

# Waning immunity most consistent with recent mumps outbreaks

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A waning immunity model is most consistent with recently observed

resurgent outbreaks of mumps in countries with high vaccine coverage, according to a study published online Jan. 9 in the *Proceedings of the National Academy of Sciences*.

Noting that multiple countries with high [vaccine](#) coverage have experienced resurgent outbreaks of mumps, Deven V. Gokhale, from the Odum School of Ecology at the University of Georgia in Athens, and colleagues proposed two putative mechanisms of vaccine failure as driving observed trends: gradual waning of immunity and the introduction of novel viral genotypes capable of evading vaccinal immunity. A statistical likelihood-based hypothesis testing was conducted using a mechanistic transmission model on age-structured epidemiological, demographic, and vaccine uptake time series data focusing on the United States.

The researchers found that the data were most consistent with the waning immunity model; by age 18 years, an estimated 32.8 percent of individuals had lost vaccine-derived immunity. The waning model reproduces features of the epidemiological data, including the shift in mumps incidence toward older individuals, recent recurrence of mumps outbreaks, and the high proportion of [mumps](#) cases among previously vaccinated individuals.

"We found that, due to the combination of waning immunity and primary vaccine failure, robust herd immunity cannot be achieved with the present vaccine and immunization schedule," the authors write.

"Indeed, our results support, in principle, the administration of regular booster doses to achieve and maintain herd immunity."

**More information:** Deven V. Gokhale et al, Disentangling the causes of mumps reemergence in the United States, *Proceedings of the National Academy of Sciences* (2023). [DOI: 10.1073/pnas.2207595120](https://doi.org/10.1073/pnas.2207595120)

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