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How polio vaccine triggered the infection in a child in Meghalaya

While the last case of wild polio was reported in 2012, India has reported cases of vaccine-derived polio. How can it be prevented.

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Written by **Anonna Dutt** Follow

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A health worker administers polio vaccine drops to a child in a hospital during a special vaccination drive, called "POLIO SUNDAY" at Agartala. (Express photo by Abhisek Saha/File)

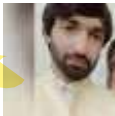
A two-year-old child from Meghalaya’s West Garo Hills district reportedly tested positive for polio — a highly infectious, debilitating, and possibly fatal viral disease that once afflicted millions but now has largely been consigned to the history books due to the development of an effective vaccine.

Officials from the Union health ministry said that the case was “vaccine-derived”, and does not jeopardise India’s polio free status. Nonetheless, officials are on high alert to ensure that the infection does not spread.

What is a vaccine-derived polio infection?

A vaccine-derived poliovirus is a strain related to the weakened version of the live poliovirus contained in the oral polio vaccine (OPV) — they have led to the successful eradication of wild polio — but on rare occasions can trigger the disease in immunocompromised systems.

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Dr T Jacob John, former professor of virology at the Christian Medical College Vellore said that the OPV can lead to vaccine-derived infections in one of two ways.

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In some cases, the weakened virus can continue circulating from child to child, gaining back its ability to transmit quickly, and then cause severe infection every time it spreads.

The virus in the vaccine can also cause chronic infection in children with weakened immune systems, replicating in their gut for years and slowly gaining its ability to cause severe infection. This is what seems to have happened in the Meghalaya case.

“It is easier to control further spread of such vaccine derived variants because the other children in the area are likely fully immunised,” Dr John said, adding that “one in every 150,000 children given the OPV in India is infected by it”. Even if children in an area where such a case is reported, health workers have to immunise them once again as a precaution.

Have vaccine-derived polio cases been detected in India?

India’s last reported case of wild poliovirus (i.e. the infection caused by the naturally occurring version of the virus) was detected in [West Bengal](#)’s Howrah district in 2011. India was declared polio-free in 2014 after successfully preventing any wild polio infections for three years.

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district succumbed to vaccine derived polio in 2013. Multiple other cases of vaccine-derived polio have been reported from across the country, with the most recent case (prior to the one in Meghalaya) being reported in Kerala last month.

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These cases do not affect India's polio-free status — only the detection of the wild poliovirus will change that.

How can vaccine-derived polio be prevented?

The OPV is extremely effective in preventing the spread of poliovirus from one individual to another. Moreover, the ease of administering the oral drops, led to the OPV becoming the mainstay of the global polio eradication programme. That said, one of its drawbacks is that in rare cases it can not only trigger the infection, but can also lead to its spread to others.

This is why some experts have recommended switching to the injectable polio vaccine (IPV). But this too comes with its drawbacks. Unlike OPV, it requires trained personnel to administer the shot, which may lead to lower immunisation rates, it can also not prevent the spread from one person to the other. To prevent future outbreaks, high vaccination rates must be maintained. Moreover, the IPV can only extend the protection to the immunised individual, and since it does not contain any live virus, there is no possibility of vaccine-derived polio.

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while oral polio vaccine is given to children up to the age of five years during **Pulse Polio Days**, the mainstay of the government’s universal polio vaccination campaign.



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According to Dr John, India is currently using IPV’s “sub-optimally”, giving only one IPV shot, as against three shots and one booster in countries that have switched completely to the injectable vaccine. This is why, “we still continue to give the oral vaccine multiple times to the children to maintain the immunity level,” Dr John said.

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Anonna Dutt

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Anonna Dutt is a Principal Correspondent who writes primarily on health at the Indian Express. She reports on myriad topics ranging from the growing burden of non-cc ... [Read More](#)

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