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Polio in exit mode: Is the battle over yet?

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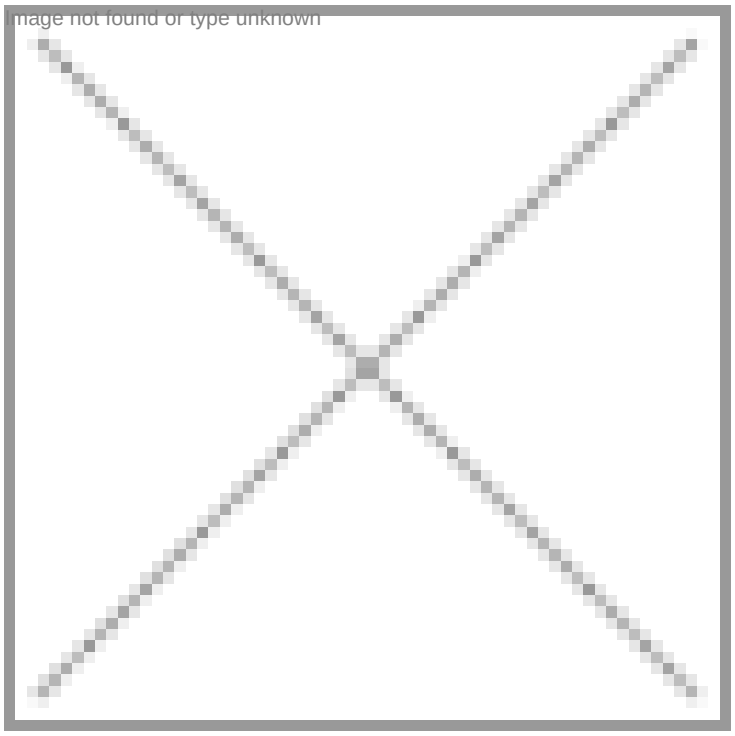

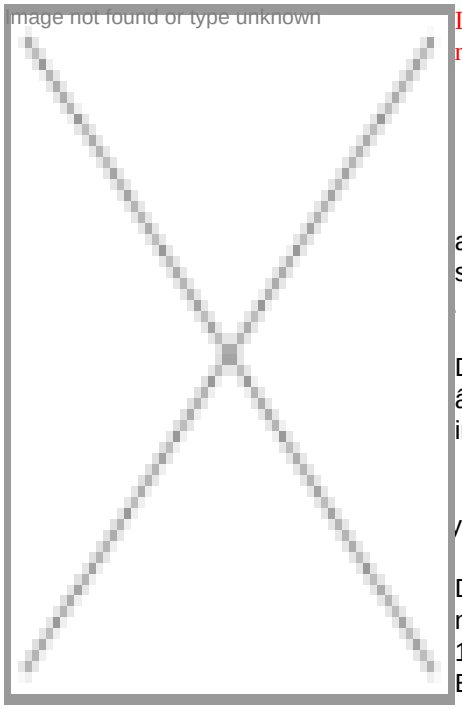

India has not reported a single case of polio in the last 12 months. However, given the live nature of polio viruses and their continued existence in the environment, experts say complete

India recently received a pat on the back from the World Health Organization (WHO) after it was reported that there have been no new cases of polio for a year in the country. The news meant freedom from a disease that about five decades ago was among the most feared diseases known for crippling children. WHO also said India's success could mean the list of polio endemic countries could soon be reduced to three

Dr Hamid Jafri, project head, National Polio Surveillance Project (NPSP), says, â€œGiven the size and scope of the challenge and the epidemiologic challenges and innovations that the program in India has done, if India succeeds in eradication of

/ by the Ministry of Health and WHO.

Data from the NPSP shows that between January 13, 2011, and January 12, 2012, no new cases of polio have been reported in India. However, at the same time, around 1,230 fresh cases of acute flaccid paralysis (AFP), mostly from Uttar Pradesh and Bihar, were reported till January 21, 2012. This has also set the tone for a debate on whether this success in the battle against polio is going to last long. The fear is

generated from the fact that there is always a risk that vaccines containing live viruses may reintroduce the disease in places that are becoming polio-free.

Another cause of worry is that there is a threat that the disease may find its way back from across the border (Afghanistan and Pakistan). The Indian government will have to maintain strict vigilance and respond rapidly to guard itself against import of any circulating polio virus.

Role of vaccine companies

The government spends close to 1,290 crore annually on the polio eradication program, which has now been integrated with the National Rural Health Mission. According to rough estimates, around 50 percent of this allocation goes into buying vaccines. Praising the contribution of the bivalent vaccine, Health Minister Mr Ghulam Nabi Azad recently said, â€œThe real scenario changed after the introduction of a bivalent oral polio vaccine in January 2010. The new polio cases have come down significantly from 741 in 2009 to 42 in 2010 and only one polio case during 2011.â€?

Since type 2 has already been eliminated, a three-strain oral vaccine called tOPV is being phased out in favour of a bivalent or two-strain vaccine called bOPV, which fights type 1 and type 3 virus. Dr Rajesh Jain, joint managing director, Panacea Biotec, says, â€œWe are the only company meeting the demand for bivalent oral polio vaccines in the country at present. To keep the virus at bay, we must keep innovating.â€?

Panacea Biotec, which has been a major supplier of vaccines to National immunization Programme (NIP), supplied more than six billion doses of WHO-pre-qualified polio vaccine to the Government of India and the UNICEF. As a sequel to the completion of full range of oral polio vaccines (tOPV, mOPV1, mOPV3 and bOPV), Panacea Biotec introduced the next generation inactivated polio vaccine (eIPV) through a collaboration with The Netherlands Vaccine Institute. The sale of polio vaccines has been a major contributor to the vaccine business revenue of Panacea Biotec, which is 70 percent of its total revenue.

Until the 1980s, vaccine requirements in India were met mainly through public sector vaccine institutions. The Pasteur Institute of India in Coonoor, Tamil Nadu, produced polio vaccine between 1967 and 1977 with the help of seed virus from Dr A B Sabin, who developed OPV with the approval of the WHO. The Haffkine Institute was able to produce OPV, but this was discontinued for reasons not clear.

In 1987, the Department of Biotechnology established a new public sector unit, Bharat Immunologicals and Biologicals Corporation (BIBCOL) at Bulandshar, Uttar Pradesh, with technology transferred from the Institute of Poliomyelitis and Viral Encephalitis in Moscow, Russia. The company started formulating OPV in bulk since January 1996 and in 1999, the company acquired WHO-GMP certification and supplied about 1,016 million doses of OPV to the NIP so far.

â€œWe are very proud of the fact that we have a series of firsts to our credit. We are the first Indian company to provide oral polio vaccine in the country since 1990,â€? says Mr Sreeshan Raghavan, managing director, BIBCOL.

Another company Bio-Med started its human vaccine division with oral polio vaccine in 1995. The company's vaccine is included in the Pulse Polio program conducted by the Ministry of Health and Family Welfare under Extended Program of Immunization (EPI).

The threat in oral vaccine

Calling OPV a savior, Mr Hamid Jafari says, â€œIt is the OPV that is even now preventing tens of thousands of children in India from getting polio every year. It is important to appreciate the huge number of cases this vaccine is averting.â€?

The irony is the side effect of the OPV. Live viruses will be administered through OPV to people and the environment. Therefore, the resurgence or importation of wild polio virus remains a threat to the children in India.

According to the NPSP, the vaccine-derived polio viruses (VDPVs) are strains of polio viruses that emerge after prolonged multiplication of attenuated strains of the virus contained in the oral polio vaccine in the guts of children with immunodeficiency or in populations with very low immunity. After prolonged multiplication, these vaccine virus-derived strains change and revert to a form that can cause paralysis in humans. Some VDPVs have shown a capacity for sustained circulation in communities. India has identified seven cases of VDPV (six of type 2 and one of type 3) in 2011.

Alternative to OPV

Few argue that even though India always had an effective indigenous injectable polio vaccine, OPV was recommended in developing countries because international organizations were trying to find new markets for US multinational corporations. However, one cannot deny that we owe our success to oral polio vaccines as they are highly effective, cheap, and easy-to-deliver.

â€œThe best way seems to be the use of oral polio vaccines to stop transmission and then switching to inactivated polio vaccines (IPV) after the virus has been contained. But it works better by producing protective antibodies in the blood, thus preventing spread of the polio virus to the central nervous system,â€? says an expert at the NPSP.

The problem here is that unlike OPV, IPV is difficult to deliver because it has to be injected by trained health workers in clinics. Also available at ₹300 per dose, the vaccine is five times costlier than the currently used OPV.

Currently, research teams are looking at ways to make IPV more accessible. One option being explored is the addition of an adjuvant, thereby lowering the amount of antigen needed in the vaccine. Another one might be developing a way of injecting the vaccine into the skin, rather than under it. It is a method that would require a lower and therefore cheaper IPV dose.

Though there is no denying the fact that we have been able to contain polio successfully, we must remember that the virus is still there and continues to affect a certain section of population. Therefore, the big question that still remains is whether we can actually call it complete eradication.

Rahul Koul in New Delhi