

Infants are vulnerable to chickenpox earlier than previously thought, study finds

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Infants are not protected against the varicella-zoster virus, the virus that causes chickenpox, for several months before they are eligible for vaccination, a new study has found.

In some cases, infants may be at risk of infection as early as one month after they are born.

"Antibodies transferred through the placenta during pregnancy protect babies against many infectious diseases when they are born, including the varicella virus," says Associate Professor Shelly Bolotin, director of the University of Toronto's Center for Vaccine Preventable Diseases (CVPD) at the Dalla Lana School of Public Health and the study's first author.

"However, our research found that that protection fades quickly, leaving infants vulnerable to infection for many months before they are eligible for chickenpox vaccine, which in Ontario is given at age 15 months."

Using samples collected at The Hospital for Sick Children (SickKids) in Toronto, researchers looked at the [antibody levels](#) in [blood samples](#) from 187 infants up to one year of age. They found that antibodies protecting against varicella wore off quickly, and that almost 80 percent of infants were susceptible to infection by the time they were three months old. At six months, all the infants studied were susceptible to chickenpox infection.

The findings, [published in the journal *PLOS One*](#), are in line with previous research indicating that the level of antibodies babies receive from their mothers at birth wear off quickly.

"Although many people think of chickenpox as a mild childhood infection, and it generally is, it can cause complications like skin infections, pneumonia or inflammation of the brain, particularly in young children," says senior study author and CVPD member Michelle Science, an infectious disease consultant and medical adviser for infection prevention and control at SickKids.

Science, who is also an assistant professor in the Temerty Faculty of Medicine, notes that [infants](#) are at a higher risk of complications than older children, and are the most likely age group to be hospitalized. Prior to the vaccine's availability, Canada saw approximately 350,000 varicella cases per year with 1,500 people hospitalized annually.

The chickenpox vaccine helps protect individuals from infection as well as the serious complications that can occur. Getting vaccinated also helps lower the number of cases of chickenpox in all age groups in a community—even in those too young or too old to be vaccinated.

The chickenpox vaccine is already part of routine childhood vaccination in several countries, including Canada, Australia, Germany and the United States. In the U.K., the Joint Committee on Vaccination and Immunization recently recommended that a [chickenpox vaccine](#) program should be introduced into the routine childhood immunization schedule, and that a catch-up program for older children should also be implemented in the future.

"The results of our study confirm that everyone around an infant should be protected from [chickenpox](#), either because they were previously infected or through vaccination," says Science.

She adds that these results may be helpful for both parents and health care providers, who should be thinking about varicella whenever they see a rash, even in a young baby, and in the assessment of an infant's risk of infection if they are exposed to a case.

Bolotin and her co-authors noted that more research is needed on varying demographics and whether factors like breastfeeding or a mother's age influence their baby's antibody levels.

In the meantime, this study is a reminder of the importance of

immunizations.

"Vaccination is not only about protecting yourself, it's also about protecting your family, friends, and neighbors," says Bolotin. "Our study further affirms how getting vaccinated can protect some of the most vulnerable—and in this case, the newest—members of our society."

More information: Shelly Bolotin et al, Maternal varicella antibodies in children aged less than one year: Assessment of antibody decay, *PLOS ONE* (2023). DOI: [10.1371/journal.pone.0287765](https://doi.org/10.1371/journal.pone.0287765)

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