

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH AND SOCIAL WELFARE



IMMUNIZATION AND VACCINE DEVELOPMENT PROGRAMME

TRAINING MANUAL FOR MEASLES SECOND DOSE FOR
REGIONAL AND DISTRICT HEALTH MANAGERS



2014



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LISTS OF ABBREVIATIONS AND ACRONYMS

AEFI	Adverse Events Following Immunization
AIDS	Acquired Immunodeficiency Syndrome
ARI	Acute Respiratory Infection
BCG	Bacillus Calmette-Guerin (vaccine against TB)
CCHP	Comprehensive Council Health Plan
CHMTs	Council Health Management Teams
CRS	Congenital Rubella Syndrome
DTP-HepB	Diphtheria Tetanus Pertussis and Hepatitis B vaccine
Hib	Haemophilus Influenza vaccine
EEFO	Earliest Expiry –First –Out (EEFO)
EPI	Expanded Programme on Immunization
FIC	Fully Immunized Children
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
IM	Intra muscular route
IMCI	Integrated Management of Childhood Illness
IMR	Infant Mortality Rate
IVD	Immunization and Vaccines Development
MCHIP	Maternal and Child Health Integrated Program
MDG	Millennium Development Goal
MMR	Maternal Mortality Rate
MNCH	Maternal Newborn and Child Health
MOHSW	Ministry of Health and Social Welfare
OPD	Out Patient Department
OPV	Oral Polio Vaccine
PCV 13	Pneumococcal Conjugate Vaccine with 13 antigens
RHMTs	Regional Health Management Teams
TFDA	Tanzania Food and Drug Authority
UCI	Universal Child Immunization
VVM	Vaccines Vial Monitor
WHO	World Health Organization
UNICEF	United Nation Children Fund

FOREWORD

The African region is now moving towards measles elimination. Tanzania has agreed with the target as set by the Regional Committee for Africa during its sixty first sessions in September 2011. This guideline will provide guidance for regional and district health managers to implement the Tanzanian plan of action for measles elimination by the year 2020 through introduction of measles second dose in routine immunization schedule.

Remarkable progress has been made during the last 10 years to reduce measles mortality although the true burden of cases reporting to the formal health services is difficult to quantify.

Measles vaccine is given to children at 9 months of age and above. Although coverage with a single dose vaccine has risen steadily over the years, it is estimated to be 90% nationally with considerable variations in coverage both between and within regions and districts. . It should be noted that even with a high coverage; up to 15% of children receiving the first measles dose at 9 months do not seroconvert and therefore are not protected from measles. These children benefit greatly from a second dose of measles with virtually all of them seroconverting when they receive the second dose and this necessitates the need to routinely deliver a second measles dose.

With elimination goal the aim is to achieve and maintain measles routine immunization coverage of 90% and above with first dose at national level and 80% and above in all districts. During measles campaign the target is to achieve 95% in all districts. So as to achieve elimination, the incidence of measles in a country needs to be less than 1 case per 10^6 populations per year and achieving of surveillance performance targets.

Tanzania is one of the countries with strong immunization programme for providing vaccinations to under one year old. Considering the importance of protecting children against Vaccine Preventable Diseases the Ministry has decided to introduce measles second dose in the routine Immunization programme.

This manual has been prepared for RHMT and CHMT health workers who are involved in the provision of immunization services so that they can provide quality vaccines including the second routine dose of measles.

Charles A. Pallangyo

PERMANENT SECRETARY

ACKNOWLEDGMENT

The development of the Measles Second Dose training manual for Regional and District Manager in Tanzania has been of paramount importance towards improving children's health, decreasing mortality and morbidity due to vaccine preventable diseases including Measles for under-five children, as well as increasing vaccination coverage.

The Ministry of Health and Social Welfare acknowledges that, the accomplishment of developing and writing this training manual was a joint and participatory process that involves, combining efforts, technical support, academic and experience input provided by various stakeholders. Without their contributions, development of this training manual would have not been possible.

The Ministry would like to express special thanks to Immunization and Vaccine Development (IVD) team-Tanzania Mainland and Zanzibar who facilitated /coordinated the development process of this document. Special thanks also directed to the secretariat for their tireless efforts in designing and finalizing this document.

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CHIEF MEDICAL OFFICER

1. CHAPTER 1: MEASLES DISEASE

1.1 Introduction

Measles occurs worldwide; control efforts have substantially altered the global distribution. Measles incidence has decreased substantially in regions where vaccination has been instituted. In the developing countries, measles has been attributed to low vaccination rates. In many countries, during the prevaccine era, more than 90 percent of children acquired measles by five years. Following implementation of routine childhood vaccination, the age of peak measles incidence during epidemics changed in many countries.

1.2 Epidemiology of measles

Worldwide, measles is a significant cause of morbidity and mortality. Precise incidence estimates are difficult to obtain because of heterogeneous surveillance systems and probable under-reporting. In 2011, there were 158 000 measles deaths globally – about 430 deaths every day or 18 deaths every hour. More than 95% of measles deaths occur in low-income countries with weak health infrastructures. Measles vaccination resulted in a 71% drop in measles deaths between 2000 and 2011 worldwide. In 2011, about 84% of the world's children received one dose of measles vaccine by their first birthday through routine health services – up from 72% in 2000.

The fourth Millennium Development Goal (MDG 4) aims to reduce the under-five mortality rate by two-thirds between 1990 and 2015. Recognizing the potential of measles vaccination to reduce child mortality, and given that measles vaccination coverage can be considered a marker of access to child health services, routine measles vaccination coverage has been selected as an indicator of progress towards achieving MDG 4

1.3 Global Measles and Rubella Strategic Plan

In April 2012, Global Measles and Rubella Strategic Plan was launched which covers the period 2012-2020. The Plan includes new global goals for 2015 and 2020:

By the end of 2015

- To reduce global measles deaths by at least 95% compared with 2000 levels
- To achieve regional measles and rubella/congenital rubella syndrome (CRS) elimination goals.

By the end of 2020

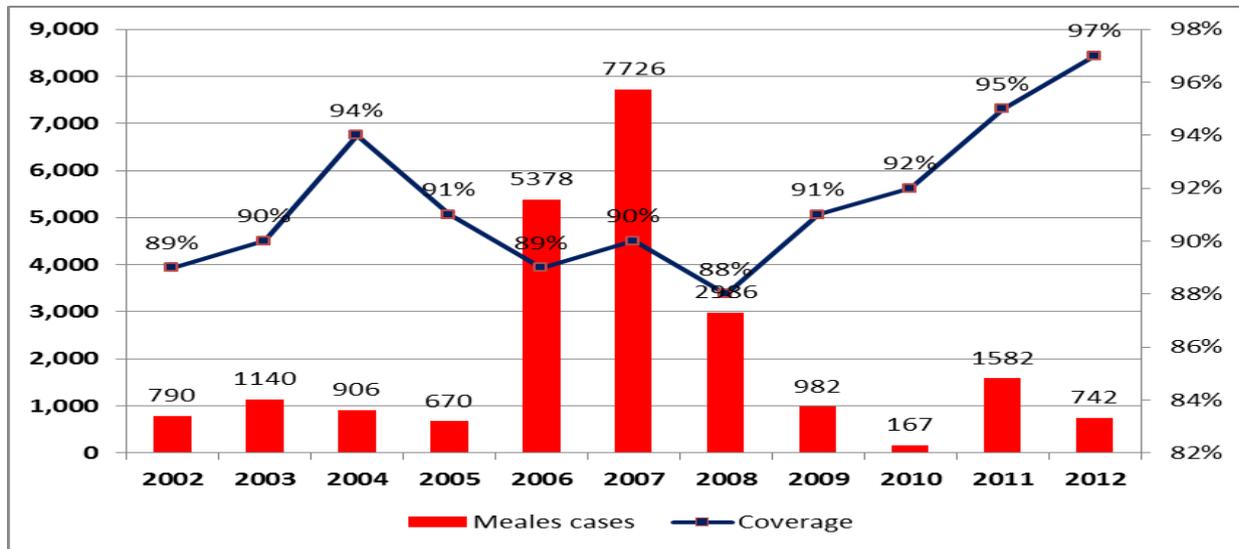
- To achieve measles and rubella elimination in at least five WHO regions.

1.4 Measles Epidemiology in Tanzania

While much progress has been made in reaching children with measles routine immunization and achieving high immunization coverage, measles remains a contributor to childhood illnesses. During the pre-immunization era, measles outbreaks were commonly experienced on annual cyclic. Measles incidence rates ranged between 100-800 cases /100,000 populations, mainly in the under five year age

group with high case fatality rates of more than 25%. When the Expanded Program on Immunization was launched in 1975 measles was one of the vaccines delivered to children at the age of 9 months. Immunization coverage increased from 5% to 50% with corresponding decrease in incidence of measles from 800 to 600/100,000 population. During the Universal Child Immunization (UCI) the immunization coverage rose from below 50% to more than 80% between the periods 1985 through 1989. Measles incidence rate declined from 600/100,000 in 1985 to 42/100,000 in 1989, with an increase in inter epidemic period from 3 to 4 years. The case fatality rate also decreased to less than 5% with a higher proportion of cases occurring in the children above five years.

Routine measles immunization coverage and number of measles cases from 2002 to 2010



Tanzania is committed to reach the global measles elimination goal by the end of 2020 in line with the Africa regional measles elimination plan endorsed by the regional committee of Africa¹. One of the activities is the introduction of MCV2 in the routine immunization¹.

1.5 The infection

Measles is a highly contagious viral illness characterized by fever, malaise, rash, cough, coryza, and conjunctivitis. There are no known measles virus reservoirs outside of humans.

The virus is spread by coughing and sneezing, close personal contact or direct contact with infected nasal or throat secretions. The virus remains active and contagious in the air or on infected surfaces for up to two hours. It can be transmitted by an infected person from four days prior to the onset of the rash to four days after the rash erupts. The incubation period is 10 to 14 days from exposure to onset of rash.

Measles outbreaks can result in epidemics that cause many deaths, especially among young, malnourished children.

¹ Regional committee for Africa. Sixty-first session. Yamoussoukro, Cote d'Ivoire 29 August- 2 September 2011. Resolution: Measles Elimination by 2020: A strategy for the African Region.

Most measles-related deaths are caused by complications associated with the disease. Complications are more common in children under the age of five, or adults over the age of 20. The most serious complications include blindness, encephalitis (an infection that causes brain swelling), severe diarrhoea and related dehydration, ear infections, or severe respiratory infections such as pneumonia. As high as 10% of measles cases result in death among populations with high levels of malnutrition and a lack of adequate health care. Women infected while pregnant are also at risk of severe complications and the pregnancy may end in miscarriage or preterm delivery. People who recover from measles are immune for the rest of their lives.

1.6 Management of measles cases

Measles can be suspected by a combination of symptoms and signs including fever and rash and confirmed by a blood test to look for antibodies to the measles virus or throat culture to look for the virus itself.

No specific antiviral treatment exists for measles virus. Severe complications from measles can be avoided through supportive care that ensures good nutrition, adequate fluid intake and treatment of dehydration. This solution replaces fluids and other essential elements that are lost through diarrhoea or vomiting. Antibiotics should be prescribed to treat eye and ear infections, and pneumonia.

Vitamin A deficiency contributes to delayed recovery and to the high rate of post-measles complications. In addition, measles infection may precipitate acute vitamin A deficiency and xerophthalmia. As a result, measles accounts for a large proportion of preventable childhood blindness. 2 doses of vitamin A during treatment of measles have beneficial impact, a high dose of vitamin A given immediately on diagnosis and repeated the next day. The recommended age-specific daily doses are 50,000 IU for infants aged <6 months, 100,000 IU for infants aged 6–11 months, and 200,000 IU for children aged ≥12 months. If the child has clinical signs of vitamin A deficiency, a third dose should be given 4–6 weeks later. Even in areas where measles is not usually severe, vitamin A should be given to all cases of severe measles. Vitamin A supplements have been shown to reduce the number of deaths from measles by 50%.

1.7 Prevention and control

Measles is prevented by immunization with measles vaccine. In Tanzania measles vaccine is provided within routine immunization schedule when a child has completed 9 months. Second opportunity is provided through mass immunization campaigns conducted every 3 years. The measles vaccine is safe, effective and inexpensive.

1.8 Rationale for introduction of measles second dose

Despite the sustained high coverage while offering a second dose through high quality supplementary immunisation campaigns there have been several outbreaks occurring in Tanzania.

The challenge of using National supplementary immunisation as the only method of providing second measles dose is that it is expensive, needs intensive preparations and needs to achieve high coverage within short period of time.

1.9 Providing measles second dose through the routine system offers several advantages

1. High coverage maintained through the years ensures that pool of unsusceptible children does not increase over the years thereby increasing herd immunity.
2. Reduced cost of providing measles second dose compared to campaigns since the labour cost, advocacy and mobilisation and logistics are borne by the government through the routine system.
3. Targeting children over 1 year will improve routine system and can improve the coverage in children who were lost to follow up when infants.
4. Providing measles second dose through the routine system improves Vitamin A coverage and provides a platform to target children with other health interventions including different vaccines.

Key points

Measles is highly infectious viral disease; it is among the vaccine preventable disease that kills more children.

The disease is spread from person to person through sneezing, coughing, and close personal contact.

The first sign of infection is a high fever lasting one to seven days and a generalized rash develops after onset/ exposure to the virus.

Pneumonia is the most common cause of death associated with measles.

Severe complications can be avoided through proper case management, including vitamin A supplementation.

Measles can be prevented by immunization. All children should have two opportunities for immunization.

2. CHAPTER 2: MEASLES VACCINE

Measles vaccine is a live virus, attenuated and freeze –dried (lyophilized). The vaccine is safe highly effective and relatively inexpensive. It is sensitive to sunlight hence it is kept in a coloured glass vials.

Following reconstitution, the vaccine must be stored in foam pad at between +2°C to +8°C and used within 6 hours. Vaccine efficacy depends on age administered. At 9 months of age the efficacy is 85% while at 18 months of age is 95%. Vaccine provides a long-lasting immunity (lifelong).

2.1 Measles Vaccines and VVM



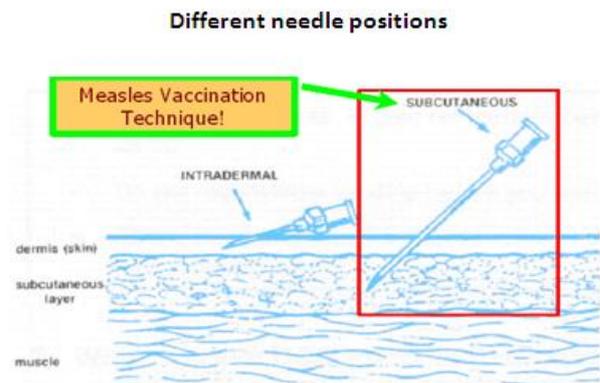
2.2 Reconstituting Measles Vaccine

- Vaccine should only be reconstituted with the diluents provided by the same manufacturer.
- Always use a new, sterile, syringe and needle with RUP to reconstitute each vial.
- Diluents should be kept in the refrigerator at least one day before vaccination. Reconstituted vaccine MUST be discarded immediately if:
 - Sterile procedures have not been fully observed;
 - There is any suspicion that the opened vial has been contaminated;
 - There is visible evidence of contamination, e.g. a change in appearance, floating particles or the cold chain has obviously been broken.
 - After six hours of reconstitution of measles vaccine should be discarded.

2.3 Administering the Measles Vaccine

The following steps should be followed:

If the child is aged 9 or 18 months give 0.5mls of measles vaccine injection by subcutaneous route in the upper left arm.



1. Hold the child's arm from underneath. Your fingers should reach around the arm and pinch up the skin.
2. Push the needle into the pinched skin to a depth of not more than 1 cm. The needle should go in at a sloping angle, not straight down.
3. Press the plunger with your thumb to inject the vaccine.
4. Withdraw the needle and drop the syringe and needle in the safety box.
5. If there is any bleeding, press the bleeding site with a dry cotton wool. Don't rub.



Remember

- *Use measles vaccine diluents of the same manufacturer to reconstitute the vaccine*
- *Never reuse mixing syringes to reconstitute subsequent vials*
- *Make sure the vaccination area is clean and all waste safely disposed off*
- *Wash your hands before start of the session*
- *Never pre-fill vaccine syringes*
- *Do not give vaccine to any child who has had an anaphylactic reaction following the administration of ANY vaccine.*

The following are NOT contraindications to measles vaccination

- HIV infection
- Malnutrition: Malnutrition is an indication to immunize. Malnourished children should be referred to the health centre for assessment and treatment after they have been immunized
- Minor illness: Low grade fever, mild respiratory infections, and diarrhoea. Sick children should be referred for treatment after they have been immunized.

2.4 Ensuring Safe Injections

- The auto-disable syringe is the preferred type of disposable injection equipment for administering vaccines. This type of syringe is the equipment of choice for conducting vaccination. The auto-disable syringe presents the lowest risk of person to person transmission of blood borne pathogens because it cannot be reused. Auto-disable syringes come with fixed needles.
- Using auto-disable syringes and mixing syringes with RUP
- A sterile packed 0.5mls auto-disable syringe must be used for each injection for each child
- 5.0mls sterile mixing syringe with RUP will be used to mix diluents to only one vial of measles vaccine; after dilution put it straight into the safety box
- Immediately after injecting the child place the syringe in the safety box. DO NOT leave the syringes lying on the table, in a tray or anywhere else after injection: put it straight into the safety box.
- DO NOT ATTEMPT TO RECAP THE NEEDLE. This practice can lead to needle stick injuries.
- Do not use auto-disable syringes from damaged or punctured sterile packs or which have passed the manufacturers' expiry date.
- Vaccinators should place used needles and syringes in safety boxes immediately after dilution and administering vaccine. Close the nearly (approximately 3/4) full box securely shut and store the box in a safe place until it can be properly disposed of, so as to prevent infecting themselves, other health care workers and the community. To avoid an occupational hazard, safety boxes should not be over-filled.

One box can hold 100 syringes and needles.



2.5 How safe is measles vaccine and what are its potential side-effects?

Mild reactions to the vaccine are not uncommon. These include: **Soreness**. Some children may experience pain and tenderness at the injection site within 24 hours of immunization. In most cases, these reactions will resolve within two or three days without any medical attention.

Fever. About 5% of children develop a moderate fever five to 12 days after receiving the vaccine. It usually lasts a day or two.

Rash. About one in 20 children develop a mild rash five to 12 days after receiving the vaccine. The rash usually lasts about two days.

Severe reactions to measles vaccine are rare; anaphylaxis has been estimated to occur about once for every million doses administered, while a severe allergic reaction can occur once for every 100 000 doses and one case of thrombocytopenia for every 30 000 doses. Encephalitis has been reported to occur in no more than one per million doses administered and, even in such cases, there is no definite proof that the vaccine was the cause.

2.6 Routine Immunization schedule

Age of administration	Vaccine	Dose	Route
At birth	BCG	0.05 ml	Intradermal deltoid muscle right arm
	OPV 0	2 drops	Oral
6 weeks	OPV 1	2 drops	Oral
	Pentavalent 1	0.5 ml	Intramuscular anterior-lateral aspect of the left mid-thigh
	PCV 1	0.5 ml	Intramuscular anterior-lateral aspect of the right mid- thigh
	Rota 1	1.5 ml	Oral
10 weeks	OPV 2	2 Drops	Oral
	Pentavalent 2	0.5 ml	Intramuscular anterior-lateral aspect of the left mid-thigh
	PCV 2	0.5 ml	Intramuscular anterior-lateral aspect of the right mid- thigh
	Rota 2	1.5 ml	Oral
14 weeks	OPV 3	2 Drops	Oral
	Pentavalent 3	0.5 ml	Intramuscular anterior-lateral aspect of the left mid-thigh
	PCV 3	0.5 ml	Intramuscular anterior-lateral aspect of the right mid- thigh
9 months	MCV 1	0.5 ml	Subcutaneous anterior-lateral aspect of left upper arm
18 months	MCV 2	0.5 ml	Subcutaneous anterior-lateral aspect of left upper arm

*BCG: In case the child was not vaccinated at birth can be vaccinated anytime the child attends the clinic for the first time

**OPV 0: In case the child was not vaccinated at birth can be vaccinated within 14 days after birth. After 14 days there is no need to give OPV 0.



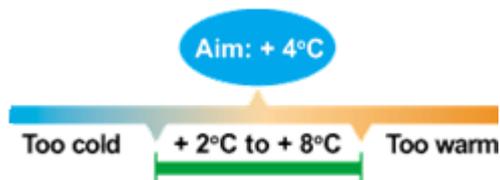
Key messages

- Vaccines are safe and can be given together
- Inform the caretaker the date to come next dose or vaccination
- First dose of rotavirus must be given between 6 to 15 weeks only,
- Second dose should be given between 10 to 32 weeks,
- Do not start the rotavirus vaccination to children older than 15 weeks
- Do not give the second dose of rotavirus vaccine to children older than 32 weeks

3. CHAPTER 3: STORAGE AND TRANSPORTATION OF VACCINE

3.1 Cold chain, transportation and storage of vaccines

Measles Containing Vaccine (MCV) should be transported and stored at + 2°C to + 8°C either in the vaccines carrier, cold box or fridge. If there is no enough space MCV can be stored at - 15°C to - 25°C at regional and district level. At health facility level all vaccines must be stored at + 2°C to + 8°C.



3.2 Use of chilled packs

Frozen ice packs are not allowed to be used while transporting vaccines at all levels because they can cause the vaccines to be frozen. While transporting vaccine either in vaccine carrier or cold boxes use the chilled packs.



Key message

- MCV diluents should not be frozen.

3.3 Vaccine Vial Monitor (VVM)

Vaccine Vial Monitors (VVMs) are heat sensitive chemicals applied to the vaccine vial label or cap. Every vaccine vial used in Tanzania has a Vaccine Vial Monitor to monitor the heat exposure of the vaccines since leaving the factory. The VVM on liquid vaccine is on the label, while the VVM on reconstituted/dried vaccine is on the caps.

	✓	Inner square is lighter than outer ring. USE the vaccine , if expiry date not reached.
	✓	As time passes: Inner square is still lighter than outer ring. USE the vaccine , if expiry date not reached.
	✗	Discard point: Inner square matches the colour of outer ring. DO NOT use the vaccine.
	✗	Beyond the discard point: Inner square is darker than outer ring. DO NOT use the vaccine.

The Vaccine Vial Monitor says...
if the expiry date is not passed,

	USE the vaccine
	USE the vaccine FIRST
	DO NOT USE the vaccine
	DO NOT USE the vaccine

3.4 Fridge tag

Fridge tag is a reliable temperature monitoring tool used to monitor the environmental temperature of sensitive goods reliably during storage in refrigerators or cold rooms. Due to its big display, all relevant data can be checked effortlessly at any time and temperature violations are discovered immediately.

- actual temperature in degrees Celsius or Fahrenheit
- all alarm violations over the previous 30 days at a glance
- daily minimum and maximum temperature over the last 30 days
- time duration of the temperature violation per day

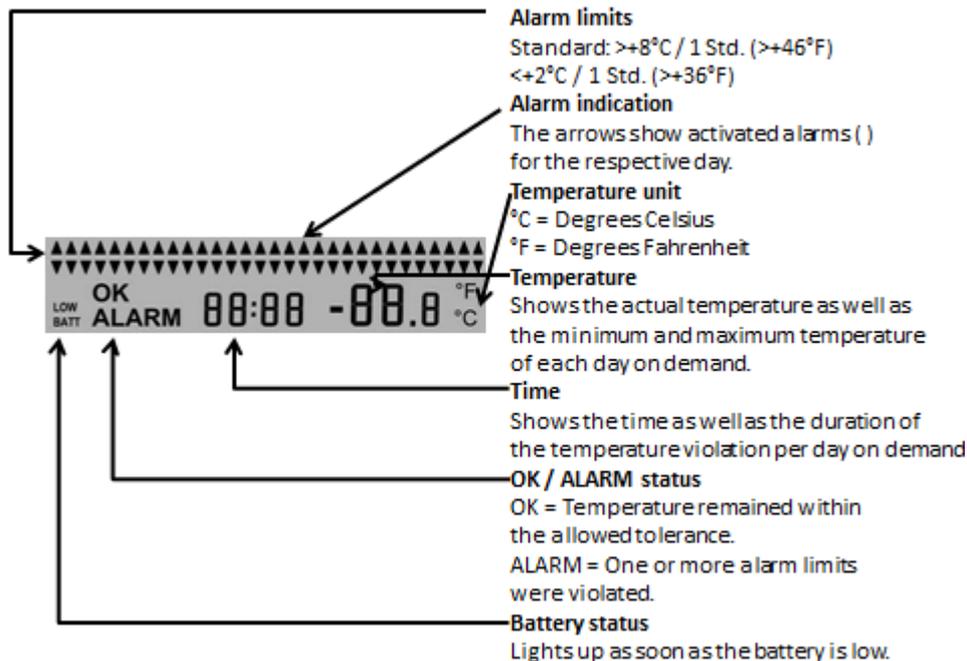
Fridge tag 1



Fridge tag 2



All data can be read out easily and precisely without any further software or computer. Fridge tag 2 has USB interface and PDF report can be easily generated and read-out without installing of software. The PDF report can be shared by email to higher level for review.



Correct storage temperature

- OK sign is visible when the alarm limit has never been violated during the previous 30 days.
- Display shows actual time and temperature.
- By pressing the READ button, the minimum and maximum temperature of each day appears.

Violation of the alarm limits

- ALARM sign appears when the alarm limits have been violated at least once during the previous 30 days.
- Display shows actual time and temperature.
- Arrows show at a glance, which alarm was violated on which day.
- By pressing the READ button, the detailed data of each day can be shown.

Easy read out of the data

By pressing the READ button the following data can be read out for each day:

- Minimum / Maximum temperature
- Duration of the time outside the permitted storage temperature
- OK sign when storage conditions have been kept
- ALARM sign by violated limits



Key message

- *Upward arrow will appear if the temperature will be above 8 °C for more than 10 hours*
- *Lower arrow will appear if the temperature will be below -0.5 °C for more than 1 hour*

3.5 Standard operating procedures of a Cold room

- Vaccine boxes should be arranged so that there is free movement of air between the vaccine packages, which should be stored about 5 cm away from the walls of the room.
- Keep door closed and locked.
- If the WICR is not fitted with an internal plastic strip curtain, always close the door when you are working inside.

Important:

- Check beforehand that WICR could be opened freely from inside and you wear proper winter clothing
- Switch off the interior light as soon as you have finished working inside.
- Keep the WICR locked and make one person responsible for the key.
- Make sure that a spare key is kept in a safe place.
- Monitor the temperature of every WICR at least twice a day and record it in the log book.
- All vaccines should be stored at temperature of +2°C and +8°C except OPV which should be stored at between -15°C to -25°C.
- Temperature mapping in the WICR should be done.

- Freeze-dried vaccines should be stored at the top shelves which are direct to the evaporator modules and bottom shelves.
- Freeze sensitive vaccines should be kept away from the evaporator and middle shelves.
- All WICRs should have freeze tags in different angles.
- All WICRs should have continuous temperature monitoring devices.
- Do not keep vaccine on the floor of the WICR. Stack the vaccine in shelves only.
- Never keep any vaccine underneath the cooling units. (Dripping water may damage vaccine boxes)

3.6 Contingency plan

- Written contingency plan should be developed and maintained.
- Make sure you and other staffs know what to do if any emergency occurs to the vaccine store i.e. the WIC room breaks down, fire, etc.
- Every vaccine store must have a contingency plan for keeping vaccine safe if emergency occurs.
- List of contacts (Immunization focal persons, Police, TANESCO, Fire department, Electrician etc., with their telephones and mobile phone numbers) should be easily accessible to security guards, nurses and other persons available in 24 hours
- The plan should be easily accessible to staff and identified location where vaccine can be stored.
- Site selection should base on appropriate storage unit, temperature monitoring capability and backup generator.
- Guidelines for packing and transporting vaccines.
- Adequate supply of packing materials (cold boxes, cool water pack) to accommodate vaccine stores supply should be available to move vaccines if needed.

3.7 Forecasting

The aim of estimating vaccine requirement is to maximize utilization of the available resources. Thus in order to avoid overstocking or stock outs or unnecessary wastage, estimation of vaccine need is necessary. The following formula is applied to calculate the required amount of measles doses for 1 year. After you have calculated the annual requirement, you can divide it by 12 in order to get the monthly requirement.

The estimated vaccine wastage for measles is 30 percent and syringes 10 percent wastage.

Measles vaccine

Target population x 1.43 (wastage factor) x 2 doses x expected cov. = number of doses of Measles vaccine

Assuming that the expected coverage is 80%.

Example: Target population: $50,423 \times 1.43 \times 2 \times 0.80 = 115,368$ doses

If measles vaccine supplied in 10 doses vial, therefore divide the number of doses required by 10.

Example: $115,368 \text{ doses} / 10 = 11,537$ vials

Monthly needs is equal to $11,537/12 = 962$ vials

Auto-disabled syringes (0.5ml)

Target population x 1.11 (wastage factor) x 2 doses x expected cov = number of A-D syringes 0.5ml

Example: Target population $50,423 \times 1.11 \times 2 \times 0.80 = 89,551$

Reconstitution syringes 5.0 ml RUP

No of reconstitution syringes are equal to no of measles vials plus 10% wastage.

Auto-disabled syringes (5 ml) $11,537 \times 1.11 = 12,806$ syringes

Safety boxes

No. of Auto-disable + Reconstitution syringes RUP /100 x 1.11 wastage factor

(1 safety box can hold 100 used syringes and needles)

$(89,551 + 12,806) / 100 \times 1.11 = 1,136$ Safety boxes

4. CHAPTER 4: ADVERSE EVENTS FOLLOWING IMMUNIZATION

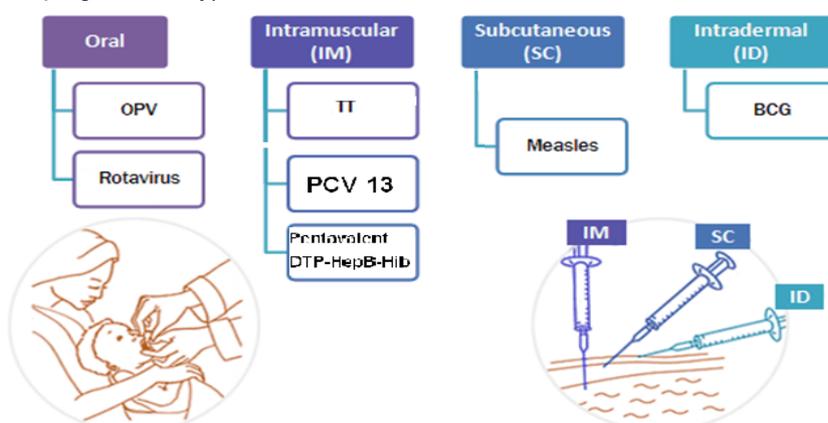
4.1 Definition and types of Adverse Events Following Immunization

The goal of immunization is to protect the individual and the public from vaccine-preventable diseases. Although modern vaccines are safe, no vaccine is entirely without risks. With the exception of water safety, vaccines have the greatest potential to promote public health. They reduce morbidity and mortality from infectious disease, saving costs as well as lives. An Adverse Event Following Immunization (AEFI) is defined by WHO as any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine.

AEFIs are divided in 5 categories as follows;

1. **Vaccine product-related reaction;** An AEFI that is caused or precipitated by a vaccine due to one or more of the inherent properties of the vaccine product. Example: Extensive limb swelling following DTP vaccination
2. **Vaccine quality defect-related reaction;** An AEFI that is caused or precipitated by a vaccine that is due to one or more quality defects of the vaccine product including its administration device as provided by the manufacturer. Example: Failure by the manufacturer to completely inactivate a lot
3. **Immunization error-related reaction;** An AEFI that is caused by inappropriate vaccine handling, prescribing or administration and thus by its nature is preventable. Example: Transmission of infection by contaminated multi-dose vial.
4. **Immunization anxiety-related reaction;** An AEFI arising from anxiety about the immunization. **Example:** Vasovagal syncope (a neurovascular reaction that leads to fainting) in an adolescent during/following vaccination.
5. **Coincidental event:** An AEFI that is caused by something other than the vaccine product, immunization error or immunization anxiety. Example: A fever occurs at the time of the vaccination (temporal association) but is in fact caused by malaria. A fever occurs at the time of the vaccination. Coincidental events reflect the natural occurrence of health problems in the community with common problems being frequently reported.

Please note that Routes of administration (intradermal, subcutaneous or intramuscular injection, and drops given orally) also contribute to the risk of an adverse reaction:



The IVD Ministry of Health, Tanzania Always recommends routes and Sites of Administration for all vaccines to prevent AEFI

4.2 Frequency and severity

Under recommended conditions, vaccines are safe, cannot cause adverse events and will completely prevent the infection that they target. Unfortunately, there is no vaccines has totally no possibilities of AEFI. The main concern is therefore to minimize as much as possible adverse events and ensure a safe use of vaccines. Vaccine adverse events are expected to occur with a certain frequency. AEFI surveillance (*also known as vaccine safety surveillance*) monitors adverse events and follows up severe events that may have been due to the vaccine. Any increase in the frequency of AEFIs should alert you to consider the quality of the vaccine and whether there are special risks in local populations.

Frequency and severity of adverse vaccine reactions

Frequency	Occurrence among persons vaccinated in percent	Severity of reactions
Very common	≥ 10%	Common and usually minor reactions: Are part of the immune response to vaccine, Reactions settle on their own, Examples include: Fever, Malaise.
Common (frequent)	≥ 1% and < 10%	
Uncommon (infrequent)	≥ 0.1% and < 1%	Rare, usually more severe reactions: 1. Usually require clinical management, 2. Examples include: Severe allergic reaction (e.g., anaphylaxis) including an exaggerated response to the vaccine antigen or component, Vaccine specific reactions, such as BCG osteitis.
Rare	≥ 0.01% and < 0.1%	
Very rare	< 0.01%	

The vaccine preventable diseases will become rare, if the vaccination coverage for all antigens will be raised and maintained above 90%. Following this, the general community will become sensitive to adverse events following immunisation. If the community concern will be left un-attended, will results decreased acceptance of vaccines by people and communities; and in turn re-occurrence of vaccines preventable diseases. To ensure continued public acceptance of vaccines, it is essential to:

- Monitor the incidence of AEFIs,
- Scientifically evaluate the likely associations,
- Respond to newly identified risks from vaccines,
- Communicate the benefits and risks to patients and parents through a trusted health care source in advance of the vaccination visit.

4.3 Adverse reactions associated with Vaccines

There are four vaccines that are provided to children which were produced using live attenuation vaccines technology in Tanzania are; Tuberculosis (BCG), Oral Polio Vaccine (OPV), Measles and Rotavirus vaccine. The other vaccines are derived from dead bacteria, toxins or synthetic DNA recombinant techniques.

	Vaccine	Rare, more severe adverse reactions	Frequency	Comment
Bacteria	Tuberculosis (BCG)	Fatal dissemination of BCG infection	very rare at 0.000019 – 0.000159%	Almost exclusively occurs in inadvertently immunized persons with severely compromised cellular immunity.
		BCG osteitis	very rare	In the past BCG osteitis has been reported in connection with certain vaccine batches but now occurs very rarely
	Pertussis (DTP-HepB-Hib; Penta vaccine)	Prolonged crying and seizures are uncommon	less than 1%	Minor adverse reactions such as local redness and swelling, fever and agitation are very common with wP vaccines (10 – 50%).
		Hypotonic, hypo responsive episodes (HHE) are rare	less than 0.1 – 0.2%	Although mild with no lasting effect, these reactions have affected the acceptance of whole cell pertussis in some populations.
Virus	Oral polio vaccine (OPV)	Vaccine-associated paralytic poliomyelitis (VAPP) in vaccinees and their contacts Vaccine-associated paralytic poliomyelitis	very rare at 0.0002 – 0.0004%	An essential component of the global polio eradication campaign despite adverse reactions.
	Measles	Febrile seizures	uncommon at 0.3%	Adverse reactions, with the exception of allergic anaphylactic reactions, are less likely to occur after receipt of the second dose of measles vaccine.
		Thrombocytopenic purpura	very rare at 0.03%	
		Anaphylaxis	very rare at 0.001%	
Rotavirus	None reported to WHO	-	To date, post-licensure surveillance does not indicate any increased risk intussusceptions or other serious adverse reaction associated with the use of current rotavirus vaccine	

4.4 Incidence of AEFI

The current vaccines are very safe vaccine. Nevertheless, there are some rare reactions that may occur following immunization. Pentavalent, PVC and Measles vaccination are normally associated with mild AEFI including soreness at the vaccination site and fever, all of which resolve spontaneously without permanent damage. Other rare events which may occur include rash, febrile convulsions, encephalitis/encephalopathy and sub-acute sclerosing pan encephalitis.

4.5 Handling AEFI during the immunization process

AEFI must be monitored up to 4 days after administration of the vaccine. Identified focal persons, training, logistics requirements, and communication are key issues to be addressed in handling AEFI during the immunization process.

4.6 Focal persons and Training in handling of AEFI

During the planning and training sessions for the immunization process, the focal persons for handling AEFI in each Council and at each health facility should be designated. These are the persons who should be alerted immediately when an AEFI is reported, and who should assist in the handling and investigation of the case. All health workers who are involved in the immunization process and who see sick children at vaccination post should know who the focal persons are. These people need to be with clinical background. All health workers who are involved in the immunization must be trained in the detection and handling of AEFI, which should include procedures for dealing with the public.

4.7 Logistics requirements

Each health facility should have an emergency kit. The emergency kit should consist of adrenalin (1:1000), hydrocortisone, analgesics, anti-inflammatory agents, normal saline, and injection equipment (2 mls and 10 mls syringes and needles and intravenous giving set). Every health facility must have a supply of AEFI case investigation forms.



Key message

- *The AEFI Focal Person at the health Facility level is the Clinician In-charge*
- *At Council level is the DMO or clinician designated for AEFI*
- *At the Regional Level is the RMO or clinician designated for the same purpose*

4.8 Treatment of AEFI during the immunization process

Treatment must always be the first response to an AEFI. All severe AEFI cases should be referred immediately to the nearest health facility or hospital for treatment. The case investigation form must be quickly filled in as far as possible and accompany the patient being referred, otherwise the investigation may not be followed up. Case investigation forms should be filled for every case of a severe AEFI.

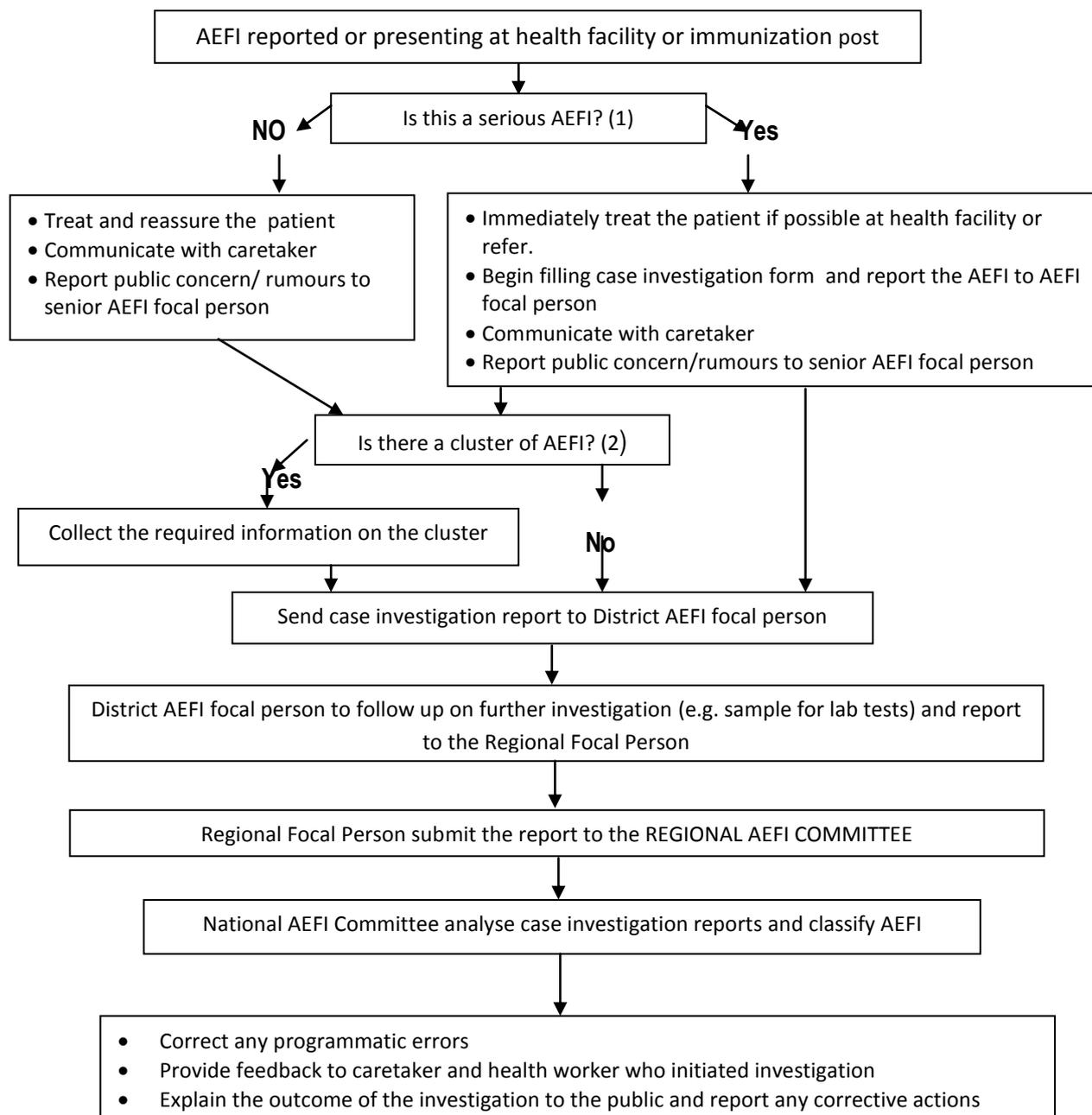
- Cases of anaphylaxis should be treated at the health facility where the immunization took place or at the facility with an emergency kit that is closest to the fixed post.
- Mild symptoms such as fever can be treated at home or by health workers. Health workers must be able to decide which AEFI to treat.
- Treatment for AEFI should be free of charge.



Key message

- *Any anaphylaxis require immediate attention*
- *Do not PANIC! Reassure the client*

ACTIONS TO BE TAKEN IN THE CASE OF AEFI



Notes

1. Defined as **Serious** if it results in hospitalization or death.
2. A Cluster is defined as AEFI that occur with unusual frequency, by vaccine, by batch number, by type of reaction, or by health facility/ community.

EMERGENCY PROCEDURE IN THE CASE OF ANAPHYLAXIS

Anaphylaxis is a very severe reaction, which may occur rarely after any injection including a vaccination. The patient collapses with signs of shock and breathing problems. If this occurs, follow the steps described below immediately.

1. Call for help and attend to patient immediately.
2. Check breathing and heartbeat.
3. If the patient is not breathing:
 - Secure the airway and ventilate
 - If there is no heartbeat:
 - Do CPR (cardio-pulmonary resuscitation)
4. Give adrenalin 1:1000
 - Children under 3 years: 0.1 ml subcutaneous at once
 - Children 4-5 years: 0.2 ml subcutaneous at once
 - Children 5- 10 years 0.3 ml subcutaneous at once
5. Give adrenalin as follows: 1 ampoule diluted with normal saline to 10 ml in small amounts slowly IV. The heart rate should not exceed 160/minute.
6. Give hydrocortisone sodium succinate slowly IV in the following doses:

Children under 1 year:	100 mg
Children 1- < 3 years:	200 mg
Children 3- < 5 years:	300 mg
7. Set IV drip and run the Normal saline drip fast

4.9 Recommendations to Minimize AEFI

- Measles vaccine must be reconstituted only with the diluent supplied by the manufacturer.
- Always check the validity of the vaccine, diluents , syringes and needles by observing Expiry date, batch number and VVM Status
- Reconstituted vaccines must be discarded at the end of each immunization session or after six hours of reconstitution and NEVER retained for use in subsequent sessions.
- In the refrigerator of the immunization centre, no other drugs and substances should be stored beside vaccines.
- Training of immunization workers and their close supervision to ensure that proper procedures are being followed are essential to prevent deaths or injury following immunization.
- Careful epidemiological investigation must be carried out in the event of adverse events following immunization. Complete investigation of AEFI is of critical importance to pinpoint the cause of the incident and to correct immunization practices so that future AEFI is prevented.

4.10 AEFI REPORTING FORM

Part 1: Demographic details

Family name:	First name:	Date of birth:	ID Number
Address		Sex: M/F	
Health Facility		Reporting Health Worker	
Council		Region	

Part 2: Vaccine given

Vaccine(s) given ¹	Route	Site	Lot number ²	Manufacturer ²	Expiry date ²

¹ Name and dose number e.g measles¹, Pentavalent², OPV²

² include information for diluent if a reconstituted vaccine

Date immunized	Date AEFI started	Onset interval	Date of report

Part 3: AEFI details

<p>Tick box(es) and describe event:</p> <p><input type="checkbox"/> Severe local reaction: >3 days <input type="checkbox"/> beyond nearest joint <input type="checkbox"/> hospitalised <input type="checkbox"/></p> <p><input type="checkbox"/> Abscess: sterile <input type="checkbox"/> bacterial <input type="checkbox"/></p> <p><input type="checkbox"/> Sepsis</p> <p><input type="checkbox"/> Toxic shock syndrome</p> <p><input type="checkbox"/> Anaphylactic (acute hypersensitivity) reaction</p> <p><input type="checkbox"/> Anaphylaxis</p> <p><input type="checkbox"/> Seizures, including febrile seizures</p> <p><input type="checkbox"/> Encephalopathy</p> <p><input type="checkbox"/> Thrombocytopenia</p> <p><input type="checkbox"/> Other AEFI (state):</p>	<p>Past medical history (including history of similar reaction or other allergies) and any other relevant information(e.g., other cases):</p>
<p>Recovered: Yes / No /</p> <p>Hospitalised: Yes / No /</p> <p>Died: Yes / No /</p>	

Part 4: Investigator assessment and comments

Date report received	Checked by:
Investigation needed: Yes/No	If yes, date investigation started
Investigator:	
Investigator findings and comments:	Conclusion:

4.11 Rumours and crises

Allegations regarding vaccine-related adverse events that are not rapidly and effectively dealt with can undermine confidence in a vaccine and ultimately have dramatic consequences for immunization coverage and disease incidence.

Some situations that encourage rumour include:

- Serious social conflict,
- Economic and political uncertainty,
- Social transition and clashes of culture and beliefs,
- A history of discrimination and manipulation,
- Lack of transparency in a distant or authoritarian organization.

4.12 Vaccine safety crisis

Crises in vaccine safety are characterized by an unexpected series of events that initially seem to be out of control. The outcome is usually uncertain when the crisis is first identified, and there is a threat to the success of a vaccine or immunization programme..

A crisis may have a "real" basis arising from genuine vaccine reactions or immunization errors, or it may have no foundation in reality and be triggered entirely by mistaken rumours. Often a crisis in vaccine safety originates in the identification of AEFIs, but is aggravated by negative rumours. Whether a rumour triggers a series of events that build into a crisis depends on the nature of the rumour, how fast it spreads and whether prompt and effective action is taken to address it.

When approaching a crisis, keep in mind that this may not only be a challenge, but also an opportunity to improve the communication on immunization issues. You have the opportunity to dispel negative rumours, to take action to upgrade policies and procedures if required, and to correct any errors or lapses in best practice.

4.13 Developing a crisis communication plan

Communication in the context of a vaccine-related crisis follows the same steps as any other planning process, but because of the urgency of the situation, compressed time scales apply and you must be able to implement the plan quickly. Inclusive planning and action are critical – all stakeholders should be involved as soon as possible. Remember that communication is not an isolated exercise, but part of a broader action plan for handling the crisis.

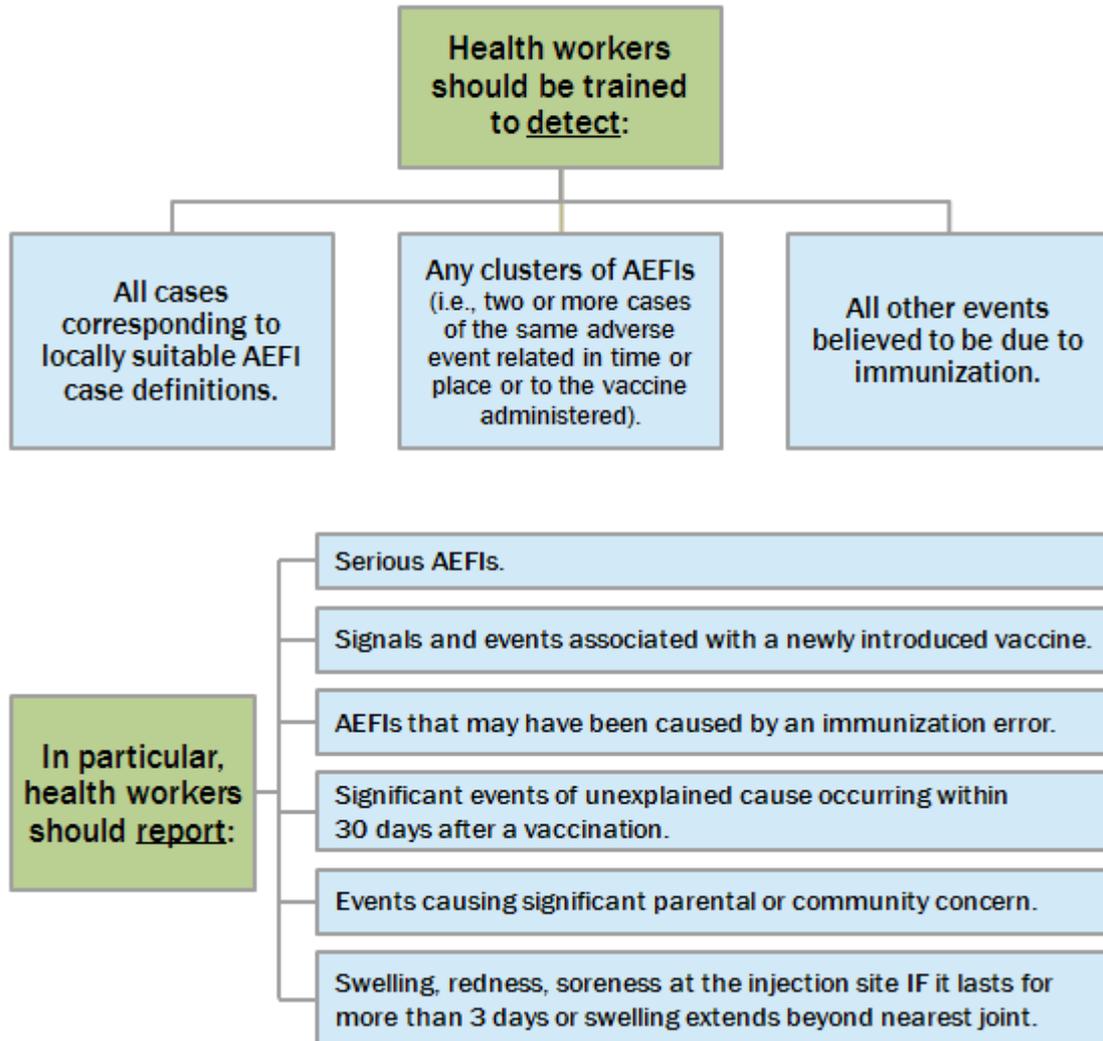


Key message

- *There is no additional risks of getting AEFI for Measles Second Dose*

4.14 Detection and reporting

Health workers should be trained on how to detect and report



Reporting should be as done to CHMTs, best done through reporting case investigation form. Health workers may be afraid of getting penalized for reporting. It is important that reporting health workers understand that adverse events following immunization – related to the vaccine or not – must be expected and can happen independent of the health worker's action.

5. CHAPTER 5: ADVOCACY, COMMUNICATION AND SOCIAL MOBILIZATION

The goal of communication is to create awareness and make sure the community at large knows measles and other vaccine preventable diseases, the value of second dose of measles vaccine and the eligible children to receive it in order to promote their active participation

5.1 Definition of the terms:

Advocacy

Advocacy is the process of soliciting the support of individual and key organizations responsible for formulating policies, making decisions and allocating resources

Social mobilization

Social mobilization is a process of gaining and sustaining the involvement of all stakeholders in order to take action to attain a common goal.

5.2 Programme Communication or communication for behaviour change

A process of providing information and education to the providers and beneficiaries of intervention so as to change and sustain positive behaviour

5.3 Organization of Advocacy and Social Mobilization Committees

Management of social mobilization committee is important for success. Committees should be multisectoral and come from pre-existing government administrative structures from National to village level. At each level there must be clear roles and functions

5.4 Advocacy and Social Mobilization Committee

The advocacy and social mobilization committees include:-

- National advocacy and social mobilization committee
- Regional advocacy and social mobilization committee
- District advocacy and social mobilization committee
- Ward advocacy and social mobilization committee
- Village advocacy and social mobilization committee

5.5 The Composition of Advocacy and Social Mobilization Committees, Their Roles and Responsibilities

5.5.1 National level:

At national level there is a Multi-sectoral Advocacy and Social mobilization committee.

National Multi-sectoral Advocacy and Social mobilisation committee.

- Ministry of Gender, Women and Children
- Ministry of Health and Social Welfare
 - RCH / IVD
 - Health Education and Promotion Section
- Ministry of Education
- Ministry of Finance
- Faith Based Organizations
- Media
- TPHA
- PAT
- APHTA
- Political leaders of all registered parties
- Non-Governmental Organizations
- Development Partners
- Civil Society Organizations (optional)

Roles and Functions

1. To oversee the planning and implementation of advocacy and social mobilization activities.
2. To identify the needs and mobilize resources
3. To identify the possible partners
4. To coordinate all the efforts among different partners
5. To conduct Press release, conference and Launching
6. To Prepare and disseminate messages for TV, Radio, Newspapers and posters
7. Monitoring of advocacy and social mobilization activities

5.5.2 Regional level:

At regional level there is a Regional Multi-sectoral Advocacy and social mobilization committee whose composition is in line with the Regional PHC committee

Roles and Functions

1. To oversee the planning and implementation of advocacy and social mobilization activities in the region.
2. To coordinate social mobilization activities at regional level
3. To supervise and support social mobilization efforts at district level
4. To disseminate advocacy and social mobilization materials in the region
5. To disseminate messages through TV, Radio, Newspapers and posters
6. Monitoring of advocacy and social mobilization activities in the region
7. Identify and respond to rumours then report to national level

5.5.3 District level:

Composition of Council Advocacy and Social mobilization committee is in line with the District PHC committee.

Roles and functions

1. To conduct District advocacy meeting for resource mobilization.
2. To oversee the development of micro planning and implementation of advocacy and social mobilization activities in the district.
3. To coordinate social mobilization activities at district level
4. To supervise and support social mobilization efforts at ward level
5. Monitoring of advocacy and social mobilization activities in the district
6. Identify and respond to rumours then report to region level

Ward level:

Ward Advocacy and social mobilisation committee has the composition of the existing Ward Development Committee under local government.

Roles and functions

1. To conduct advocacy meeting at ward level.
2. To oversee the development of micro planning and implementation of advocacy and social mobilization activities in the ward.
3. To coordinate social mobilization activities at ward level
4. To supervise and support social mobilization efforts at village level
5. To supervise distribution of advocacy and social mobilization materials in the ward.
6. Monitoring of advocacy and social mobilization activities in the ward
7. Identify and report rumours to district level

Village level

Village Advocacy and social mobilisation committee has the composition of the existing village health committee under local government.

Roles and functions

1. To conduct advocacy and sensitization meetings at village level.
2. To oversee the development of micro planning and implementation of advocacy and social mobilization activities in the village/Health Facility.
3. To coordinate social mobilization activities in the village
4. To advocate community support in immunization activities.
5. To supervise distribution and display of advocacy and social mobilization materials in the village.
6. Monitoring of advocacy and social mobilization activities in the village
7. Identify and report rumors to ward level

Dealing with Rumors

Rumor is an unverifiable assertion that is circulating Or General talk, gossip or hearsay of doubtful accuracy

Process of dealing with rumors

- **Find where do rumors or negative publicity start**

- Those with vested interests: e.g. Traditional healers
- Panic reaction to stories in the press
- Religious beliefs or fundamentalists: Ban followers from receiving vaccines
- Anti-vaccine lobby (parents who believe their child was damaged by vaccine)
- Is the rumours based on the management of the vaccine e.g. policy, service, process or service provider
- Is the rumours based on the product e.g. manufacture

- **Responding to rumors or negative publicity**

After analyzing the situation:

- Move quickly to respond to rumors without a delay using existing government channels.
- Clarify the rumor or misinformation (type of messages circulating, source, persons or organizations) spreading the rumor
- Determine the motivation behind the rumor (lack of information, questioning of authority, religious opposition)
- Communicate a benefit focused on audience expectation
- Provide facts that create trust
- Disseminate the correct information through mass media.
- Use chain of command in reporting the rumors, know the spokes person

Key Communication Messages for MCV2

- Measles is a dangerous disease which kills children. Measles is a disease caused by measles virus. The signs include a red, blotchy rash over the whole body, fever and a runny nose, red eyes or a cough.
- Children with suspected measles must be taken to a health Centre immediately.
- If not treated, a child with measles can develop problems such as pneumonia, eye infections, ear infections, sores or thrush in the mouth and other complications, sometimes leading to death.
- Measles can be prevented by giving measles vaccine. All children should have at least two doses of measles vaccine. The first dose is given when the child is 9 months or soon afterward and the second dose at 18 months or soon afterwards.
- Measles vaccine is safe and is used in all countries in the world. Measles vaccination may cause mild and transient reactions such as local reaction, fever and rash, which do not cause long term problems.
- A child with mild fever may be vaccinated with measles vaccine.
- Receiving two injections of different vaccines on the same day will not cause any extra side effects and will in fact save you an additional trip to the health centre.
- The risk of complications from natural measles infection and disease is much higher than the risk of the mild reactions after vaccination.
- Take your child aged 18 months to the nearest health centre for the second dose vaccination against measles.
- It is important that your child receive two doses of measles vaccine and is vaccinated on time against all diseases in the schedule

6. CHAPTER 6: SHARPS AND IMMUNIZATION WASTE MANAGEMENT

Inadequate management of wastes generated by immunization activities such as sharps and infections non sharp wastes can cause direct negative health impacts on the community and the personnel working on routine immunisation. In addition, pollution due to inadequate treatment and disposal of these wastes can cause indirect health effects in the community and impact the environment.

Health-care waste should be considered as a reservoir of pathogenic microorganisms, which can cause contamination and give rise to infection. If waste is inadequately managed, these microorganisms can be transmitted by direct contact. 20% of total health-care waste can be dangerous, Immunization contributes 15% of the total sharps waste.

Poor waste disposal practices are dangerous to the community and health care workers. Some of the risks posed by immunization waste include cuts, needle stick injuries, contraction of infections such as hepatitis B, hepatitis C, HIV infection etc.

The biggest impact of MCV2 on waste management will be the need to safely dispose of almost double the number of syringes and safety boxes, compared to a MCV1 schedule. It will be necessary to verify that the current waste management system is able to cope with this increase or to make adjustments so that it can.

6.1 Definitions

Immunization Waste: Immunization waste includes all waste generated during vaccination activities.

Sharps: Sharps are items that could cause cuts or puncture wounds including needles, hypodermic needles, and broken glass. Whether or not they are infected, such items are usually considered as highly hazardous waste.

6.2 Management of Immunization Waste

Key steps in **Immunization** waste disposal process

6.2.1 Segregation

The key to minimization and effective management of **Immunization** waste is segregation (separation) and identification of the waste. Segregation should always be the responsibility of the waste producer (vaccinator), should take place as close as possible to where the waste is generated, and should be maintained in storage areas and during transport. The following practices are recommended:

- Sharps should all be collected together in safety box, regardless of whether or not they are contaminated.
- **Other Immunization** waste such as syringe plastic covers, used papers, empty vials should be disposed in waste bins.

6.2.2 Handling and storage

A storage location for immunization waste should be designated inside the health-care facility. The waste containers should be stored in a separate area, room, or building of a size appropriate to the quantities of waste produced and the frequency of collection.

A supply of cleaning equipment, protective clothing, and waste containers should be located conveniently close to the storage area.

Do not transfer sharps from one container to another or transport them from one point to the other (from health facility "A" without incinerator to health facility "B" with incinerator for disposal

6.3 Disposal

It is important that the immunization services should be designed to ensure safe disposal of sharps waste and vials glasses because of the following reasons:

- Increase of glass vials to be disposed following introduction of MCV2
- Future introduction of new vaccines.

NB: Auto-disable and dilution syringes being used in the routine immunization will remain the same

6.4 How to dispose safety box and used glass vials

When safety box is full it should be destroyed by burn and bury or incineration

The present options for final disposal at hospitals, health centres and dispensaries are:

6.4.1 Incineration

This involves burning at high temperatures using Small Scale Incinerators (SSI) which can attain 800°C and above. All sharps will be completely burned and the remaining ashes and vaccine vials are buried in pits designed for this purpose.

Advantages

- Complete combustion of syringes and needles
- Reduce risks of toxic emissions
- Reduce volume of wastes

Figure 1 syringe cover



Figure 2 Incinerator



Disadvantages

- Building materials not readily available e.g. firebricks
- Relatively expensive to build, operate and maintain
- Require trained personnel to operate
- May require fuel or dry wastes to start the burning

6.4.2 Burn and Bury

Where there is no incinerators the Burn and bury method can be used. This involves burning at low temperature in pits one meter deep. The remains/ashes and vaccine glass vials are then covered with soil/sand.

Advantages

- Relatively inexpensive
- Minimum training is required
- Reduction in wastes volume
- Reduction in infectious materials

Disadvantages

- Pollution toxic emissions i.e. dioxins and furans
- May not completely burn



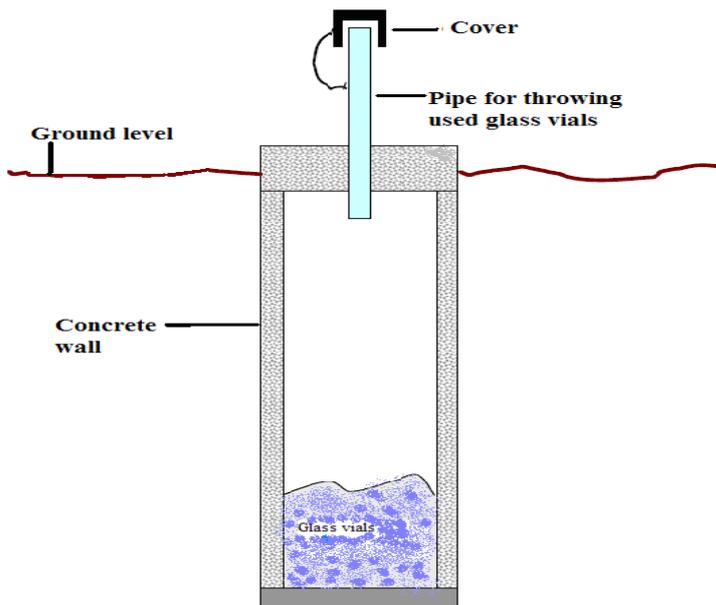
Figure 3 Burning safety box

6.4.3 Disposal pits

Long term measures: Disposal pit can be used. This type of pit is specifically designed for the disposal of vaccine glass vials. This pit will not allow for excavation of the glass vials. This method is being applied in Zanzibar and some of the region in Tanzania mainland eg Kigoma whereby circular pits with a depth of 4 meters and diameter of 5meters are constructed using concrete and covered at the top with a small opening enough to allow for depositing glass vials.

Empty or expired vials if not recycled for glass manufacturing should be crushed into a pit for volume reduction. Glass should never be incinerated as it is clogged incinerator or may explode. If recycled vial should be disinfected before using chlorine or by boiling

Figure 4: Disposal pit for used glass vials



Remember

In the case of a needle stick injury:

- Immediately bleed and wash wound.
- Immediately report and record the incident.
- Get details of its source for identification of possible infection.
- Seek additional medical attention.
- Initiate post exposure prophylaxis, if available and appropriate.
- Get blood tests or other tests and counselling, if indicated.
- Investigate the incident and implement steps to prevent future incidents.
- Protective clothing to health care waste handler is crucial i.e. overalls, rubber gloves, boots or closed-toe shoes, rubber aprons, goggles

GUIDELINES TO IMPROVE PRACTICES AT THE LOCAL LEVEL

The following chronological checklist of actions provides recommendation to set up a waste management plan for a health-care facility to provide tools for its implementation.

- STEP 1: Estimate needs and design infrastructure**
- Estimate total quantities of wastes to be treated in the health-care facility during the campaign
 - Calculate the total number of safety boxes and plastic bags required for segregation and packaging.
 - Design and secure storage area for wastes
 - In health-care facilities, design infrastructure for additional wastes treatment and disposal if current capacity is insufficient.
- STEP 2: Raise awareness and assign responsibilities**
- In health-care facilities, set up a supervision board with the health facility incharge
 - Assign responsibilities to medical staff/ vaccinators and ancillary staff.
 - Appoint a waste management operator
 - Give briefing and provide instructions to medical staff/vaccinator on daily routine procedures
 - Outline duties and responsibilities of health-care workers in job descriptions.
- STEP 3: Develop a waste tracking system**
- Inventory of equipment provided
 - Set up stock position forms for supplies
 - Set up procedures for daily stock monitoring
- STEP 4: Take protective measures for staff**
- Check that waste operators wear protective clothes (thick gloves, boots, trousers or apron, long sleeve shirt)
 - Provide washing facilities for personal hygiene (minimum: soap and water for hand hygiene).
 - Set-up a response system for accidental injuries
 - Ensure that storage and waste treatment areas are restricted to authorized personnel.
- STEP 5: Set up daily routines**
- Provide all vaccinators with adequate number of safety boxes and containers for the day or week
 - Ensure immediate disposal of used syringes without recapping needles.
 - Ensure adequate segregation of sharps and infectious wastes.
 - Ensure immediate replacement of used bags or containers when $\frac{3}{4}$ full.
 - Ensure secure storage and disposal of full boxes according to procedures selected.
 - Check stock position according to number of vaccines carried out.
- STEP 6: Supervision and Follow up:**
- Carry out regular supervision in the field as part of routine monitoring
 - Check daily waste management practices
 - Verify procedures - SOPs