Risk Assessment

Measles in the United States

Measles Scenario-Based Human Health Risk Assessment for the United States Published On October 29, 2026

CORI judges the risk of measles to human health in the United States to be in Scenario 5: Sustained and difficult to control transmission

This judgment is based on transmission of measles across multiple US jurisdictions, with cases reported continuously for over 20 months. **As of October 29,** CDC has confirmed **4,834 cases** in the United States in 2026 and reports three measles associated deaths.[1] The Pennsylvania Department of Health has separately confirmed five measles associated deaths.[2] CDC reports that 96% of confirmed cases are outbreak-associated (not travel-associated).[1] Multiple large outbreaks are active simultaneously, with prolonged transmission (≥1 year) continuing in some jurisdictions, and new transmission chains continuing to emerge despite public health intervention.

Unvaccinated individuals, particularly school-age children, are at substantially higher risk than the general population. Whether the US will lose its measles elimination status remains under active investigation; PAHO is scheduled to conduct a formal review in November 2026.[3]

See additional risk assessment materials beginning on the next page.

	Risk Levels for Populations Residing in or Traveling to Outbreak Areas				Risk to the US general public
	Risk to unvaccinated children	**Risk to fully* vaccinated children**	**Risk to the general public in affected area**	**Risk to healthcare workers**	
Scenario 5 – Sustained, difficult-to-control transmission	**High**	**Moderate**	**Moderate**	**Moderate**	**Low-Moderate**

*Fully vaccinated refers to individuals who have received all recommended measles-containing vaccine doses for their age and risk group, consistent with current AAP recommendations.[4]

Overall **confidence in the risk scores** is **moderate**, supported by state and local case surveillance and wastewater surveillance data, with remaining uncertainty around unknown-source cases, transmission chain linkages, and potential under recognition of community spread.

To decrease the risk to human health in the current situation, CORI recommends:

- Enhancing surveillance and active case finding in some situations and within certain populations.
- Considering implementation of more stringent requirements for MMR vaccination for children entering childcare settings.

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Background

Measles was declared eliminated from the United States in 2000, following the introduction of the measles vaccine, with a second recommended second dose added for children in 1989. Limited outbreaks occurred in populations with low-vaccination coverage, but transmission was interrupted through vaccination and other public health interventions. Since 2024, US measles cases have increased alongside declining vaccination rates. The CDC states that when >95% of people in a community are vaccinated (coverage >95%) most people are protected through community immunity (herd immunity)".[1] However, national MMR coverage of kindergarten students declined from approximately 95.2% in the 2019-2020 school year to 92.4% in 2026, contributing to a resurgence of large outbreaks.[4] Preliminary evidence suggests that vaccine-derived maternal immunity may provide infants with a shorter duration of passive protection than immunity acquired through previous measles infection, potentially leaving some infants susceptible before the routine first MMR dose at 12-15 months.[22] These findings have prompted calls for further evaluation of earlier measles vaccination, particularly during periods of sustained transmission.[22]

Measles Elimination Status

As a result of sustained measles transmission in 2025 and 2026, the US is now facing a loss of Measles Elimination Status.[7] Measles elimination is defined as the absence of continuous endemic transmission for ≥12 consecutive months within a country. Loss of status occurs when a single, uninterrupted domestic chain of transmission is documented. Assessment is conducted by PAHO's Regional Verification Commission.[3]

Global Context: Loss of Measles Elimination Status	
November 2025	Canada lost elimination status after its multi-jurisdictional outbreak (begun October 2024) persisted for >12 months. PAHO declared the entire Region of the Americas lost measles-free status.[8]
January 2026	WHO announced six European countries — UK, Spain, Austria, Armenia, Azerbaijan, and Uzbekistan — lost elimination status due to sustained 2024 transmission.[9]
November 2026	PAHO formal review of US and Mexico elimination status (establishment of transmission starting in January 2025 in the US and February 2025 in Mexico).[3] Originally scheduled April 2026; postponed to allow for completion of US genomic and epidemiologic analyses.

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US Elimination Status Indicators

Research from Boston Children's Hospital and Harvard Medical School, published in *The Lancet* on May 2, 2026, assessed the US against seven established indicators.[7] Four have been definitively missed; the remaining three are unlikely to be met.

Key Genomic Finding

A ProPublica genomic analysis from June 8, 2026 showed that measles viruses circulating in Utah as of May 2026 differed from the original Texas strain (January 2025) by only 12 nucleotides out of ~16,000. The same genetic fingerprint has appeared in viruses from Iowa, North Dakota, Minnesota, and Alaska. While genomic similarity alone cannot prove continuous domestic transmission, this evidence will make it difficult for the US to demonstrate maintained elimination without strong epidemiologic data linking cases to independent international sources.[10]

Current Risk Assessment

CORI judges the risk of measles to human health in the United States to be in Scenario 5: Sustained and difficult to control transmission

This judgment is based on transmission of measles across multiple US jurisdictions, with cases reported continuously for over 20 months. **As of October 29**, CDC has confirmed **4,852** cases in the US in 2026. CDC has reported three measles associated deaths in 2026, while the Pennsylvania Department of Health has independently confirmed five, with a sixth currently under investigation.[1,2]

Multiple large outbreaks have occurred, and new transmission chains have emerged despite public health interventions. Pennsylvania currently has the highest state reported case count, reaching 1426 confirmed cases across 44 counties as of October 30. Cases in New York continue to rise, with 170 cases reported in 2026 and the state declaring a statewide disaster emergency on October 5. Outbreak activity also continues to spread in Wisconsin and Kentucky, with 392 and 201 cases respectively.[23,24] Transmission appears to be slowing in some previously affected states. As of October 27, Utah has reported no new cases in the preceding weeks, while Arizona has not reported renewed community transmission following the end of its earlier outbreaks, suggesting that some longstanding transmission chains may be approaching interruption.

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Measles in the United States

The scale, duration, and geographic distribution of outbreaks indicate measles transmission remains sustained and difficult to control. However, it remains unclear whether cases reported across outbreaks represent continuous linked transmission chains or multiple concurrent introductions.[1]

Measles Human Health Risk Assessment Scenario Table

	Risk Levels for Populations Residing in or Traveling to Outbreak Areas				Risk to the US general public
	Risk to unvaccinated children	**Risk to fully* vaccinated children**	**Risk to the general public in affected area**	**Risk to healthcare workers**	
Scenario 1 – Sporadic cases of measles, no outbreaks outside of a single household (baseline)	**Low-Moderate**	**Low**	**Low**	**Low**	**Low**
Scenario 2 – Development of localized small-to-medium outbreaks	**Moderate-High**	**Low**	**Low**	**Low**	**Low**
Scenario 3 – Development of large outbreaks in defined populations and geographic location(s)	**High**	**Low-Moderate**	**Low**	**Low**	**Low**
Scenario 4 – Substantial widening of an outbreak outside of defined population or geographic area	**High**	**Low-Moderate**	**Low-Moderate**	**Low-Moderate**	**Low-Moderate**
Scenario 5 – Sustained, difficult-to-control transmission	**High**	**Moderate**	**Moderate**	**Moderate**	**Low-Moderate**

*Please note: We are evaluating the risks to human health should each scenario occur, **not** the relative risk of any one scenario occurring.*

*Fully vaccinated refers to individuals who have received all recommended measles-containing vaccine doses for their age and risk group, consistent with current AAP recommendations.[6]

Recommended Actions by Scenario (S1-S5)

Recommendation	S1	S2	S3	S4	S5
Children, adolescents, and adults should be up to date on recommended MMR vaccination.[11,12]	✓	✓	✓	✓	✓
Healthcare personnel should have documented evidence of measles immunity and receive 2 MMR doses if indicated.[12-15]	✓	✓	✓	✓	✓

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International travelers should be fully vaccinated against measles before departure; infants aged 6–11 months should receive an early MMR dose.[13,14]	✓	✓	✓	✓	✓
Individuals should not travel while sick, especially with fever and rash; returning international travelers should monitor for measles symptoms for 3 weeks.	✓	✓	✓	✓	✓
Health departments should monitor vaccination coverage and identify populations with low coverage.	✓	✓	✓	✓	✓
Health departments should build relationships with healthcare providers, community leaders, and schools.	✓	✓	✓	✓	✓
Post-exposure prophylaxis (PEP) should be provided as indicated.[16]	✓	✓	✓	✓	✓
Community and provider awareness of measles activity should be increased.		✓	✓	✓	✓
Surveillance, active case finding, and epidemiologic analysis should be enhanced in affected populations.[16,17]		✓	✓	✓	✓
Targeted vaccine messaging and mobile clinics should be used to reach populations with low coverage.		✓	✓	✓	✓
Response capacity and resource needs should be assessed across affected jurisdictions.			✓	✓	✓
Health departments should consider temporary, accelerated vaccination schedules in affected areas.[13]			✓	✓	✓
Communication and coordination between public health and medical leaders should be enhanced.			✓	✓	✓
Health departments should develop and maintain public-facing dashboards to communicate measles activity and trends.			✓	✓	✓
Outbreak modeling should be used to project outbreak trajectory and resource needs and assess response strategies.[16,17]			✓	✓	✓
Coordination, surveillance, and active case finding should be expanded across jurisdictions.				✓	✓
Cross-jurisdictional analyses and genomic sequencing should be used to characterize geographic spread and transmission chains.				✓	✓
Neighboring jurisdictions should consider accelerated vaccination schedules.[13]					✓

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Sustained transmission and the effectiveness of control measures should be assessed.					✓
More stringent MMR vaccination requirements for children entering childcare should be considered.					✓

Methods

Risk assessment can be very helpful in times of significant uncertainty because it enables structured consideration of complex scenarios, likelihoods, and consequences to inform decisions around policy and operational action, as well as implementation of protective measures and future planning for worst-case scenarios. It is important not to wait for perfect information to estimate potential risk, because decisions must be made even in the absence of plentiful data.

Therefore, the Center for Outbreak Response Innovation (CORI) conducted a scenario-based risk assessment to consider human health risks both now and in potential future scenarios. The purpose of this document is to consider possible future developments in this outbreak and describe corresponding risks to human populations should a given scenario occur. A risk score is determined for each key population across multiple possible scenarios.

Risk scores are evaluated on a five-point scale, with scores including low, low-moderate, moderate, moderate-high, and high. The confidence in each of these risk level assignments is based on the breadth, depth, and the quality of information available. The overall confidence of each risk score determination is based on a three-point scale, which includes low, moderate, and high.

In each scenario, we consider the risk to 5 distinct populations: unvaccinated children, fully vaccinated children, members of the general public residing in or traveling to affected areas, healthcare workers, and the broader U.S. general public. In determining these risks, we consider several factors, including transmission pathways, morbidity and mortality rates, the outbreak's current status, and potential events that could exacerbate the situation. Additionally, the assessment considers the effectiveness of preventative measures, ongoing response operations, and political factors that may influence the outbreak's progression.

Measles Special Considerations

Vaccination status of individuals and populations plays a key role in this risk assessment's scenarios. For this assessment, a well-vaccinated community is defined as having over 90% of the population vaccinated; communities with vaccination coverage at or below 90% are considered undervaccinated. The 90% threshold is used

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because it is the point at which data suggest that the chance of an outbreak rises to 51%, and as coverage continues to decline, the risk escalates further, according to the Centers for Disease Control and Prevention (CDC).[18] For the 2025-2026 school year, national vaccine coverage among kindergartners (typically ages 5 to 6) stands at 92.4%, which is slightly above this critical level, offering some protection against widespread outbreaks.[1] The Healthy People 2030 initiative has a goal to achieve 95% vaccination coverage among kindergarteners.[19] Modeling of measles transmission in a school setting suggests that increasing vaccination coverage from 85% to 95% reduces the estimated probability of an outbreak following the introduction of a measles case from approximately 92% to 29%.[18] Reaching this higher level of coverage is essential to maintain herd immunity and ensure that measles outbreaks remain rare in the US. While 95% coverage is necessary for robust herd immunity, 90% serves as a critical minimum threshold, beyond which the risk of outbreaks increases substantially.

Scenario Details:

*__Please note:__ We are evaluating the risks to human health should each scenario occur, **not** the relative risk of any one scenario occurring.

Scenario 1 – Sporadic cases of measles, no outbreaks outside of a single household (baseline): In this scenario, the measles virus is occasionally introduced, usually by international travelers or individuals with recent travel to an outbreak setting, into a community, but transmission remains limited to a single household or results in no onward transmission at all. While sporadic cases can occur in any community with varying vaccination coverage, they often occur in well-vaccinated communities. Due to the high vaccination coverage, typically over 90%, continued transmission of the virus is effectively prevented through herd immunity. Public health authorities quickly identify and isolate the case, resulting in short transmission chains of 1–2 related cases.[18] This scenario represents the most common outcome, as 70% of international measles importations from 2001–2023 did not lead to outbreaks, thanks to robust vaccination efforts.[18] This scenario may also involve 3 or more epidemiologically linked cases within a household; however, transmission remains confined to the household setting, posing low risk to the broader community, as public health authorities move quickly to isolate cases and identify contacts.

Scenario 2 – Development of localized small-to-medium outbreaks: In this scenario, small-to-medium outbreaks occur, with or without reports of sporadic cases, and do not result in sustained transmission beyond 12 months. These outbreaks involve 3–49 related cases occurring in a single geographical location, typically within undervaccinated communities or defined exposure settings such as schools or households, where vaccination coverage is generally 90% or less.[18]

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Transmission remains localized to the community or setting where the outbreak was initially reported, with minimal spread beyond it. Despite public health efforts, lower vaccination rates create challenges in containing the virus, and outbreak size is influenced by factors such as the density of the exposure setting, the effectiveness of the public health response, and chance events. For instance, a measles virus exposure at a school with an MMR vaccination rate of around 85% could result in an outbreak of 18 measles cases per 100 children exposed. However, outbreaks are typically contained within a few weeks through routine public health response measures. From 2001–2023, 29% of international measles importations led to small-to-medium outbreaks.[18]

Scenario 3 – Large outbreaks in defined populations and defined geographic location(s): In this scenario, one or more large outbreaks occur, with or without reports of small-to-medium outbreaks and/or sporadic cases. Large outbreaks typically occur in close-knit, undervaccinated populations with high density, especially where there are pockets of unvaccinated individuals, such as migrant shelters or close-knit communities. Due to low vaccination coverage, often driven by lack of access or vaccine hesitancy, the virus spreads quickly, resulting in 50 or more cases.[11] Transmission may persist for weeks to months within the affected population, and between 2001–2023, 88% of outbreaks larger than 50 cases occurred in undervaccinated communities. Controlling such outbreaks is particularly challenging due to high population density and low vaccination rates; for example, a measles exposure in a migrant shelter with low MMR vaccination coverage could trigger an outbreak of more than 50 cases persisting for several months despite extensive public health interventions, as seen in the 2024 Chicago outbreak.[18,20] While the public health response is resource-intensive, it is generally effective in limiting spread beyond the initially identified populations, with spillover into the broader community remaining limited. From 2001–2023, less than 1% of international measles importations led to large outbreaks.[18]

Scenario 4 – Substantial widening geographic spread beyond initial communities: In this scenario, multiple large outbreaks and/or a large multi-jurisdictional outbreak occur, with or without reports of small-to-medium outbreaks and/or sporadic cases. There is increasing geographic spread with evidence of transmission extending beyond the initially affected populations, as outbreaks emerge independently across different communities due to factors such as localized drops in vaccination coverage, mass gatherings, or travel-related introductions. While transmission is still being interrupted within individual outbreaks, spread is occurring across connected communities or jurisdictions, new outbreaks continue to emerge, and containment is becoming increasingly complex. Additionally, there may be an increase in sporadic cases in highly

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vaccinated communities due to the widespread prevalence of the virus. This pattern of multiple outbreaks and growing geographic spread presents significant challenges for public health authorities, as it indicates gaps in both surveillance and vaccination efforts across multiple jurisdictions. Effective control requires sustained, multi-jurisdictional coordination, enhanced monitoring, rapid response to isolate and treat cases, and targeted vaccination campaigns to close immunity gaps and prevent sporadic cases from initiating new outbreaks.

Scenario 5 – Sustained, difficult-to-control transmission: In this scenario, transmission is ongoing across multiple communities and jurisdictions, with new transmission chains continuing to emerge despite intervention efforts. Unlike earlier scenarios, outbreaks are no longer discrete and may be interconnected, with cases increasingly identified outside initially affected populations, indicating broader community risk. The virus maintains sustained transmission, regardless of vaccination coverage levels, with cases consistently reported over the course of a year. The public health response is highly resource-intensive, requiring large-scale, coordinated interventions to reduce transmission, as the sustained spread of the virus across multiple jurisdictions signals significant gaps in both vaccination coverage and outbreak containment. This situation necessitates extensive public health interventions and efforts to regain control. Depending on whether a continuous chain of transmission can be identified, this scenario could also lead to the loss of the US measles elimination status, which was achieved in 2000. The CDC defines endemic transmission as a chain of measles virus transmission that is continuous for 12 months or more within the US; however, if transmission chains remain interrupted even amid ongoing cases, elimination status may be preserved.[21]

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