Children with Asthma

DEFINITION

Children with asthma is the rate of emergency department visits where asthma was the primary diagnosis per 1,000 children under age 18.

SIGNIFICANCE

Asthma is a chronic respiratory disease that causes treatable episodes of coughing, wheezing, shortness of breath, and chest tightness, which can be life threatening when not controlled. Asthma attacks can be triggered by respiratory infections, air pollutants (such as high levels of ozone), cigarette smoke, and allergens. While the exact cause is unknown, various genetic factors, environmental factors (such as long-term exposure to traffic pollution), climate change, and socio-economic factors (such as poverty and persistent or prolonged stress) have been linked to an increased risk for asthma.[1,2,3,4]

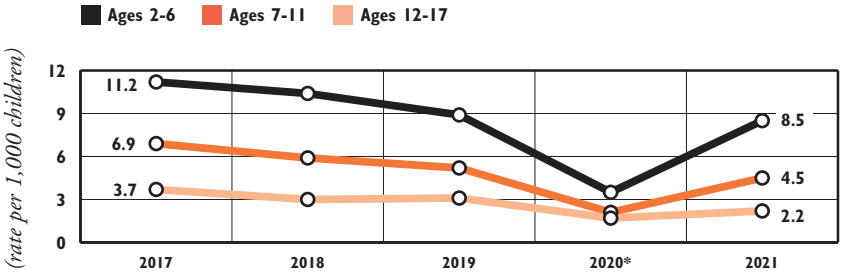
Asthma is the most common chronic condition among children and adolescents in the U.S.[5] Current asthma prevalence among U.S. children fell from 8.5% in 2015 to 7.5% in 2020.[6] However, disparities in asthma rates continue to persist. Puerto Rican and non-Hispanic Black children have much higher asthma rates than non-Hispanic white children. Rates of asthma are also higher among males than females and among children living in poverty than among children in higher income families.[7] Social and environmental risk factors for asthma account for much of the pronounced racial and ethnic disparities in asthma rates and severity.[8]

Compared with adults, children have much higher rates of emergency department visits for asthma, slightly higher hospitalization rates, and lower death rates.[9] Asthma is a leading cause of emergency department visits and hospitalization for children under age 18 and school absenteeism.[10,11]

Proper asthma management requires continued assessment and monitoring, patient education, assessment of environmental factors, and appropriate medication. Health care providers should work with the child and family to create an asthma action plan with instructions on how to avoid asthma triggers and use medications properly. An asthma action plan can improve health outcomes and reduce hospitalizations if adhered to and supported by enhanced care and community-based interventions.[12,13,14]

Rhode Island middle and high school staff provide information about and referrals for asthma. In Rhode Island in 2020, 67% of middle and high schools reported providing health care referrals for students diagnosed with or suspected of having asthma, 69% of schools reported providing asthma education to students, and 41% provided families with information on asthma.[15]

Asthma Emergency Department Visit Rates By Age, Rhode Island Children, 2017-2021*



Source: Rhode Island Department of Health, Emergency Department Visit Data, 2017-2021. *Asthma-related emergency department visits decreased substantially in spring 2020 and must be interpreted with caution due to the COVID-19 pandemic.

◆ **Pediatric asthma emergency department (ED) visit rates where asthma was the primary diagnosis decreased in each age group between 2017 and 2021. The decrease was most notable in the youngest age group (ages two to six years), with an asthma emergency department visit rate of 11.2 per 1,000 children in 2017 and a rate of 8.5 per 1,000 children in 2021.[16]**

◆ **In Rhode Island between 2017 and 2021, there were 731 hospitalizations with a primary asthma diagnosis of children under age 18, a rate of 0.7 per 1,000 children. The rate of primary asthma hospitalizations was more than twice as high in the four core cities (1.1 per 1,000 children) than in the remainder of the state (0.5 per 1,000 children).[17]**

◆ **There was a steep decline in pediatric asthma emergency department visits and hospitalizations in Rhode Island the spring of 2020.[18] One contributor for this was families' reluctance to visit the hospital due to fear of contracting COVID-19. In addition, with public schools closed in the spring of 2020, it is likely that children with asthma had less exposure to viral infections and environmental allergens than in prior years, which may have decreased asthma problems.[19]**

Asthma Prevalence and Support Programs

◆ In 2020, Rhode Island parents reported rates of current asthma prevalence of their children of 9.5% (up from 8.7% in 2019) compared to the average of 7.5% for parents surveyed in 30 states and Washington, DC. Rhode Island has the fifth highest self-reported child current asthma prevalence among the 30 ranked states.[20]

◆ Between 2017 and 2021, 44% of emergency department visits with a primary diagnosis of asthma were for Hispanic children, 33% were for white children, and 17% were for Black children. Nearly three quarters (72%) of emergency department visits were for children with RIte Care/Medicaid.[21] Inequities in social determinants of health (housing policies, environmental quality and pollution, and social stressors) contribute to the racial and ethnic disparities in asthma development, progression, and management.[22]

◆ The Rhode Island Department of Health Asthma Control Program has been implementing a home-based, multicomponent intervention since 2010. This program serves children with asthma who have had a recent emergency department visit or hospitalization for asthma and who live in the core cities of Central Falls, Pawtucket, Providence, or Woonsocket, communities with high child poverty rates.[23]

Table 23. **Asthma Emergency Department Visits for Children Under Age 18, Rhode Island, 2017-2021**

CITY/TOWN	ESTIMATED # OF CHILDREN UNDER AGE 18	# OF CHILD EMERGENCY DEPT. VISITS WITH PRIMARY ASTHMA DIAGNOSIS	RATE OF CHILD EMERGENCY DEPT. VISITS WITH PRIMARY ASTHMA DIAGNOSIS, PER 1,000 CHILDREN
Barrington	4,489	70	3.1
Bristol	2,887	36	2.5
Burrillville	3,229	35	2.2
Central Falls	6,411	248	7.7
Charlestown	1,161	11	*
Coventry	6,655	103	3.1
Cranston	15,744	297	3.8
Cumberland	7,550	88	2.3
East Greenwich	7,886	18	1.0^
East Providence	3,465	191	4.8^
Exeter	1,175	11	*
Foster	790	11	*
Glocester	1,896	11	*
Hopkinton	1,613	18	2.2^
Jamestown	871	10	*
Johnston	5,119	97	3.8
Lincoln	4,640	60	2.6
Little Compton	568	5	*
Middletown	3,487	87	5.0
Narragansett	1,651	11	*
New Shoreham	189	1	*
Newport	3,660	146	8.0
North Kingstown	5,496	65	2.4
North Providence	5,802	144	5.0
North Smithfield	2,274	26	2.3^
Pawtucket	16,455	521	6.3
Portsmouth	3,444	43	2.5
Providence	41,021	1,891	9.2
Richmond	1,627	8	*
Scituate	1,866	10	*
Smithfield	3,411	31	1.8
South Kingstown	4,339	41	1.9
Tiverton	2,723	23	1.7^
Warren	1,826	25	2.7^
Warwick	14,034	194	2.8
West Greenwich	1,251	9	*
West Warwick	5,787	131	4.5
Westerly	3,826	59	3.1
Woonsocket	9,467	432	9.1
Four Core Cities	*73,354*	*3,092*	*8.4*
*Remainder State***	*136,431*	*2,126*	*3.1*
*Rhode Island***	*209,785*	*5,218*	*5.0*

Source of Data for Table/Methodology

Rhode Island Department of Health, Emergency Department and Hospital Discharge Data, 2017-2021.

**Data for 2020 are not comparable to prior years. Asthma-related emergency department visits and hospitalizations decreased substantially in spring 2020, due to the COVID-19 pandemic.

Data are reported by place of child's residence at the time of the emergency department visit.

The Rhode Island Department of Health defines emergency department visits with primary asthma diagnosis as those resulting in a home discharge or another facility, but not admitted to the hospital as an inpatient. As such, data are not comparable to *Factbooks* prior to 2017.

Effective October 1, 2015, the International Classification of Disease (ICD) codes changed from the 9th classification to the 10th classification, which may impact comparability across the years.

The data are event-level files. Children admitted to the hospital (ED or inpatient) more than once are counted as a new event for each admission.

The denominator used to compute the 2017-2021 rate of emergency department visits is the number of children according to the 2020 U.S. Census, multiplied by five.

^ The data are statistically unstable and rates should be interpreted with caution.

* The data are statistically unreliable and rates are not reported and should not be calculated.

** Excludes Rhode Island cities and towns unknown.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

References

[1] Subbarao, P., Mandhane, P.J., Sears, M.R. (2009). Asthma: epidemiology, etiology and risk factors. *CMAJ, 181*(9), E181-E190.

[2] Rice, M. B., et al. (2018). Lifetime air pollution exposure and asthma in a pediatric birth cohort. *Journal of Clinical Immunology, 141*(5), 1932-1933.

(continued on page 182)