

Guidelines

Investigating outbreak of Polio and AFP case clustering

National Surveillance Cell Islamabad

Introduction

The Polio Eradication Initiative in Pakistan has now entered a stage where preparedness to respond to outbreaks in a timely manner is critical. To properly respond, however, it is important to first determine the duration, extent, and risk factors for viral transmission in the outbreak. These guidelines are developed with the idea to have a uniform, standardized and comprehensive investigation and information. Investigations should be conducted promptly by the federal and provincial surveillance staff together. The final outcome of the investigation is to provide information that will guide planning for intervention. Therefore, recommendations need to be specific and action oriented and include recommendations for strengthening surveillance to document cessation of virus transmission.

Indications of a possible outbreak

Any one of the following should prompt an investigation:

- Cluster of AFP cases in a district (number of AFP cases reported more than twice the expected cases in that month)
- A single isolate of wild poliovirus from a district without known ongoing transmission of poliovirus
- Cluster of wild poliovirus isolates in an area with previously absent or sporadic cases.

Objectives of investigation

1. Confirm the presence of an outbreak, especially in the absence of confirmed cases.
 - a. If no outbreak is suspected after initiation of investigation, the secondary objective is to determine reasons for AFP clustering.
2. Determine the extent and duration of wild poliovirus circulation.
3. Define population characteristics of the cases including demographics, socio-cultural characteristics, and other risk factors.
4. Identify the causes for the outbreak; i.e. what were the factors that allowed and increase in virus transmission or the source for importation of poliovirus.
5. Formulate control measures to stop and prevent the spread of the transmission of virus and take care in future.

Confirmation of an outbreak in the absence of laboratory data:

An increase in the number of reported AFP cases twice the expected number in any given month should raise the suspicion of an unrecognized or early polio outbreak. However, other explanations may be possible such as:

- Overzealous reporting of inappropriate cases not meeting the case definition for AFP.
- Outbreaks of non-polio related paralysis such as toxins or non-polio enteroviruses.
- Inaccurate denominators. That is, if the underlying population is much larger than the number used to calculate the expected AFP rate. This could occur, for example, with a very large sudden migration of people into an area.

An unrecognized outbreak of poliomyelitis should be suspected until it can be ruled out. The first step to confirming an outbreak is to review the clinical details of reported cases to determine if they are clinically consistent with poliomyelitis. Large numbers of Guillane-Barre, especially with atypical features such as fever at onset and persistent weakness, are particularly suspect. Even traumatic neuritis is difficult to distinguish clinically from polio as injections can provoke the development of poliomyelitis if given in the presence of poliovirus. Do not be misled by reports of stool adequacy. "Adequate" means that the specimen arrived in the lab in sufficient quantity, was cool to touch, and in a sealed container. It does not address the issue of how the specimen was stored or collected in the field. Improper collection and storage will result in an "adequate" specimen with dead viruses. Enterovirus detection rates (the proportion of specimens collected growing non-polio enteroviruses) and the recovery of Sabin-like viruses can give evidence of systematic problems with stool collection but tell very little about individual specimens. Discussion with parents of affected children is the most reliable way to estimate the quality of the collection process.

Major components of the investigation include:

1. Review quality of surveillance past and present.
 - a. Review of reported data
 - b. Search for unreported cases
 - c. Review of surveillance methods and practices, including active site visits and specimen collection methods.
2. Review of campaign quality
 - a. Reported monitoring data
 - b. Area survey of coverage
 - c. Vaccination coverage rates of AFP cases from the area in previous years.
3. Examine sociological and cultural characteristics of local population
 - a. Tribal or other social connections to areas of known polio virus transmission.
 - b. Presence of high-risk groups in the area.
 - c. Presence of highly mobile groups in the area, or recent influx of people, especially from areas of known virus circulation.

Before moving to the field:

After establishing that there is a need for field investigation ensure following before going to field:

- Prepare your checklist of activities on the basis of analysis of data and salient findings to interview EDO (H), DSC, SO, EPI staff, Pediatrician and Parents etc.
- Contact the provincial and the district office before leaving in to the field and your provincial and district counterparts accompanying in the field
- Basic data of the district e.g., all the contact numbers of concerned staff, Tehsil level population statistics of the district, detailed maps of the district with clearly marked boundaries, number of health facilities etc.
- Spot Map of AFP, polio and compatible cases of previous year
- Table of Tehsil level distribution of AFP surveillance indicators including zero reporting and active surveillance visits
- List of active surveillance sites
- Copy of Detailed epidemiological reports and case files
- Provincial and district line list (electronic and hard copies)
- Promotional material for AFP Surveillance
- AFP surveillance instruments (detailed EPI investigation form, these guidelines, and other case investigation forms)

Steps of investigation:

1. Data analysis before going to the field.
 - a. Detailed analysis of the district surveillance data including
 - i. All surveillance indicators including process indicators
 - ii. Map of previous confirmed, compatible, and discarded cases
 - iii. Time course for previously reported of cases
 - iv. Final diagnoses of discarded cases to determine proportion that were “good” quality AFP cases.
 - b. Review of laboratory surveillance indicators including time sequence, enterovirus detection rates, etc.
 - c. Review of monitoring reports from previous campaigns.

2. Review of clinical data. For clusters of AFP with no confirmed cases, it must be confirmed whether or not this represents an outbreak.
 - a. Cases should be reviewed for clinical consistency with poliomyelitis. This should begin with a case record review but may require re-examination by the investigation team.
 - b. Detailed epidemiological investigation of each case using the standard form.
 - c. EMG can supplement the clinical data and provide additional evidence for poliomyelitis in the absence of laboratory data. The provincial Team Leader has guidelines for using this test.
 - d. Contact sampling of recent cases that have died or been lost to follow up. Collect specimens from 5 close contacts of the index case (see contact sampling guidelines).
3. Review of stool collection methods. The details of stool collection should be gathered both from EPI staff and the parents of case-children looking for evidence of improper collection, storage, and handling.
4. Search for unreported AFP cases.
 - a. Retrospective review of key reporting sites in the district should be carried out to look for unreported AFP cases. Patient registries must be carefully examined.
 - b. Interviews of local pediatricians, GPs, faith healers, and quacks.
 - c. In addition, during the area coverage survey, parents of other children in the area should be questioned about the presence of children with paralysis.
 - d. Interview with children and teachers of local schools.
5. Discussion with local village leaders. Importation of virus into an area may have occurred by a family other than the one to which the index case belongs with subsequent local spread to the affected child. A detailed description of the ethnic connections of the people of the area, nomadic groups in the area and their migration patterns, and the presence of other high-risk groups such as refugees should be done.

Description of outbreak and data analysis:

As with any epidemiological investigation, the basic description of the outbreak involves describing person, place, and time of the cases. That is who was affected (risk factors), where the cases occurred (extent), and the time course of their occurrence (duration). Analysis should follow this format as well as the final report.

PERSON: Who was affected by the disease?

The characteristics of the human host are related to risk of the disease.

EPID No.	Name	Age	Sex	Religion	Race	Vaccination status	
						Routine	SIA
Summary							

Other:

- Describe behaviors or activities might have placed the affected children at risk.
- Describe are the living conditions of the case-families and the area where they live. E.g. is it primarily rural or urban, farming community, refugee camps, or other.
- Describe the vaccination status of the community.
- Give a very detailed description of the index, or first case, of the outbreak focusing on any potential exposures from outside the area or from areas of known virus transmission. Include a description of travel of cases or case-families. *Remember* that the true first case of the outbreak may not be the one first discovered, it may be a compatible. The case suspected to be the first one of the outbreak should also be fully described.
- Describe nomadic groups or Afghan refugee camps in the area.
- Describe any social connections between cases.

PLACE: Where did the cases arise?

A spot map is required for locating all AFP, compatible and confirmed cases clearly identified by Union Councils (UCs) in the district. Identify the first suspected and confirmed cases. If the outbreak occurred over a long period of time, it is useful to display the information in a series of weekly or monthly maps.

TIME: What was the time course and duration of the outbreak?

It is important to note the trend of the disease incidence over time. To do this, you should include, but distinguish, confirmed cases and compatible cases including those newly discovered as a result of the investigation.

Make a histogram (vertical bar chart) of AFP cases over two-year time by month of onset of the paralysis. Discarded, compatible, and confirmed cases should be identified.

SUMMARY FINDINGS

Primary questions to be answered in the summary:

Has surveillance in the district been of sufficient quality that unrecognized transmission can be reasonably ruled out?

If unrecognized transmission is suspected, how long has it been going on?

Is there an epidemiological linkage with areas of known virus transmission?

Is there evidence that virus has been reintroduced from outside (imported)?

Communicate Findings & Recommendations

Briefing to the EDO (H) and district health staff before leaving the field

Briefing to the Provincial EPI Manager & WHO provincial team leader

Final written report:

Submission of the written report to the NSC with copies to the provincial and district health authorities. Suggested format is:

- Executive summary
- Introduction
 - How was outbreak detected?
 - What is the evidence for an outbreak?
 - Why is this district important to investigate & what is the significance of this particular outbreak?
- Background
 - Baseline surveillance data including quality indicators, expected numbers of cases, etc.
 - Estimates of routine and campaign immunization coverage.
- Methods
 - What was done in the field
- Results
 - New discoveries from field investigation such as unreported cases, areas missed in previous campaigns, etc.
 - Description of person, place, and time of outbreak
 - Supporting data, if no lab data available (EMG, contact specimens)
- Discussion
 - If no lab data are available for confirmation, how strongly is a polio outbreak suspected?
 - Is virus a reintroduction or unrecognized persistent transmission?
 - What is the probable extent of virus circulation?
 - What are the risks of spread posed to neighboring areas.
- Recommendations
 - Is an immunization response needed? How large?

- Recommendations for increasing the sensitivity of surveillance to document cessation of transmission after a response.

Suggested questions, which can be asked from Staff/Parents while in the field

Health Managers (EDO/DSC)

1. Surveillance overview
2. Description of the surveillance performance indicators of 2001 and 2002
3. Zero reporting & active surveillance sites, documentation and their quality
4. Comments on the causes of P1,P3, clustering of AFP cases
5. Comments on our questions on 2001 and 2002 data
6. Campaign profile in 2001 and 2002
 - a. Target population
 - b. No. UCs
 - c. Children/Team/Day
 - d. Team/UC Incharge
 - e. Teams/Zonal Supervisor
 - f. Reported coverage in 2001 and recent campaigns
7. Identify issues
8. Solutions for issues

Health Care Providers

1. Frequent areas people travel to?
2. Areas from where people frequently come?
3. Are you reporting AFP cases to the EDO (H) office
4. What is the response of the EDO office
5. Have you examined any AFP case recently or during this year.
6. Are you receiving the lab results
7. Are you sending zero reporting
8. Is DSC/SO is visiting you for the active surveillance
9. What activities they do during the visit.

Parents/Mother of the AFP Cases

1. Frequent areas visited by family members
2. Frequent areas from where visitors come
3. Frequent areas people travel to?
4. Areas from where people frequently come?
5. Where do you go if sick?
6. Where do you take your elders males?
7. Where do you take your females if sick?
8. Where do you take your boys
9. Where do you take your girls
10. How far is the nearest health facility?
11. Where was this child taken before the notification
12. Why do you go to a particular health facility?
13. Stool collection process
 - a. Briefed by the EPI staff on stool collection
 - b. Stool carrier with the icepacks and kits were given
 - c. When 1st sample was collected and placed
 - d. When was the 2nd stool sample collected
 - e. Who collected back the carrier
14. How do you know about the campaign?
15. How are campaigns held?
16. Any suggestion for improvement of the campaigns