



Burden Report: Asthma Care in Montana

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Introduction

A key component of asthma control is routine health care and proper medication use. Asthma health care usually involves a visit to a health care provider every six months for a routine checkup, asthma self-management education, and rescue or controller medications as prescribed. Hospitalizations or emergency department visits should be avoided by well-controlled asthma, and up to date vaccinations for influenza, pneumonia, and other vaccine-preventable diseases can prevent possible complications that may result in more serious symptoms. The purpose of this report is to describe health care (such as routine healthcare visits, emergency department stays, hospitalizations, cost barriers) and medication usage among people with asthma as part of a larger series of reports highlighting the burden of asthma in the state of Montana.

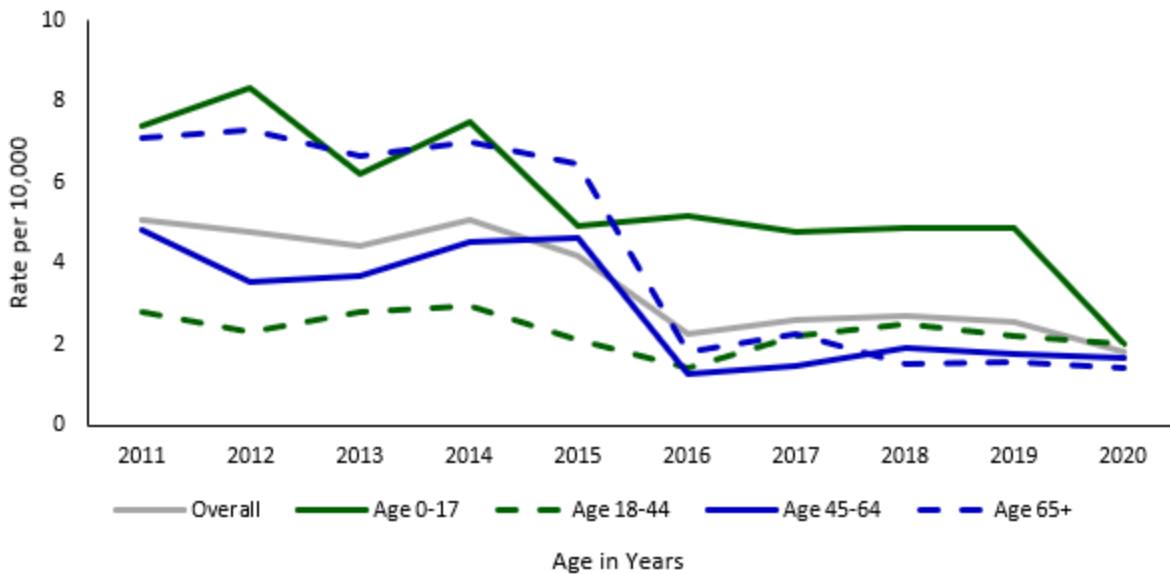
Methods

This report analyzed data from the 2020 Montana Behavioral Risk Factor Surveillance System (BRFSS) and the 2014-2018 Montana Asthma Callback Survey (ACBS) to describe vaccination status, medication use, insurance status, and health care visits among adults with current asthma in Montana. The BRFSS and ACBS are telephone surveys of non-institutionalized adults aged 18 years and older. BRFSS respondents that report having current asthma are asked if they would like to participate in the ACBS. If they agree, they are called back within the next two weeks and are asked a series of questions about their asthma symptoms, medications, triggers, and other exposures. Current asthma was defined as a respondent reporting that a health care professional has ever told them they have asthma and then reporting that they still have asthma. Montana asthma hospitalizations and emergency department visits were analyzed using the Montana Hospital Discharge Data System (MHDDS) for years 2011–2020. An asthma hospitalization or emergency department stay was determined by the primary diagnosis code of 493.0 – 493.9 (ICD-9 for years 2011-2015) or J45.2 – J45.99 (ICD-10 for years 2016-2020). Mortality rates were calculated from 2011–2020 death records in Montana Office of Vital Records. An asthma-related death was defined as a Montana resident with asthma listed as the underlying cause of death (ICD code J45–J46) or asthma being recorded in the causal chain of events (multiple cause).

Asthma Hospitalizations and Emergency Department Stays

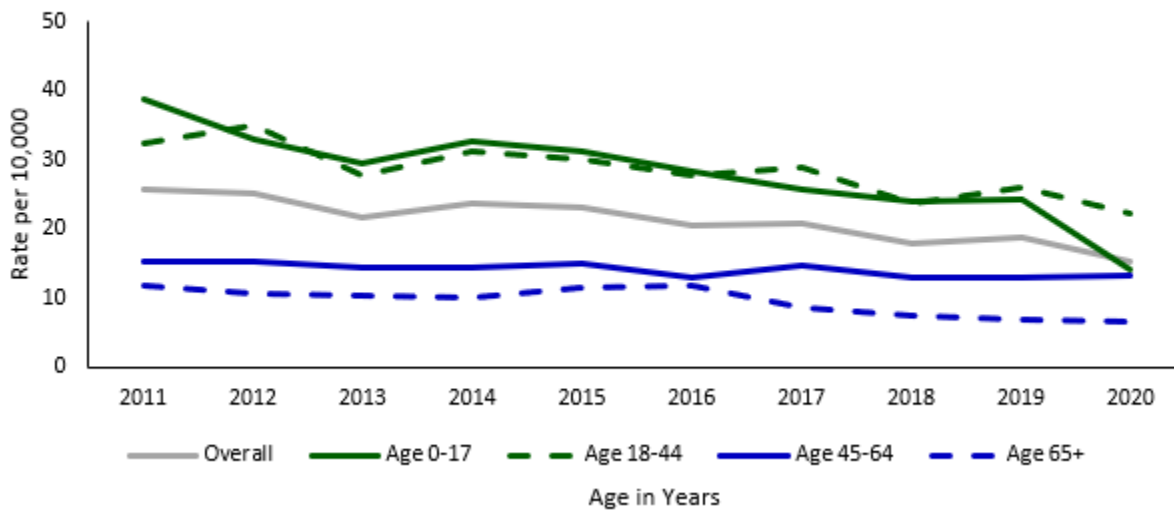
Well-controlled asthma is the best preventative measure for hospitalizations or emergency department visits. On average, there were 3.5 hospitalizations per 10,000 Montana residents from 2011 to 2020. The overall rate of hospitalizations decreased from 5.1 per 10,000 people in 2011 to 1.8 per 10,000 in 2020. Children (aged 0 – 17 years) had the highest rate of asthma-related hospitalizations with an average of 5.6 per 10,000 people. Additionally, the older adults (aged 65+ years) went from having the second highest hospitalization rate in 2011 (7.1 per 10,000) to the lowest in 2020 (1.4 per 10,000). (Figure 1).

Figure 1. Asthma hospitalization rate per 10,000 people by age group, MHDDS, Montana, 2011 - 2020



Asthma emergency department visits occur more often than hospitalizations, with an average rate of 21 per 10,000 people from 2011 to 2020 and changed little year-to-year. Children (aged 0 – 17 years) and younger adults (aged 18 – 44 years) had higher rates of emergency department visits at 28 per 10,000 people than the adults in older age groups (aged 45 – 64 years and 65+ years) who had 14 per 10,000 and 10 per 10,000, respectively.

Figure 2. Asthma emergency department rate per 10,000 people by age group, MHDDS, Montana, 2011 - 2020



Persons aged 65 years and older accounted for 20% of asthma-related hospitalizations, but only 8% of asthma-related ED visits, suggesting the severity of the asthma exacerbations is higher for this age group. Conversely, the percent of emergency department visits for the age group 18-44 years was twice as high as the percent of hospital admissions (45% to 23%, respectively) (Table 1).

Table 1. Percent of Asthma-Related Hospital Admissions and Emergency Department Visits by Age Group, Montana MHDDS, 2011-2020

Age Group	Hospital Admissions (N)	Hospital Admission (%)	ED Visits (N)	ED Visits (%)
0-17	1,267	35%	6,366	29%
18-44	820	23%	9,980	45%
45-64	822	23%	3,929	18%
65+	732	20%	1,699	8%

The average length of stay for an asthma-related hospital admission was 2.7 days and the average cost in 2020 was just under \$16,000. The cost of asthma-related ED visits more than doubled from \$942 in 2011 to just under \$2,000 in 2020. Acute respiratory failure with hypoxia was a common secondary diagnosis for both hospital admissions and ED visits (Table 2).

Table 2. Other Characteristics of Asthma-Related Hospital Admissions and Emergency Department Visits, Montana MHDDS, 2011-2020

	Hospital Admissions	ED Visits
Average length of stay	2.7 days	3.8 hours
Cost of stay in 2020	\$15,989 (72% increase from 2011)	\$1,912 (103% increase from 2010)
Top Three Most Common Secondary Dx	Acute respiratory failure with hypoxia, Pneumonia, Hypoxemia	Tobacco use, Acute respiratory failure with hypoxia, Nicotine dependence cigarettes uncomplicated
Percent of stays paid by Medicare, Medicaid, and other government payers	58%	52%

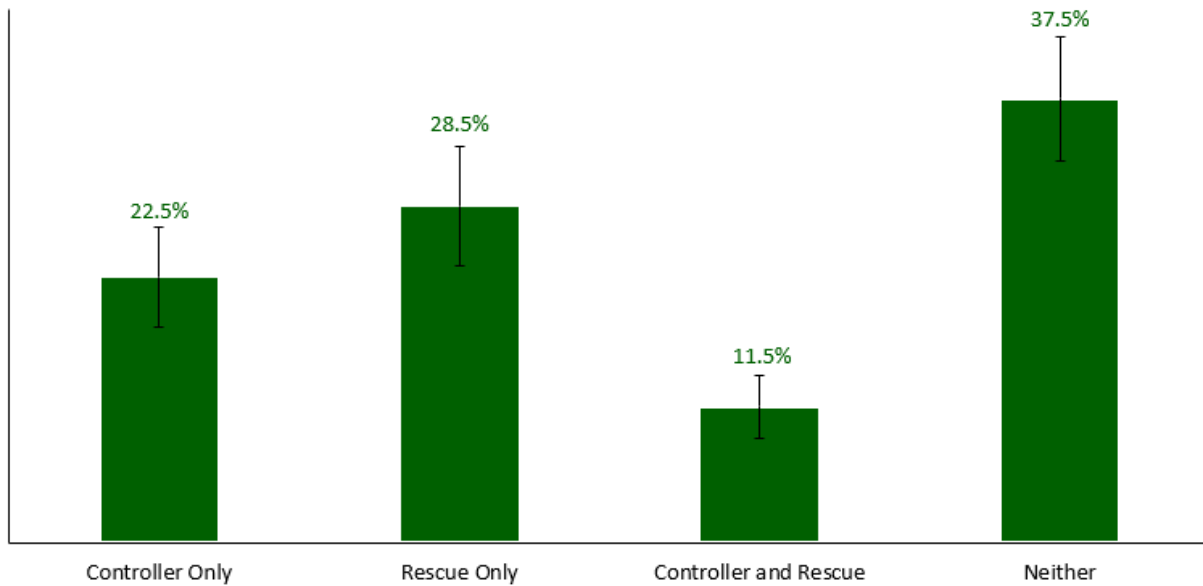
Medication Usage

Asthma medications can be largely grouped into four categories. These categories include long term asthma control medications, which are taken daily to control chronic symptoms; quick-relief medications (rescue medications), which are taken as needed for short-term relief to prevent or treat an asthma attack or to pretreat prior to exercise; medications for allergy-induced asthma; and biologics, which are taken with control medications to better manage severe asthma.¹ These medications can be

taken in a variety of forms, including inhalers, pills, syrup, or nebulizers. Most people with asthma should be taking some form of asthma medication as prescribed by their doctor.

Nearly a quarter (22.5%) of Montana adults with current asthma have only have a controller medication, while 28.5% of adults only have rescue medication. More than one in ten (11.5%) of adults have both rescue and controller medication while over a third (37.5%) have neither (Figure 3).

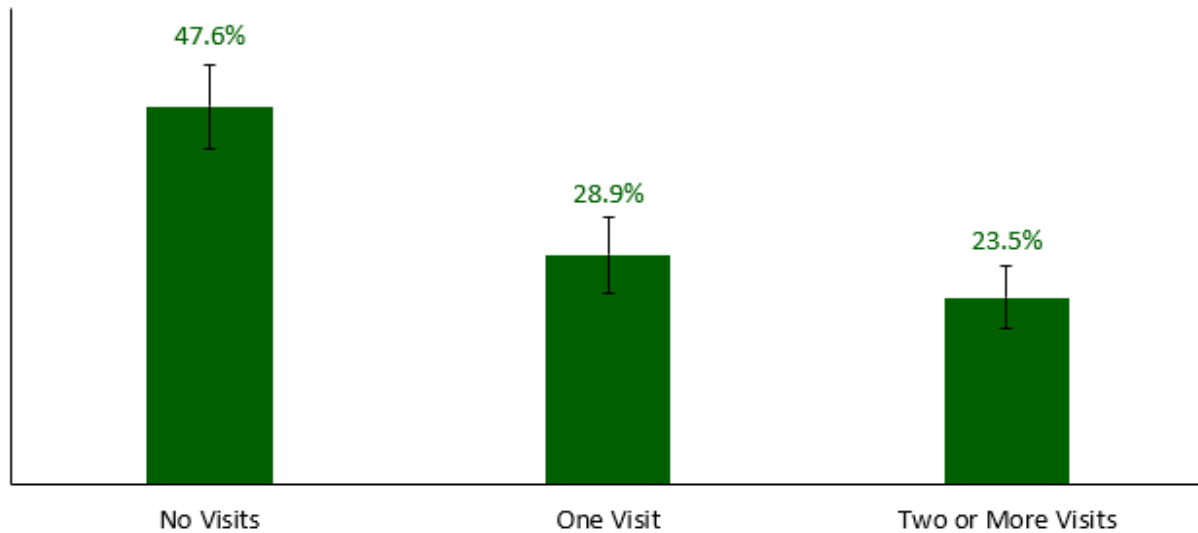
Figure 3. Percent of adults with current asthma by type of asthma medication used, ACBS, Montana, 2014 - 2018



Routine Health Care

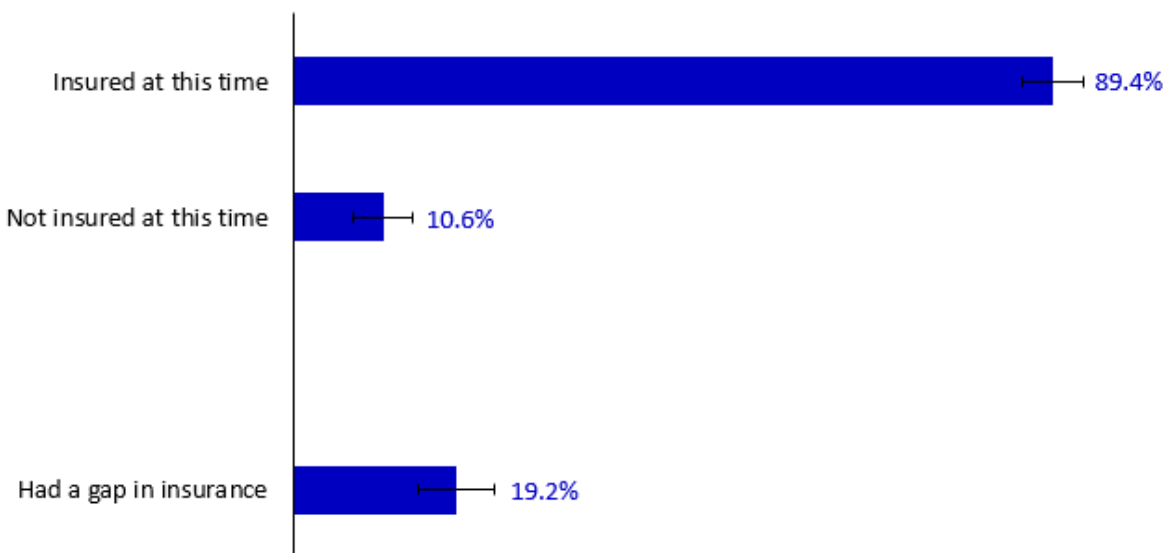
National asthma guidelines suggest having two routine medical visits for asthma within a year.² Less than a quarter (23.5%) of adults with current asthma have had at least two visits within the past year. Nearly half (47.6%) did not have any routine visits at all (Figure 4).

Figure 4. Prevalence of adults with current asthma who sought routine health care for asthma in the last year, Montana, ACBS, 2014 -2018



Access to health care is an important factor in managing asthma and having health insurance is key to making health care accessible. Nearly nine in ten (89.4%) adults with current asthma were insured at the time of the survey. However, one in ten (10.6%) adults had no insurance at the time of the survey and one in five (19.2%) had some form of insurance gap during the past year (Figure 5).

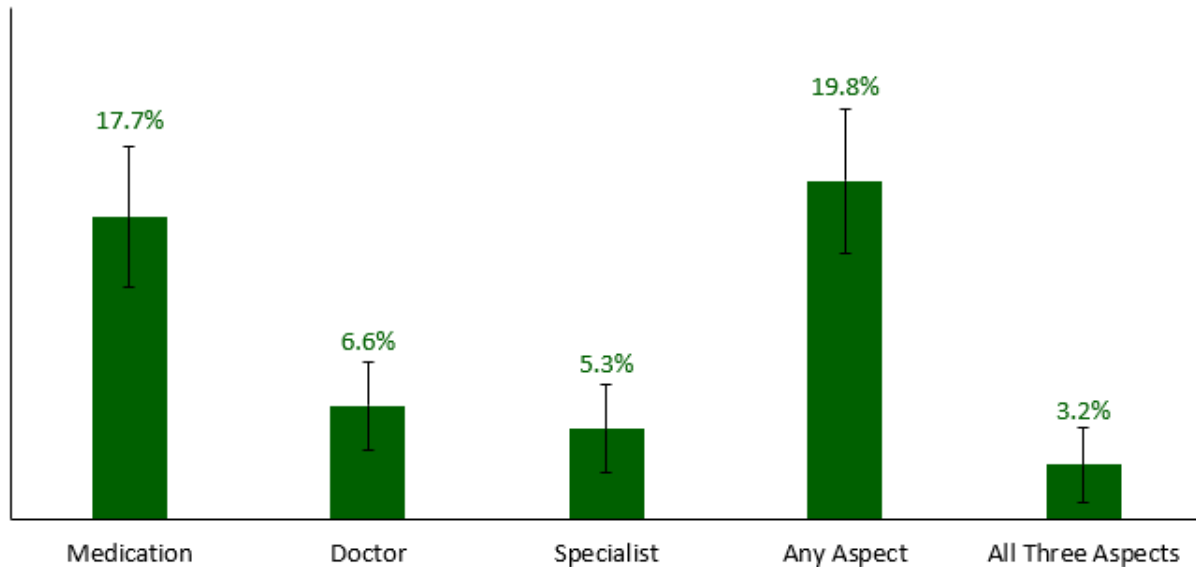
Figure 5. Insurance status within the past year of adults with current asthma, Montana, ACBS, 2014 - 2018



Even if a patient has health insurance, there may be moments where they cannot afford some aspect of asthma health care, such as medication, doctor’s visits, or a specialist visit. One in five (19.8%) Montana

adults with current asthma could not afford at least one of these aspects and 3.2% couldn't afford any. Medication was most often reported to be unaffordable at 17.7% (Figure 6).

Figure 6. Prevalence of adults with current asthma who could not afford some aspect of health care, Montana, ACBS, 2014 - 2018



Vaccinations

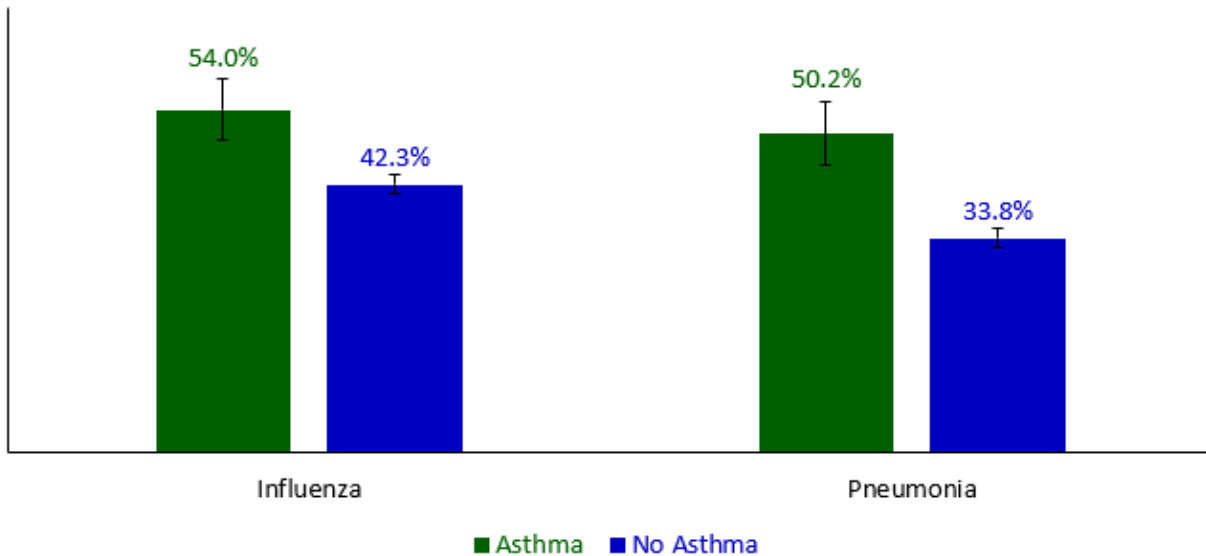
People with asthma have a high risk of developing complications from influenza (“the flu”), even if their asthma is well-controlled. The flu can cause further inflammation of both the airways and the lungs, which can trigger asthma attacks or make symptoms worse. This can also lead to pneumonia or other respiratory diseases.³

Injectable influenza vaccines are recommended for people with asthma; the nasal spray vaccine (LAIV) is generally not recommended for people with certain chronic medical conditions such as asthma.⁴

Pneumococcal vaccines are also recommended for people with asthma after discussing with a doctor which pneumococcal vaccine would be appropriate for their demographic.³

A significantly higher percent of adults with current asthma received an influenza vaccine within a year and the pneumonia vaccine in their lifetime compared to adults without asthma. Nonetheless, almost 50% of adults with asthma did not receive the pneumonia vaccine and almost 40% did not receive the flu vaccine (Figure 7).

Figure 7. Percent of vaccinated adults by current asthma status, Montana, BRFSS, 2020



Asthma Self-Management Education

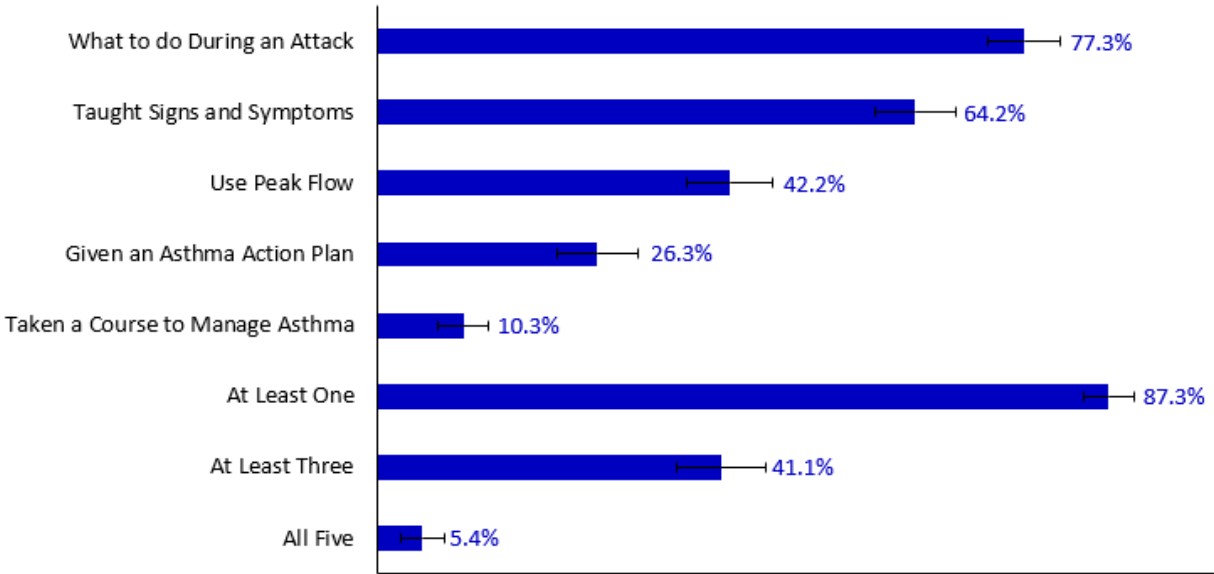
The national asthma EPR-3 guidelines identify asthma self-management education (ASME) as an essential tool for people with asthma to control and improve their asthma symptoms.² There are five major parts of asthma education:

1. Recognize early signs and symptoms of an asthma attack
2. What to do during an asthma attack
3. How to use a peak flow meter
4. Have an asthma action plan (AAP)
5. Take a course on how to manage asthma

More than three-quarters (77.3%) of adults with current asthma are taught what to do during an attack, while three in five (64.2%) know the signs of symptoms of an asthma attack. The remaining ASME components are all less than 50% (Figure 8).

More than four out of five (87.3%) Montana adults with current asthma have been taught at least one part of the recommended ASME; however, only about two in five (41.1%) have received at least three out of the five recommended ASME parts. Only 5% received all five (Figure 8).

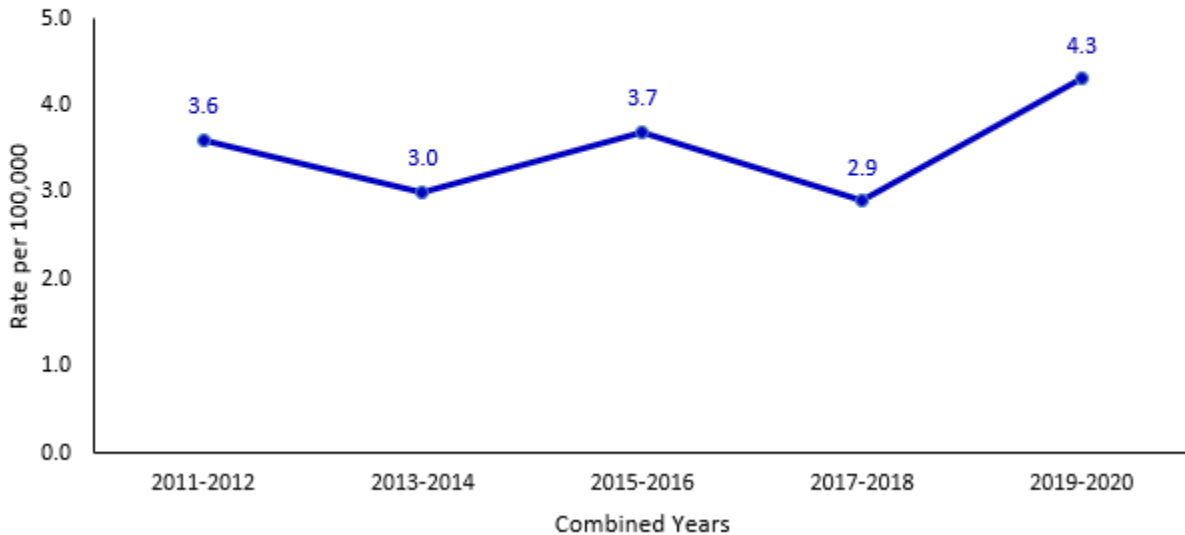
Figure 8. Percent of adults with current asthma who received recommended ASME, Montana, ACBS, 2014- 2018



Mortality

Asthma-related mortalities are rare, with an average of 18 people dying each year in Montana from asthma between 2011 and 2020. The two-year mortality rate remained between 2.9 per 100,000 people and 4.3 per 100,000. (Figure 9).

Figure 9. Age-adjusted asthma-related mortality in Montana rate per 100,000 people by Year, Montana Office of Vital Records, 2011 - 2020



Conclusion

Many Montanans with current asthma are not receiving the recommended asthma care, with 38% of adults with current asthma not having rescue or controller medication on hand and nearly half (48%) not seeing a doctor in the past year for a routine asthma exam. Almost 20% of Montana adults with current asthma could not afford some aspect of their asthma care (a doctor's visit, medication, or a specialist visit). Additionally, only a quarter of adults with current asthma have an asthma action plan, which describes their regular treatment, what to do during an attack, and when to seek emergency medical treatment. All of these are important factors in asthma control.

Uncontrolled asthma leads to more emergency department visits or hospital stays. While the asthma hospitalization rate did decline starting in 2016, the emergency department rate remained relatively consistent over the past decade. Children (aged 0 – 17 years) have the highest rate of both emergency department visits and hospitalizations, which suggests extra attention should be paid to this group.

Recommendations for Health Care Providers

- Asthma self-management education, correct medication, and regular doctor visits are excellent preventative measures to avoid asthma-related hospital stays or emergency department visits.
 - Recall patients every six months for their routine asthma checkups.
 - Ensure patients are taking their prescribed asthma medication and demonstrate inhaler techniques if needed.
 - Check to make sure all patients have been given an asthma action plan.
- Recommend eligible patients with asthma to get the flu vaccine, as well as the appropriate pneumococcal vaccine.
- Encourage patients to follow up with their primary care provider after an ED visit.
- Discuss medication barriers with patients and adjust if necessary.
- Refer patients to an asthma educator, pharmacist, or community health worker for further team-based care.

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