The 2025 measles resurgence in Ontario, Canada validates emerging seroprevalence concerns

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A recently published measles seroprevalence study of about 350,000 individuals in Ontario underscored the fragility of Canada's measles elimination status and revealed notable immunity gaps among adolescents, young adults, and immigrant populations (Ariyarajah et al., 2025). The findings corroborate Ontario's epidemiological reality in 2025, marked by an alarming resurgence of measles.

As of July 2025, Public Health Ontario has reported more than 2,000 confirmed cases of measles, making it the highest annual total since measles was officially eliminated in Canada (Public Health Ontario, 2025). The age distribution of the majority of measles cases reported in 2025 aligns closely with the findings of Ariyarajah et al. (2025).

Adolescents aged 10-19 years made up the most significant proportion of cases accounting for 25.9% (595 cases). The next largest group consisted of children aged five to nine years, who accounted for 23.2% (533 cases). The third largest group, young adults aged 20-39 years, comprised 20.4% (469 cases) of the total reported cases in Ontario (Public Health Ontario, 2025). These epidemiological patterns correspond closely with the Ariyarajah et al., study seroprevalence findings, which showed the lowest immunity in these age groups – 75.3% in adolescents aged 12-19 years and 75.8% in young adults aged 20-29 years. Immunity was assessed using an enzyme-linked immunosorbent assay (ELISA), applying a threshold of ≥275 mIU/mL of measles-specific Immunoglobulin G (IgG) in serum (Ariyarajah et al., 2025). These numbers fall below the 90-95% herd immunity target, revealing an elevated risk of transmission upon exposure.

Local data from the Windsor-Essex County Health Unit, a public health agency in Southwest Ontario, with 150 confirmed cases showed transmission occurring primarily within household settings and close-contact clusters, rather than widespread community spread. This pattern supports the interpretation that herd immunity may indeed be present at the population level in Ontario, as in the Ariyarajah et al. study, when a threshold of >120 mIU/mL of measles IgG was used; seroprevalence was 97.1% (95% CI [97.0%, 97.1%]) (Ariyarajah et al., 2025), which represents a sufficient level of herd immunity to protect against community transmission. Nonetheless, the findings still urge caution. In the Windsor-Essex region, measles mainly spread among unvaccinated households. Notably, some vaccinated parents also contracted measles, pointing to the impact of high viral loads within households and the possible waning of immunity decades post-vaccination (Moss, 2018).

Immigrant populations, including migrant farmworkers and international students, continue to be vulnerable in outbreak chains due to diverse immunization histories and unique exposure risks in congregate housing (e.g., dormitories, bunkhouses) and enclosed working environments (Aloosh, 2024, 2025). Measles transmission was observed among migrant farmworkers in Windsor-Essex County during this outbreak. We initiated a targeted vaccination campaign for this population, which led to about 50% uptake and halted transmission. These public health interventions underscore the value of tailored strategies in mitigating outbreak chains.

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Finally, knowing who is fully vaccinated supports targeted immunization strategies and enables efficient post-exposure prophylaxis. A centralized digital immunization registry can facilitate the public health response to vaccine-preventable disease outbreaks. Contact tracing remains labour-intensive, and a registry would streamline efforts and improve response efficiency. Addressing this gap, alongside catch-up campaigns for under-immunized age cohorts and targeted outreach for immigrants and international students, could be essential for sustaining measles elimination in Canada.

In conclusion, real-world provincial and local data validate Ariyarajah et al.'s findings and highlight the urgency of proactive surveillance and equitable immunization coverage. Populations born in measles-eliminated settings or with fragmented immunization records, including immigrant populations are at elevated risk and deserve targeted national approaches.

REFERENCES

Aloosh, M. (2024). A chickenpox outbreak among international students in a post-secondary institution residence in Ontario, Canada. *Canadian Journal of Infection Control, 39*(1), 27-32.

Aloosh, M. (2025). Closing the gap in vaccination among international students and migrant farmworkers in Canada. *Canadian Journal of Infection Control, 40*(1), 13-14.

Ariyarajah, A., Crowcroft, N. S., Brown, K. A., Wang, J., Kwong, J. C., & Bolotin, S. (2025). Measles seroprevalence among individuals serologically tested in Ontario, Canada. *Vaccine, 62*, 127446. https://doi.org/10.1016/j.vaccine.2025.127446

Public Health Ontario. (2025). *Enhanced epidemiological summary: Measles in Ontario.* https://www.publichealthontario.ca/en/diseases-and-conditions/infectious-diseases/vaccine-preventable-diseases/measles

Moss, W. (2018). Measles in vaccinated individuals and the future of measles elimination. *Clinical Infectious Diseases, 67*(9), 1320-321. https://doi.org/10.1093/cid/ciy306