

POLIOMYELITIS— SURVEILLANCE IN INDIA

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Immunization Coverage

Oral polio vaccine (OPV) was introduced in the National Immunization Programme at the end of 1979. In the second half of the 1980s, coverage levels have rapidly increased in many districts, although there is still a wide range of performance. Up to 1986, overall reported immunization coverage level in the country with the third dose of OPV was less than 50% of the estimated infants. Coverage levels with 3 doses of OPV in children below 12 months of age in 1990-91 was estimated to be around 75 to 80%, with a wide immunization coverage range of performance at the state and district level. A dramatic increase in coverage has been reported in many states and a large number of districts over the last few years, although coverage levels in many other districts remains low to moderate. The results of vaccination coverage surveys conducted in 1990 confirm high immunization coverage levels reached in many districts by 1989 (Fig. 1).

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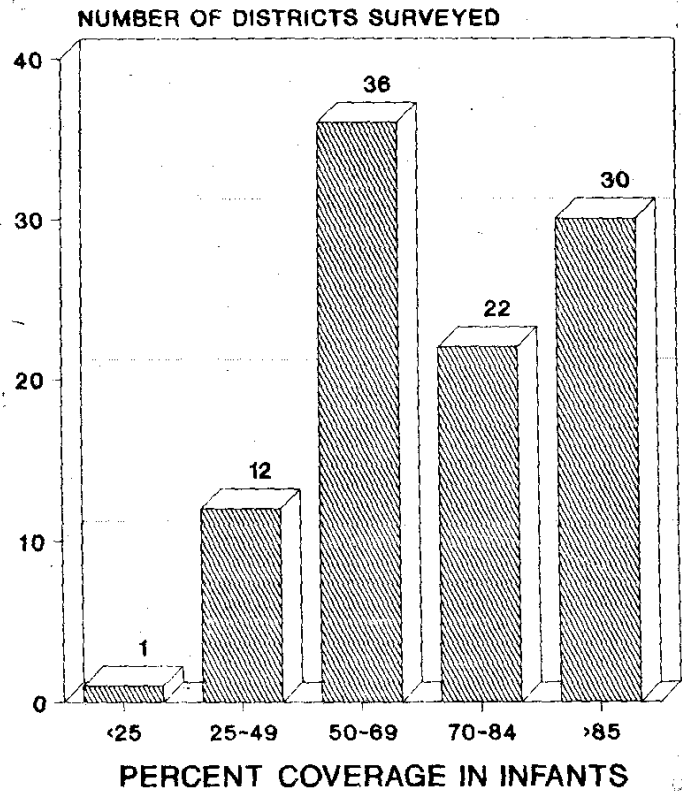


Fig. 1. OPV₃ immunization coverage.
Source: 101 surveys—1990.

Strategy of Polio Control

The strategy for the control of poliomyelitis is to achieve and sustain high levels of immunization coverage with all vaccines including OPV. Services are provided through regular immunization sessions, which are held, at least, at monthly intervals. Outreach sessions are organized regularly on the basis of 'fixed site' and 'fixed time' approach so that the community is aware of the time and place and vaccine supplies can be regulated.

Mop-up operations have started in majority of the districts on reported cases of

poliomyelitis. In districts with high levels of immunization coverage, pockets of low or moderate coverage are being identified and immunization services intensified in these areas. In districts with low to moderate coverage, the first priority remains the rapid overall increase of immunization coverage levels.

Surveillance of Poliomyelitis

Baseline sample lameness surveys conducted in 1981 and 1982, which covered a period when there was no-OPV immunization services in the country, showed that on an average 20 to 25 cases of paralytic poliomyelitis per 100,000 population could be expected annually *in the absence of an immunization programme*. There was no significant difference in the rates in the urban and rural areas and the incidence rate in the states was also more or less uniform.

Information on poliomyelitis in the early 1980's was based on the reports of the state health authorities to the central bureau of health intelligence (CBHI). The data was limited to information from major hospitals. Under the immunization programme, sentinel surveillance system was developed to obtain more reliable and regular information and to study trends. With the start of the Universal Immunization Programme in 1985-86, disease surveillance data was collected and monitored by districts under UIP.

From 1989, several additional measures were taken to strengthen the surveillance of poliomyelitis. These included 'nil' reporting of cases by all major hospital and other treatment facilities such as the primary health centres (PHCs) if no cases were seen, to confirm that the low incidence was not due to incomplete reports. The health workers were also instructed by the state and district health authorities to

report cases of suspect poliomyelitis to the local medical officer so that few or no cases were missed, especially in the rural areas where the contact with the community is frequent and regular (*Table I*).

Line listing of reported cases was

TABLE I—*Polio Surveillance*

Nil reporting
Active surveillance
Line listing of cases
Follow-up
– Search for more cases in area
– Additional dose of OPV to children under 3 years in the area
– Confirmation of residential status
– Confirmation of immunization status
– Confirmation of paralysis after 60 days
Identification of 'low-risk' cases
– Screening of case records
– Assessment of clinical status by team
Spot-mapping by residential status for identification of 'high-risk' pockets
Polio virus isolation from fecal samples

started in 1989 to check for duplication (same case reported more than once if the child visited more than one facility), year of onset of illness (to screen children with residual paralysis who developed poliomyelitis prior to the year of reporting), identification of 'high risk' pockets (by analysis of residential status) and documentation of 'high-risk' age-groups.

Line listing of cases made it possible to take appropriate follow-up action in areas from which cases had been reported. The line lists have also provided useful epidemiological data for programme purposes. Line lists, for example, provided information on the age at onset of illness and underscored the urgency for the early completion of the OPV immunization schedule (*Fig. 2*). Age-shift to the right has been

noted in states with high immunization coverage levels and is a positive epidemiological indicator.

Spot-mapping of cases by residential

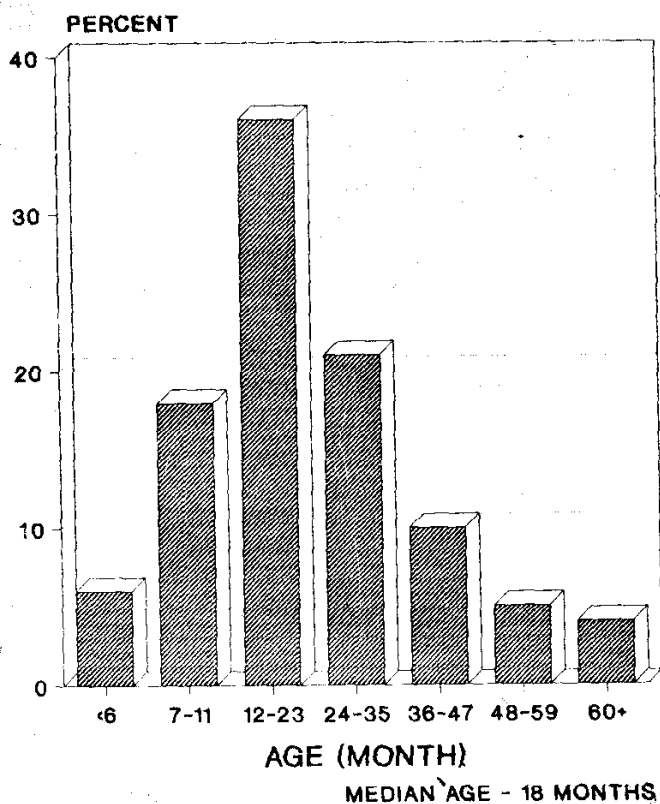


Fig. 2. Age distribution of polio cases.
Source: Line list of cases—1991.

address has started in most districts. A cluster of two or more cases in a subcentre area or a locality in an urban area is taken as an indicator of a pocket of low or moderate immunization coverage and quality are reassessed and immunization services are intensified in these areas.

If the case was reported early after onset of illness, an additional dose of OPV is given to all children under 3 years in the areas, as a precautionary measure. An

active search is also made in the concerned subcentre area for more cases. A follow up visit is made two months after onset of illness for clinical assessment of residual paralysis and atrophy of muscles. However, less than half the children whose line-lists are available can not be traced due to incomplete or incorrect addresses and high mobility of some groups of people such as those living in urban slums.

In many states and large number of districts, the incidence of poliomyelitis has reached low to negligible levels. In such districts even a single case is treated as an 'outbreak' leading to immediate investigation and outbreak control measures.

Due to increased emphasis on surveillance, greater awareness in the community about the disease and easier accessibility to the treatment facilities, the completeness of reporting has improved as compared to the early years of the Immunization Programme,* although cases are still being missed from the surveillance system. Besides completeness of reporting, emphasis of the surveillance system has shifted to obtaining information on cases as early as possible to allow epidemiological investigations and effective follow-up action.

Declining Trends of Poliomyelitis

Declining trends of poliomyelitis, commensurate with the increase in immunization coverage levels, have been recorded at national, state and district levels. The incidence of poliomyelitis has declined from a reported 28,350 in 1987 to less than 10,000 in 1990 and 5,669 in 1991 (Fig. 3).

Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Punjab, Tamil Nadu, Chandigarh and Pondicherry, with a combined population of 252 million (1991 census) and an estimated 5.8 million infants, have recorded sustained high levels

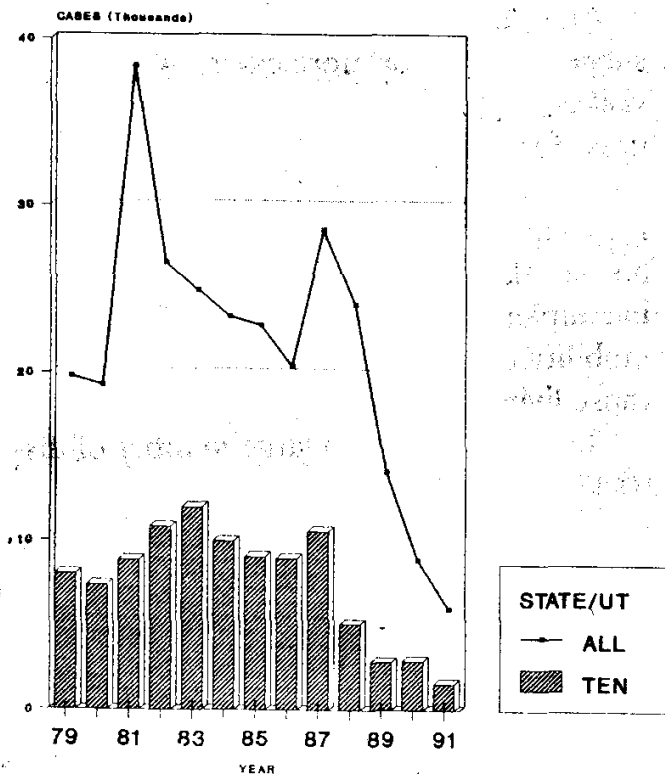


Fig. 3. Poliomyelitis in India.

of coverage with the third dose of oral polio vaccine (OPV) over the last few years and significant declining trend. An incidence rate of poliomyelitis of 1.1 per 100,000 population was recorded in these states in 1990, a decline of more than 80% as compared to the reported incidence of 5.7 per 100,000 population in 1980 (Table II). The rate in 1991 is 0.6. Almost 58% of the total cases in 1991 in these states and UTs have been reported from Tamil Nadu, which experienced an outbreak of poliomyelitis in one district.

Surveillance reports from Bombay, with a population density of more than 16,000 persons per sq km and nearly half

TABLE II—Reported Incidence Rate (per 100,000 Population)

State	Year			
	80	85	90	91
Haryana	3.4	3.3	2.0	0.6
Himachal Pradesh	1.9	0.7	0	0
Karnataka	4.6	3.9	0.6	0.2
Kerala	0.8	0.4	0.2	0.1
Maharashtra	3.4	2.4	1.6	0.4
Punjab	7.9	7.9	0.9	0.4
Tamil Nadu	11.9*	1.6	1.3	1.7
Chandigarh	3.6	2.7	0.3	0
Goa	0.5	2.1	0.7	0.4
Pondicherry	57.0	17.0	1.0	0.9
Total	5.7	3.8	1.1	0.6

*Incidence rate in 1981.

the population living under poor sanitary conditions in slums, show a declining trend of poliomyelitis in the city and other qualitative epidemiological changes since 1988. A 60% decline in the cases, first reported in 1988, has been sustained. In 1990, an incidence rate of 4.2 per 100,000 population was recorded as compared to the incidence rate of 14.0 in 1987. The incidence rate in 1991 was 2 per 100,000 population (Fig. 4). The flattening of the seasonal peak was a major epidemiological change noted since 1988 (Fig. 5). Similar trends have been recorded in Madras.

Diagnostic Criteria

Acute paralytic illness due to enteroviruses other than polioviruses, is clinically indistinguishable from poliomyelitis. Guillain-Barre syndrome (GBS) and transverse myelitis are other causes of flaccid paralysis in young children. Traumatic neuritis due to improper intra-muscular injections in the gluteal region is also incorrectly diagnosed as poliomyelitis. Conditions

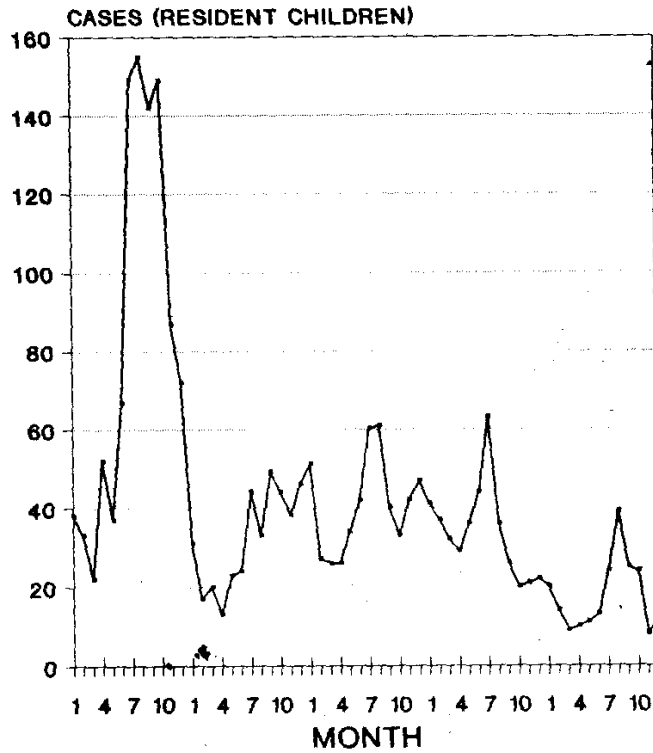
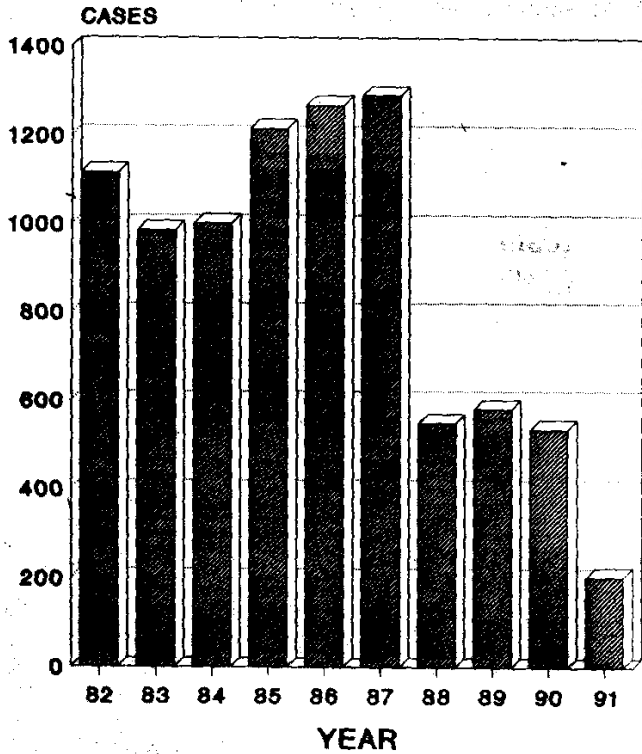


Fig. 4. Poliomyelitis in Bombay.

Source: Enterovirus Research Centre.

Fig. 5. Poliomyelitis in Bombay, 1987 to 1991.

which can lead to paucity of movement of affected limb(s) and can potentially be confused with poliomyelitis are myalgia, trauma, sprains, septic arthritis, osteomyelitis, scurvy and rheumatic fever.

Unless adequate history is taken and the children carefully examined by experienced physicians, diagnosis can be difficult and is further complicated by the young age of the child. Cases with atypical clinical picture are being increasingly reported. These include cases without fever at onset of paralysis, hemiplegia and quadriparesis with initial involvement of all four limbs.

As OPV is not expected to have any impact on non-polio cases, unless such cases are identified and excluded from 'genuine' cases of poliomyelitis, these cases will continue to be considered as vaccine and programme failure. The experience in the Pan American Health Organization (PAHO) Region suggests that the incidence of non-polio acute flaccid paralysis (AFP) is around 1 per 100,000 children under 15 years of age. Of the 2094 cases of AFP in children reported in 1989, 95% were found to be of non-polio etiology.

Additional Measures Proposed for 1992

Many states and a large number of districts have a potential of reaching zero-status. The achievement of the goal can be accelerated if the surveillance data is promptly and effectively used. In addition to the existing measures, the following steps are considered important for the eradication of poliomyelitis:

1. Poliomyelitis should be made a notifiable disease with mandatory and immediate reporting of all acute cases, including cases seen by private practitioners.
2. Extension of the surveillance network to include cases of non-polio acute flaccid paralysis in children.
3. Monitoring of timeliness of follow-up action on reported cases. Promote computerization of surveillance data at state level.
4. Collection of stool samples from all cases of acute flaccid paralysis for virus isolation in selected states.
5. Clinical and epidemiological review by team of atypical cases for confirmation of diagnosis.

NOTES AND NEWS

NATIONAL NEONATOLOGY FORUM— INTERNATIONAL NEONATOLOGY EXCHANGE PROGRAMME

Applications are invited for the posts of Registrar in Neonatology at the Westmead Hospital, Westmead, Australia, under Prof. Elizabeth John for the year 1994. The candidates should have a postgraduation in Pediatrics; be under 40 years of age; have at least one year's experience at Level II neonatal care unit accredited by the NNF; have assured position in Pediatrics in India with a commitment to pursue neonatology; and have adequate knowledge of English.

The above post is that of a salaried occupational trainee who will participate in regular roster involving night duties. The appointment will be initially for a period of one year and can be extended by another year if the performance is satisfactory. The candidates are not permitted to undertake any qualifying Australian examinations while within that country.

Only serious candidates who fulfill the above criteria need to apply. The applications with biodata may please be sent to:

Dr. V.K. Paul,
Secretary-NNF,
Department of Pediatrics,
All India Institute of Medical Sciences,
New Delhi 110 029.