Health Protection Agency
Ministry of Health

AEFI Management Guide

Maldives- All levels

Measles Rubella Elimination Campaign

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Compiled by the

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Ministry of Health

Observation and management of AEFI

Introduction

An Adverse Event Following Immunization (AEFI) is an untoward medical occurance which follows immunization and which does not necessarily have a causal relationship with the usage of vaccine.

MR vaccine is a safe vaccine. After this vaccine, children may feel pain on the site of injection, mild fever and measles like rash on the body which are milder in nature.

During campaign, larger numbers of children are vaccinated within a short period of time hence the effects of vaccines may be more common during campaign. Anaphylatic shock (severe type of AEFI) may occur in rare case.

Types of AEFI

Types	Definition
Vaccine Reaction	Event caused or precipitated by a vaccine due to one or more of the inherent properties of the vaccine product. (Anaphylaxis) .
Program Error	Event caused by an error in vaccine preparation, handling or administration. For example: collection of pus at injection site, Toxic Shock Syndrome
Co-incidental	Event that happens after immunization but not caused by the vaccine- a chance association. Example: pneumonia after MR vaccine
Injection Reaction	Event from anxiety about, or pain from, the injection itself rather than vaccine. For example: fainting after vaccination.
Unknown	The event's cause cannot be determined.

Identification of AEFI and its treatment:
Severe type of AEFI

Anaphylaxis

Anaphylaxis is rare but severe type of AEFI. Individual may even die if this condition is not distinguished and manage early. Occurrence of an adverse event after immunization does not necessarily imply that the vaccine is the cause of the adverse event. This type of events may appear 1 hour after vaccination (usually: 5-30 min)

Difference between fainting (Vasovagal syncope) and Anaphylaxis

Some children faint due to their anxiety towards injection. Fainting due this kind of anxiety does not require any special treatment but in case of anaphylaxis, victim may die if not treated immediately.

It is very essential for health workers to differentiate between fainting and anaphylaxis. Injection Adrenaline must be administered immediately in case of anaphylaxis while fainting can be managed in a simple ways by providing rest to patient in supine position, maintaining peaceful environment.

Basis for differentiating fainting (vasovagal syncope) and anaphylaxis

Sign/symptoms	Faint	Anaphylaxis
Onset	This occurs immediately after seeing an injection, while injecting or immediately after injecting.	Seen within 1 hour of injection (usually 5-30 minutes)
Skin symptoms	Skin becomes pale, cold and clammy (sweating)	Redness and swelling around injection site, swelling of face and eyes, appearance of rashes in the body and itching.
Respiratory symptoms	Normal or deep long breathing pattern	Difficulty in breathing due ot obstruction of airways, wheezing sound produced while breathing
Symptoms of circulatory system	Decrease heart rate, transient hypotension (for short duration)	Increased heart rate, hypotension
Digestive Symptoms	Nausea, vomiting	Crampy abdominal pain, stomachache, nausea, vomting

Sign/symptoms	Faint	Anaphylaxis
Neurological symptoms	Fainting for short period, comes to normal state after providing rest in supine position	Complete fainting, no reaction after providing rest in supine position

a. Anaphylaxis Management

Immediate treatment and management must be carried out after identification of anaphylaxis and it should be referred to nearest AEFI management centre.

Immediate treatment and management of AEFI at the Vaccination Site:

- Call for help
- Lie victim supine with legs raised or if unconscious and breathing place on one side (recovery position) or maybe propped up if breathing difficulty is present.
- Injection adrenaline 1:1000 dilution must be given immediately by deep intramuscular route to middle third of anterolateral thighs. If symptoms not improved doses may be repeated after 5 minute interval up to a maximum of 3 doses.
- Check respiration rate and pulse rate and listen for heart rate. If available administer high flow and transport to nearest AEFI management center

In case of anaphylaxis, immediately call for help, make the patient lie on side, clear airway, give oxygen, Injection adreanline intramuscular 0.3 ml for 6 - 12 years, 0.5 ml for above 12 years, and transfer to health centre

- If respiration is stopped, heart rate/sound is absent, immediately start CPR (Cardio-Pulmonary Resuscitation) on the following ways:

1. communicate

- call the physician of AEFI management team and inform about patient condition.
- start CPR and apply technique to make heart work, ask for 1 assistance if available.

2. Provide CPR

- place palm of hand over the other and fingers of one hand, fingers interlocked with fingers of other hand.
- place palm of both hands over the centre of chest of patient and provide forced compression and release so, that chest goes 2 inch depth.
- the compression should be provided for 30 compression at the rate of 3 compressoin 2 seconds.
- after that provide 2 forced mouth to mouth breathe. While giving mouth to mouth breathe the chest of patient should be raise.

Knowledge and skills of CPR for vaccinators must be included in the vaccinator training and demonstration and practice must be done during the training.

3. To ensure respiration

- hold and slightly press the head of the patient backward with palm of right hand and slowly raise the chin with the left hand so as to maintain the respiratory tract in a straight line.
- listen and check whether the patient is breathing or not.

4. Remove any obstruction for CPR

- remove any secretions, cough, teeth or any other matter present in the respiratory tract of patient.
- close the both nostrils of the patient by pinching it with one hand
- place your mouth in patient's mouth holding the chin of the patient and give 2 slow repsiration.
- while giving CPR give 1 respiration in every 1 second and in every respiration check whether the chest of patient is raised or not.

5. Repeat phases of force respiration

- repeat compression and respiration for atleast 5 times or until the patient establish his/her own breathing pattern.

Treatment and management of anaphylaxis at Health Facilities /Hospital setting

- Asses Airway, Breathing, Circulation, Disability and Exposure (ABCDE)
- Position patient supine with legs elevated above level of head (if unconscious and breathing lie patient on side)
- Administer Injection Adrenaline 0.3ml for children 6- 12 years and 0.5ml for above 12 years through deep intramuscular routein anterolateral thigh (if not given at the site)
- High flow oxygen
- Administer IV fluids (normal saline or Ringer lactate) to maintain blood pressure at bolus dose of 20ml/kg in children and in adults 500-1000ml
- Administer Injection Pheniramine Maleate (Inj Avil 45.5/2ml), 1ml I/M or slow IV for children 6-12 years of age and 1-2ml IM or slow IV to adults
- Administer Injection Hydrocortisone, 100mg I/M or slow IV to children 6-12 years of age and 200 mg I/M or slow IV to adults.
- Monitor and maintain vitals: Heart rate, respiratory rate, blood pressure, pulse oximetry and put on ECG monitor if available.

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The normal respiratory rate varies by age (approximate):

<1 year 30-40 min
>1 to 2 years 26-34 min
>2 to 5 years 24-30 min
>5 to 12 years 20-24 min
>12 years 12-20 min

Normal heart rate by age (approximate)

Newborn to 3 months 140 min
>3 months to 2 years 130 min
>2 to 10 years 80 min
>10 years 75 min
Adults 60-100 min

Lower limit of blood pressure for children (approximate):

0 to1 month 50-60 mmHg
>1 to12 months 70 mmHg
>1 to 10 years 70 + (age in years x 2) mmHg
>10 years 90 mmHg

Doses:

Adrenalin IM doses of 1: 1000 (repeat after 5 minutes if not better)

- Adult 0.5ml
- Child more than 12 years 0.5ml
- Child 6-12 years 0.3ml
- Child 1- 6 years 0.15ml
- Child less than 1 year 0.05-0.1ml

(For infants less than 1 year of age prefer adrenalin dose to be given according to weight as: 0.01ml/kg)

CAUTION: IV boluses of adrenaline are NOT recommended without specialised training as they may increase the risk of cardiac arrhythmia

IV fluid challenge

- Adult 500-1000ml Normal Saline/Ringer lactate
- Child 20ml/kg

Pheniramine Maleate (Inj Avil 45.5mg/2ml) (IM or slow IV)

- Adult or child more than 12 years 1-2ml
- Child 6-12 years 1ml

Hydrocortisone (IM or slow IV)

- Adult or child more than 12 years 200mg
- Child 6-12 years 100mg
- Child 6 months to 6 years 50mg
- Child less than 6 months 25mg

(A 2-day course of oral steroids (e.g. oral prednisolone 1 mg/kg, maximum 50 mg daily) could be given at discharge to reduce the risk of symptom recurrence after a severe reaction)

Toxic Shock Syndrome

Toxic Shock Syndrome occurs if vaccine/syringe-needles are contaminated by Staphylococcus Aureus during the process of vaccination. During this, sudden high fever few hours after vaccine, nausea, diarrhea leading to severe type of illness, which may lead to death if not treated early.

For children with Toxic Shock Syndrome IV drip; Normal Saline/ Ringer lactate should be started and Broad Spectrum Antibiotic such as Injection Cefotaxime must be used to manage AEFI and referral must be done to AEFI management centre.

Other severe type of AEFI

- Health workers and community claims that the mortality and morbidity is due to vaccination
- High fever (102ºC or greater than 102ºC)
- Unconsciousness, other severe effects on nervous system

- Presence of Encephalitis/ Encephalopathy within 14 days of vaccination
- Larger number of minor AEFI seen in in a particular area

Minor type of AEFI

Minor type of AEFI includes:

- Pain
- Swelling
- Redness at injection site
- Mild fever
- Rash on body.

This kind of AEFI can be managed based on the symptoms at local HF level. For example: providing Paracetamol for fever.

Preparation for treatment at the referral AEFI management centre

- HPA should prepare a list of all government, non-government and private hospital/clinics identified as AEFI management canters and communicated to the vaccination teams at every level
- 1 physician appointed as coordinator and at least one nurse must be present in AEFI management team for every Health Facility.
- Members of AEFI management team should be trained in identification and management of AEFI.
- AEFI kit should be made available to every AEFI management team.
- While referring an AEFI case, AEFI form must be filled and sent along with the patient.
- HPA must be immediately informed in case of severe type of AEFI.

Drugs and Equipment's Required in AEFI KIT

• Injection adrenalin (1:1000) solution – 2 ampoules • Injection Pheniramine maleate (Inj Avil 45.5mg/2ml): 2 ampoules • Injection hydrocortisone (100 mg/ml) – 1 vial • Disposable Syringe (insulin type) having 0.1 ml graduations and 26G IM needle – 2 sets • Disposable Syringe (5 ml) and 24/26G IM needle – 2 sets • Scalp vein set – 4 sets • IV cannula (for multiple sizes) • Tab Paracetamol (500 mg) - 10 tabs	• IV fluids (saline solution): 1 unit in plastic bottle • IV drip set: 1 set • Cotton wool + adhesive tape : 1 each • AEFI reporting form • Label showing: Date of inspection, Expiry date of Injectable adrenaline and shortest expiry date of any of the components • Drug dosage tables for Inj Adrenaline and Hydrocortisone • At hospital setting, oxygen support and airway intubation facility should be available.

• IV fluids (Ringer lactate/Normal Saline): 1 unit in plastic bottle	

Recording and reporting of AEFI

HPA must be informed and report sent within 24 hours.

Vaccinators must send the report of all minor type of AEFI to local HF and HF must communicate to HPA.

AEFI and media

Any media communication will be handled by HPA

Management of anaphylaxis

Anaphylactic reaction?

Asses Airway, Breathing, Circulation, Disability and Exposure (ABCDE)

Diagnosis – Look for:

- Acute onset of illness
- Life threatening Airway and/ or breathing and or Circulation problems
- And usually skin changes

- Call for help
- Lie patient flat
- Raise patient's legs

Administer Injection Adrenaline through deep intramuscular injection to anterolateral thigh

- 0.3ml for children 6- 12 years
- 0.5ml for children above 12 years and adults
- Repeat dose of adrenalin maybe given 5 minute intervals at diffrent sites for maximum 3 doses if symptoms does not improve and further doses if required maybe given in hospital setting (do not give adrenalin to the limb used for vaccination)
- **MONITOR VITALS AND TRANSFER TO NEAREST HEALTH CENTER/HOSPITAL**

AT THE HEALTH CENTER/HOSPITAL AS SOON AS SKILLS AND EQUIPTMENT AVAILABLE

- Establish airway and give high flow oxygen
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