

**23rd Meeting of the India Expert Advisory Group
for Polio Eradication (IEAG)
Delhi, India, 13-14 July 2011**

Conclusions and Recommendations

The twenty-third meeting of the India Expert Advisory Group (IEAG) was convened on 13-14 July 2011 in Delhi, with the following objectives:

1. To review progress on polio eradication since the twenty-second Meeting of the IEAG in November 2010;
2. To make recommendations on strategies to ensure the interruption of wild poliovirus transmission in India.

The meeting was co-chaired by Mr P.K. Pradhan, Special Secretary and Mission Director (NRHM), Ministry of Health and Family Welfare, Government of India, and Dr Jagadish Deshpande, Director, Enterovirus Research Centre (ICMR), Mumbai. A list of IEAG members that attended the meeting is annexed. The IEAG was pleased to have the participation of Dr. R.K. Srivastava, Director General Health Services, Ms. Anuradha Gupta, Joint Secretary along with other representatives from Government of India, Dr. Ajay Khera, Deputy Commissioner, Child Health, Dr. Pradeep Haldar and Dr. NK Dhamija, Assistant Commissioners for Immunization, MoHFW and representatives from the States of Bihar, Uttar Pradesh (UP), Jharkhand, Delhi, West Bengal, Maharashtra, Punjab and Haryana. In addition, core partner agencies (Rotary International, UNICEF, WHO, and CDC) were represented as were the Bill and Melinda Gates Foundation, USAID, MCHIP, CORE, JICA and KFW.

Introduction

The IEAG was posed with the following questions by the Government of India:

1. What is the significance of the current polio epidemiology - is this progress real?
2. What are the implications of the ensuing high transmission season for the current polio situation?
3. What are the risks for continued polio transmission in India?
4. How should risks be effectively addressed to ensure that the gains made so far are further consolidated to achieve polio eradication?
5. How should the current communication gains be maintained and what are the specific communication challenges at this stage of polio eradication?
6. What should be the number, timing, scope, and vaccine type for SIAs during the remaining months of 2011 and early 2012?
7. How should the program begin to prepare for the next phase of polio eradication?

Findings and conclusions

India has reported only one case of polio in 2011 to date, with onset in January, the lowest number of cases reported for this period since surveillance began. This follows on from 2010 which was the year with the lowest level of polio transmission ever recorded in India. Transmission of both wild poliovirus (WPV) type 1 and WPV type 3 is at the lowest level ever in both UP and Bihar. Furthermore, environmental sampling in Mumbai, Delhi, and most recently Patna, has not identified wild poliovirus in sewage samples in 2011. These extremely low levels of transmission detected by AFP and environmental surveillance since October 2010 confirm that WPV is very close to eradication in India. The IEAG commends the Union and State governments for these achievements, made possible through unwavering commitment to completing polio eradication, commitment of substantial financial resources, thorough implementation of previous IEAG recommendations and, most importantly, success in identifying and addressing high risk areas and programme weaknesses.

However, the IEAG cautions that this impressive reduction in transmission has occurred during the *low transmission season*. Only continuation of this trend through the high transmission season will bring confidence that WPV transmission may truly be interrupted. Analysis of previous very low transmission years (2005, 2008) shows that despite very restricted low season transmission, there was considerable WPV1 activity in the subsequent high transmission seasons of 2005 and 2008. Low transmission season epidemiology is not necessarily predictive of high transmission season epidemiology.

Genetic analysis of WPV from the period 2008-10 adds to the need for caution. There have been several instances of detection of "orphan viruses" over the last 3 years (viruses with significant genetic differences from their nearest known relatives, indicating long periods, i.e. greater than 12 months, of undetected transmission).

*Therefore the absence of cases in the period February to May does not definitively mean that transmission has stopped, and that cases will not occur in the coming high transmission season. **In fact the program should put in place a plan of action to manage one or more cases during the peak period of risk from June to November.*** This has significant implications for the assessment of risk, conclusions, and recommendations of the IEAG.

The progress towards interrupting poliovirus transmission in India is real. The opportunity to eradicate polio from India has never been better. Success is achievable in the near future provided the remaining risks are addressed with the utmost concern and effort.

The epidemiological situation

Wild poliovirus type 1: No WPV1 has been reported in India for over 6 months, the longest period on record without cases being reported; the previous longest period was 8 weeks in 2004. No WPV1 has been detected in UP since November 2009, and in Bihar since September 2010. Only two WPV1 cases have been detected since October 2010, both from West Bengal (December 2010 in Murshidabad District and January 2011 in Howrah District). Additionally WPV1 was detected in an environmental sample from Mumbai in November 2010. These three isolates represent independent transmission within a single genetic cluster.

Wild poliovirus type 3: No WPV3 has been reported for 8 months; similar to WPV1, this is the longest period on record without WPV3 being reported; the previous longest period was 25 weeks in 2004. The last WPV3 case reported had onset in October 2010 in Pakur District, Jharkhand, and the last environmental isolate reported was from Delhi in July 2010.

Vaccine derived polioviruses: In 2011 to date a total of 4 vaccine derived polioviruses (VDPVs) type 2 have been detected from AFP cases in four different states. There is no evidence that any of these viruses were circulating, or any of the strains are related to each other or to the strains that were circulating in 2009 or those detected in 2010. In addition, a VDPV type 2 has been detected in a single environmental sample from Mumbai in January, with no evidence of circulation.

Risks to completing polio eradication in India

The main risks to completion of polio eradication in India are:

1. Undetected low season WPV transmission

- **Historic reservoir areas:** Although immunity levels in the traditional endemic areas of western UP and central Bihar remain high, it would be very dangerous to consider them as anything other than extremely high risk. Central Bihar detected an orphan virus in 2009 which subsequently circulated throughout the high season, and Western UP sustained an outbreak for more than 18 months following the re-introduction of WPV1 in 2008.
- **The continuation of transmission in the most recent outbreak areas of 2010.** These are the last known areas of WPV transmission, in particular West Bengal, and must therefore be considered at very high risk; this consideration is supported by the concern that program improvements were driven by recent outbreaks, quality in some key areas remains sub-optimal, and immunity gaps therefore likely remain.
- **Undetected circulation in migrant, mobile, and underserved communities.** This is a double risk of both virus persistence and further virus movement. Most transmission of WPV in India in 2010 was the result of movement of virus from an infected area to polio-free areas, and the

genetic record has several examples of long chain virus appearing in migrant or underserved communities in high risk areas; the Maharashtra and West Bengal WPV outbreaks in 2010 are clear examples of this.

- **Orphan virus isolates as indicators of surveillance gaps.** A significant number of "orphan viruses" were isolated in the period 2008-10 indicating instances of undetected poliovirus circulation for periods up to 12-18 months. At a minimum, the districts detecting these viruses multiple times are likely to represent areas that missed transmission. Many of the districts with orphan isolates are destinations for populations supporting transmission that was missed by other districts or states. Both instances represent a risk and the need to ensure highly sensitive surveillance in such areas and populations.

2. An international importation of wild poliovirus. Numerous instances of WPV exportations from India to other countries have been documented with the most recent one being the WPV1 outbreak in Tajikistan. There remains a risk that populations associated with carrying poliovirus outside India or new movements of people from another polio infected country, could reintroduce WPV into India.

The recommendations below outline strategies and activities that take into consideration the current epidemiological situation and the need to mitigate the risks.

IEAG Recommendations

The IEAG concludes that the opportunity to eradicate polio from India has never been better, provided the current scale and quality of activities are maintained and the risks of the coming 6-12 months are fully addressed. The IEAG recommends the following:

Emergency response to any detected WPV

The IEAG re-emphasizes the recommendation from its November 2010 meeting that *any WPV detected, regardless of source, anywhere in the country should be considered a public health emergency and responded to by multiple high quality mop-up vaccination campaigns.* The IEAG commends the Governments of India and West Bengal on the speed and scale of response to the WPV1 reported from Howrah district, West Bengal with onset 13 January 2011. This response should be used as a model for any future detection of WPV and the lessons learned from this experience should guide finalization of Emergency Preparedness and Response Plans.

Emergency Preparedness and Response plans

- All states should ensure development of a comprehensive emergency response plan. The plan should include a thorough risk analysis that considers past WPV circulation, identification of migrant areas, populations with low routine or supplementary immunization coverage, and those with a

history of OPV refusal. The plan should clearly define actions that immediately address the risks if WPV is detected.

- State Emergency Preparedness and Response teams should also include state-level media and behaviour change communications focal persons to ensure that the communication element of the emergency response is also properly addressed
- State emergency response plans should be reviewed and evaluated by GOI and partners to confirm appropriate selection of rapid response team members, thorough risk assessment, clarity of roles and responsibilities, and effective plans for addressing current risks and responding to WPV should it be reported.
- Simulations of the emergency response plans at national and state levels should be conducted by the Union government on an urgent basis.
- The IEAG reviewed the National Emergency Response Plan and endorses the mop-up approach and timelines as adequate and consistent with past IEAG recommendations (a minimum of 3 large scale, high quality, house to house immunization rounds covering 2-5 million children with the first SIA starting within 2 weeks of notification and the others occurring no more than 2 - 4 weeks apart)

OPV Buffer stock

- The Union Government should ensure a rolling emergency stock of 50 million doses of OPV.
- Recognizing the evolving risks, 40 million doses of the stock should be bOPV and 10 million doses tOPV to enable response to both WPV and cVDPV detections. The composition of the stockpile should be reviewed every 6 months and adjusted as necessary in response to changes in the risk and epidemiology

Communications preparedness

- All states should develop a media and IEC plan that includes identification of a spokesperson to officially represent the state government in communicating information about the WPV emergency response
- GOI, with support from UNICEF and communication partners, should support local-level analysis of social data for risk assessment and communication planning for emergency action, especially for reaching populations in WPV transmission areas and other high risk groups.

Maintaining immunity - OPV Supplementary Immunization Schedule (SIAs)

The risk of detecting any remaining WPV transmission in India will increase during the remaining months of 2011 as the country moves into the poliovirus high transmission season. The high levels of immunity achieved through SIAs conducted to date *must be extended* into the high transmission season in order to minimize the consequences of any WPV transmission. In the first half of 2012,

immunity needs to be maintained until the risk of undetected WPV declines. The IEAG therefore recommends the following supplementary immunization schedule for the period August 2011 through June 2012.

Polio SIAs for the remainder of 2011:

- August: SNID with bOPV targeting western UP, central Bihar, Delhi, and associated high risk areas of Haryana, and Rajasthan, and migrant/high risk areas in Maharashtra, Punjab, Gujarat, Jharkhand, and West Bengal. All efforts should be made to conduct the activity in the recommended areas in August to minimize the risk associated with the high transmission season. Currently available stocks of bOPV should be prioritized for use in the highest risk areas if sufficient supply can not be obtained with the balance used as soon as it is available.
- September and November: SNIDs with bOPV as recommended in the previous meeting of the IEAG.
- December: Vaccine supply arrangements should be in place to move forward the January NID by one month if warranted by the epidemiology.

Polio SIAs 2012: 2 NIDs + 4 SNIDs

- January and February: 2 NIDs with tOPV in all areas and use of bOPV in one of the rounds in high risk zones of western UP, Bihar, & Delhi
- March, April, May, and June: For planning purposes, bOPV should be procured to conduct SNIDs across UP, Bihar, Delhi, and associated high risk areas of Haryana, Rajasthan, and Uttarakhand, and migrant/high risk areas in Maharashtra, Punjab, Gujarat, Jharkhand, and West Bengal. The scale or timing of 1 or 2 of these SNIDS can be adjusted if warranted by the epidemiological situation.

Identification and immunization of migrants

The evidence reviewed confirms the continued importance of marginalized and migrant populations in contributing to persistent poliovirus transmission and spread. The IEAG commends the efforts of Government and partners to address this risk to date though notes that further work is needed to ensure this major risk is mitigated:

- Efforts to identify migrant areas and incorporate them into SIA, surveillance, and routine immunization plans should continue as a priority activity
- The identification of migrant areas in non endemic states appears variable and should be reviewed to ensure completeness.

107 block plan

The 107 block plan remains a key strategy for reducing the risk of poliovirus transmission in the highest risk blocks of the country. The IEAG notes that implementation of certain elements of the plan has been variable.

- Efforts to focus government and partner resources on the 107 blocks should continue with increased focus on fully implementing the plan across all blocks, with particular emphasis on improving routine immunization coverage and scaling up distribution of zinc/ORS and water/sanitation interventions.

AFP Surveillance and laboratory performance

The IEAG reviewed the quality of AFP surveillance and laboratory performance in India and is satisfied. The IEAG is particularly impressed that speed of laboratory results continue to decrease even with increasing numbers of AFP samples submitted for testing. Ongoing efforts to improve the sensitivity and speed of results need to be maintained - an extremely high level of vigilance is necessary in the coming months to ensure that any residual transmission is reliably and rapidly detected.

- Sustain surveillance quality in endemic states with particular emphasis on maintaining sensitivity in the Kosi area of Bihar and western UP.
- Improve surveillance in areas with recent transmission, with particular emphasis on addressing the identified weaknesses in Murshidabad and Nasik districts of West Bengal and Maharashtra.
- Continue efforts to improve the sensitivity of AFP surveillance among migrant populations, particularly in non-endemic states
- Efforts to improve surveillance sensitivity should seek to optimize the reporting network to ensure all risk populations are adequately captured by the surveillance system
- The IEAG endorses the plan to expand environmental surveillance into Kolkata by the end of 2011 and to Punjab and Gujarat in 2012.
- Regular field reviews of surveillance systems should continue as planned.
- Recognizing the increasing workload for the polio laboratory network, the human and financial resources should be reviewed and sufficient amounts ensured in order to maintain the current level of performance.

Communications and Social Mobilization

Maintaining a positive and widely recognized brand for polio eradication remains a critical component of success in India.

- The IEAG endorses the new media campaign materials and recommends their roll-out.
- The social mobilization networks in Uttar Pradesh and Bihar continue to play a critical role in ensuring community participation in the polio program and should be maintained until interruption of transmission is secured.
- The efforts to address long standing community resistance to OPV in some pockets of southern West Bengal and other areas of recent transmission should continue until resistance is overcome or there is no case of wild poliovirus for at least 12 months.

- GOI, together with support from the partners, should conduct systematic analysis to identify and compile a list of pockets of significant OPV refusal in other states and develop plans for engaging these communities.

Strengthening Routine immunization

The IEAG re-emphasizes the importance of ensuring high levels of routine OPV coverage to prevent resurgence of polio. Significant areas of low routine OPV coverage remain, particularly among the most marginalized populations, putting the progress towards polio eradication at risk. These gaps should be urgently addressed by all states, particularly those with the greatest gaps in coverage.

- Improvement of routine immunization is urged for UP, where there is a significant risk of WPV resurgence alongside chronic unaddressed gaps in routine immunization coverage.
- The IEAG reaffirms its recommendation to ensure that adequate numbers of experienced staff are allocated to the planning, management, and evaluation of routine immunization services.
- Efforts for convergence of polio eradication and routine immunization efforts should continue, particularly with microplanning, communications, and inclusion of marginalized populations such as migrants and urban/peri-urban areas.
- As part of state Emergency Preparedness and Response Plan, the ongoing task of validation and inclusion of high risk areas and populations particularly migrants, in routine immunization microplans should be finalized.
- IEAG acknowledges the progress that has been made in implementing routine immunization monitoring. IEAG encourages States to continue to scale-up the use of monitoring data for programme decision making at all levels.

Research

- Results from the August 2011 serosurvey in high risk areas of UP and Bihar should be presented to the IEAG for review at their next meeting.
- IEAG should also be provided an update on the Mucosal Immunity study planned in the coming months of 2011.

Response to vaccine derived polioviruses

- All detected VDPVs should be investigated with urgency. During the course of the investigation, routine immunization intensification should be undertaken as appropriate. Findings should be reported to the State secretary of health and activities implemented to address any deficiencies identified with routine immunization coverage
- If a VDPV is confirmed as circulating in the community (i.e. cVDPV), then an appropriate mop-up response should be conducted to prevent expansion of circulation and reduce the risk of further VDPV emergence.

Preparing for the next phase of polio eradication

There is a significant program of work that will follow the achievement of polio eradication in India and the IEAG concurs with the Government of India's plan to begin to address the issues:

- Based on the current epidemiology, plans should be developed to ensure completion of Phase I of laboratory containment of wild polioviruses by the end of 2012 to minimize the risk of a facility based wild poliovirus reintroduction
- Research relevant to a possible tOPV/bOPV switch for routine immunization and post eradication polio immunization policy decision making in India should proceed in earnest including ongoing research on mucosal immunity, mathematical modeling of post eradication risk mitigation strategies, and the feasibility of safe and affordable IPV approaches (e.g. Sabin IPV, fractional IPV doses, reduced dose schedules)
- GOI should consider convening a special consultation of the IEAG / NTAGI and other experts as appropriate by December, 2011 to advise the government on post eradication immunization policy options and issues.

Annex

List of India Expert Advisory Group Members

1. Mr. P.K Pradhan, Special Secretary & Mission Director, MoHFW, Govt. of India
2. Dr. Jagadish Deshpande, Co-Chair, Director, ERC Mumbai
3. Dr. R.K Srivastava, DGHS, Govt. of India
4. Ms. Anuradha Gupta, Joint Secretary (RCH), Govt. of India
5. Dr. Nivedita Gupta, Assistant Director, ICMR (on behalf of Secretary, DHR & DG, ICMR)
6. Dr. R N Srivastava, Consultant Paediatrician and member of the Expert Group on case identification for polio, New Delhi
7. Dr. Harish Chellani, Associate Professor, Department of Pediatrics, Safdarjung Hospital, New Delhi
8. Prof Jaya Prakash Muliyl, Director & Head of Community Medicine, CMC, Vellore
9. Prof. Sanjay Chaturvedi, Professor of Community Medicine, UCMS, Delhi
10. Prof Ashok Mishra, Professor, Dept of PSM, Gwalior Medical College
11. Dr. D.K. Taneja, Director, Professor of Community Medicine, Maulana Azad Medical College, New Delhi
12. Dr. A.S. Vasudev, IAP
13. Mr. Deepak Kapur, Rotary International
14. Mr. Carl Tinstman, Public Health Consultant, Former Principal Advisor, P.E, UNICEF/WHO, Geneva
15. Dr. Bruce Aylward, Director, Polio Eradication, WHO- Geneva
16. Dr. Robin Nandy, Senior Health Advisor, Health Section, Programme Division, UNICEF HQ, New York
17. Dr. Ajay Khera, Deputy Commissioner(CH& I), MoHFW, Govt. of India