



# CONTAGIOUS COMMENTS

## 2025 Measles VPD Report



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### Highlights:

- 2025 has seen the most U.S. measles cases since 1991, including 36 across Colorado, which may risk the U.S. losing its Measles Elimination Status—achieved in 2000.
- Early recognition of measles, vaccination and isolation is key to preventing spread through the community.
- Private schools, childcare facilities, and the Southwestern region of Colorado are at most risk of a school-based measles outbreak due to clustering of unvaccinated students.
- Small decreases in school/district vaccination rates can drastically increase outbreak size.

### 2025 Measles Outbreaks

2025 has seen a concerning resurgence of measles outbreaks throughout the United States and globally. The US has reported more than 1950 cases across 43 jurisdictions, a six-fold increase from 2024 and the most cases since 1991.<sup>1</sup> Ninety-two percent of cases have occurred in unvaccinated patients or those with an unknown vaccination status. Overall hospitalization rate is 11%, though 1 of every 5 children <5 years of age have been hospitalized.<sup>1</sup> The three confirmed deaths from measles in the US in 2025 equates to a case fatality rate of 1.6 per 1000 cases - slightly higher than the historical rate of 1 per 1000 cases - **possibly indicating an undercounting of cases nationwide.**

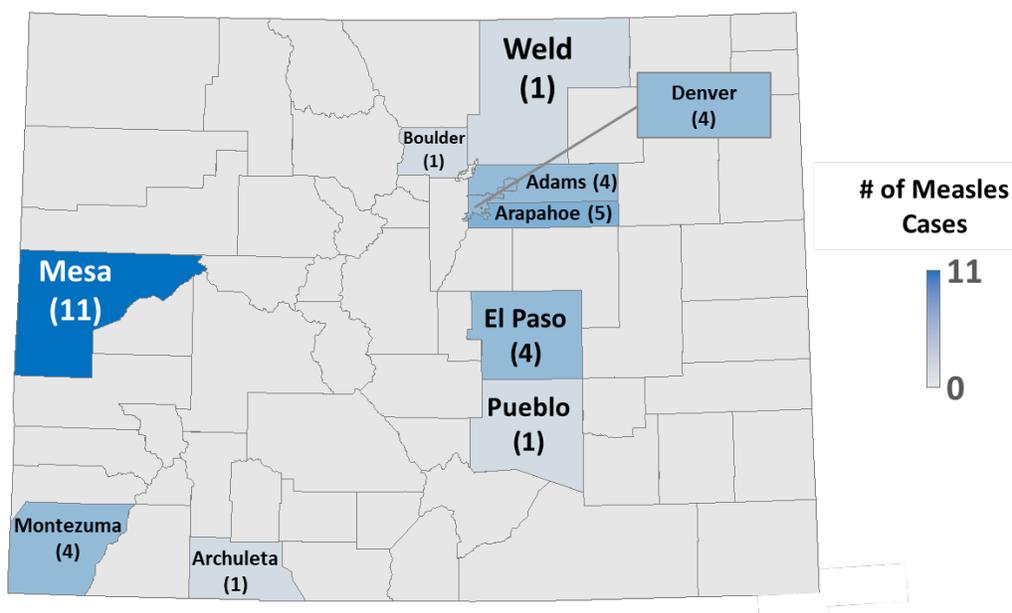


Figure 1. 2025 Colorado Measles Cases by County

Measles cases have surged throughout the Americas with Canada recently losing its measles elimination status, initially achieved in 1998.<sup>2</sup> Disease elimination is defined as a lack of endemic disease transmission in a geographic area for  $\geq 12$  months. The US initially accomplished measles elimination in 2000. Should US cases persist into 2026, which seems likely with ongoing outbreaks in Utah and South Carolina, **the US risks losing its elimination designation.**<sup>3</sup>

Colorado has seen 36 measles cases thus far in 2025 and five hospitalizations. Most cases have occurred in Mesa County and the Denver-Metro area (**Figure 1**). Ten cases were associated with a single infectious out-of-state traveler on a flight that infected four passengers on their plane, five at Denver International Airport, and one contact of a secondary case.<sup>4</sup> Concerningly, the most recent cluster of cases in Montezuma county this month had no known contact with prior cases or travel outside of the state, indicating possible unidentified measles transmission in the Cortez area.<sup>5</sup>

## Disease Timeline<sup>6</sup>

- Incubation period: 10-14 days (range 7-23 days)
- ~4 days of prodromal illness (see symptoms below)
- Rash typically develops on day 4 of illness
- Patients are **contagious for 4 days before and 4 days after development of rash**
- Frequency of Complications:
  - **Diarrhea** (8-10% of cases)
  - **Acute Otitis Media** (7-9%)
  - **Keratoconjunctivitis** (3-10%)
  - **Pneumonia** (1-6%)
  - **Acute Encephalitis** (1 week) (0.1%)
  - **Death** (0.1%)
  - **Subacute Sclerosing Panencephalitis** (years later) (0.007-0.011%)

## Measles Symptoms<sup>6,7,8</sup>

- Prodromal Symptoms
  - Subjective or documented fever
  - Cough
  - Coryza
  - Conjunctivitis
  - +/- Koplik spots (**Figure 2A-may be absent once rash appears**)
- Rash typically develops on **day 4** of illness (Figure 2B-C)
  - **Measles rash typically overlaps with fever** (compared to other viruses like roseola where rash occurs AFTER fever resolves)
  - **Macular rash classically starts on face (hairline and/or behind the ears)** and descends to torso/extremities
  - Macules eventually become confluent, particularly on face
  - Immunocompromised patients may not have rash
  - Rash can involve the palms and soles
  - **Rash may be less obviously erythematous and more purple or hyperpigmented on patients with darker skin tones (Figure 2D)**
- Vaccinated patients are less likely to develop fever, cough, coryza, and conjunctivitis and may have more limited or less intense rash

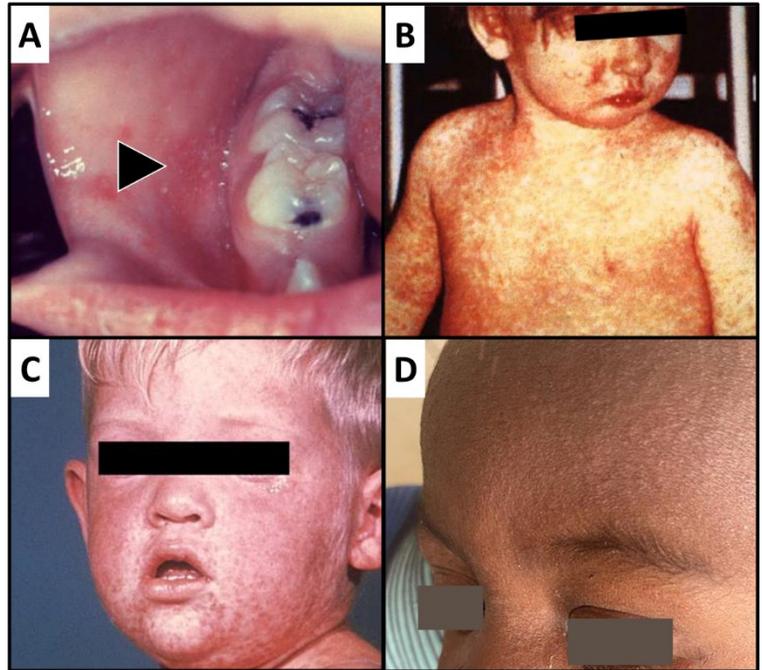


Figure 2. A: Koplik Spots. B-C: Measles Rash. D: Measles rash on skin of color<sup>6</sup>

## What to Do If You Suspect Measles

- Immediately place a medical mask on the patient. Place them and anyone accompanying them into negative pressure room.
- If a negative pressure room is not available, medical masks should be worn by the patient and anyone with them. They should be placed into a regular room and the door to the room should remain closed.
- When inside the room, providers should wear gowns, gloves, and use a properly fitted respirator (N95 mask or PAPR).
- Call your state or local public health department to report a suspected measles case and discuss testing. **CDPHE: 303-692-2700 or after hours 303-370-9395.** If you are sending the patient to another health care facility, call first to give the facility and family an appropriate plan to minimize additional exposures.
- For further information, see “**Targeted Guidance: Measles, Evaluating Risk in Ill Patients**” in the Children’s Hospital Colorado **Firstline** app- <https://firstline.org/colorado/>.

## Preparing for the Future

As we head into the new year, CO and the US overall remain at risk of further sustained measles outbreaks. For the 2024-2025 school year, 4.1% of CO kindergarteners claimed a non-medical vaccine exemption to the MMR vaccine, leading to statewide MMR vaccination coverage of only 88%.<sup>9</sup> This is far below the 95% threshold needed for herd immunity (see below) and **ranks CO 45<sup>th</sup> out of all US states and the District of Columbia in kindergarten MMR coverage.**<sup>10</sup> The ongoing dismantling of federal vaccine policymaking infrastructure, complete restructuring of the Advisory Committee on Immunization Practices (ACIP), and federal dissemination of vaccine disinformation has the potential to exacerbate an already raging under-vaccination crisis.<sup>11</sup>

Clusters of vaccine refusal and non-medical exemptions often occur in specific communities, making schools a key setting for measles transmission. Even in counties with high overall coverage, these clusters can allow outbreaks to spread quickly. Recent modeling work at the University of Colorado Anschutz combined school MMR vaccination rates with Susceptible-Exposed-Infected-Recovered (SEIR) simulations, to predict school measles outbreak risk to anticipate potential outbreaks going forward. Preliminary simulation analysis has revealed that **the median Colorado K-12 private school is 1.5 times more likely to produce an outbreak (≥3 related infections) than the median Colorado K-12 public school** when a single measles case is introduced into the school. Simulated outbreaks **in childcare/preschool facilities tend to be larger and spread more quickly** than K-12 schools, likely because of younger students having 0-1 MMR vaccines as opposed to 2 by nature of age. Geographic variation was noted, with higher median outbreak sizes in southwestern and western Colorado, though significant outbreaks were possible statewide—even in well-vaccinated areas. **(Figure 3).** Potential school-based outbreak risk differed from 2025 case distribution in Figure 1 as the majority of 2025 Colorado measles cases were not school associated. Despite notable simulation geographic trends, extensive outbreaks involving a large portion of the school were possible all over the state **even in well vaccinated counties.** Small decreases in school vaccination rates led to drastic increases in simulated outbreak size across Colorado schools with similar enrollment sizes **(Figure 4).** **Every vaccinated child brings a school closer to 95% herd immunity and can help decrease the risk and size of a measles outbreak.**

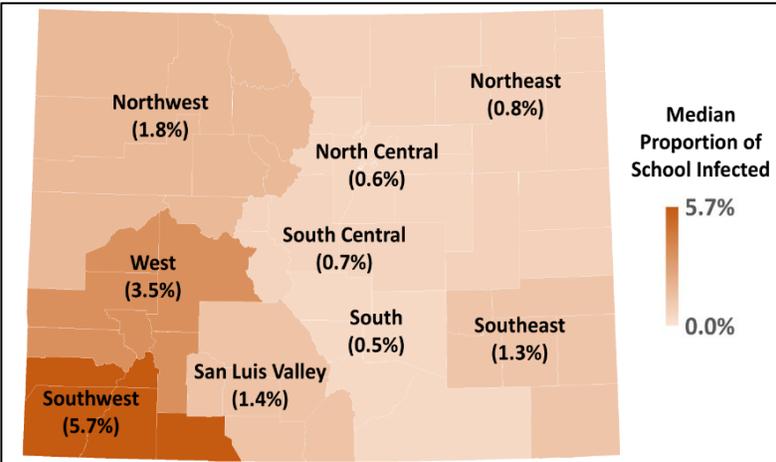


Figure 3. Simulated Outbreak Size in Schools by Region

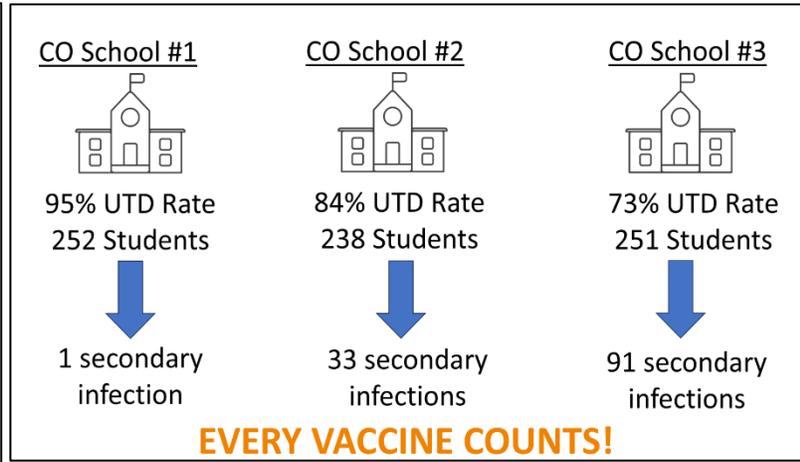


Figure 4. Simulated Outbreak Size in Three Colorado Schools with Similar Enrollment but Different MMR Up-to-Date Rates

## The Vaccine-Preventable Diseases Report

### References

1. Measles Cases and Outbreaks. Centers for Disease Control and Prevention (CDC). Updated 12/10/25. Accessed December 11th, 2025. <https://www.cdc.gov/measles/data-research/index.html>
2. Soucheray S. Canada loses measles elimination status after record year of outbreaks. Updated 11/10/25. Accessed November 25, 2025. <https://www.cidrap.umn.edu/measles/canada-loses-measles-elimination-status-after-record-year-outbreaks>
3. Jones N. Measles makes a comeback: four charts show where and how. *Nature*. Nov 18 2025;doi:10.1038/d41586-025-03769-z
4. 2025 Colorado measles case information. Colorado Department of Public Health & Environment. Updated 12/5//2025. Accessed December 11th, 2025. <https://cdphe.colorado.gov/diseases-a-to-z/measles/2025-case-information>
5. Public health officials release information on potential measles exposure. Colorado Department of Public Health & Environment. Updated 12/5/25. Accessed December 11th, 2025. <https://cdphe.colorado.gov/press-release/potential-measles-exposures-2512>
6. Do LAH, Mulholland K. Measles 2025. *N Engl J Med*. Jun 25 2025;doi:10.1056/NEJMra2504516
7. Photos of Measles. Centers for Disease Control and Prevention. Updated 5/23/24. Accessed November 26th, 2025. <https://www.cdc.gov/measles/signs-symptoms/photos.html>
8. Cherry JD, Zahn M. Clinical Characteristics of Measles in Previously Vaccinated and Unvaccinated Patients in California. *Clin Infect Dis*. Oct 15 2018;67(9):1315-1319. doi:10.1093/cid/ciy286
9. College/University, school, and child care immunization data. 8/19/25. Accessed 12/4/25. <https://cdphe.colorado.gov/immunization/school-and-child-care-data>
10. Vaccination Coverage and Exemptions among Kindergartners. Centers for Disease Control & Prevention. Updated 7/31/25. Accessed December 4th, 2025. <https://www.cdc.gov/schoolvaxview/data/index.html>
11. Chu HY, Brewer NT, Asturias EJ, et al. The Path Forward for Vaccine Policy in the United States. *N Engl J Med*. Jul 30 2025;doi:10.1056/NEJMsb2509134

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