

2025 Measles Surveillance: Emerging Trends in a Post-Pandemic Landscape

Pallavi Upadhyay, PhD, Vijay Singh, PhD

Scientific Strategy and R&D Department, HealthTrackRx, Denton TX, 76207

INTRODUCTION

Measles virus (MeV) is a highly contagious, airborne pathogen that primarily spreads through respiratory droplets and remains a significant global public health concern. MeV causes acute systemic infection characterized by high fever, cough, conjunctivitis, and a maculopapular rash, which can progress to severe complications such as pneumonia, encephalitis, or even death—particularly in immunocompromised and unvaccinated population.

Early clinical presentation of measles can resemble other viral respiratory infections and diagnosis based on clinical symptoms alone can be challenging. Multiplex PCR testing, owing to its high sensitivity and specificity, enables simultaneous detection of multiple respiratory pathogens. This approach not only facilitates early measles detection but also supports rapid public health responses to prevent further transmission.

Our retrospective study demonstrates that the Measles outbreak in 2025 marked the highest case incidence reported in the United States since 2000. This study continues our post-pandemic surveillance of MeV spread within the United States and underscores the critical importance of diagnostic preparedness and data-driven surveillance to understand transmission dynamics and mitigate future outbreaks and guide.

MATERIALS & METHODS

Respiratory specimens, collected in PrimeStore® MTM (Longhorn Vaccines & Diagnostics, Bethesda, MD) submitted to HealthTrackRx laboratories (between 3/24/2025 and 10/31/2025) were analyzed for the presence of Measles virus (MeV) using validated multiplex PCR assay for MeV detection in clinical samples. A total of 947 samples were analyzed for the study.

Patient data were categorized on the basis of positivity, age, and geographic region to evaluate demographic trends in MeV positivity. Diagnostic information accompanying each specimen was classified according to International Classification of Diseases, Tenth Revision (ICD-10) codes to align laboratory results with pertinent clinical context.

All statistical analyses were performed using R version 3.6.0. Descriptive and comparative analyses were conducted to summarize patient characteristics, identify distribution patterns, and explore associations among demographic and clinical variables.

REFERENCES

1. CDC. Measles Cases and Outbreaks. Accessed 9-05-25.
2. Strebel PM, Orenstein WA. Measles. N Engl J Med. 2019;381(4):349-357.
3. CDC. Laboratory Testing for Measles. Accessed 9-05-25.

RESULTS

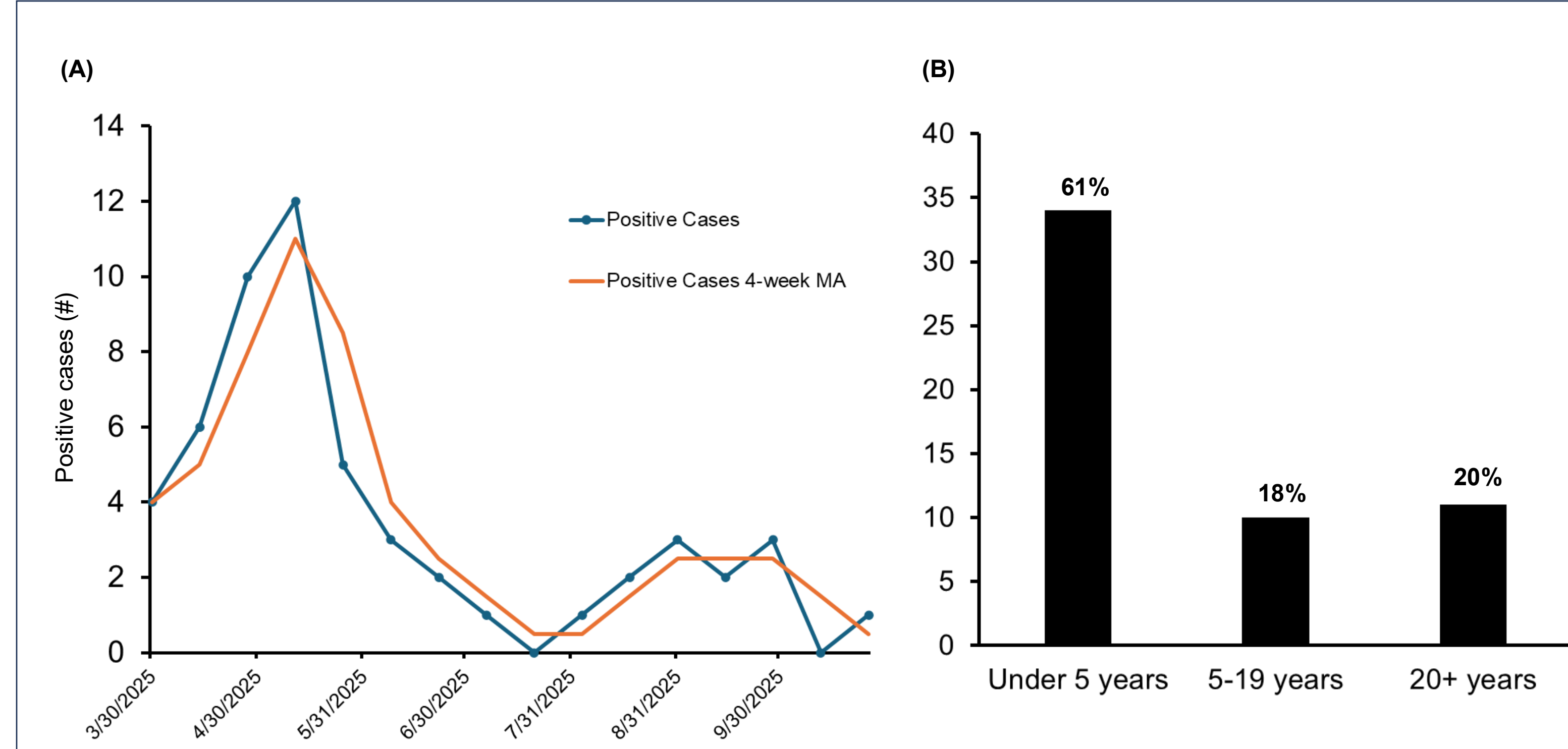


Figure 1: Measles (MeV) outbreak in 2025. (A) Positive detection of MeV by PCR between 3/24/25 – 10/31/2025. (B) Age wise distribution of MeV positive patient samples.

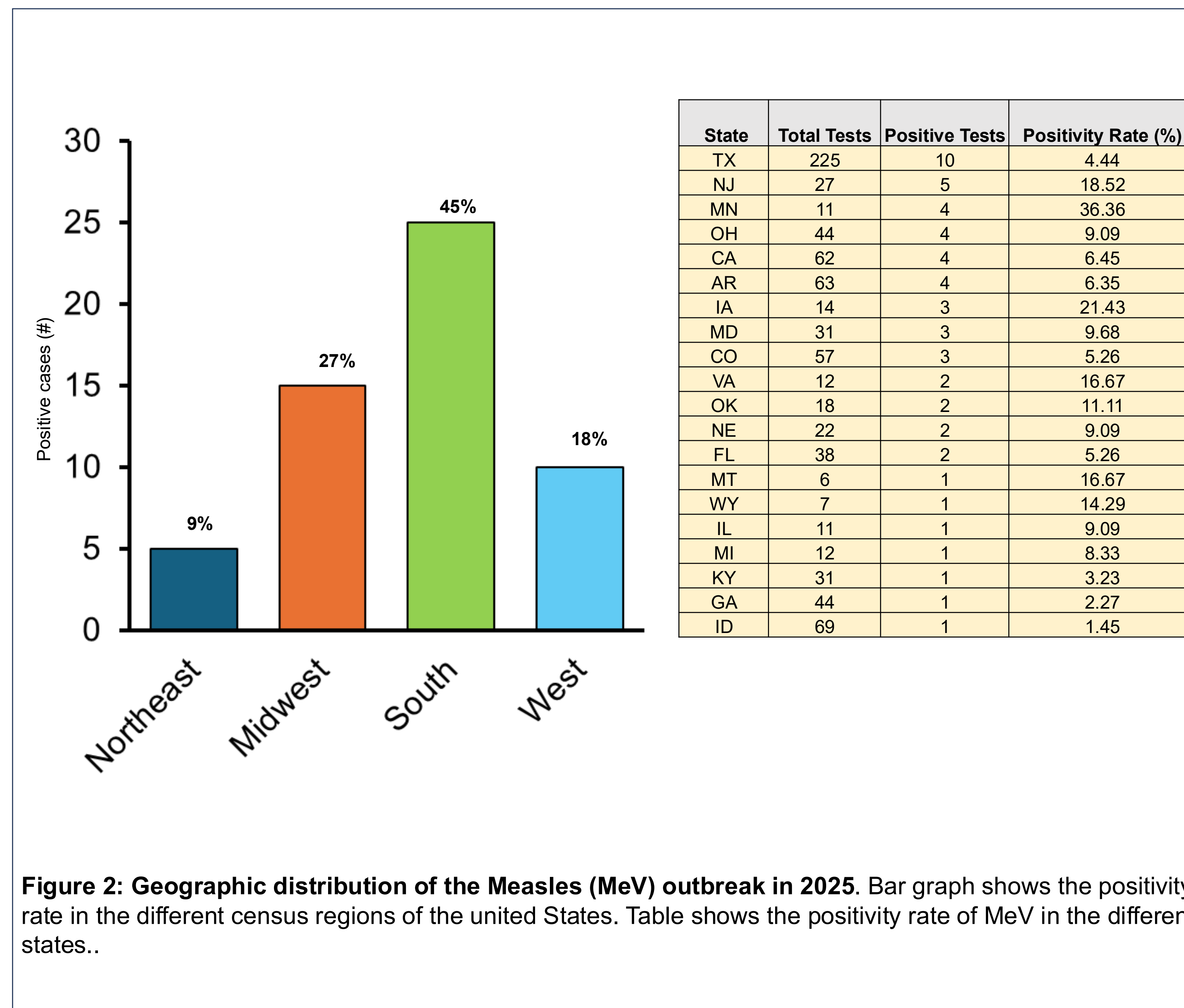


Figure 2: Geographic distribution of the Measles (MeV) outbreak in 2025. Bar graph shows the positivity rate in the different census regions of the United States. Table shows the positivity rate of MeV in the different states.

ICD 10 Code	Negative	Positive	Total	Positivity (%)
R21	501	26	527	4.93
R50	275	28	303	9.24
R05	101	9	110	8.18
B05	72	4	76	5.26
Z11	63	4	67	5.97
J06	60	5	65	7.69
B09	51	1	52	1.92
B34	46	2	48	4.17
J02	39	7	46	15.22
Z20	17	2	19	10.53

Table 1: ICD-10 codes associated with the MeV positive and negative cases during the 2025 outbreak.

SUMMARY

- The 4-week moving average shows clear peaks in positivity rate during early spring and early fall during the 2025 Measles outbreak.
- Highest positive cases were recorded in the pediatric population, especially patients under 5 years of age (61%).
- Southern region of the United States registered the highest percentage of positive measles cases (45%), dominated by Texas which was the epicenter of the 2025 Measles outbreak.
- R21 (rash) and R50 (fever) were the most common presenting symptoms in both positive and negative cases.
- J02 (pharyngitis) and related respiratory categories show higher positivity (15.2%) and a better positivity signal when present alongside rash and fever.

CONCLUSIONS

The study demonstrates an increased MeV detection in the outpatient population in the USA during 2025. The study reinforces the importance of prompt diagnostic testing teamed with preventable measures and continued surveillance in reducing outbreak occurrence. The insights from the study are crucial to understanding the re-emergence of measles and preparedness strategies, especially in this post-COVID landscape.