

# Eradicating Polio: Making a Short Story Long

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A discussion of India's polio eradication programme, what has worked, what has not and what now needs to be and can be done.

The eradication of smallpox in the mid-1970s led to a new global confidence. At the same time, the Alma Ata declaration of 1978 marked a commitment to primary health care. Soon, selective primary health care with its technocentric focus dislodged the original vision, at least to some extent. It is at this juncture that the idea of polio eradication appeared on the horizon. The year 2008 marked the 25th year in the history of the polio eradication programme. In 1983, a meeting of public health experts held at Bellagio, recommended the inclusion of polio eradication as a component of the Expanded Programme on Immunisation (John 1996: 76-90). A consultative committee constituted by the Rotary International declared in the following year that eradication could possibly be achieved by 2005. Meanwhile, the World Health Assembly in 1988, in its wisdom, advanced the goal to 2000 terming it an "appropriate gift, together with the eradication of smallpox, from the 20th to the 21st century".<sup>1</sup> The Global Polio Eradication Initiative (GPEI), popularly known as "Pulse Polio", was thus crafted as a short story with a happy ending. As stated by the recently released GPEI Strategic Plan 2009-13, what started as a 12-year operation (1988-2000) now stands officially extended by another 12 years, to 2013. Pulse Polio, in India, is currently plagued not only by missed deadlines, but also by the crisis of confidence.

By late 2003, endemic foci were located in five states/provinces of India, Pakistan and Nigeria. It was projected that by 2006, there would be no endemic countries, and by 2008, all countries would be certified polio-free. But polio continue to persist in developing, tropical countries owing to (1) "substantially lower" levels of seroconversion, on account of concomitant infections and malnutrition; (2) programmatic factors, including cold chain weaknesses; and (3) environmental factors including sub-optimal sanitation, high population density and tropical climates. The challenges for India included the failure in reaching very young and underserved children in general, and implementing the programme, specifically, in western Uttar Pradesh, where a "substantial number" of children had missed pulse doses. While these challenges were identified and strategies drawn up to face them, the crucial missing piece was the number of doses required in endemic areas like western Uttar Pradesh and Bihar to achieve elimination/eradication. Till date, there is no satisfactory answer.

## Polio Situation in 2008

Following a sharp decline of wild poliovirus (WPV) cases globally in 2003, the period from 2004 to 2008 actually recorded a sharp increase. In 2008, there were 1,625 globally reported WPV cases, including 137 from non-endemic countries. Seventeen countries reported WPV including Nigeria (788), India (551), Pakistan (188) and Afghanistan (31). In a reversal of trends since 2006, P1 virus was back as the dominant infection, accounting for about 60% of all WPV cases. Active outbreaks on account of imported cases were reported from 12 countries, five of them experienced prolonged transmission for more than 12 months.<sup>2</sup>

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Till the week-ending 28 March 2009, India reported 21 cases of WPV, 20 of them from the endemic states of Bihar and Uttar Pradesh and one from Delhi. Nine of these were WPV1 cases signalling that the gains in terms of reduction of WPV1 in 2008 were perhaps short-lived. The number of compatible cases, a critical but underplayed indicator, is yet to be released for the first quarter. Three hundred and forty-seven compatible cases were reported in 2008. The progress in terms of reduction in the number of infected districts has been quite slow from 114 districts in 2006, to 99 in 2007, and 90 in 2008.<sup>3</sup>

## Theory and Practice

**Beyond WPV1 and WPV3:** The Indian Academy of Paediatrics (IAP) has taken the position that the current surge of WPV3 cases is an “iatrogenic outbreak”. It has argued that despite the epidemiological rationale of prioritising WPV1, it is unethical to underplay the impact of WPV3 since at the host level, the end results are the same. Thus, yet another variant, the Bivalent Oral Polio Vaccine (BOPV) is on the anvil. Despite the intricate strategisation by the India Expert Advisory Group (IEAG), balancing monovalent Oral Polio Vaccines (OPVs) and trivalent OPVs, nearly one-eighth of WPV cases in India were WPV1 during 2008 (globally, WPV1 accounted for about 60% cases). Noting the wild virus like characteristics of vaccine derived polio viruses (VDPV) in Egypt (Kew O M et al 2004), John argued for “true eradication”; defined as, “zero incidence of infection with wild and vaccine viruses” (John 2004). The epidemiological rationale of the programme, particularly the notion of “eradication” interpreted by GPEI, has been questioned by other scholars (Sathyamala et al 2005). The 2009-13 Strategic Plan acknowledges that vaccine associated paralytic polio (VAPP) and VDPV are “inconsistent with global eradication of paralytic poliomyelitis”.

The goal of the present campaign should thus be restated as “elimination” and efforts made to achieve that (Dowdle 1998).

**Injectable Polio Vaccine:** Expert bodies such as the IEAG and the Advisory Committee on Polio Eradication (ACPE) have

signalled the introduction of the Injectable Polio Vaccine (IPV) in western Uttar Pradesh. OPV cessation has been on the cards for some time; the incidence of significant numbers of WPV cases has led to its continuation. At least 1.5 to 4.5 million doses of IPV are expected to be procured once the government of India gives the go-ahead.

Meanwhile, the global experience is varied; Japan and Cuba achieved interruption with two doses of OPV, while many countries in Latin America, Africa and Asia have used OPV for prolonged periods. Introducing IPV in western Uttar Pradesh could turn out to be a technological gamble. Dasgupta et al (2008) in Moradabad and JP Nagar districts mapped stakeholder perspectives regarding introduction of IPV. Issues of logistics difficulties including trained vaccinators (in an already weak health service system) and injection safety were raised strongly both by providers and community stakeholders. IPV was unlikely to have any great demand given the lukewarm response to preventive injections (vaccines) borne out by routine immunisation (RI) coverage rates. Any move to introduce IPV should take these issues into account.

## Routine Immunisation

The increased emphasis on routine RI seems to be paying off in Bihar, Chhattisgarh, Jharkhand and Uttar Pradesh. The increase is most dramatic in Bihar and Jharkhand – a doubling of the rate from 20.7% to 41.4%, and 25.7% to 54.1%, respectively. Significantly, the proportion of children who have not received any vaccination is also high; as many as 24% in Uttar Pradesh (Dasgupta 2009). In Moradabad, less than a third of the children received three doses of OPV. The corresponding figures for JP Nagar, Baghpat, Badaun, Mainpuri and Aligarh are 36%, 35%, 22%, 37% and 39%, respectively. According to district-level household survey of the government (DLHS-3), poor RI coverage in the most vulnerable districts shows that things have clearly not worked where they were required the most. The RI programme can deliver only if the primary healthcare services become more effective and responsive. The National Rural Health Mission (NRHM) has brought in some improvements and promises. RI has a long way to

go in these districts if it has to make a difference to the polio eradication campaign.

## Patience Is Running Out

Immunisation campaigns are a lot more beyond “technology missions”. They have deeply rooted social and political dimensions, in addition to health benefits. Technical strategies, specifically, vaccine-related innovations have hogged the limelight. Social determinants of the programme have not received the attention that they deserved (Arora et al 2007). Social resistance to immunisation programmes (particularly pulse campaigns) by parents of under-five children has been reported from Uttar Pradesh and Bihar (and other parts of the world) along with “fatigue” and “burnout” of the service providers. The two have acted in tandem.

The GPEI has adopted a range of social mobilisation strategies and in the high risk states of Bihar and Uttar Pradesh, there is a platform of the social mobilisation network (SMNet). Vertical programmes like the GPEI leave little space for community involvement in decision-making processes. Though innovations are frequently being made in information, education and communication and social mobilisation strategies, marginalised communities (across religions and social groups) in areas of poor development remain sceptic clients. The feeling of “otherness” needs to be minimised before optimal acceptance for this repetitive state programme is expected. The primary health centre doctor is uniquely positioned to facilitate a process of trust. However, s/he can claim legitimacy only when effective public health services are delivered on the ground. Health services should not be used as a tool but need to be visualised as one of the core components of development.

## Concluding Comments

The disappointments of 2008 with regard to the pulse polio programme are well known. A “stand alone” success seems elusive, while the public health system in the country continues to be weak. The NRHM has brought some cheer in terms of resources, infrastructure and models of governance. There has been an intellectual revival of the concept of primary healthcare. The World Health Organisation has recently published the report of the

Commission on Social Determinants of Health- 2005-2008. Programmes can over-rely on technology without due attention to social determinants, only at their own peril.

Much action has been witnessed over the last several years, based on recommendations of national and global policy-making bodies. Serious biological and programme management debates have turned into hackneyed clichés about vaccines and doses, driven by bursts of enthusiasm and panic. There have been multiple learnings at local levels and a remarkable commitment by health workers and managers; many are disappointed if not cynical. The saga of the campaign has taken its toll. Deadlines and milestones have ceased to be relevant. Fatigue, both among community members and healthcare workers, is likely to feed upon itself further weakening the campaign. Migrant workers and religious minorities, clearly among the most marginalised communities, have become targets in a high-risk approach. Given the definitional boundaries, this is at best an elimination campaign; eradication is a distant dream. But even that would not be possible without sound policies, determined social implementation (certainly transcending technical implementation) and refocusing political attention and social control towards building a responsive and effective primary health care system.

### A Postscript

The AFP Surveillance Bulletin released on 6 June 2009 put the number of confirmed WPV cases at 63, and in a first in India, two VDPVs one each of Types 1 and 2. VDPVs are defined as live, attenuated strains of the virus contained in the OPV which have changed and reverted to a form that can cause paralysis in humans with the capacity for sustained circulation. Programme managers assure us that “they have been seen in many countries. Many VDPVs are isolate that do not progress any further. Those that do circulate respond readily to high quality immunisation response.”<sup>74</sup>

There are three caveats. First, the emergence of VDPVs signifies continuing low levels of immunity at the population level. Media reports suggest that a two-year-old boy from East Champaran, Bihar, who was confirmed with VDPV, did not receive any

dose of RI and was thus vulnerable despite several doses of pulse polio – so much for the myth of the programme machinery. Despite impressive aggregates, less visible clusters of unimmunised children with low RI may sustain the infection; that such clustering is not random is another complex story. Evidence from across the globe (Hispaniola, Philippines, Egypt and Nigeria) is a pointer that VDPVs can circulate silently for prolonged periods. Second, the media report states that “investigations to determine the immunological and clinical status of both have been initiated”. Rare immune deficiency disorders of hosts lead to excretion of immune-deficiency-related vaccine-derived polioviruses (iVDPVs) for prolonged periods. The scientific consensus is that iVDPVs are less dangerous than circulating VDPVs (cVDPVs) at the current phase of the eradication campaign. Whether the cases in India are cVDPVs or iVDPVs are under investigation. But the search for individual-level “risk factors” should not obfuscate population-level determinants of low RI coverage; that would be missing the wood for the trees. Third, lower sero-conversion attributed to recurrent infections and malnutrition requires urgent attention. “Flagship programmes” of the new central government are expected to address these unfinished agenda and have the potential to make a difference; but then, global deadlines have minds of their own.

### NOTES

- 1 The World Health Organisation, Forty First World Health Assembly, Geneva, 2-13 May 1988, WHA resolution No 41.28, Global Eradication of Poliomyelitis by the Year 2000, <http://www.who.int/csr/ihr/polioresolution4128en.pdf>. Accessed 20 December 2007.
- 2 Global Polio Update.
- 3 The National Polio Surveillance Project (NPSP). Infected districts 2008. <http://www.npsindia.org/infecteddistrictso8.asp>
- 4 Polio from vaccine: India confirms two cases. Posted: Friday, 12 Jun 2009 at 0157 hrs IST. <http://www.indianexpress.com/news/Polio-from-vaccine-India-confirms-two-cases/475202> accessed on 12 June 2009.

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