Serious Messages Behind VDPV Cases in India

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Though not epidemiologically unexpected, the two vaccine derived poliomyelitis virus (VDPV) cases notified recently portend serious messages for the eradication program in India. One each of Type 1 (Dibrugarh, Assam) and Type 2 (East Champaran, Bihar) viruses was detected and are unrelated to each other(1). VDPVs are live, attenuated strains forms of the parent vaccine virus that have undergone mutation and recombination and differ from (original) Sabin strains by 1 to 15% of VP1 nucleotides. Investigations are on to microbiologically characterize these VDPV cases and whether local transmission has already occurred. Capable of both neuro-virulence and transmissibility, VDPVs have caused outbreaks, including in the neighboring countries of China, Myanmar and Indonesia. VDPVs are further classified into circulating VDPV (cVDPV), VDPV in the immunodeficient (iVDPV) and those of ambiguous origin (aVDPV). iVDPVs have not yet been observed to transmit or spread; the epidemiological significance of 'chronic iVDPV excretors' (up to 6-12 months) is therefore currently perceived to be less critical compared to circulating VDPVs(2).

WAS IT FORESEEN?

The 2004-08 GPEI Strategy Plan opined that cVDPVs were likely to be rare events and amenable to containment by mop-up rounds. The Hispaniola situation was a pointer that VDPVs could circulate silently for up to two years before an outbreak. By 2000, it was reasonably clear that VDPVs could indeed persist, circulate and cause outbreaks. That the VDPV cases have been detected in India underscores the strength of surveillance system. The 18th India Expert Advisory Group (IEAG) did consider the emergence of cVDPVs of Type 2 (as has been the experience in several countries that has been free of WPV2 for some time) but the emergence of Type 1 VDPV was perhaps unforeseen.

CURRENT STATUS IN INDIA

In 2009, a total of 124 cases of WPV and 4 compatible cases have been notified till the week ending 11 July. Two VDPV cases are to be added to this tally. Reminding ourselves of the 2004-08 GPEI strategic plan, following milestones for 2007-2008 have not been adequately achieved: (*i*) long-term immunization policies, including national IPV decisions; (*ii*) introducing protocols for cVDPV response; and (*iii*) beginning of environment sampling.

The disappointments of 2008 are thus well known. The GPEI strategic plan begins on an optimistic note, planning to interrupt all WPV1 transmission in India by 2009. With 27 WPV1 cases already notified and the peak monsoon/post-monsoon period yet to set in, this objective shall remain unrealized.

WHAT ARE THE KEY CONCERNS?

VDPVs signify continuing low levels of immunity at the population level. High routine immunization (RI) coverage is one of the four basic tenets of this eradication strategy. Media reports suggested that the child in Bihar received several doses of pulse polio but no dose of RI. Despite impressive national/state/district aggregates, less visible clusters of children with low RI may sustain the infection. 48% children completed all doses of RI in Assam; the

corresponding figure for East Champaran District, Bihar was 41.3%.

The search for individual-level 'risk factors' (through immunological and clinical status of both children), in the risk factor epidemiology paradigm, should not obfuscate population-level determinants of low RI coverage. That would be missing the wood for the trees. Public health programs (vertical, time-bound) are often reduced to 'technology missions'. Repetitive activities (as in pulse polio rounds) lead to fatigue and burnout of both providers and recipients/ communities, particularly in the absence of a functioning and responsive primary healthcare system.

THE WAY AHEAD

The VDPV cases in India emerged in the twenty-fifth year of the history of ideas of polio eradication, first considered in 1983. There was broad-based scientific and political support when the campaign was launched in 1994-95. Scripted as a short story (achieving eradication in 2000) this is slowly but inexorably turning out to be a saga. The GPEI is yet to visualize a scenario where vaccines are no longer required; the hallmark of eradication, in contrast to elimination programs where interventions need to be sustained(3). VDPV cases in India may well raise concerns of popular confidence in the program. Low coverage of completed RI and missed RI doses in the child with VDPV is a signal that aggregates of coverage data have created a myth of the machinery while pockets of unimmunized have sustained the disease in various forms. There is lack of accurate data of number of pulse doses that an individual child has received. That such susceptibles are clustered and not random events indicate that social determinants of the program have not received the attention that they deserved. Technical strategies, particularly vaccine related innovations have hogged the limelight in the campaign; serious biological, social and program management debates have often gone unheard.

Noting wild virus like characteristics of vaccine derived polio viruses (VDPV) in Egypt, some argued for 'true eradication' (definitional perplexities that this campaign has generated!), as 'zero incidence of infection with wild and vaccine viruses'(4). The 2009-13 Strategic Plan acknowledged that "VAPP and cVDPVs are inconsistent with global eradication of paralytic poliomyelitis". That contact-VAPPs and VDPVs shall cease to be epidemiological concerns on cessation of OPV is probably misplaced, with tens of billions of vaccine viruses released in the environment.

For the OPV based campaign to achieve elimination of polio in the foreseeable future several steps are required including evaluation and modification of key implementation strategies; social science research leading to social implementation policies that take a participatory approach, transcending the current social mobilization framework and, energizing the routine immunization program. Coverage of RI need not be seen as an end in itself; it provides a valuable marker of the state of functioning of public health services. None of these is possible without a responsive and effective primary healthcare system with adequate social controls. The basic strategy of eradication has continued so far with only tactical changes made from time to time. This event should prompt us to address some of what is now entrenched as conventional wisdom!

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REFERENCES

1. AFP Surveillance Bulletin – India. Report for week 24, ending 13th June 2009. URL: http://npspindia.org/bulletin.pdf. Accessed June 22, 2009.
2. Vaccine Derived Poliovirsues. Global Polio Eradication Initiative. URL: http://www.polioeradication.org/content/fixed/opvcessation/opvc_vdpv.asp. Accessed June 22, 2009.
3. Dowdle WR. The principles of disease elimination and eradication. In Global Disease Elimination and Eradication as Public Health Strategies. Bull WHO 2008; 76: 22–25.
4. John TJ. Who benefits from global certification of polio eradication? Indian J Med Res 2004; 120: 431-433.