Standard Operating Procedures (SOPs)

For

Investigation of Adverse Events

Following Immunization (AEFI)

Department of Family Welfare
Ministry of Health and Family Welfare

GOVERNMENT OF INDIA

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ABBREVIATIONS

AC (UIP)	Assistant Commissioner Universal Immunization Programme
AEFI	Adverse Event Following Immunization
AE	Adverse Event
AFP	Acute Flaccid Paralysis
ANM	Auxiliary Nurse Midwife
BCG	Bacillus Calmette-Guerin - vaccine for tuberculosis (TB)
CHC	Community Health Center
Commissioner FW	Commissioner Family Welfare
CMO/ CS	Chief Medical Officer/ Civil Surgeon
DCG (I)	Drug Controller General of India
DF	Deep freezer
DIO	District Immunization Officer
DIR	Detailed investigation report
DM&HO	District Medical and Health Officer
DPT	Diphtheria -Pertussis (whole-cell) -Tetanus vaccine
DT	Diphtheria-Tetanus vaccine
EPI	Expanded Programme on Immunization
FDA	Food & Drugs Administration
FIR	First information report
GoI	Government of India
HA	Health Assistant
Hep B	Hepatitis B
Hep C	Hepatitis C
HIV	Human Immunodeficiency Virus

ICD 10	International classification of diseases 10th edition
ILR	Ice lined refrigerator
MO	Medical officer
MO (PHC)	Medical Officer Primary Health Center
MoHFW	Ministry of Health & Family Welfare
NCL	National Control laboratory
NRA	National Regulatory Authority
OPV	Oral Polio Vaccine
PHC	Primary health center
PIR	Preliminary investigation report
RIT	Regional Investigation Team
SC	Sub center
SEPIO	State EPI Officer
SRA	State Regulatory Authority
SOPs	Standard operating procedures
TT	Tetanus Toxoid Vaccine
VAPP	Vaccine-Associated Paralytic Poliomyelitis
VPD	Vaccine Preventable Disease
WHO	World Health Organization
UHC	Urban Health Center
UIP	Universal Immunization Programme
UNICEF	United Nations children's fund
UT	Union territory

GLOSSARY

Adverse event following immunization (AEFI): A medical incident that takes place after an immunization, causes concern and is believed to be caused by the immunization.

> **Serious AEFIs** are defined as those that are life threatening and those that result in hospitalization (or prolonged hospitalization), disability (or have the potential to result in disability) or death.
>
> **Minor AEFI:** A reaction that is not "serious".
>
> **Trigger event:** A medical incident that stimulates a response, usually a case investigation.

Causal association/link: An AEFI which is caused by administration of a particular vaccine. Causally associated events are also temporally associated (i.e. they occur within a limited time after vaccine administration), but events which are temporally associated may not necessariy be causally associated. Causality is usually based on:

- Laboratory findings (e.g. isolation of vaccine virus strain), and/or
- Unique clinical syndrome (e.g. anaphylaxis), and/or
- Epidemiological studies showing an increased incidence in vaccinated groups as compared with unvaccinated groups.

Coincidental adverse event: A medical event that would have occurred whether or not the individual had received an immunization prior to the event.

Cluster: Two or more cases of the same adverse event related in time, the time interval since vaccination, geography or vaccine administered.

Injection safety: The public health practices and policies dealing with various aspects of the correct administration of injections (including waste disposal) aimed at minimizing the risk of transmission of blood-borne pathogens. All injections, irrespective of their purpose, are covered by this term (see definition of safe injection practices).

Immunization safety: The public health practices and policies dealing with the various aspects of the correct administration of vaccines. They focus on minimizing the risk of transmission of disease with the injection and on maximizing the effectiveness of the vaccine. The term encompasses the spectrum of events from proper manufacture to correct administration. The term usually includes both injection safety (programmatic errors compromising injection safety) and vaccine safety (faults in the vaccine itself compromising vaccine safety).

Programme-related AEFI or programme error: A medical incident that was caused by some error in the transportation, storage, handling, or administration of vaccine.

Safe injection practice: Those public health practices and policies which ensure that the process of injection carries the minimum of risk, regardless of the reason for the injection or the product injected. This is the preferred generic term for this subject.

Surveillance: The continuing, systematic collection of health data that is analyzed and disseminated to enable public health decision-making and action to protect the health of populations

Temporal association/link: An event which occurs close in time to vaccine administration. Temporal association is independent of causal association, and an event which is temporally associated with vaccine administration may or may not be shown to be caused by the vaccine.

Vaccine: Biological substance that is administered to individuals to elicit immunity (protection) against a specific disease.

Combination vaccines (e.g. DPT) protect against more than one disease.

Live viral vaccines (e.g. poliomyelitis, measles) contain attenuated (weakened) version of the disease-causing virus. The vaccine virus causes a mild infection, usually with no or minimal symptoms, that creates immunity against that virus.

Vaccine reaction: A side-effect (usually mild) such as soreness at the site of injection following administration of a vaccine. It is usually of short duration (two or three days) with no long-term consequence. It may require mild medication such as paracetamol for a short while to alleviate the symptoms.

STANDARD OPERATING PROCEDURE (SOP) FOR INVESTIGATION OF ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI)

An adverse event following immunization (AEFI) is defined as a medical incident that takes place after an immunization, causes concern, and is believed to be caused by immunization.

Types of AEFI

AEFIs can be classified into 5 types. These are described and defined in Table 1.

Table 1: Classification of Adverse Events Following Immunization

Type of AEFI	Definition	Example
1. Vaccine reaction	An event caused or precipitated by the active component or one of the other components of the vaccine. This is due to the inherent properties of the vaccine.	Anaphylaxis due to measles vaccine
2. Programme Error	An event caused by an error in vaccine preparation, handling or administration.	Bacterial Abscess due to unsterile injection
3. Coincidental	An event that occurs after immunization but is not caused by the vaccine. This is due to a chance association	Pneumonia 4 days after oral polio vaccine administration
4. Injection Reaction	Event from anxiety about, or pain from the injection itself rather than the vaccine	Fainting spell in a teenager after immunization
5. Unknown	Event's cause cannot be determined	

Table 2: Frequency of common minor vaccine reactions

Vaccine	Local reaction (pain, swelling, redness)	Fever	Irritability, malaise and non-specific symptoms
BCG[1]	Common	-	-
Hepatitis B	Adults up to 30% Children up to 5%	1-6%	-
Measles	Up to 10%	Up to 5%	Up to 5%
OPV	None	Less than 1%	Less than 1%[4]
Tetanus	Up to 10%[3]	Up to 10%	Up to 25%
DPT[2]	Up to 50%	Up to 50%	Up to 60%
Treatment	Cold cloth at injection site Paracetamol[5]	Give extra oral fluids Put on cool clothing	
		Tepid sponge or bath Paracetamol[5]	

[1] Local reactogenicity varies from one vaccine product to another, depending on the strain and the number of viable bacilli.

[2]With whole cell pertussis vaccine. Acellular pertussis vaccine rates are lower.

[3]Rate of local reactions likely to increase with booster doses, up to 50 to 85%

[4]Diarrhoea, Headache, and/or muscle pains

[5]Paracetamol dose: up to 15 mg/kg every 4 hours, maximum of 4 doses in 24 hours

Table 3: Summary of Rare Serious AE, onset interval and rate

Vaccine	Reaction	Interval between vaccination and onset	Number of events per million doses
BCG	Suppurative lymphadenitis	2-6 months	100-1000
	BCG Osteitis	1-12 months	1-700
	Disseminated BCG infection	1-12 months	2
Hepatitis B	Anaphylaxis	0-1 hour	1-2
	Guillain-Barre Syndrome (plasma derived)	1-6 weeks	5
Measles[a]	Febrile seizures	5-12 days	333
	Thrombocytopenia (low platelets)	15-35 days	33
	Anaphylaxis	0-1 hour	1-50
OPV	Vaccine-associated paralytic polio	4-30 days	1.4-3.4 [b]
Tetanus	Brachial neuritis	2-28 days	5-10
	Anaphylaxis	0-1 hour	1-6
DPT	Persistent (>3hours) inconsolable screaming	0-24 hours	1,000-60,000
	Seizures	0-3 days	570[c]
	Hypotonic hypo responsive episode (HHE)	0-24 hours	570
	Anaphylaxis/shock	0-1 hour	20
	Encephalopathy	0-3 days	0-1

[a] Approximately 90% of those receiving a second dose are already immune. Reactions do not occur if the child/woman is already immune. This is not the case for anaphylaxis, where this type of reaction is more likely on the second or subsequent doses.

[b] The risk of Vaccine-associated Paralytic Poliomyelitis (VAPP) – is higher after the first dose (1.4 - 3.4 per million doses) compared with the second and third doses (0.17 per million doses).

[c] Seizures are most likely febrile in origin, and rate depends on past history, family history and age, with much lower risk in children under the age of 4 months.

Programme Errors	Possible Adverse event that may occur
Non-sterile injection: • Improperly sterilizing syringe & needle • Contaminated vaccine or diluent • Reuse or reconstituted vaccine at subsequent sessions • wiping the needle with a swab, administering injection over clothes	Infection such as local abscess at site of injection, sepsis, toxic shock syndrome, or death.
Reuse of disposable syringe & needle	Transmission of blood-borne infections such as Hep B, HIV, Hep C
Reconstitution Error/ Wrong vaccine preparation • Reconstitution with incorrect diluent • Drug substituted for vaccine diluent • Inadequate shaking for T series vaccine	 Vaccine ineffective Negative effect of drug, e.g. insulin Death Local abscess
Injection at incorrect site • BCG given subcutaneously • DPT/DT/TT given superficially • Injection into buttocks	 Local reaction or abscess Local reaction or abscess Sciatic nerve damage
Vaccine transportation/storage incorrect	Local reaction from frozen vaccine Vaccine ineffective
Contraindications ignored	Avoidable serious reaction

CLUSTER OF AEFI

Working definition for adverse event cluster

A cluster of AEFIs is defined as two or more cases of the same adverse event related in time, place or vaccine administered. The exact nature of the relationship between the adverse events (e.g., duration of "time", proximity of "place") will differ by the nature of the events and the circumstances within which they occur.

Different types of AEFI clusters are illustrated by the following examples:

- Two (or more) cases of abscesses following vaccinations administered in a single immunization session, whether fixed or outreach. (Duration of time in hours.)
- Two or more cases of deaths following measles vaccination during a mass immunization campaign over several days.
- Two (or more) cases of disseminated BCG infection in a district or province in a month. (Duration of time may be in months and will depend on background rate of risk factors for disseminated BCG infection such as severe immune deficiency states. Similarly the definition of the relationship in place may extend beyond a single health unit or district, depending on population size and the background rate of risk factors.)

Reporting and Investigation of AEFI

At Field Level

- ANMs, HAs and other field level health workers and Medical Officers of Primary Health Centers MO(PHC) should follow-up all children and mothers they vaccinated during the next vaccination session or follow-up field/ home visits (or post and ante-natal visits), to monitor the occurrence of any AEFI.
- During the vaccination session, vaccinators should inform all parents and guardians about the risk of mild AEFIs that could occur and encourage them to report the AEFIs described or any illness that causes concern after the immunization to the respective ANM/ HAs or to the MO (PHC). Parents and guardians should be given instructions to manage fever with sponge baths, paracetamol and extra oral fluids. In cases of fever that remains intractable (with or without a febrile seizure) and for other severe illness, the child should be taken to a treatment facility for urgent treatment.
- In case of a serious AEFI or other AEFI which warrants investigation (see AEFIs to be reported & investigated in the Annex 1), the MO (PHC) should be informed by telephone immediately.
- On receipt of information about any other AEFI, the ANM/HA should report the same in the monthly reporting form as per the existing timeline for monthly reports.

At PHC level

- Once information regarding an AEFI, including any concerns reported by the parents, is received by the MO (PHC), he/she should personally initiate an investigation to verify the facts, for any serious event he will fill the First Information Report (FIR) (Annex 2).
- If the event is a reportable AEFI (see annex 1), FIR should be filled in duplicate and a copy should be sent to the DIO as soon as possible. For serious events (see annex 1) the completed form should be sent within 24 hours of the report. For all other events the report should be sent monthly.

- If the reported AEFI is an event that needs investigation (see annex 1), the MO/PHC should inform the DIO of the case(s) by telephone or fax immediately. The MO (PHC) will keep copy of FIR at PHC level.
- In the event of death following AEFI, the incriminated vial of vaccine and syringe used to administer the vaccine should be collected and sent under cold chain requirement to DIO. If required, a post-mortem investigation should be conducted to assist with the investigation.
- If the event is due to a programmatic error, actions should be taken to correct wrong practices.
- In situations where no reports of AEFIs are received during the month, a "Nil" report should be prepared by writing word ""NIL' across the monthly reporting form and sent to the DIO and the copy kept in a separate file at the PHC.

At Medical Institution Level

- All medical officers treating patients with conditions, as given in the list of reportable AEFIs, (especially among the children admitted to pediatric units and children with injection site abscess to the surgical units) should ascertain their immunization history. If the event is in the list of events to be reported immediately then FIR should be filled in duplicate and sent to the DIO within 24 hours. Rest of the events should be reported in the monthly reporting form.
- If the AEFI is an event that needs investigation (see annex 1), it should be informed to the DIO by telephone or fax immediately and followed up by FIR within 24 hours.
- In the event of death following AEFI, the incriminated vial of vaccine and syringe used to administer the vaccine should be collected and sent under cold chain requirement to DIO. If required, a postmortem investigation should be conducted to assist with the investigation.
- Medical officers should give their fullest cooperation to DIOs and RITs to investigate AEFI by providing clinical information and by carrying out the appropriate laboratory investigation, and facilitating postmortem investigation where needed.

At District (DIO) Level

- On receipt of FIR from hospitals and MO (PHC), for cases that warrant investigation, the DIO should initiate an investigation by filling up PIR and Detailed investigation form (DIR). Remaining reports in the monthly reporting forms will be compiled for future reference and further analysis using the form in Annex 6. The FIR should be sent to AC (UIP) within 24 hrs, the PIR within 7 days and the DIR within 90 days. Original copies of FIR/PIR and DIR should be maintained in a separate file at district level.
- Events that need to be investigated by RIT (see annex) should be intimated to the coordinator of the respective RIT through the SEPIO by telephone or fax. The DIO should assist the RIT to carry out the investigation.

When applicable the AC (UIP) should always be informed of the investigation to take place; he/she will assist in the investigation whenever possible.

- In the event of death following AEFI, the incriminated vial of vaccine and syringe used to administer the vaccine should be collected and sent under cold chain requirement to CRI Kasauli for laboratory investigation.
- On completion of the investigation, the DIO should provide feedback on the outcome of the investigation to the MO (PHC) and HA with appropriate corrective measures.
- DIO should maintain a line listing of all cases of AEFI reported to him/her through FIR/PIR/monthly reports. This line listing according to blocks should be maintained on a monthly basis and a copy should be forwarded to the SEPIO before 20th of following month. Form similar to appendix 7 may be used for this.

Regional Investigation Team (RIT)

- The epidemiologist in each RIT should act as the coordinator and focal point for that team.
- All deaths incriminated to AEFI, AEFIs causing public concern, serious events not specified in the reporting form but warrant detailed investigation, AEFI clusters, where cause is not clear and any other situations when requested by SEPIO should be investigated and a report made available.
- The coordinator of the RIT will receive requests for investigations from SEPIO
- Since RIT members are located in the main referral hospitals in the regions, medical officers and nodal persons who are in charge of AEFI reporting also can in parallel inform RIT through the SEPIO to initiate an early investigation.
- In the event of a death, the RIT should after an onsite investigation make a preliminary report available to the SEPIO within 72 hours. The final report should be ready within a reasonable time (3 months) period after completing necessary tests and detailed investigations. Report should be prepared according to the DIR and any additional details deem necessary can be forward with it.

State Expert Committee on AEFI

Note: These generic terms of reference have been drafted as a single TOR to cover (a) case investigation and implementation issues and (b) expert review or causality assessment of cases. Options for establishment of separate committees for the respective areas of responsibility, a single committee (with or without subgroups for the respective areas) or alternative structure may be decided by States.

I. Terms of reference for *Case Investigation and other Implementation issues*

- Provide technical advice on the implementation of the AEFI system (including training activities, development of training materials in local language if required)

- Review aggregate reports and advise on analysis and reporting of AEFI data advising on development & maintenance of a state database
- Recommend cases for expert review and causality assessment, oversee regular
- Evaluations of the surveillance system and recommendations for further strengthening.
- Investigate serious and unusual AEFI (investigation will be initiated within 24 hours of being reported to the team).

Composition: It is recommended that the committee/team with overall responsibility as described above should comprise as a minimum, the SEPIO, an epidemiologist, a paediatrician/clinician. Additional membership (or participation on an ad hoc basis) of a microbiologist, and 1 or more DIOs should be considered.

II. Terms of reference for *Expert Review and Causality Assessment*

An expert advisory committee/panel will be established to:

- Review individual serious and unusual AEFIs and other AEFIs referred to it by the "Case Investigation and Implementation group" in order to assess a potential causal link between the event and the vaccine. This review will be most effective if done in a comprehensive and standard manner consistent with the international criteria for causality assessment listed below.
- Monitor reported AEFI data for potential signals of previously unrecognized vaccine-related adverse events and make recommendations for further investigation.

WHO criteria for assessment and classification of the likelihood of a causal association between a vaccine (or drug) and an adverse event:

- Very likely/Certain: Clinical event occurring in a plausible time relationship to vaccine administration, and which cannot be explained by concurrent disease or other drugs or chemicals.
- Probable: Clinical event with a reasonable time relationship to vaccine administration, and which is unlikely to be attributed to concurrent disease or other drugs or chemicals.
- Possible: Clinical event with a reasonable time relationship to vaccine administration, but which could also be explained by concurrent disease or other factors.
- Unlikely: Clinical event whose temporal relationship with vaccine administration makes a causal relationship improbable, and in which other factors or underlying disease provide a plausible explanation.
- Unrelated: Clinical event with a temporal relationship which is not compatible with vaccine administration, and which could be explained by underlying disease or other factors.
- Unclassifiable: Clinical event with insufficient information provided to allow for an assessment of the cause.

Criteria (Evidence) for Establishing Causality:

- Biologic plausibility (coherence with existing information)
- Strength of the association
- Consistency of the association
- Specificity of the association
- Temporal sequence

Composition: It is recommended that the committee/panel with above responsibility should have broad expertise, including a paediatrician/neurologist, physician, microbiologist, epidemiologist, the SEPIO, a representative of the State Drug Control Authority. In addition, the DIO and/or other designated officers from concerned districts should be invited to participate in meetings of the committee to review AEFI cases.

The committee will meet at least twice a year to review the serious and unusual AEFI.

Monitoring and feedback

At Community Level

- When ever a parent, public or any other interested group brought any AEFI to the notice of any member of the health team, they should be assured that after an investigation they will be informed about the true facts of the situation.
- In situations were cause of an AEFI is obvious, after in consultation with the MO (PHC), parent/public should be informed the reason for the AEFI and if it is due to a programme error, it blame should be admitted and public should be assured that all possible corrective measures has been taken to prevent an occurrence of such event in the future.

At PHC Level

- At every monthly meetings, MO (PHC) should discussed the types of AEFI reported, results of investigations, action taken and corrective measures adopted with ANM/ HAs and other field health staff.
- Contents of the Quarterly and annual feed back reports received from district and state level should also be a part of feedback to field health staff during these meetings when they core received.

At District (DIO) Level

- DIO should maintain a log to monitor the completeness and timeliness of FIR/PIR/DIR/ Monthly report received from MO (PHC), RIT and from the reporting hospitals come under his/her purview.
- When Monthly report or the FIR/PIR is not received from a particular hospital or from a PHC before the dead

line, reminder should be sent and DIO should make sure that he/her received all reporting forms in reasonable time.

- At the end of every quarter and annum DIO should analyze the data available in FIR/PIR/DIR/ Monthly reports by filling the form in annex 6, a summary report of this should be sent to the MO (PHC)s and to the SEPIO.

At State Level

- SEPIO should maintain a log to monitor the completeness and timeliness of all reporting forms received from DIO.
- When the reports are not received from a particular DIO before the dead line, reminder should be sent and SEPIO should make sure that he/her received all AEFI forms in reasonable time.
- At the end of every quarter and annum SEPIO should analyze the data available in annex 6 & 7 and compile a report, and feed back it to the DIOs, Reporting Hospitals, RIT, Expert committee, to the national level and to the all interested officials and institutions. It's contains should be discussed at least Quarterly at the DIOs meeting.

General Instruction for report writing

- The basic principles of field investigations of infectious diseases should be adopted for the investigation of AEFI, especially if there is clustering of cases. Preliminary diagnosis from first reports must be clinically examined. It is important that non-immunized children – of the same age group in the locality are also investigated and examined to include temporal relationship.
- Particularly if the type of AEFI is unexpected and not easily explainable, views other experts must carefully record all signs and symptoms and timing of these for review.
- A detailed write-up is necessary as the reports are likely to be reviewed by both at the State and National level. Uniformity in the format of the reports facilitates review. The report should start with general information regarding the place where the events occurred. The name of the state, district and PHC / ward should be stated. The following points should be covered in the report:

a. General information and details of investigation:

- When the first symptoms were observed, what they were and who reported the event;
- Who conducted the investigations and how long after the first symptoms were these started:
- How was the investigations conducted (was active search included, were relevant records checked and whether parents of children and other representatives of the community contacted?)
- No. of children immunized and the type of reaction observed. The line lists and summary tables should be attached;
- If any unimmunized children in the area had similar symptoms.

b. Clinical aspects for affected child:

- Site of injection of each vaccine and time given;
- Detailed clinical picture;
- History of previous doses;
- Treatment given;
- Outcome of illness;
- Diagnosis by treating physician and any relevant observation;

c. Operational aspects:

- Batch no. of involved vaccines;
- How are immunization sessions generally provided in the area? Procedure followed on the day of the event (whether the session was on the scheduled day);
- When and from where the vaccines were received. How were the vaccines stored and transported. Batch no. of the vaccines;
- How many syringes and needles were available and procedure followed for the sterilization of equipment;
- Who administered the vaccines and the training they had received;
- Have similar reactions been observed in the past and were not reported;

d. Laboratory investigation:

- The samples will be sent to CDL, Kasauli for testing. (The test reports are not expected to be available at the time of writing the report);
- The samples should be sent under proper cold chain condition. The forwarding letter should explain the circumstances under which the samples were sent. The used vial with the remaining vaccine as well as unused vials of the same batch from the same storage point should be sent.
- Any other samples sent for testing; name of the laboratory;

e. Autopsy;

- If a post-mortem was conducted relevant findings may be included.

Since the purpose of investigations is to identify the underlying cause of AEFI and suggest corrective measures, operational aspects of the program must be carefully reviewed and noted in the written report. Also please mention following at the end of the report.

f. Follow – up:

- State briefly follow – up measures taken;

g. Suggestions and recommendations:

- What was the likely cause of the adverse event;
- Further steps would you recommend to minimize the risks in the future:

APPENDIX 1

Events to be reported and investigated immediately

- Any death, hospitalization, disability or other serious and unusual events that are thought by health workers or the public to be related to immunization
- Anaphylaxis
- Toxic shock syndrome (TSS)
- Anaphylactoid reaction (acute hypersensitivity reaction)
- Acute flaccid paralysis*
- Encephalopathy
- Sepsis
- Any event where vaccine quality is suspected
- Any cluster of events

*Any case of AFP will be reported through the current system for AFP surveillance and reporting

Events, which are to be reported in the monthly reporting forms.

- Persistent (more than 3 hours) inconsolable screaming,
- Hypotonic hypo-responsive episode (HHE),
- Severe local reaction,
- Injection site abscess (bacterial),
- Seizures including febrile seizures,
- Brachial neuritis,
- Thrombocytopenia,
- Lymphadenitis,
- Disseminated BCG infection,
- Osteitis / Osteomyelitis.

Common minor reactions usually resolve without any serious consequences.

However, if there is a change in the nature, severity or the frequency with which these reactions occur, health staff should report this to their supervisor.

Also, if any of these events occur in cluster or cause a major public concern then they should be reported and investigated immediately following the same guidelines as for the serious AEFIs.

APPENDIX 2 | FIRST INFORMATION REPORT FORM

First Information Report

Adverse Events Following Immunization

(To be reported within 48 hrs to the GoI)

State	District
Block	Date of report
Name	
Age (DOB)	Sex: Male/ Female
Mother's / Father's Name	
Complete Address of the case	
Date & time of vaccination	Date & time of onset of symptoms
Complete address of place of vaccination	
Vaccines given	
Batch Number & Expiry date of each vaccine	
Type of reaction	
Date of Death	
Any other comment[1]	

Name of person filling the report

Signature and Designation

On completion the form should be sent along with the monthly surveillance report of AEFI to Assistant Commissioner (UIP), CH division of Govt. of India (Fax No. 011-23062728 or email: aefi@rediffmail.com

1 Preliminary report will follow in a week and detailed investigation report will be submitted in three months.

APPENDIX 3 | PRELIMINARY INVESTIGATION REPORT FORM

PRELIMINARY INVESTIGATION REPORT

Adverse Events Following Immunization

(To be reported within 7 DAYS to the GoI)

State	District
Block	Date of report
Name:	
Age (DOB):	Sex: Male/ Female
Mother's / Father's Name	
Complete Address of the case	
Date & time of vaccination	Date & time of onset of symptoms
Vaccines given	
Complete address of place of vaccination	
Batch Number & Expiry date of each vaccine	
Type of reaction	
Date of Death	
Probable cause of death:	
Probable cause of the AE: Programme error/ Vaccine reaction/ Coincidental/ Unknown	
Further action planned: Yes/ No (if Yes Details)	
Any other comment	

Name of person filling the report Signature and Designation

On completion the form should be sent along with the monthly surveillance report of AEFI to Assistant Commissioner (UIP), CH division of Govt. of India (Fax No. 011-23062728 or email: aefi@rediffmail.com

APPENDIX 4 | DETAILED INVESTIGATION REPORT FORM

DETAILED INVESTIGATION REPORT

Adverse Events Following Immunization (AEFI)

(To be reported within three months)

Adverse event following Immunization or Death after Immunization

Date of Investigation:

Case ID No.: IND (AEFI)/_ _ /_ _ _ /_ _ / _ _ _ Use same coding as done for AFP cases

1.	Name of child affected (In Block Letters)	
2	Name of Parents	Father's name Mother's name
3	Age and Sex	— —/— —/ — — Date of Birth Male/ Female yrs mo days (if know)
4	Full detailed address	
5	Place of immunization	Health facility/ Out reach session site/Field camp/ Hospital/ Maternity home/ Private clinic/ any other place
6	a. Date and time of immunization	
	b. Location of immunization session (Full address)	
7	No. of children immunized at the session	BCG___ DPT1___ DPT2___ DPT3___ DPT B___ OPV1___ OPV2___ OPV3___ OPV B___ HEPB 1___ HEPB 2___ HEPB 3___ MEASLES___ DT___ TT1___ TT2___ TT B___ VIT A___ OTHERS___
8	Date and time of onset of AEFI Date of Initial report	

9	Type of AEFI	
10	Was the patient admitted to hospital	Yes/ No/ Unknown
11	If Yes, date & Time of admission	
	Name of Hospital	
	Ward no	
	Centralized admission number	
	Outcome	Recovered/ still in hospital/ death/ unknown/ Residual problem
12	SYMPTOMS AND SIGNS	
	a. Time of onset	
	b. Sign of shock present/absent	
	c. Temperature	
	d. Pulse	
	e. Respiration	
	f. Convulsion	
	g. Vomiting	
	h. Diarrhoea	
	i. Altered sensorium	
	j. Rash	
	k. Any other symptoms & sign (pl specify)	
	l. Progress of symptoms and signs with brief history & chain of events (Please attach additional sheet if required or patient records if available)	

	m. Mention whether above sign and symptoms are seen by investigating officer or whether above sign and symptoms are noted from hospital record	
13	Treatment given (attach copy of case sheet, if available)	
14	GROWTH & DEVELOPMENT/PAST/ FAMILY HISTORY (please fill as relevant to case)	
	a. Type of Delivery	Normal delivery/ LSCS/ Assisted birth
	b. Gestation	Full term/Premature/Post dated
	c. Complications during birth	
	d. Birth weight (if possible)	
	e. Present Weight (if possible)	
	f. Present length/ height (if possible)	
	g. Present head circumference (if possible)	
	h. Developmental milestones	Gross motor
		Fine Motor
		Language
		Adaptive & Social
	i. Past illness like allergy, asthma, convulsion etc	
	j. Any previous history of similar event after immunization	Yes/ No/ Unknown
	k. Family history - history of epilepsy, allergy, asthma etc in the family	

	l. Any history of similar event in siblings	Yes/ No/ Unknown
	m. Was the child on any concurrent medication for any illness	Yes/ No/ Unknown If yes: Indication & Dosage
15	INFORMATION ON IMMUNIZATION (IN CASE PROGRAMME ERROR SUSPECTED)	
	a. Name of worker who administered vaccine	
	b. Designation	
	c. Length of service	
	d. Experience	
	e. When did worker receive the last training in immunization	
	f. Name of Health Assistant (Supervisor)	
	g. Designation	
	h. Length of service	
	i. Experience	
	j. When did Health Assistant (Supervisor) receive the last training in immunization	
16	k. Total number of mother and children immunized. Attached detailed list giving name/age/sex/vaccines given	
	l. Any history of similar event reported (among those vaccinated)	a. At same clinic: Yes/ No/ Unknown b. Using same vaccine type at previous clinic sessions: Yes/ No/ Unknown
	If Yes	Specify event Number Place

	m. Any history of similar event reported (among unimmunized)	a. At same clinic session: Yes/ No/ Unknown b. In the field: Yes/ No/ Unknown
	If Yes	Specify event Number Place
	n. At what stage was the index child immunized	a. Within the first few doses of the vial b. Within the last few doses of the vial c. Within the first vaccinations of the clinic session d. Within the last vaccinations of the clinic session e. Unknown
	o. Vaccination technique (observe the relevant vaccinator)	Reconstitution: Satisfactory/ Unsatisfactory/ Not observed
		Drawing of vaccine: Satisfactory/ Unsatisfactory/ Not observed
		Injection technique: Satisfactory/ Unsatisfactory/ Not observed
17	DETAILS OF VACCINE GIVEN PRIOR TO AEFI	
	a. Date of receipt of vaccine of implicated batch by	MoH/ State Regional Store District PHC/CHC/ Urban Health Center Sub center/ Out reach session site
	b. Status of maintenance of cold chain at	State
		Regional store
		District Head Quarter
		PHC/ Urban health post
		Subcenter
		Session Site
	c. Is there a suspicion of breach of cold chain as per records? (If so, when & where?)	

	d. Is there a suspicion of freezing of 'T' series vaccines? (If so, when & where?)	
	e. Where are the vaccines and diluents stored	In the PHC/CHC: In the Subcenter: In the Clinic: Others (specify)
	f. How are the vaccines transported	In a vaccine flask or vaccine carrier/ In a cold box/ Others (specify)
	g. Is the packing of vaccine	Satisfactory/ Unsatisfactory/ Not observed
	h. Maintenance of cold chain for unopened/ opened vials during immunization session	Satisfactory/ Unsatisfactory/ Not observed
	i. Status of the vaccine storage in the refrigerator/s	Deep freezer: Satisfactory/ Unsatisfactory/ Not observed
		Status of the VVM: Satisfactory/ Unsatisfactory/ Not observed
		Main compartment of refrigerator: Satisfactory/ Unsatisfactory/ Not observed
	j. Are any other drugs or food stored in the refrigerator/s	Yes/ No/ Unknown If yes, specify
	k. If vaccine given by private practitioner, then	Source of vaccine: Govt supply/ procured from manufac turer/ pharmacy
		Status of cold chain at clinic: Satisfactory/ Unsatisfactory/ Not observed
		Status of cold chain at procurement site: Satisfactory/ Unsatisfactory/ Not observed
	IF VACCINE GIVEN DURING FIELD CAMP/ OUTREACH SESSION	
	l. Time of collection of vaccine from Health Post/ PHC for field camp immunization	

	m. Time of receipt of vaccine at field camp site (immunization session site)	
	n. Maintenance of cold chain during transit from Health Post/ PHC to field camp site	
	o. Name of person collecting vaccine from fixed centre to field camp site	
	p. Vaccines used	BCG/ DPT/ OPV/ Measles/ Hepatitis/ Vit A/ others (specify)
	q. If reconstituted, what diluent was used	
	r. Which type of syringe was used for reconstitution?	Reusable/ Disposable/ AD
	s. Practice of reconstitution	Same syringe used for multiple vials of same vaccine/ Same syringe used for reconstituting different vaccines/ Separate syringe for each vial/ Separate syringe for each vaccine
	t. Is the needle left in reconstituted vaccine vial	Yes/ No/ Not observed
	u. Whether label of vial intact i) Batch No ii) Expiry date iii) Manufactured by	
	v. Date and time when vial opened	
	w. Date of vaccine sent for testing	
	x. Result of sample of vaccine sent for testing	
	y. Is the vaccine collected by FDA or SRA	
	i) Name of the officer	
	ii) Date when vaccine sent for testing	

	iii) Place where vaccine sent for testing	
	iv) Result of vaccine sent for testing	
18	STERLISATION OF SYRINGE AND NEEDLE	
	a. Types of syringes used to vaccinate the child.	Reusable/ Disposable/ AD
	b. Method of sterilization if reusable syringes used	
	c. Name and Designation of person who was responsible for autoclaving/ boiling for 20 minutes	
	d. Date and time of autoclaving/ boiling started	
	e. Date and time of autoclaving/ boiling completed	
	f. Sterilization satisfaction as per records of Signolac strip register	
	g. No of syringes & needles autoclaved	
	h. No of syringes & needles used for the session.	
19	INVESTIGATIONS DONE	
	a. Whether any blood tests were done	
	b. If yes, results of blood tests	
	c. Whether CSF was examined	
	d. If yes, result of CSF tests	

	e. Any other investigation done	
	f. Results of other investigations	
20	IN CASE OF DEATH	
	a. Any post mortem done	
	b. If yes, were was it done	
	c. Post mortem findings in brief (Please attach the post mortem report)	
21	Probable cause of death/ Residual problem	
22	Probable cause of AE	Programme error: Injection Sterility/ Vaccine reconstitution/ Administration technique/ Vaccine storage/ Vaccine transportation/ Unknown/ Others (specify)_____
		Vaccine reaction: Vaccine lot problem/ Known vaccine reaction at expected rate/ others
		Coincidental: Similar events in unimmunized/ others
		Unknown
23	Remarks including recommendation (or any addition information / action taken or to be taken)	

Name/s of the person doing investigation

Signature and Designation

Please attach photocopies of relevant documents such as case records, inpatient records, lab reports etc

If certain information is not available at the time of filling report to don't delay in sending the report, please send the form within 90 days. You can forward additional information whenever it becomes available

On completion the form should be sent along with the monthly surveillance report of AEFI to Assistant Commissioner (UIP), CH division of Govt. of India (Fax No. 011-23062728 or email: aefi@rediffmail.com

APPENDIX 5 CASE DEFINITIONS AND TREATMENTS FOR AEFI

Adverse event	Case definition	Treatment	Vaccines
Acute flaccid paralysis (Vaccine associated paralytic poliomyelitis)	Acute onset of flaccid paralysis within 4 to 30 days of receipt of oral poliovirus vaccine (OPV), or within 4 to 75 days after contact with a vaccine recipient **and** neurological deficits remaining 60 days after onset, or death.	No specific treatment available; supportive care.	OPV
Anaphylactoid reaction (acute hypersensitivity reaction)	Exaggerated acute allergic reaction, occurring within 2 hours after immunization, characterized by one or more of the following: • wheezing and shortness of breath due to bronchospasm • laryngospasm/laryngeal oedema • One or more skin manifestations, e.g. hives, facial oedema, or generalized oedema. Less severe allergic reactions do not need to be reported.	Self-limiting Anti-histamines may be Useful	All
Anaphylaxis	Severe immediate (within 1 hour) allergic reaction leading to circulatory failure with or without bronchospasm and/or laryngospasm/laryngeal oedema.	Adrenaline injection (See Appendix 5)	All
Disseminated BCG infections	Widespread infection occurring within 1 to 12 months after BCG vaccination and confirmed by isolation of *Mycobacterium bovis* BCG strain. Usually in immuno-compromised individuals.	Should be treated with anti-tuberculous regimens including isoniazid and rifampicin.	BCG
Encephalopathy	Acute onset of major illness characterized by any two of the following three conditions: • seizures • severe alteration in level of consciousness lasting for one day or more	No specific treatment available; supportive care.	Measles, Pertussis

	• Distinct change in behaviour lasting one day or more. Needs to occur within 48 hours of DPT vaccine or from 7 to 12 days after measles vaccine, to be related to immunization.		
Fever	The fever can be classified (based on rectal temperature) as Mild fever: 100.4 ^{O}F to 102 ^{O}F (38 to 38.9^{o}C), High fever: 102 ^{O}F to 104.7 ^{O}F (39 to 40.4^{o}C) and Extreme fever: 104.7 ^{O}F or higher (>40.5^{o}C).	Symptomatic; paracetamol. Give extra oral fluids. Tepid sponge or bath. In cases of high and extreme fever, other signs and symptoms should be sought and reported/ managed as appropriate.	All
Hypotonic, hypo responsive episode (HHE or shock-collapse)	Event of sudden onset occurring within 48 [usually less than 12] hours of vaccination and lasting from one minute to several hours, in children younger than 10 years of age. **All** of the following must be present: · limpness (hypotonic) · reduced responsiveness (hypo responsive) · pallor or cyanosis – or failure to observe/ recall	The episode is transient and self-limiting, and does not require specific treatment. It is **not** a contraindication to further doses of the vaccine.	Mainly DPT, rarely others
Injection site abscess	Fluctuant or draining fluid-filled lesion at the site of injection. Bacterial if evidence of infection (e.g. purulent, inflammatory signs, fever, culture), Sterile abscess if no evidence of bacterial Infection on culture. Sterile abscesses are usually due to the inherent properties of the vaccine.	Incise and drain; Antibiotics if bacterial.	All injectable vaccines

Lymphadenitis (includes suppurative lymphadenitis)	Either at least one lymph nodes enlarged to >1.5 cm in size (one adult finger width) or a draining sinus over a lymph node. Almost exclusively caused by BCG and then occurring within 2 to 6 months after receipt of BCG vaccine, on the same side as inoculation (mostly axillary).	Heals spontaneously (over months) and best not to treat unless lesion is sticking to skin. If so, or already draining, surgical drainage and local instillation of anti-tuberculous drug. Systemic treatment with anti-tuberculous drugs is ineffective	BCG
Osteitis/ Osteomyelitis	Inflammation of the bone with isolation of Mycobacterium bovis BCG strain.	Should be treated with anti-tuberculous regimens including isoniazid and rifampicin.	BCG
Persistent inconsolable screaming	Inconsolable continuous crying lasting 3 hours or longer accompanied by high-pitched screaming.	Settles within a day or so; analgesics may help.	DPT, Pertussis
Seizures	Occurrence of generalized convulsions that are **not** accompanied by focal neurological signs or symptoms. **Febrile seizures**: if temperature elevated >100.4 ^{O}F or 38 ^{O}C (rectal) Afebrile seizures: if temperature is normal	Self-limiting; supportive care; paracetamol and cooling if febrile; rarely anticonvulsants.	All, especially Pertussis, Measles
Sepsis	Acute onset of severe generalized illness due to bacterial infection and confirmed (if possible) by positive blood culture. Needs to be reported as possible indicator of programme error.	Critical to recognize and treat early. Urgent transfer to hospital for intravenous antibiotics and fluids.	All injectable vaccines
Severe local reaction	Redness and/or swelling centred at the site of injection and one or more of the following: • swelling beyond the nearest joint	Settles spontaneously within a few days to a week.	All injectable vaccines

	• pain, redness, and swelling of more than 3 days duration • Requires hospitalization. Local reactions of lesser intensity occur commonly and are trivial and do not need to be reported.	Symptomatic treatment with analgesics. Antibiotics are inappropriate.	
Toxic shock syndrome (TSS)	Abrupt onset of fever, vomiting and watery diarrhoea within a few hours of immunization. Often leading to death within 24 to 48 hours. Needs to be reported as possible indicator of programme error.	Critical to recognize and treat early. Urgent transfer to hospital for intravenous antibiotics and fluids.	All injectable vaccines

APPENDIX 6 | DISTRICT REPORTING FORMAT FOR AEFI

State _____ District_____Month_____ Year_____

Please indicate the no. of events in the relevant cage

Adverse events	BCG	OPV	DPT	Measles	DT	TT	JE	MR	Hepatite B	others
1. Local adverse events										
Injection site abscess										
BCG lymphadenitis										
Severe local reactions										
2. Central Nervous System adverse events										
Vaccine associated paralytic poliomyelitis (within 4-30 days after immunization)										
Guillain-Barre syndrome (within 30 days after immunization)										
Encephalopathy (within 72 hours after immunization)										
Encephalitis (within 1-4 weeks after immunization)										
Meningitis (within 1-4 weeks after immunization)										
Seizures (febrile/afebrile)										
3. Others										
Allergic reaction										
Anaphylactic shock										
Arthralgia										
High fever (>39 deg. C)										
Persistent screaming										
Osteitis/ Osteomyelitis (within 8-16 months after immunization)										
Toxic shock syndrome (within few hours after immunization)										
Others (please specify)										

What are the possible explanations for the above-mentioned AEFI?

Actions taken

Were there any hospitalisations or deaths among the reported AEFI? Please explain

Did any cluster of events come to your notice during the month

If Yes, Please provide details

Name _____ Designation _____Date _____ Signature_____

APPENDIX 7 | LINELISTING FORMAT FOR AEFI TO BE USED AT STATE LEVEL

This is to be used to identify trends and clusters of AEFI

State_____ Year_____

Name/ID	District	Date of Birth (dd/mm/yyyy)	Date of immunization (dd/mm/yyyy)	Reaction type (code)	Outcome (Recovered/ Died)	Suspect Vaccine (name & dose eg DPT-2)	Batch number	Onset time (hours,days, weeks)	Date of report (dd/mm/yyyy)	Investigated (if yes, date)	Conclusion*

* 1 = injection site abscess; 2 = BCG lymphadenopathy; 3 = severe local reaction; 4 = acute flaccid paralysis;

5= encephalopathy/encephalitis/meningitis; 6 =seizure; 7=acute anaphylaxis; 8 = fever; 9 = toxic shock;

10 = other (enter as many as required)

Note : Similar form according to blocks should be used by DIO to maintain line listing of AEFI cases at District level.

APPENDIX 8 AEFI LABORATORY REQUEST FORM

This section should accompany specimens to the laboratory and be completed by the **sender** of the specimens

State:	IND (AEFI)/_ _ /_ _ _ /_ _ / _ _ _		
Patient's Full Name	Age(DOB):		Sex
Male Female			
Complete Address of patient			
Date of onset of symptoms of AEFI	Day	Month	Year
Date of collection of specimen	Day	Month	Year
Date specimen sent	Day	Month	Year
Precise description of the samples (Batch no / Expiry date/ manufacturer/ Quantity sent)			
How were specimens shipped (e.g. with dry ice, ice-pack)			
Tests requested			
Preliminary clinical diagnosis (working hypotheses)			
Name & complete address of person to whom laboratory results should be sent			
Telephone number	Fax number		

This section should be completed by a virologist at the receiving laboratory and, when complete, sent to the EPI manager and the sender of the specimens.

Date of receipt of specimen at laboratory	Day	Month	Year
Name of person receiving specimen(s) at laboratory			
Condition of specimen upon receipt at lab (circle response)	good	poor	unknown
Results:			
Comments by pathologist, virologist or bacteriologist:			
Date specimen results sent from this lab (if applicable)	Day	Month	Year
Name of laboratory professional			
Signature			
Telephone number	Fax number		

Vaccine samples should be sent for testing to the National control laboratory, Kasauli. The samples have to be sent in cold chain (2-8 degree Celsius) and by fastest means (by courier or by messenger). The forwarding note should clearly state the circumstances under which the sample(s) is/are sent. It is important that the used vial with remaining vaccine and diluent (if applicable and available) is sent for testing along with unused vials of same batch. 50 ml of each vaccine has to be sent (e.g. 25 vials for vaccine coming in 2ml vials and 10 for those coming in 5 ml vials)

It should be ensured that the label of the vaccine is intact and the used vial is packed in polythene and kept upright in the vaccine carrier to avoid contamination and leakage