

IN THIS ISSUE: MEASLES

Measles: Updates on Epidemiology, Signs, Symptoms, and Testing

Introduction

Measles is one of the most contagious diseases and requires a high vaccination rate in the population for transmission to be interrupted.¹ Measles was declared eliminated in the United States in the year 2000 [Figure 1]. However, international travel continues to import measles into the United States, and it can spread rapidly among those who are not vaccinated, which puts the United States at risk of losing its measles elimination status.² The MMR vaccine is the best method of prevention. It is safe and highly effective, with two doses 97% effective against measles (one dose is 93% effective).² Although an effective vaccine is available, the disease is still not eradicated and continues to be of public health concern.

The outbreaks in Texas and New Mexico have reached tragic outcomes with the death of an unvaccinated school-aged child, and another death still under investigation.³ Additional cases emerging in other parts of the United States add to the concerns about the possibility of further spread, especially among the unvaccinated population. On March 7, 2025, the Centers for Disease Control and Prevention (CDC) released a [Health Alert Network \(HAN\) Health Advisory regarding measles and the upcoming travel season](#) to advise health care providers and public health practitioners on the most recent measles updates and protocols.

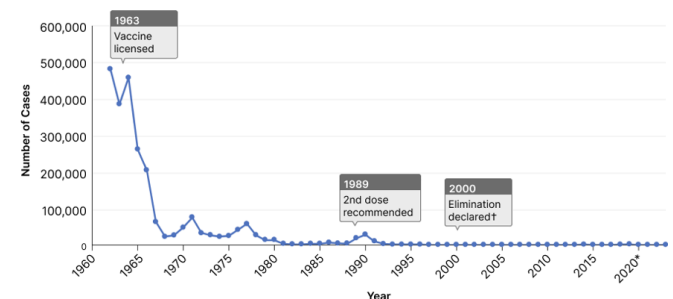
Epidemiology

Achieving measles elimination in the United States was an enormous accomplishment for public health. According to the CDC, measles became notifiable in 1912 and during the first decade of reporting, an average of 6,000 measles-related deaths were reported each year in the United States.² After the licensing of the vaccine in 1963, reported cases dropped dramatically by 1981 (over 80%), along

with deaths.² However, in 1989, a second dose was recommended after outbreaks among school-aged children were seen [Figure 1], after which cases remained steadily low under a well-established surveillance system, and its elimination was declared in 2000.²

After the declaration, the number of reported cases in the United States remained below 200 per year for the following decade.² After 2010, a rise in reported cases was seen in 2014, 2018, 2019, and 2025.³ The most notable increase was observed in 2019 (N=1,274). The lowest number was observed in 2020 (N=13) since 1985 [Figure 2].

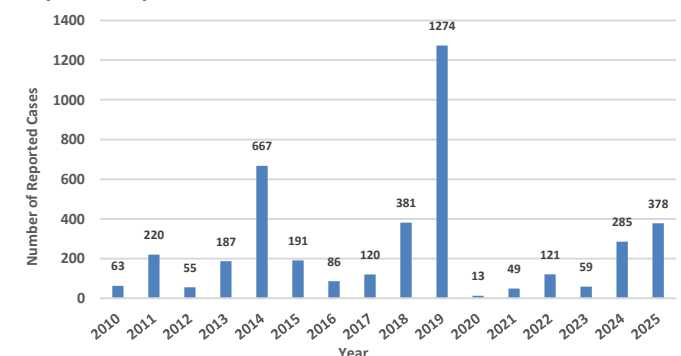
Figure 1: Reported Measles Cases in the United States from 1962-2023*



*2023 data are preliminary and subject to change. †Elimination refers to the absence of transmission for 12 months or longer in the presence of a surveillance system.

Source: CDC Measles Cases and Outbreaks accessed from <https://www.cdc.gov/measles/data-research/index.html>

Figure 2: Number of Measles Cases in the United States Reported by Year 2010-2023 as of March 20, 2025.



Case count is preliminary and subject to change. 2010-2025 (as of March 20, 2025)

Source: <https://www.cdc.gov/measles/data-research/index.html>

In Washoe County, the last measles case was reported and investigated in 2018, which was the first in nearly two decades. This case was a male who traveled out of state and came into contact with an existing case at an event, with no further transmission occurring in Washoe County.

Signs & Symptoms

Measles is highly infectious and characterized by prodrome fever, malaise, one or more of the 3 “Cs” (cough, conjunctivitis, coryza), and Koplik spots [Figure 3], which appear before the rash.⁴ The incubation period from exposure to fever is about 7-21 days, with rash onset around 14 days after last exposure.⁴ The infectious period starts 4 days before the rash appears and ends 4 days after the rash appears; however, a rash may not develop if the patient is immunocompromised.⁴

The rash starts at the hairline or face and spreads to the trunk and extremities. It can present atypically and may be more difficult to see on darker skin tones, where the redness may not be visible and can possibly cause hyperpigmentation [Figures 4 & 5].⁴

Figure 5: Koplik's Spots on Palate



Source: [Photos of Measles | Measles \(Rubeola\) | CDC](#)

Koplik spots may be present in the buccal mucosa and can appear before or after the rash, and they may also be hard to see.⁴

Additional examples of the rash can be viewed on CDC website at <https://www.cdc.gov/measles/signs-symptoms/photos.html>

Figure 4: Measles Rash on a Child's Face with Lighter Skin Tone



Source: [Photos of Measles | Measles \(Rubeola\) | CDC](#)

Figure 5: Measles Rash on a Child's Face with Darker Skin Tone



Source: [Photos of Measles | Measles \(Rubeola\) | CDC](#)

Common complications of measles infection include otitis media, diarrhea, bronchopneumonia, and laryngotracheobronchitis.⁴ Severe complications can occur and may include hospitalization, complications during pregnancy, acute encephalitis which often results in permanent brain damage, and death from respiratory and neurologic complications.⁴ Long-term complications can include the rare but fatal subacute sclerosing panencephalitis (SSPE), which can develop 7-10 years after a person has had measles and is higher among unvaccinated individuals.⁴

If measles is suspected, isolate the patient immediately and adhere to standard airborne precautions when evaluating and collecting samples.⁵

Testing & Diagnosis

Consider measles as a diagnosis in anyone with fever $\geq 101^{\circ}\text{F}$ and a maculopapular rash. Immediately

isolate the patient and evaluate. CDC recommends collection and submission of nasopharyngeal, throat swab, and/or urine samples for polymerase chain reaction (PCR) and a blood specimen for serology (IgM and IgG detection) from all patients with suspected measles.⁶ The State Public Health Laboratory (NSPHL) can conduct PCR testing through coordination with NNPH.

The CDC offers [training](#) for healthcare providers on the clinical overview of measles that addresses diagnosis, laboratory, testing, and outbreak response. The web on-demand training is available via [CDC TRAIN](#).⁴

Prevention

The only way to protect against measles is to get the MMR vaccine. Travel can be especially dangerous for babies as a severe measles infection can lead to hospitalization and even death if unvaccinated.⁷ The CDC provides some tips for the public to consider before and after travel.⁷

BEFORE

- Talk to a provider to make sure everyone is vaccinated against measles
- If not, get the vaccine at least 2 weeks prior to departure
- Even if trip is <2 weeks out, one dose of the vaccine can still be administered

AFTER

- Watch for measles symptoms for 3 weeks
- **Call provider immediately** if:
 - You or your child have been exposed or suspect exposure
 - You or your child get sick with rash and fever after returning
- Avoid contact if sick, cases are infectious 4 days before and 4 days after rash onset

Reporting

Measles is nationally notifiable, and cases should be reported to the local health department immediately. Prompt recognition, reporting, and investigation is crucial to interrupt the transmission of this highly contagious, vaccine preventable disease.

The list of reportable communicable diseases and reporting forms can be found at:

<http://tinyurl.com/WashoeDiseaseReporting>

Report communicable diseases to Northern Nevada Public Health. To report a communicable disease, please call 775-328-2447 or fax your report to the NNPH at 775-328-3764.

Acknowledgement

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References

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