Children's Hospital Colorado

Contagious Comments
The Vaccine-Preventable Diseases Report

Volume XXXIX Number 2

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February 2024

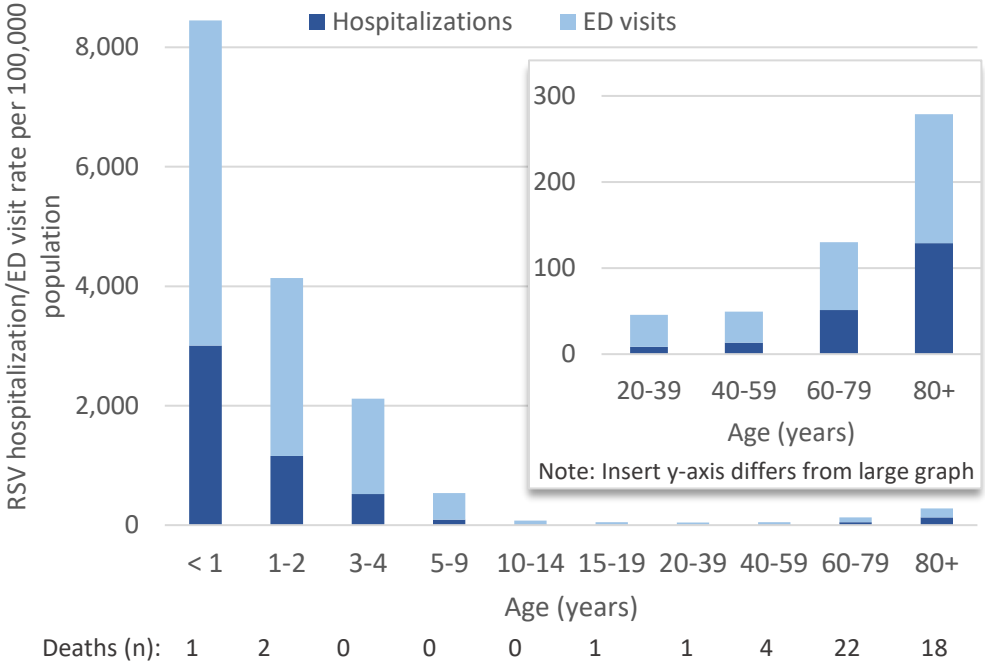
- **Statewide Summary:** Over 4,000 Colorado children were hospitalized and over 11,000 had an emergency department visit with RSV in 2022. Among adults, people older than 80 years of age were the most impacted.
- **Epidemiology Trends:** After little RSV early in the pandemic, we saw a dramatic return of disease in 2022-23.

RSV Disease in Colorado:

Infants had the highest rates of hospitalizations and ED visits with RSV in 2022. With over 4,000 hospitalizations, RSV would have been the most common cause for hospitalization with a vaccine-preventable disease (VPD) among Colorado children in 2022. Only COVID and influenza accounted for more pediatric ED visits with a VPD in Colorado in 2022.

Hospitalizations and ED visits with RSV were less common in adults with the largest impact seen among adults older than 80 years. There were 49 deaths among Coloradans hospitalized with RSV in 2022; most in adults ≥60 years.

The median length of stay for a hospitalization with RSV was 3 days in most age groups and 4 days among adults older than 60 years.



Hospitalizations, emergency department (ED) visits associated with RSV in Colorado in 2022. Diagnoses identified using ICD-10 codes from Colorado Hospital Association (CHA) data. Colorado Department of Local Affairs population estimates used to calculate incidence rates.

RSV vaccine	RSV monoclonal antibodies	
	Palivizumab	*Nirsevimab*
• Adults ≥60 years using shared clinical decision-making • Pregnant people at 32-36 weeks of pregnancy, during or before RSV season	• Infants at high risk for severe RSV including some infants who were born preterm, some with chronic lung disease or congenital heart disease. • Up to 5 monthly doses during RSV season	• All infants ≤8 months during first RSV season • Children 8-19 months who are at increased risk of severe RSV during their second RSV season. • Single dose for one RSV season

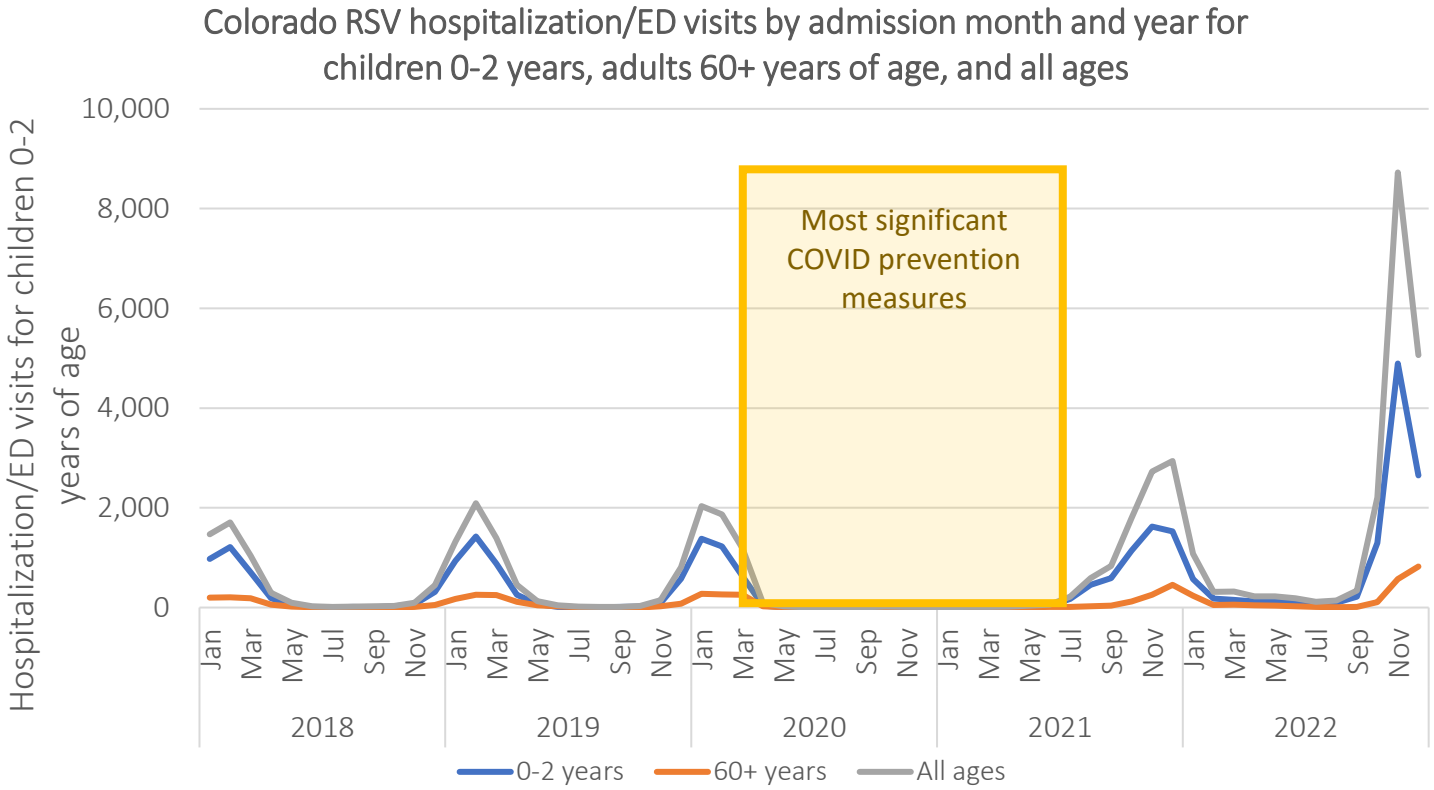
RSV Prevention:

In 2023, the Advisory Committee on Immunization Practices recommended new RSV vaccines for use in older adults[1] and pregnant people[2] and a new RSV monoclonal antibody for use infants.[3] RSV vaccination for adults ≥60 years of age is recommended with shared clinical decision making, which may include consideration of chronic conditions and age-

related factors. RSV vaccination is recommended for pregnant people at 32-36 weeks of pregnancy during or before the beginning of the RSV season.

Vaccination during pregnancy offers one method of protection for infants through maternal antibody transfer and giving a new long-acting monoclonal antibody (Nirsevimab) offers passive postnatal protection. Nirsevimab is recommended for all infants ≤8 months of age during their first RSV season and for children 8-19 months of age who are at increased risk for severe RSV during their second RSV season. Children who should receive Nirsevimab at 8-19 months include American Indian/Alaska Native children, children with chronic lung disease of prematurity still needing respiratory support, children who are severely immunocompromised, and children with cystic fibrosis.

Due to limited supply in 2023, the Centers for Disease Control and Prevention amended recommendations to prioritize use of Nirsevimab for children weighing <5kg and children weighing ≥5kg who are either 1) under 6 months of age, 2) American Indian/Alaska Native, or 3) aged 6-8 months with a medical condition placing them at increased risk of severe RSV disease. Increasing supply in 2024 may allow a return to regular eligibility criteria depending on local availability.



RSV Seasonality and Changes since COVID:

In Colorado and around the world, the incidence of RSV and other respiratory illnesses decreased dramatically in 2020 and 2021 as a result of the implementation of non-pharmaceutical interventions to prevent COVID including masking and social distancing.[4-13] The return of RSV disease has come with shifting seasonality. In North America, RSV season has typically occurred between October and April with peak activity in December or January.[14] Based on Colorado Hospital Association (CHA) data, RSV hospitalizations and ED visits in Colorado peaked in November of 2021 and 2022 compared to January for 2018-2020. A significant increase in RSV hospitalizations and ED visits occurred among Colorado children in 2022, and colleagues found that children hospitalized with RSV in the 2022-23 season were more likely to be older and to be admitted to an intensive care unit compared to 2021-2022.[15] You can receive updates about activity of RSV and other pathogens from the Children's Hospital Colorado Bug Watch at https://www.childrenscolorado.org/health-professionals/professional-resources/, or contact Maggie Bay (maggie.bay@childrenscolorado.org) to subscribe.

Summary: *After little RSV activity during the early COVID pandemic, there were almost twice the typical number of RSV hospitalizations and ED visits in Colorado in late 2022.*

Disease Burden and Economic Impact of RSV:

RSV hospitalizations and emergency department visits by payer type in Colorado, 2022

	Children 0-2 years			Adults ≥ 60 years		
	Total	Commercially Insured	Publicly/Un-insured	Total	Commercially Insured	Publicly/Un-insured
Population, N (%)	178,010 (100%)	99,043 (56%)	78,967 (44%)	1,242,294 (100%)	289,871 (23%)	952,423 (77%)
Hospitalizations, N (%)	3,335 (100%)	1,506 (45%)	1,829 (55%)	820 (100%)	53 (6%)	767 (94%)
Rate per 100K	1873.5	1520.6	2316.2	66.0	18.3	80.5
Total Charges, $M	$197.3M	$94.6M	$102.7M	$72.4M	$3.4M	$69.0M
ED visits, N (%)	7,144 (100%)	2,087 (29%)	5,057 (71%)	1,166 (100%)	134 (11%)	1,032 (89%)
Rate per 100K	4,013.3	2,107.2	6,403.9	93.9	46.2	108.4
Total Charges, $M	$38.2M	$14.3M	$23.9M	$12.0M	$1.3M	$10.7M

Table 1 shows hospitalization and emergency department (ED) visits with RSV for by payer type in Colorado in 2022. Charges and diagnoses from Colorado Hospital Association (CHA) data. M=million, K=thousand.

Among Colorado children 0-2 years of age, many of whom will be eligible to receive Nirsevimab moving forward, hospitalizations and ED visits with RSV resulted in over $38 million in health care charges in 2022. For Colorado adults ≥60 years of age, most of whom are now eligible for RSV vaccination, hospitalizations and ED visits with RSV resulted in $12 million in health care charges.

In both young children and older adults, population-based rates of hospitalization and ED visits with RSV were higher among publicly insured and un-insured Coloradans compared to those with commercial insurance. Associated health care charges were also disproportionately higher among publicly insured and un-insured populations.

Summary: *Like other vaccine-preventable diseases, rates of RSV hospitalizations and ED visits and the associated economic burdens are higher for publicly insured and uninsured Coloradans.*

Methodologic limitations:

With the availability of new RSV prevention products, tracking the burden of RSV hospitalizations and ED visits can illustrate the potential and realized benefit of immunization strategies. Measuring hospitalizations and ED visits from the Colorado Hospital Association (CHA) database has several limitations. The accuracy of ICD-10 coding is subject to biases from clinicians and coding professionals. The analyses presented include only ICD-10 codes specific to RSV. By excluding general bronchiolitis codes in children, we may have underestimated the burden of RSV. In addition, diagnosis of RSV relies in part on diagnostic testing behaviors of clinicians and organizations, which may vary widely. Availability of new RSV prevention approaches may raise awareness of the disease and make clinicians more likely to test for RSV.

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Thank you for your interest in our publication.

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