

Standard Operating Procedures for Measles Outbreak Investigations

Revised as of September-2014

[To be read in conjunction with Field Guide: Measles surveillance and Outbreak Investigation, September 2006 edition.]

Weekly Reporting of suspected measles cases

All reporting units (RU) in the acute flaccid paralysis (AFP) surveillance system will submit a weekly report to the district immunization officer (DIO) in form **VPD-H002** for all AFP and suspected measles cases seen during the week. This report will be submitted even if there are no measles or AFP cases seen during the week (NIL report is a must). In addition, the informers will also report suspected measles cases.

Flagging of outbreaks and giving outbreak ID

At the district level the DIO and district surveillance officer (assisted by the SMO) will compile and collate information regarding measles cases from these weekly reports, the AFP Informer network and also from other sources like IDSP etc. in **VPD-D001 (modified)** and a measles outbreak flag will be raised whenever either or both of the following conditions are met:

- ➔ Five or more suspected measles cases are reported from one block / planning area or contiguous blocks / planning area **in a month / consecutive four weeks**
- ➔ One or more suspected measles deaths are reported from one block / planning area **in a month / consecutive four weeks**
 - A. The DIO and DSO will reconcile the count of the suspected measles cases reported from the district during each week.
 - B. An outbreak flag shall be raised as soon as five or more suspected cases are reported from a block or planning area or contiguous area of adjacent blocks, during four consecutive weeks.
 - C. DIO/SMO will allot a measles outbreak identification number prefixed by MOB (**Ex: MOB IND-ST-DIS-YR-XXX**), while collating block wise and week wise reported cases within a month.
 - D. Once an outbreak ID is allotted every outbreak flagged in this manner for the resident cases of that district, a preliminary cases search is initiated irrespective of the modalities of later outbreak investigations.

Sound judgement should be exercised while allotting the outbreak ID and cumulative count of cases from consecutive past weeks are to be considered if they are being reported from the same planning area / block, i.e. contiguity in both time and place is to be considered for flagging an outbreak and allotting an outbreak ID. Sometimes, cases reported in one week/month may be part of an outbreak which has already been flagged and investigated in an earlier week/month. In this instance, even if the case count is

above five, no fresh outbreak ID will be allotted, to avoid counting the same outbreak twice over. However, in such cases, the reasons for not allotting the outbreak ID must be clearly recorded in the VPD-D001 form.

If the cases reported by the reporting system in one district are actually resident cases of another district then the concerned DIO should immediately cross-notify the cases to the DIO of the resident district. The outbreak-ID in this case will be allotted by the DIO of the resident district.

Outbreak investigation

Outbreak Investigations are triggered by outbreak flags as discussed above. For operational purposes measles outbreak investigations are done in two steps:

1) **Preliminary case search:** Includes a desk based data review by the MO and a field visit with interview of community members, HWs and link workers (ASHA/AWW).

And

2) **Detailed Outbreak Investigation:** Is conducted for potentially large outbreaks (minimum 5 suspected measles cases clustered in one contiguous/adjacent areas, rural villages / urban wards) involves a house-to-house case search and line-listing of suspected measles cases with a unique-ID to each suspected case and collection of samples from minimum 5 suspected cases.

Preliminary case search

Objective: To decide if the flagged outbreak is potentially large and clustered in a contiguous area (adjacent rural villages / urban wards) and requires a detailed outbreak investigation.

Method: Preliminary case search has two components - a desk review and field visit.

Desk review: Initially the DIO/DSO/SMO will look at the details of the suspected measles cases reported from one or more blocks/planning area in that week or for consecutive 4 weeks in the past to decide if there is a clustering of minimum 5 cases in place and time. For example they may all be reported from the same village or from multiple adjacent villages / urban wards within the block or contiguous blocks/planning areas. If this desk review reveals that there is no clustering of minimum five cases contiguous in place and time (4 weeks span), then no further outbreak investigations will be conducted.

Field Visits: If the desk review reveals that there is a clustering of minimum five cases, in place and time then the DIO and DSO / SMO along with the BMO and other Health Workers (ANM, ASHA/AWW) of the block will undertake a preliminary field visit to ascertain if there are minimum 5 suspected cases or any deaths in a contiguous area (rural village / urban wards) for minimum 4 weeks in the past , or if the outbreak is spreading or if there are any other unusual features of the outbreak which merit further detailed outbreak investigations.

If the outbreak flag was raised because of a “measles death” then a preliminary field visit must be undertaken irrespective of the clustering or non-clustering of the other cases. This preliminary field visit will be exploratory in nature and there is no need to undertake a formal house-to-house search. The health workers (ANM/AWW/ASHA) will collect the information by visiting and interviewing knowledgeable members of the community, medical practitioners in the area, mothers’ groups, child care centres and schools etc.

Data recording: The results of the preliminary cases search will be recorded in VPDOB004 and key findings mentioned against the outbreak ID. The number of cases found during this preliminary field visits should not be recorded in the outbreak line-list. If the preliminary cases search is not followed up by a further detailed house to house outbreak investigation, then reasons for not doing so must be recorded in VPDOB004.

Detailed outbreak investigation (EPID-code / Unique- ID to all suspected cases)

Objective: To obtain detailed information about all suspected measles cases from potentially large outbreaks being investigated. Generally the data includes age, fever & rash onset, vaccine & vaccination status, alive/dead and samples etc on interview date.

Method: If the preliminary investigation reveals that this is a potentially large outbreak (minimum 5 suspected cases &/or deaths clustered in a contiguous areas of adjacent villages / urban wards, within a month (consecutive 4-weeks), then the DIO should convene/mobilize the District Epidemic Response Team (ERT). The ERT will plan and conduct a detailed outbreak investigation which will have at least three components as below:

1. House to house search in the affected area for all measles cases and deaths
2. Sample collection (blood from minimum 5 suspected measles cases within the appropriate time window (4-28 days of rash onset) and a few urine/throat swab samples for virus isolation if feasible (within 5 days of rash onset).
3. Appropriate case management for all suspected cases including referral services
4. Unique-ID to all suspected cases line-listed in the revised (VPDOB003), outbreak investigation format, prefixed by MSL (**Ex: MSL IND-ST-DIS-YR-XXX**).

The ERT, with assistance from SMO, must ensure that all field workers are adequately trained for the detailed outbreak investigation. Proper logistic arrangements for blood sample collection from minimum five suspected measles cases and vitamin A administration to all suspected measles cases must also be in place.

The ideal time to collect adequate blood sample for measles IgM serology is between 4 and 28 days from date of rash onset. In an outbreak setting every attempt should be made to collect blood/serum samples from minimum 5 cases within this time window at the earliest possible. Samples for virus isolation must be collected as per SOP. [For details please see Field Guide: Measles surveillance and Outbreak Investigation, September 2006 edition.]

Sample coding in the MLRF: All the samples collected should have the same unique specimen EPID-Number that has to be mentioned in the MLRF (revised). This EPID number will be the same unique case-ID allotted to the suspected cases in the revised VPDOB003 format followed by 'B' for Blood specimen, 'U' for Urine specimen and 'T' for Throat swab specimen as pre-requisite, before sending the samples to appropriate laboratories.

(Ex: MSL IND-ST-DIS-YR-XXX- B / U / T)

Data recording: The data regarding the suspected measles cases will be recorded in form revised **VPDOB003**. Data regarding laboratory specimens are collected in the appropriate revised measles laboratory request forms (revised **VPDMLRF**). The summaries of both preliminary and detailed outbreak investigations are to be recorded in form **VPDOB004** and tabulated in the outbreak line-list. In addition a new case line-list will be generated after entering the data recorded in the **VPDOB003** in SIMS every week.

Classification of outbreaks based on IgM serology results:

IgM results of samples collected from an outbreak	Classification of Outbreak
≥ 2 measles positive and <2 rubella positive	Measles
≥ 2 rubella positive and <2 measles positive	Rubella
≥ 2 measles positive and ≥ 2 rubella positive	Mixed
<2 measles positive or <2 rubella positive	Negative for both measles and rubella

A diagrammatic representation of the M-R surveillance system is given below:



