016

Asthma is a complex chronic respiratory disease that manifests in the lungs as inflammation and hyper-responsiveness to irritants and environmental triggers. Its exact causes remain unknown and a cure is yet to be discovered. Presumably, asthma results from interactions among genetic predisposition and environmental exposures. Although its onset may occur at any age, asthma symptoms, severity, reaction to treatment, comorbidities, and environmental irritants and triggers differ among patients. Asthma is most likely to occur in children when families have a history of asthma<sup>1</sup>. Environmental irritants, allergens, chemicals, pollutants, and infant and child exposure to respiratory infections may contribute to asthma occurrence<sup>2</sup>. Allergy susceptibility, smoking, and obesity may also increase the risk of asthma<sup>1</sup>. Asthma morbidity differs by socioeconomic status (SES), race/ethnicity, gender, and age<sup>3</sup>.

In general, for people with asthma, exercise, strong emotions, or exposure to certain substances results in an inflammatory reaction that causes airflow obstruction by swollen airways and muscles tightness. In such cases, persons with asthma could have one or more asthma symptoms i.e., coughing, wheezing, shortness of breath, and chest tightness<sup>2</sup>. Asthma symptoms can occur or worsen with triggers (e.g., flu, stress, and cold air), irritants (e.g., cigarette smoke, smog, and dust), and allergens (e.g., pollen, mold, and dust mite)<sup>2</sup>.

In 2016, 11.8% of NM adults reported having current asthma, while asthma prevalence was 9.1% among children in 2015. Sociodemographic characteristics play a role in asthma disparities. For instance, in 2016, among adults, current asthma prevalence was higher among Hispanics (12.6%) than Whites (11.4%) and American Indians (9.4%). Moreover, the average asthma prevalence for 2012 to 2016 was 15.0% among adults residing in Mora County compared to 5.2% in Luna County.

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In addition to morbidity and mortality, asthma burdens individuals, families, and the society. In New Mexico, total direct cost of asthma for 2016 was estimated at \$210 million and indirect cost was estimated at \$21 million. Excluding other costs (e.g., missing school or work days), the asthma medical cost is projected to increase 68.7% between 2010-2020<sup>4</sup>.

### Methods

Data used in this report were derived from NM Behavioral Risk Factor Surveillance System (BRFSS), a randomized phone survey conducted annually, the New Mexico Hospital Inpatient Discharge Database (HIDD), and Emergency Department (ED) data from the Epidemiology and Response Division of the New Mexico Department of Health.

As recommended by the CDC, ICD-10 CM codes J45 were used to define a primary diagnosis for asthma ED and hospital discharge data. HIDD and ED data include non-federal hospital visits. Therefore, visits to Indian Health Service (IHS) and Veteran Affairs' hospitals were not included. Additionally, hospitalization and ED visits from nonresidents and New Mexico residents admitted to out of state emergency departments were not included. Rates were calculated by dividing the number of reported hospitalization or ED visits by the total population; the result was then multiplied by 10,000. Age-adjusted rates were based-on the U.S. 2000 standard population weights.

### Results

Asthma burden is disproportionally distributed among NM counties. For instance, in 2016, the highest age-adjusted asthma hospitalization rates were among NM residents living in Lea County with 12.6 hospitalizations per 10,000 population and Guadalupe County

with 12.0 hospitalizations per 10,000. The lowest hospitalization rates were 1.2 per 10,000 population in Otero County and 1.3 in Quay County (Figure 1). Disparity also exists in asthma ED visit rates among NM counties. For example, in 2016, the highest age-adjusted asthma ED visits rates were in Eddy County with 82.4 visits per 10,000 population compared to the Roosevelt County rate of 6.6 visits per 10,000 population (Figure 2). Asthma ED visit and hospitalization rates vary between sexes and among age groups; male 1-4-year-old hospitalization and emergency room visit rates were 31.3 and 79.4 per 10,000, respectively, almost double the rates 16.5 and 41.8 among females in the same age group (Figure 3).

### Discussion and Recommendations

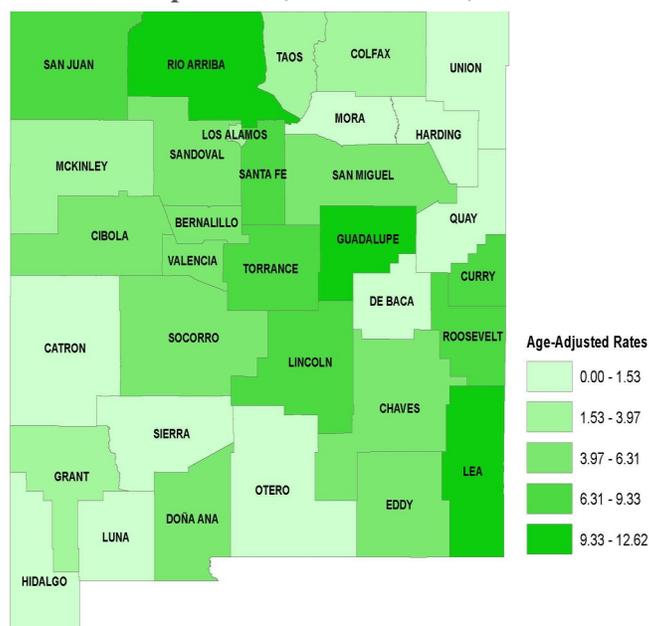
The descriptive statistics in this report highlight disparities in asthma hospitalization and ED visit rates among age groups, sexes, and across NM counties. Asthma can be controlled using evidence-based approaches recommended in the Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma<sup>5</sup>. When asthma is controlled, related hospitalizations and ED visits can be reduced. Therefore, the NMDOH Epidemiology and Response Division Asthma Control Program (ACP), in collaboration with partners, utilizes the EPR-3 guideline recommendations to target areas, communities, and various groups of high burden of asthma throughout the state. Currently, ACP is working with partners to provide asthma self-management education for children in Lea

and San Miguel counties and open airways for elementary school students in the Northwest Region, continued community-based participatory intervention to reduce barriers to access healthcare for monolingual and Spanish speaking families in San Juan, Taos, and Lea counties<sup>6</sup>, referral system to connect families of children with uncontrolled asthma to healthcare services and educational resources, and home visits for families of children with asthma in the Southeast and Northeast regions.

ACP also published a Healthy Homes Principles video in Spanish on its website. This video aims to educate promotoras and Spanish-speaking community members on how to assess and remediate asthma triggers in homes. The forthcoming ACP plan includes additional activities to increase adherence to the EPR-3 guidelines including publishing a Navajo Speaking Healthy Homes Principles video for Navajo speaking CHWs and community members, increasing local community capacity for asthma management in Dona Ana County.

In this report, descriptive, but not statistical analyses were used to depict the burden of asthma in NM. Moreover, national data for the same period were not available for burden comparison. Despite these limitations, this report highlights significant disparities in asthma hospitalization and ED rates in New Mexico and areas where evidence-based asthma interventions can be targeted to address the disparities.

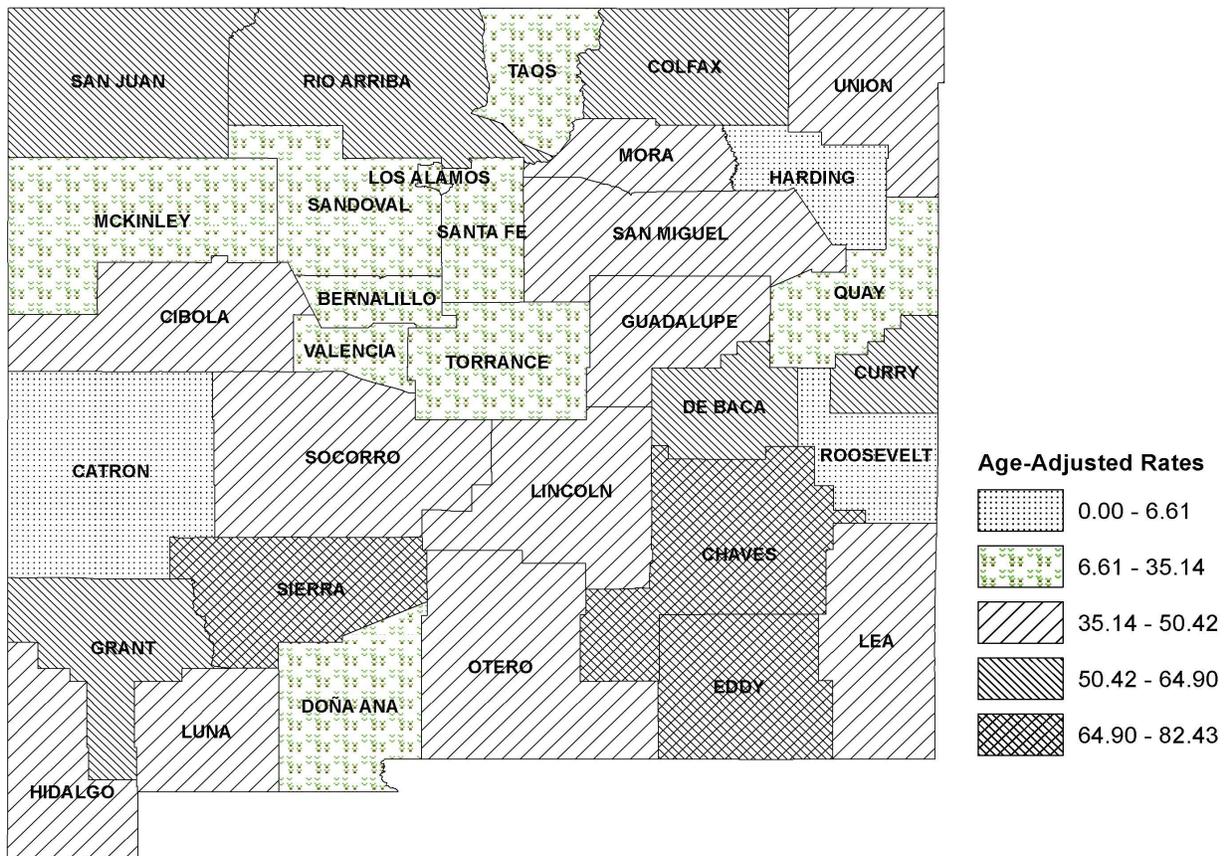
**Figure 1. Asthma Hospitalization Rates Per 10,000 Population, New Mexico, 2016**



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**Figure 2. Asthma Emergency Department Visit Rates Per 10,000 Populations, New Mexico, 2016**



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**Figure 3. Asthma Hospitalization and ED Visit Rates per 10,000 Population By Sex and Age, NM, 2016**

