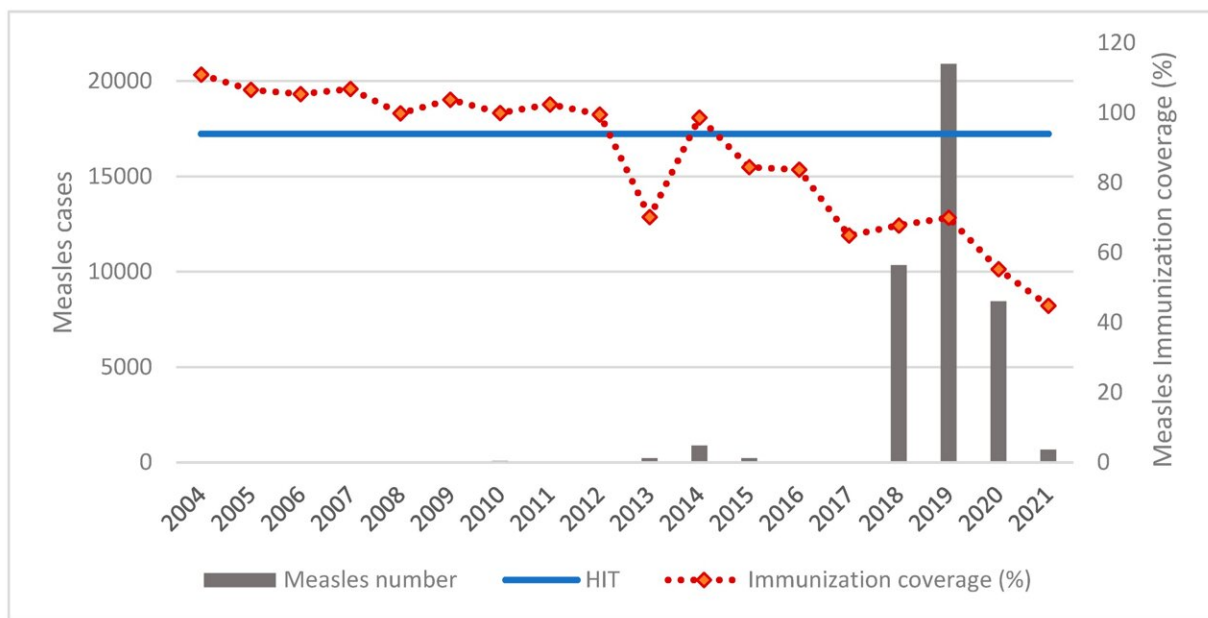


# Study at hospital in São Paulo state detects measles antibodies in only 75% of those under 15

December 1 2022, by Karina Toledo



Relationship between measles case numbers and immunization coverage in Brazil, 2004–2021 [7,9]. HIT: herd immunity threshold. Credit: *Vaccines* (2022). DOI: 10.3390/vaccines10101570

A study conducted in Brazil and reported in an article in *Vaccines* shows that in the São José do Rio Preto region in the northwest of São Paulo state, only 75.8% of children aged 0-15 have antibodies against measles.

The proportion considered ideal to prevent outbreaks of the disease is 94%. The findings are in line with other recent surveys showing a drop in child vaccination rates in Brazil since 2015.

"This is yet another warning shout that Brazilian [children](#) aren't achieving herd immunity and are susceptible to infection. We can see the results in practice: [measles](#) was eradicated but has now come back in our country," said Maurício Lacerda Nogueira, a professor at the São José do Rio Preto Medical School (FAMERP) and last author of the article.

The researchers analyzed [blood samples](#) collected from 252 children between December 2018 and November 2019 in search of specific immunoglobulin (IgG) antibodies against measles. The children had been admitted to FAMERP's hospital with suspected dengue, and gave blood for analysis during clinical examination.

The samples were used to determine measles seroprevalence. They were divided into five groups according to age: up to 1 year (unvaccinated); 1 year-2 years (the age at which the first and second doses of the measles vaccine should be taken); 2-5 (when the child should be fully immunized against measles); 5-10; and 10-15. The vaccination rate was less than 80% in all groups.

"All age groups are below the ideal rate, but the most troubling is the 2-5 age group, where the rate is 70%," Nogueira said. "These children should have been vaccinated in the last two or three years. The COVID-19 pandemic may have contributed to this shortfall, but the drop in vaccine coverage in Brazil is a problem that began earlier, in 2015 or 2016."

In a previous study, published in *Scientific Reports*, the team led by Nogueira showed that almost a third of São José do Rio Preto's inhabitants aged between 10 and 40 had no measles antibodies. In light

of this finding, they decided to investigate the situation in the younger age groups.

"We know vaccination against various diseases has been falling for several years. The reasons include lack of investment in educational campaigns and organizational difficulties on the part of local government and [health authorities](#). People also appear to have stopped being afraid of getting measles, since cases are no longer frequent," Nogueira said.

Yet another reason could well be the anti-vaccine movement, which was confined to the wealthier part of the population until 2020 but became more widespread during the pandemic.

"São José do Rio Preto has a very active municipal department of health, but it's hard to achieve immunization targets without a national pro-vaccination movement," Nogueira said. "I should think vaccine coverage is even lower in poorer parts of the country."

## Statistics

Measles is a highly contagious disease, for which there is no specific treatment. The virus is expected to infect nine out of ten people not protected by vaccination or prior infection. Transmission is by contact with saliva or mucus droplets expelled by sneezing and coughing. Symptoms appear between ten and 14 days after exposure and include cough, [runny nose](#), red eyes (conjunctivitis), sore throat, fever and a red skin rash.

Complications such as ear and [respiratory tract infections](#), and even neurological disease, can lead to serious sequelae, including deafness, blindness, growth retardation and impaired mental capacity.

Nine million cases of measles were reported worldwide in 2019, resulting in 207,500 deaths, according to the US Centers for Disease Control (CDC). In Brazil, 8,448 cases were confirmed in 2020 and 676 in 2021, according to the Ministry of Health.

The only means of prevention is vaccination with the measles, mumps and rubella (MMR) vaccine, which in Brazil is part of the Ministry of Health's National Immunization Program (PNI). However, the ministry itself admits that only 47% of children in the target population have so far received the MMR vaccine in 2022, far short of the 95% official coverage target. In 2021, only 50% took the second dose of the vaccine, which should be given to children who are about 15 months old.

Although immunization is not sufficient to block circulation of the virus in Brazil, it is at least sufficient to reduce the transmission rate, as shown by the FAMERP study. Scientists estimate that one infected person can transmit the virus to between 12 and 18 others in an entirely unprotected population. In the cohort of children aged 0-15 studied at São José do Rio Preto, the number of secondary cases was calculated to be 3 or 4 per confirmed case of measles, high enough to be a cause of concern.

"The main takeaway from the article is that the problem hasn't been solved by the vaccination campaigns held so far. A bigger effort is needed. The study, via the university and FAPESP, has provided healthcare administrators with valuable information. It's up to them to do what should be done," Nogueira said.

**More information:** Cassia Fernanda Estofolete et al, Reduced Prevalence of Measles Antibodies in a Cohort of Brazilian Children under 15 Years of Age, *Vaccines* (2022). [DOI: 10.3390/vaccines10101570](https://doi.org/10.3390/vaccines10101570)

Cassia Fernanda Estofolete et al, Prevalence of Measles Antibodies in

São José do Rio Preto, São Paulo, Brazil: A serological survey model, *Scientific Reports* (2020). [DOI: 10.1038/s41598-020-62151-3](https://doi.org/10.1038/s41598-020-62151-3)

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