



March 2020

- **In the News:** Hepatitis A and measles risks persist
- **Statewide Summary:** The latest data on VPDs in Colorado and comparing our vaccination rates with other states
- **Measles Hits Home:** What it takes to respond to measles cases and exposures in your hospital

(Still) In the News: Hepatitis A and Measles in Colorado.

Hepatitis A: Colorado continues to face an outbreak of hepatitis A that began in October 2018. Similar to other states seeing a resurgence of hepatitis A, Colorado's outbreak has most affected people experiencing homelessness, people with substance use disorders, and those who are currently or recently incarcerated. Recent outbreaks of hepatitis A have also impacted men who have sex with men.

There have been over 360 cases, leading to over 260 hospitalizations and 2 deaths in Colorado so far. The outbreak began in El Paso county. In the past six months it has spread to the Denver metropolitan area and to several rural counties throughout the state. Most cases have occurred in adults and the youngest person affected so far was 8 years old. Public health officials and health care facilities are working to prevent spread of hepatitis A through vaccination.

Symptoms of hepatitis A include fever, vomiting, diarrhea, and jaundice. Hepatitis A is most commonly spread by fecal to oral transmission, usually through eating contaminated food or drinks related to poor hand hygiene.

Who needs a Hepatitis A vaccine?

- All children over 12 months
- Anyone under 18 years should receive catch-up vaccination
- Adults with any risk factor:
 - ✓ International travel
 - ✓ Experiencing homelessness or substance use
 - ✓ Men who have sex with men
 - ✓ People living with HIV or chronic liver disease
 - ✓ Newly adopted child from another country

What can you do about measles?

Parents

- Call your doctor if you think you/your child have symptoms: fever, rash, cough and runny nose
- Make sure your family is vaccinated- the MMR vaccine is 97% effective in preventing measles
- Check your childcare and school vaccination rates. Call or look online:

<https://www.colorado.gov/pacific/cdphe/school-and-child-care-immunization-data>

Health Care Providers

- Be sure patients traveling internationally are fully vaccinated, including MMR from age 6mo
- Contact CDPHE if you think a patient may have measles or have been exposed to someone with measles.
- Resources and guidance on testing: <https://www.colorado.gov/pacific/cdphe/measles>

Measles: In December 2019, three unvaccinated children who were visiting Colorado became ill with measles while traveling internationally. While infectious, they were at Denver International Airport and the Children's Hospital Colorado Emergency Room in Aurora. Colorado Department of Public Health and Environment, Tri-county Health Department, and Children's Hospital Colorado worked together to respond to these cases and exposed contacts. There have been no related measles cases in Colorado. We are past the risk period for secondary cases.

Public health teams respond to a measles case by identifying people who may have been exposed and ensuring they are protected from infection. Tri-County Health Department officials estimated the costs of responding to two separate measles cases in 2016 and 2017 at \$18,000 and \$49,000 respectively.¹ Costs related to these recent exposures were likely many times higher.

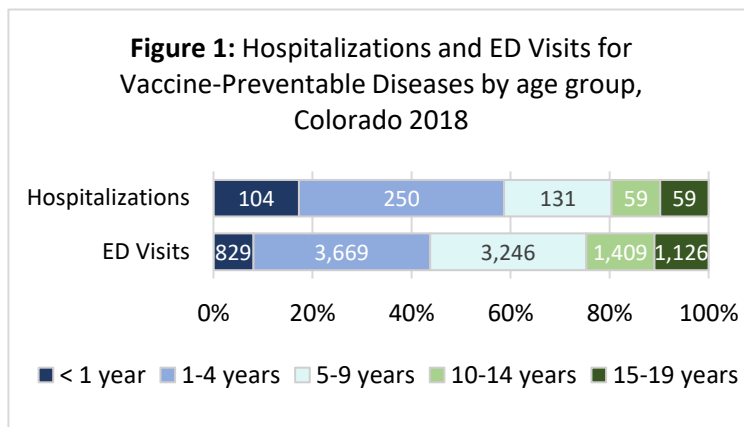
It is important for people traveling internationally to be protected against measles. Early or accelerated vaccination may be needed.

If you are concerned about a suspected case of measles, please contact your state or local public health department.

Statewide Summary: *Vaccination rates continue to lag behind other states, including for MMR.*

In 2018 Kindergarten vaccination data collected by the Centers for Disease Control and Prevention, Colorado was last among US States for MMR vaccination at 87.4%.² MMR coverage at 87% is below the level needed to protect against outbreaks of measles (~95%).^{3,4} Colorado ranked second-to-last for DTaP vaccination at 90.3%.²

These low early kindergarten immunization rates impact the same young age group that experiences the highest burden of vaccine-preventable illness. In Colorado in 2018, most hospitalizations and over 40% of ED visits related to vaccine-preventable diseases occurred among infants and children under 5 (**Figure 1**).



Vaccine-preventable diseases caused over 10,000 hospitalizations and emergency department visits for Colorado children in 2018 and resulted in over \$59 million in health care charges

Table 1: Cases, rates, and charges for Colorado children 0-19 years of age with vaccine-preventable diseases, 2018.

Vaccine	Hospitalized Cases	Rate per 100,000	Hospital Charges	ED Cases	Rate per 100,000	ED Charges	Total Charges
Diphtheria*	-	-	-	(1)	-	-	-
H. influenzae	2	0.1	\$174,331	-	-	-	\$174,331
Hepatitis A	1	0.1	\$9,000	-	-	-	\$9,000
Hepatitis B	3	0.2	\$293,587	7	0.5	\$117,592	\$411,179
Influenza	524	36.9	\$22,251,991	10,102	711.0	\$27,379,813	\$49,631,804
Measles*	-	-	-	(2)	-	-	-
Mumps	-	-	-	6	0.4	\$17,553	\$17,553
Pertussis	16	1.1	\$591,708	51	3.6	\$151,782	\$743,490
Pneumococcal disease	51	3.6	\$8,450,671	7	0.5	\$77,691	\$8,528,362
Polio*	-	-	-	(4)	-	-	-
Rubella*	-	-	-	(2)	-	-	-
Tetanus*	-	-	-	(1)	-	-	-
Varicella	6	0.4	\$100,849	96	6.8	\$171,701	\$272,550
Total	603	42.4	\$31,872,137	10,269	722.8	\$27,916,132	\$59,788,269


Table 1 shows hospitalizations and emergency department (ED) visits associated with a vaccine-preventable disease (VPD) in Colorado 2018 as well as the hospital-associated charges for these cases (Colorado Hospital Association data). Diagnoses of VPDs were identified using ICD-10 codes. Population estimates from the American Community Population Survey and the Colorado Health Institute were used to calculate incidence rates. *Cases of diphtheria, measles, polio, rubella, and tetanus were reviewed due to diagnostic accuracy concerns. These diseases are reportable to public health and CHA data did not correlate with CDPHE reports. Noting methodologic limitations of using ICD-10 data, the number of cases reported is displayed, however associated charges have been removed so as not to inflate estimates of overall VPD-associated charges; these cases have been subtracted from totals.


Similar to prior years, influenza, pneumococcal disease and pertussis were the three most common reasons for hospitalization due to vaccine-preventable disease in Colorado children in 2018. The three most common reasons for ED visits due to a vaccine preventable disease were influenza, varicella, and pertussis.


The most common vaccine-preventable cause of hospitalization and ED visits was influenza, with 524 hospitalizations and over 10,000 ED visits in Colorado children in 2018. Total hospital charges and ED charges for vaccine-preventable diseases were over \$59 million, with over \$49 million due to influenza alone. The second most common vaccine-preventable cause of hospitalization was pneumococcal disease, with 51 hospitalizations and total hospital/ED charges of \$8.5 million.


Measles Hits Home: An Overview of Responding to Measles Cases and Exposures in Colorado


In December 2019 three children were diagnosed with measles in Denver. One child was seen at Children's Hospital Colorado on December 12 and potentially exposed many people to measles before a diagnosis was made. Children's Hospital Colorado, Tri-County Health Department and CDPHE worked together to respond to this exposure and other community exposures. These efforts aimed to identify any additional cases of measles (none were found in Colorado) and to prevent the spread of measles within the community.

 **Treatment:** There is no antiviral treatment for measles. Measles cases are treated with supportive care, supplemental vitamin A, and responding to complications. Complications include pneumonia, ear infections, diarrhea and dehydration, and encephalitis. Ten percent of US measles cases in 2019 needed to be hospitalized.

 **Identifying exposures:** Measles is transmitted through tiny airborne droplets and requires special isolation precautions including use of an N95 mask and negative airflow room. Measles is very contagious and can remain in the air for up to two hours after an infected person has left. This means that patients, family members, visitors, and staff who were in the same spaces as the patient with measles may have been exposed and at risk for infection.

 **Responding to exposures:** Public health specialists must determine whether a person who was exposed to measles has been immunized against measles and therefore has protection. For those who have not been vaccinated, they can receive MMR vaccine or immunoglobulin (antibody infusion) within a few days of their exposure to prevent infection. If someone has been exposed, is not vaccinated, and does not receive a preventative vaccine or immunoglobulin treatment, they may need to go on home quarantine and be monitored.

 **Responding to questions:** A case of measles in the community raises concern among parents, doctors, schools, and the media. People should be informed of the symptoms of measles as well as their personal risk. The risk of measles is low for people who are vaccinated and is higher for people who have been exposed to a case of measles, who are unvaccinated, or who have recently travelled abroad. Responding to questions about measles cases requires a coordinated plan from public health officials and health care providers.

 **Triage and testing:** Measles testing involves taking blood and respiratory samples to send to CDPHE. For patients suspected to have measles, health care providers work with public health officials to arrange for safe and effective testing, taking care to avoid unnecessary trips to a hospital or clinic where other people might be exposed to measles.

References

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The Vaccine-Preventable Diseases Report

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The Vaccine Preventable Diseases Report

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