



Federal Ministry of Health  
Nigeria

# **STANDARD OPERATING PROCEDURES (SOPs)**

for

## **Effective Management of Vaccines in Vaccine Storage Facilities**



NATIONAL PRIMARY HEALTH CARE  
DEVELOPMENT AGENCY (NPHCDA)

November, 2007



EU-PRIME  
EUROPEAN UNION PARTNERSHIP TO REINFORCE IMMUNISATION EFFICIENCY





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# 1. INTRODUCTION

## 1.1. *Background:*

The Government of Nigeria joined the rest of the world in the fight against the six childhood killer diseases, by starting the Expanded Programme on Immunization in 1980 with the aim of reducing morbidity and mortality due to vaccine preventable diseases. The National Primary Health Care Development Agency (NPHCDA), an agency of the Federal Ministry of Health, is charged among other responsibilities with this responsibility through the delivery of safe and effective immunization services.

For the agency to achieve this goal, this requires a set of activities and tasks to be routinely carried out to achieve the desired objective.

It is equally important that the correct sequence of carrying out these activities and tasks follow established norms and procedures that make the implementation easy and problem free.

## 1.2. *Purpose of the SOPs:*

The purpose of the Standard Operating Procedures (SOPs) manual is to simplify and standardize the work required in vaccine cold stores management to minimize wastage and improve the quality of immunizations. It also sets out, national standards within the context of international best practices,, the sequence within which tasks are carried out, how these tasks are carried out and by whom.

Activities for effective management of vaccine stores fall within the following broad categories:

1. Vaccine management
2. Equipment management
3. Administration

This manual outlines the steps for completing required tasks for a smooth operation in the vaccine cold stores at National, Zonal, State, LGAs and health facility levels

The manual is also designed to help personnel at these facilities, to:

- Operate an efficient and effective cold chain system
- Ensure adequate vaccines and supplies
- Ensure optimal storage, transportation and handling conditions for potency
- Reduce wastage due to expiry, breakages, loss of potency and pilferage
- Proper disposal of expired vaccines and supplies.

## 2. VACCINE MANAGEMENT ACTIVITIES

Activities that are required to ensure proper vaccine management are summarized below:

Sn.	Activity/Task	Definition of activity/task
1	Forecasting	Determine quantities needed and quantities to order
2	Ordering	Determine facility supply needs and place an order taking into consideration the available functional storage capacity, and lead period.
3	Receiving	Ensure correct receipt (quantities, batch, expiry, cold chain monitoring devices, ice/water pack quality) and appropriate documentation applicable at the receiving facility and a feedback system.
4	Storage	Store vaccines and supplies within recommended temperatures and maintain security of stock
5	Issuing	Supply of vaccines, diluents, droppers, injection materials and other related supplies through intermediate storage facilities to service delivery levels
6	Inventory control	Distribute and maintain adequate supplies within minimum and maximum stock levels, account for the quantities of the stock on hand and those at risk of expiry and damage.
7	Quality assurance	Ensure that the quality of vaccines is maintained. . Facilitate sampling and testing by National Agency for Food and Drug Administration and Control (NAFDAC) when required
8	System monitoring	Monitor the collection of supplies by lower levels against coverage; support lower levels to maintain stock within minimum and maximum stock levels
9	Reporting	Maintain accurate and upto date records and submit monthly reports/returns to the next higher levels.

*Table 2: Basic Activities for Ensuring In-Country Vaccine Security*

A summary of the tasks and responsible personnel involved in vaccine store and cold chain management at national, zonal, state, LGA and health facility levels follow below:

Table 3: Summary of Activities and Tasks for the Officer In Charge of the National Strategic Cold Store, Abuja

## 2.2. Activities at the Zonal Vaccine Store

Responsible: Zonal cold Chain Officer

Category	Sn	Tasks	Tools	Frequency
Vaccine mgt	1	Prepare zonal forecast for vaccines & devices and communicate to NCCO for action	Vaccine Forecast Spreadsheet	Annual, by beginning of 3rd quarter of preceding year
	2	Determine minimum & maximum stock and re-order levels for each antigen and maintain stock within these limits.	SMT	Annual, reported quarterly
	3	Receive vaccines and supplies from NSCS for intermediate storage and distribution to states and prepare and maintain documentation	Stock control forms & SMT	For every vaccine delivery
	4	Prepare distribution plan & movement budget for vaccines and supplies to the state levels based on their requests	Requisition forms from States	Quarterly (or when requested by States)
	5	Obtain state stock balances and prepare periodic reports that also includes zonal stock balances for submission to NCCO	SMT	Monthly, by 10th of following month
	6	Maintain vaccines at optimum storage conditions (positive and negative storage temperatures) by regular monitoring of temperature and performance of storage equipments	Temperature monitors & charts, VVMs, CCMs, Freeze Watch, Data Loggers, Alarm, duty roster	Twice daily
	7	Keep appropriate and up-to-date records of all transactions	Files, Forms, Computer tools, reports	Continuous
	8	Monitor and provide regular reports to Director of Immunization through NCCO on key indicators (adequacy and stock levels, wastage rates, quality of storage, bundling) on utilization of vaccines and supplies at all supply levels	DVD-MT	Monthly, by 15th of following month
	9	Conduct a quarterly physical stock count of all antigens and devices	Personnel and Stationary	Quarterly
Equipment Mgt	10	Maintain an up-to-date zonal inventory of cold chain equipment and storage capacity (including states, LGAs & Health Facilities within the zone)	IRP-MT	Quarterly
	11	Prepare estimates for operational costs including maintenance & fueling of electric stand-by generators.		Quarterly
Administration	12	Conduct training for managers of vaccine stores to enhance performance	SOP, standard VM & CC tools	Bi-annual

Table 4: Summary of Activities and Tasks for the Officer In Charge of Zonal Cold Store

### 2.3. Activities at the State Vaccine Store

Responsible: State Cold Chain Officer

Category	Sn	Tasks	Tools	Frequency
Vaccine mgt	1	Prepare states' forecast for vaccines & devices and communicate to ZCCO for action	Vaccine Forecast Spreadsheet	Annual, by beginning of 3rd quarter of preceeding year
	2	Determine minimum & maximum stock and re-order levels for each antigen and maintain stock within these limits.	SMT	Annual, reported quarterly
	3	Receive vaccines and supplies from Zona Ccold Stores for storage and distributie to LGAs and prepare and maintain documentation	Stock control forms & SMT	For every vaccine delivery
	4	Prepare distribution plan & movement budget for vaccines and supplies to the LGAs' levels based on their requests	Requisition forms from LGAs	Monthly (or when requested by LGAs)
	5	Obtain LGAs stock balances and prepare periodic reports that also includes state's stock balances for submission to ZCCO	SMT	Monthly, by 7th of following month
	6	Maintain vaccines at optimum storage conditions (positive and negative storage temperatures) by regular monitoring of temperature and performance of storage equipments	Temperature monitors & charts, VVMs, CCMs, Freeze Watch, Data Loggers, Alarms, duty roster	Twice daily
	7	Keep appropriate and up-to-date records of all transactions	Files, Forms, Computer tools, reports	Continuous
Equipment Mgt	8	Monitor and provide regular reports to SIO on key indicators (adequacy and stock levels, wastage rates, quality of storage, bundling) on utilization of vaccines and supplies at all supply levels	DVD-MT	Monthly, by 7th of following month
	9	Conduct a monthly physical stock count of all antigens and devices.		Monthly
	10	Maintain an up-to-date state inventory of cold chain equipment and storage capacity (including LGAs & Health Facilities within the state)	IRP-MT	Monthly
Administration	11	Prepare estimates for operational costs including maintenance & fueling of electric stand-by generators		Monthly
	12	Conduct training for managers of vaccine stores to enhance performance	SOP, standard VM & CC tools	Bi-annual

Table 5: Summary of Activities and Tasks for the Officer In Charge of State Cold Store

## 2.4. Activities at the LGA Vaccine Store

Responsible: State Cold Chain Officer

Category	Sn	Tasks	Tools	Frequency
Vaccine mgt	1	Prepare LGAs' forecast for vaccines & devices and communicate to SCCO for action		Annual, by beginning of 3rd quarter of preceeding year
	2	Determine minimum & maximum stock and re-order levels for each antigen and maintain stock within these limits.	VM3	Yearly reported Monthly
	3	Receive vaccines and supplies from State CCS for storage and distribution to Health Facilities, and prepare and maintain documentation	Stock control forms	Every vaccine delivery and Issues
	4	Prepare distribution plan & movement budget for vaccines and supplies to the Health Facilities' levels based on their requests	Requisition forms from Health Facilities.	Monthly (or when requested by Health Facilities.)
	5	Obtain health facilities stock balances and prepare periodic reports that also includes LGAs balances for submission to SCCO	VM3	Monthly, by 3rd of following month
	6	Maintain vaccines at optimum storage conditions (positive and negative storage temperatures) by regular monitoring of temperature and performance of storage equipments	Temperature monitors & charts, VVMs, CCMs, Freeze Watch, Data Loggers, duty roster	Twice daily
	7	Keep appropriate and up-to-date records of all transactions	Files, Forms, Computer tools, reports	Continuous
	8	Monitor and provide regular reports to SCCO on key indicators (adequacy and stock levels, wastage rates, quality of storage, bundling) on utilization of vaccines and supplies in the LGA store,	VM3	Monthly, by 3rd of following month
	9	Conduct a monthly physical stock count of all antigens and devices.	Personnel & Stationary	Monthly
Equipment Mgt	10	Maintain an uptodate LGA inventory of cold chain equipment and storage capacity (including Health Facilities within the LGA.)	Inventory Forms	Monthly
Administration	11	Prepare cost estimates for operational costs including maintenance & fueling of stand-by generator sets		Monthly
	12	Conduct training for managers of vaccine stores to enhance performance	SOP, standard VM & CC tools	Bi-annual

Table 6: Summary of Activities and Tasks for the Officer In Charge of LGA Cold Store

## 2.5. Activities at the Health Vaccine Store

Responsible: Health Facility In-Charge

Category	Sn	Tasks	Tools	Frequency
Vaccine mgt	1	Prepare HFs' forecast for vaccines & devices and communicate to LGAs' CCO for action	Vaccine Forecast Spreadsheet	Monthly,
	2	Determine minimum & maximum stock and re-order levels for each antigen and maintain stock within these limits.	VM 1	Monthly
	3	Receive vaccines and supplies from LGAs' CCS .	Stock control forms.	For every vaccine delivery
	4	Submit health facilities stock balances at the end of every month.	VM 1	Monthly, by 3rd of following month
	5	Maintain vaccines at optimum storage conditions (positive and negative storage temperatures) by regular monitoring of temperature and performance of storage equipments	Temperature monitors & charts, VVMs, CCMs,	Twice daily
	6	Keep appropriate and up-to-date records of all transactions	Files, Forms, Computer tools, reports	Continuous
	7	Monitor and provide regular reports to states' SIO on key indicators (adequacy and stock levels, wastage rates, quality of storage, bundling) on utilization of vaccines and supplies at its HF.	VM1 and 3	Monthly, by 3rd of following month
Equipment Mgt	8	Conduct a fortnightly physical stock count of all antigens and devices.	Personnel and Stationary	Every two weeks
	9	Maintain an uptodate HFs inventory of cold chain equipment and storage capacity.	Inventory Forms	Monthly
Administration	10	Prepare estimates for operational costs including maintenance & fueling of stand-by electric generators.	SOP, standard VM & CC tools	Monthly
	12	Conduct training for managers of vaccine stores to enhance performance		Bi-annual

### 3. STORAGE AND DISTRIBUTION OF SUPPLIES

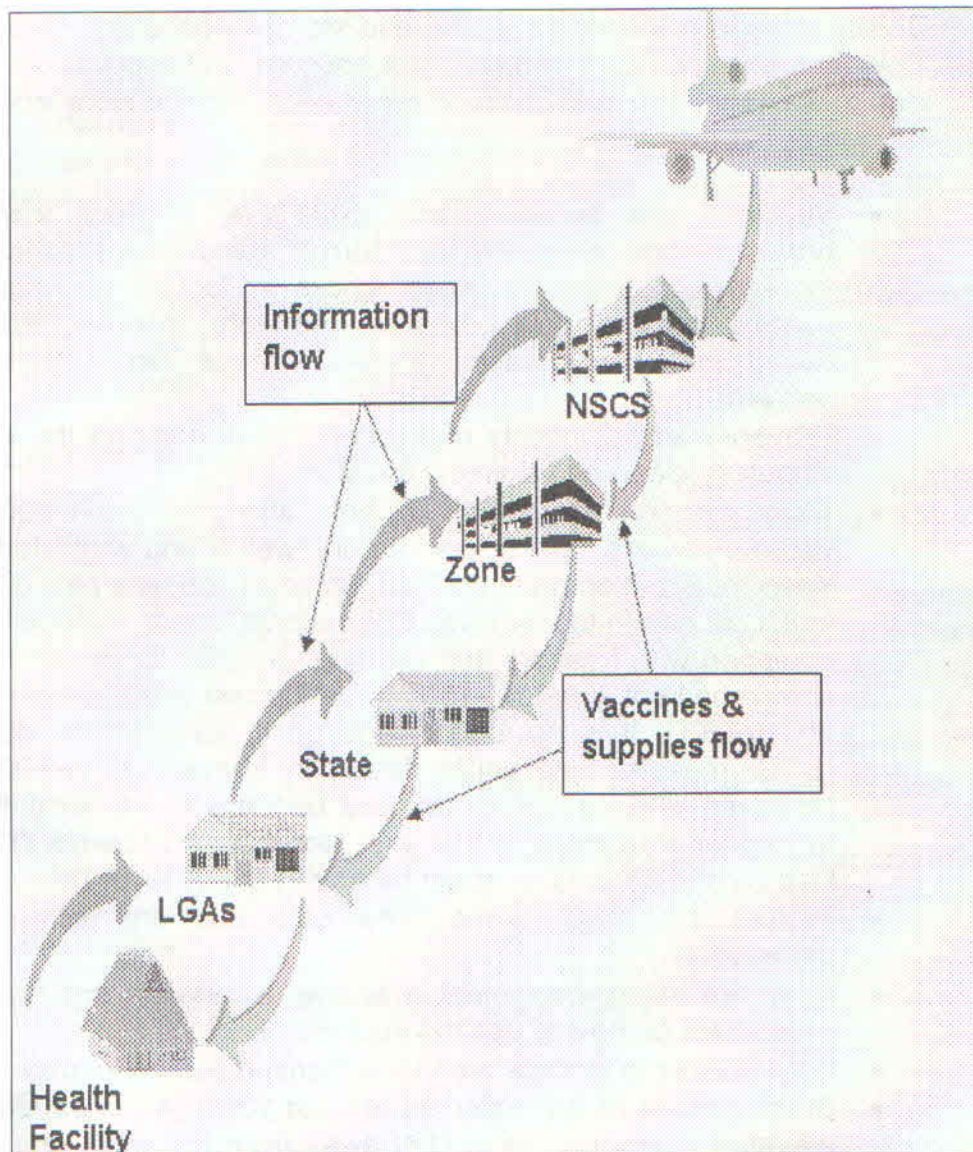


Fig 1: Immunization Logistics Diagram. Source – WHO/AFRO Logistics Handbook

Figure 1 above shows the operating cycle of the immunization logistics system: Vaccines and supplies flow efficiently from National to service delivery levels through Zonal, State and LGA vaccine storage facilities. In the reverse direction, information on immunization sessions, consumption and wastage are reported from service delivery up to LGA, State, and Zone and National levels. It should be noted that some feed-back flows

downstream also from upper levels to lower levels. The efficient management of this cycle and correct maintenance of all equipment needed to carry it out is the prime responsibility of cold chain officer at each level.

### **3.1. Guidelines for Monitoring at Vaccine Storage Facilities**

Quality storage practices save time and storage space and prevent wastage. They also prevent expiry or damage of antigens and supplies which ultimately lead to wastage. The cold chain officer at each vaccine store must ensure the following:

- Vaccines are sensitive and expensive. Prevent theft, pilferage, breakage and exposure to incorrect temperature conditions during storage and transport. Keep stocks in locked enclosures such as vaccine carriers, cold boxes, refrigerators, freezers, and coldrooms taking into consideration correct storage temperatures for each antigen.
- Prevent harmful insects and rodents from entering the storage area. Regularly clean and disinfect the store rooms.
- Store injection equipment, diluents and cold chain equipment, e.g. vaccine carriers, cold boxes in a dry, well lit and ventilated store room. Keep them out of direct sunlight. Store all antigens plus diluents at 2°C to 8°C at health facility level. For national, zonal, state and LGA stores equipped with freezers and keeping vaccines for longer periods, OPV should be kept at below -15°C while the rest of the antigens are kept at 2°C to 8°C. It is no longer required to keep freeze dried vaccines (BCG, measles and yellow fever) in freezers at any storage level. However, it does not cause any damage to do so if the available functional equipment is freezers. Non-freeze vaccines (TT, DPT, and Hep B) and diluents must not be frozen at any level.
- Protect the store rooms (The cold and dry store) from water penetration.
- Keep fire safety equipment available, accessible and functional, train all workers on how to use the equipment.
- Limit access to storage area to authorised personnel only.
- Stack cartons of dry materials at least 10cm (4 inches) off the floor on elevated platforms, 30cm (1ft) away from the walls and other stacks and not more than 2.5m (8ft) high.
- Arrange cartons with arrows pointing upwards and with identification labels, expiry dates and manufacturing dates clearly visible.
- Check expiry dates of vaccines and supplies and store them to facilitate "First expire, First out" (FEFO) procedures of stock management.
- Conduct routine equipment maintenance.

### 3.2. *Forecasting vaccines and Supplies*

Three methods are commonly used to estimate vaccine needs based on:

- Target population (currently the method used in the country)
- Previous consumption
- Immunization sessions.

### 3.3. *Forecasting by Target Population Method*

The following proportions apply when applying the target population method:

	Target age group	% of total Population
1	0 to 11 months	4
2	0 to 23 months	8
3	14 to 45 yrs	22
4	0 to 59 months	20
5	2 to 30 yrs	60
6	9 months to 15 yrs	42
7	9 to 59 months	17

The formula for estimating needs using the target population method is:

Target Pop x Target Coverage x No. Of Doses On The Immunization Schedule x Wastage Factor

Where:

- Immunization Target Coverage is the expected immunization (target) coverage for the year decided annually by the Federal Government of Nigeria and is the basis for vaccine forecasting and procurement.
- The Schedule for Routine Immunization provides the number of doses of each antigen in the immunization schedule
- Wastage Factor is as follows:

Antigen	Wastage Factor
BCG	2
OPV	1.33
DPT	1.33
TT	1.33
Hep B	1.33
MV	1.43
YF	1.43

### Forecasting for related supplies

- The number of A-D syringes required = target population x coverage x 1.1
- Reconstitution syringes = No. of reconstitutable vaccine vials x 1.1
- Safety boxes = Total no. of syringes / 100 x 1.1

### 3.4. Ordering Vaccines

Before ordering new supplies, the stock available should be known and the lead time for supply taken into consideration. The quantity to be ordered can be calculated using the formula:

$$\text{Quantity to order} = \text{Maximum stock} - \text{Available stock} + \text{estimated consumption to cover lead time period}^*$$

*\*Lead time is the period between when an order is placed for a particular supply item and the time the item is delivered to the ordering facility.*

At the zones, states, LGAs and health facility levels, orders should be made using the Stores Requisition Order Forms, which are then submitted to the next higher level for action.

When ordering vaccines, ensure to:

- a. Take physical count of current stock of antigens and related supplies.
- b. Order for a consumption period of 1 month for LGAs and 3 months for states and zonal cold stores.
- c. Order for health facilities based on sessions where storage facilities are not available but for fifteen days where storage facilities are available.

### 3.5. Receiving Vaccines at Zonal, State, LGA and HF Levels

Receiving stocks in the vaccine cold stores requires that the receiving officer observes certain basic stores principles which are listed below:

- ✓ Open and inspect vaccine shipments as soon as possible after arrival, before signing the delivery documents. (Signing delivery documents signifies acceptance by the receiving store that the shipment has been received in good condition and complete. It absolves both the supplying store and the shipping/haulage agent of any further responsibility for that particular consignment.)
- ✓ Check the order against the packing list/way bill/delivery note; note and report any discrepancies immediately in writing. Ensure such discrepancy is also reflected on the delivery documents before signing.

- ✓ Check the ice packs , cold chain monitor, where applicable, and the vaccine vial monitor as applicable. Note, record and report any colour change immediately.
- ✓ Check the expiration dates on the vaccines and record the date. Reject deliveries of any expired vaccines. Report to your supervisor and send back expired vaccines to supplying store.
- ✓ Store the vaccines in the cold chain appropriately according to recommended storage temperatures.

### **3.6. Receiving at National Level**

At the national level, UNICEF Supply Division procures on behalf of the Government and delivers to Abuja airport by air. Before dispatching the supplies, pre-shipment information (pre-alert) is sent to the National Primary Health Care Development Agency (NPHCDA) specifying the following:

1. Type of antigen expected.
2. Number of vials and/or doses expected
3. Flight number of the aircraft
4. Expected time of departure (from country of origin)
5. Expected time of arrival (Abuja)
6. Airway bill number
7. Number of packages to be expected and the gross weight.

The following original documents pertaining to the vaccine shipment are also sent to NPHCDA ahead of the shipment to facilitate release by NAFDAC and customs clearance:

1. Lot release certificate for each batch
2. Production protocol
3. Packing list
4. Airway Bill
5. Certificate of country of origin
6. Certificate of analysis
7. Invoice

On receiving the above documents, NPHCDA notifies Customs, NAFDAC and clearing agent to facilitate pre-release of the shipment

On arrival, cold chain during transshipment is assessed through the condition of the ice packs and sampling cartons of vaccines for the condition of the following monitoring devices:

1. Cold chain monitors (CCMs) accompanying individual vaccine boxes
2. Vaccine vial monitors (VVMs) on the individual vaccine vials.

On confirmation that the vaccines have been transported properly, they are sorted out according to their manufacturers, batch numbers and expiry dates and stored appropriately pending distribution. A Vaccine arrival report (VAR)

is prepared and copies sent to UNICEF for quality control and in case of receipt in poor condition or discrepancy in quantities, for follow up with the supplier. The completed VAR must be returned to UNICEF Supply Division within three days of receipt of the vaccines consignment. This facilitates arbitration of claims in case of complaints on quality, supplier or transportation errors.

All vaccines received for use must be from WHO pre-qualified manufacturers and registered with NAFD.

**Adequate preparations must be made for receiving and storing vaccines. These include:**

- Preparation of adequate storage space before arrival of vaccines
- On receiving, arrange vaccines in storage space by batch
- Label cold chain equipment with type of antigens stored in them by batch and expiry dates
- Posting of a clear plan for emergencies at the vaccine store and responsibilities for weekend and public holidays
- Charting of temperatures for each equipment twice daily

### 3.7. Storage of Vaccines

Vaccines are sensitive thermo labile biological products which need special storage conditions. Vaccines are classified into two groups based on their storage temperature requirements viz heat sensitive and freeze sensitive vaccines. Heat sensitive vaccines require storage at negative temperatures especially during prolonged storage periods while freeze sensitive vaccines are easily destroyed when frozen. They are stored at positive temperatures (between 2 to 8 degrees Celsius). The table below illustrates this classification:

WHO RECOMMENDED VACCINE STORAGE CONDITIONS							
		Primary Store	INTERMEDIATE STORES				
S/N	ANTIGEN	NATIONAL STORE	ZONAL STORES	STATES' STORES	LGAS' STORES	HEALTH FACILITIES	HEALTH POSTS
1	OPV	-15°C to -25°C			2°C to 8°C		
2	BCG	WHO no longer recommends that freeze dried vaccines be stored at -20°C. Storing them at -20°C is not harmful but it is unnecessary. Instead these vaccines should be kept in refrigeration and transported at					
3	Measles						
4	Yellow Fever						

5	CSM	+2°C to +8°C
6	DPT	
7	Hep B	
8	TT	

*Diluents vials must NEVER be frozen. When the manufacturer supplies a freeze - dried vaccine packed together with its diluents, ALWAYS store the product at between +2°C and +8°C. Where space permits, diluents supplied separately from the vaccine may safely be stored in the cold chain between +2°C to +8°C.*

**Adapted from WHO – UNICEF Effective Vaccine Store Management Initiative**

### **3.8. Storage Period (Supply Interval)**

The storage periods for each level of stores in the country are;

- Three (3) months each for National, Zonal, and State levels,
- One (1) month at LGAs
- Fifteen (15) days at Health Facilities levels. (where storage facilities exist)

## **4. COLD CHAIN EQUIPMENT AND MONITORING TOOLS**

The following are the most common vaccine storage cold chain equipment and temperature recording devices:

1. Refrigerators/ Refrigerator cold rooms
2. Freezers/ Freezer cold rooms
3. Generators at storage facilities (cold stores)
4. Cold boxes, vaccine carriers and ice packs (for service delivery at peripheral/HF levels).
5. Cold chain monitors.
6. Vaccine vial monitors.
7. Electronic temperature loggers.
8. Thermometers.
9. Temperature charts.

### **4.1. How to adjust thermostat to maintain required temperatures for vaccine storage:**

- Adjust the refrigerator thermostat to maintain between 2°C and 8°C. If this is being adjusted during the hottest time of the day, adjust to maintain between 6°C and 7°C. This will compensate for tendency swing to freezing (below zero °C) when the environmental temperature drops for instance at night. Conversely, the thermostat may be set at the coldest time of the day to maintain just above 2°C. In either case, it is important to

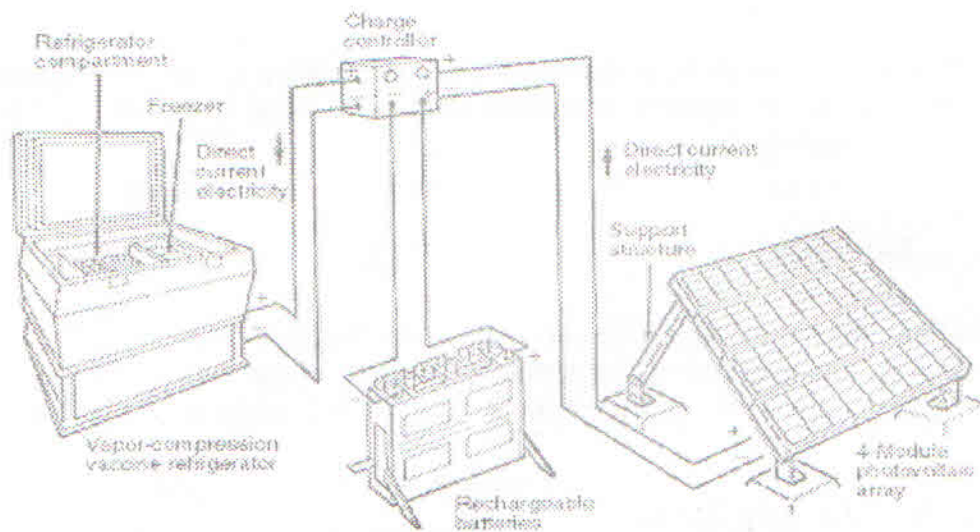
- keep the equipment under close observation while charting twice daily as required and to correct any swings tending outside 2°C and 8°C.
- Adjust thermostats for freezers to maintain temperatures of -15°C and below.
- Chart temperatures twice daily. Observe temperature trends to determine when it is necessary to re-adjust thermostat setting due to weather changes (hot and cold seasons)

#### **4.2. *Setting up new or newly repaired equipment:***

- When new or recently repaired equipment is brought into stores, place it in an upright position for at least 1 hr for compression type and 4 hrs for absorption type. Then plug to power source and run overnight to ensure correct temperatures are maintained before loading.
- Refer to manufacturer's instructions manual before making any adjustments, especially temperature control settings.
- Avoid frequent opening of the refrigerator door as it results in break in the cold chain and can result in cumulative exposure of vaccine to heat over time
- Store ONLY vaccines (and diluents at health facility levels) in vaccine storage equipment. No other products should be allowed in the vaccine refrigerator/freezer.
- Check for ice that forms around the freezer and defrost as necessary
- Clean the cabinet, condenser and compressor (monthly task)
- Maintain free air circulation around the refrigerator unit. Place the equipment at least 15 cm (1 foot from the wall.)

#### **4.3. *Solar powered equipment***

Solar powered cold chain equipment offer an attractive and sustainable alternative to erratic or non-existent national electricity grid. The sketch below shows the components of a solar (photo voltaic) cold chain system.



Check the charge controller daily to ensure optimal performance of the solar refrigerator. To do this, you must be able to read and interpret the signals of the PV controller.

For Dulas Solar Charge Controllers, four lights are used to show:

- ✓ **SOC** – State Of Charge of the battery
- ✓ **IM** – Current from Modules
- ✓ **IL** – Current to the Load/Refrigerator
- ✓ **UBAT** – Charging voltage of the battery

Most Solar Charge Controllers can be interpreted as follows:

- ✓ **Green Light** – Battery fully charged
- ✓ **Yellow Light** – Average Charge (do not freeze ice packs when this light is on)
- ✓ **Red** – Almost discharge (do not freeze ice packs when this light is on)

In addition to the above, the following user level maintenance tasks must be carried out as described below:

#### 4.3.1. Daily Tasks:

1. Complete daily record sheets (temperature charting)
2. Monitor temperature, indicator lights and metering
3. maintain free air circulation around the refrigerator
4. Maintain vaccines at recommended temperatures of 2°C to 8°C

#### 4.3.2. Weekly Tasks:

1. Check for ice formation on the freezer and defrost if thicker than 5 mm

2. Check and clean solar panels if dirty (frequency of cleaning depends on weather conditions and environment – more frequent during dry dusty weather)

#### **4.3.3. Monthly Tasks:**

1. Clean the refrigerator cabinet, condenser and compressor
2. Check the solar panels for shading , clear or clean if necessary
3. Check battery for electrolyte level, add distilled water if necessary

#### **4.3.4. Six Monthly Tasks:**

1. Check tightness of electrical connections, tighten if necessary
2. Check the lid door seal for proper closing

#### **4.4. Storage of vaccines in the cold chain**

- Label vaccine storage equipment (e.g. Freezer1 or Refrigerator2 etc) and list quantity of vaccines in each equipment indicating batch numbers and expiry date. This allows for easy tracking of vaccines by batch numbers and simplifies implementation of the First Expire First out (FEFO) system of store management.
- Place the vaccines in the appropriate storage compartment of the vaccine storage equipment taking into consideration recommended storage temperatures for freeze dried and non-freeze vaccines.
- Diluents must be at same temperature as vaccines at point of use (+2°C to +8°C).

#### **4.5. Cleaning and Store Arrangement**

Regular cleaning of the vaccine cold store is important. The vaccine cold store is expected to be clean and well arranged at all times. Cleaning may be scheduled as follows:

##### **..1. Daily/routine cleaning:**

1. Sweep the store
2. Dust the equipment and all other surfaces where dust easily settles
3. Remove wrappings and packing materials from the store after each delivery/issue

##### **..2. Weekly cleaning:**

1. Sweep the vaccine store including under equipment
2. Dust crevices and other areas where dust settles

3. Check arrangement of equipment and supplies in the store and reorganize if necessary

**..3. Monthly cleaning:**

1. Clear cobwebs from all surfaces
2. Clean all equipment especially after defrosting

## **5. STOCK MANAGEMENT AND DISTRIBUTION**

The goal of this set of procedures is to manage vaccine stocks and related supplies to ensure accountability and minimize wastage. This stock management system is designed as **a forced ordering maximum/minimum control system** that allows every level to order according to the set re-supplies cycle. In this system every HF with storage facility would order from the LGA at the end of every two weeks while LGAs order monthly from the state and states order quarterly from the zones. HFs without a refrigerator should order for each planned vaccination session and use cold boxes with vaccine carriers and icepacks. While doing this, we must;

- Maintain up-to-date records of all items in the store (receipts and issues)
- Maintain appropriate quantities of vaccines and related supplies applying minimum/maximum stock level estimation
- Use the formula below to determine how long stock will last:

**Stock on hand/Stock used in a month = how long supplies will last.**

### **5.1. Visual Inspection**

A visual inspection should be conducted when receiving, issuing or when conducting a physical inventory as follows:

- Package and product integrity: check for damages to packaging (tears, perforations, water or oil).
- Manufacturing defect: Incomplete supply, missing or illegible identification information
- Labelling: Make sure that vaccines/supplies are labelled with the date of manufacture or expiration, lot numbers and manufacturer's name.

## **6. VACCINE AND SUPPLIES DATA MANAGEMENT TOOLS**

The table below shows forms that will be used to manage vaccine / devices stocks at stipulated different levels, and the responsible officers for their use. The overall aim is to ensure accountability, minimizing wastages, and generating a reliable feedback for action.

S/N	NAME OF FORM	LEVEL AT WHICH FORM IS USED.	RESPONSIBLE OFFICERS
1	Health Facility Vaccine Utilization Reporting form: VM1	Health facilities.	Health Facilities' RI Focal Persons
2	Monthly LGA Vaccine Utilization summary form: VM2	LGAs	LGA Cold Chain Officers./ LIO
3	Monthly LGA Routine Immunization Vaccine Utilization Report Form: VM3	LGAs	Local Immunization Officers.
4	Store Issues/Receipts Voucher :VM4	LGAs, States, Zonal, and National	Respective Cold Chain Officers.
5	Vaccines, Diluents, Consumables, Stock Record. VM5	LGAs, States, Zonal, and National	Respective Cold Chain Officers.
6	Vaccines, Diluents, Consumables Ledger Book. VM6	LGAs, States, Zonal, and National	Respective Cold Chain Officers.
7	Monthly State vaccine Utilization Summary Form VM7	State	State Immunization and Cold Chain Officers
8	Monthly State Routine Immunization Vaccine Utilization Report Form VM8	State	State Immunization and Cold Chain Officers

These tools are in Annex 3. They will be used to document and report vaccine usage from Health Facilities through LGA level to the state. All LGA summaries will be collated at the state level electronically using DVD MT and SMT tools which are described in Annex 5 and 6. (The non electronic version is represented by VM7 and VM8).

Details on how each form will be completed are as follows:

### **6.1. VM1: Health Facility Vaccine Utilization Reporting form**

**PURPOSE:**

- To track the quantities of vaccines and devices received/used/balance on a daily basis, and double as ledger book at the health facility level

**FREQUENCY:**

- This is to be filled each time vaccines and devices are received and or opened for use.

**BY WHOM:**

- To be filled by Health Facility Routine Immunization focal person

**HOW:**

- Balances from the previous month will be received into current month, in brought forward row.
- Minimum and maximum stock levels of all antigens and devices are to be entered at the beginning of the month, calculated by Local Immunization Officers.

- All items received from the LGA must be entered into RECEIVED column.
- All items opened for sessions must be written in USED column, and balances calculated.
- At the end of the month, add all issues and receipts separately and enter into VM2.
- A copy of this form is to be submitted to the LGAs, together with Monthly RI Health Facility Summary, at the end of the month.

At the beginning of the month, fill:

**Part A:** Name of facility, Ward, LGA, State, Month, monthly target population, minimum and maximum stock required at Health Facility,

**Part B:** The table has the following;

- Day of the month.
- Vaccines and devices
- Two blank column to be filled as needed – for additional vaccines / interventions e.g. ( csm vaccine, vitamin A)

**Part C:** Last row: the received and used column will be added up to give the total per month and in the balance column. The last entry will be noted, transferred into VM2, and contribute to the total balance in the LGAs. To know the balance in the LGA at the health facilities.

**Part D:** Remarks/Comments.

**Part E:** Six column tables to record antigens and devices wasted due to expiry, VVM change, frozen, breakage, and labels removed (the closed vials).

## 6.2. **VM2: Health Facility Vaccine Utilization Summary form**

### PURPOSE:

- To track the quantity of vaccine and devices received/used/balance in health facilities

### BY WHOM

- To be filled by LGA Immunization Officer and LGA Cold Chain Officer

### FREQUENCY:

- This is to be done at the end of the month, timely, and completely

### HOW:

- Data taken from the balance of stocks, and addition of receipts and used in VM1.
- To be submitted to the State together with Monthly LGA RI Summary and Monthly Routine immunization vaccine utilization report form: VM3

**Part A:** Name of LGA, State, Month, monthly target population of the LGA

**Part B:** The table has the following

- Name of Facilities
- Vaccines and devices
- Two blank column to be filled as needed

**Part C:** Last row: Total of the received, used and balance in the facilities.

**Part D:** Remarks/Comments.

**Part E;** Six column tables to record antigens and devices wasted due expiry, VVM change and breakage at the facilities

### 6.3. **VM3 RI Vaccine Utilization Report Form**

- To be filled by LGA Immunization Officer and LGA Cold Chain Officer
- Purpose to document the quantity of vaccine and devices available at the beginning of the month and end of the month in the LGA.
- This is to be done at the end of the month.
- Physical inventory count must be done at the end of the month
- To be submitted to the State together with Monthly LGA RI Summary and Monthly LGA Health Facility Vaccine Utilization Summary form. (VM2.)

**Part A:** Name of LGA, State, Month, Number of health facilities providing RI per month of the LGA

**Part B:** The table has the following;

- Name of antigen, estimated vaccines (doses) and devices required for month, vaccines and devices balance at the beginning of the month.
- Vaccines and devices received, used in the facilities
- Physical inventory balance at LGA and facilities
- Number of children immunized and minimum and maximum temperature

**Part C:** Reporting Officer Details.

### 6.4. **VM4: Store Issue and Receipt Voucher**

Issue and receipt voucher will be filled in duplicate, and signed by both issuing and receiving officer. This information can be used to cross check the bin and ledger cards and will be filled as follows...

Steps	Action	Notes/Comments
1	Issuing and Receiving Stores' names	To be completed by corresponding officers.
2	Description of Vaccine, diluents and devices.	Record in Commodity column
3	Date of transaction.	Dates of issues and receipts.
4	Issue and receipt Voucher number	Already assigned.

Steps	Action	Notes/Comments
5	Batch numbers	This is of items no 2 above.
6	Expiry Date	
7	VVM status at point of issue and receipt.	As read by issuing and receiving officers.
8	Quantities Issued / Received	Record individual issues or Receipts.
9	Name, title, Date, and Signature of both Issuing and Receiving Officers.	To be completed at the time of Issuing and Receiving.

### **6.5. VM5: Supplies Stock Record Card**

This inventory control card tracks the quantity of vaccine/supplies in the store. The information tracked on the inventory control cards will facilitate the management of inventory at the store.

Task:	Completing the inventory control card
Completed by:	Cold chain/store officer
Purpose:	To track the number/quantity of vaccines in the store
When to perform task:	Each time there is a transaction that affects the stock balance of vaccines, diluents, and consumables.
Materials needed:	Vaccine, Diluents, Consumables, Stock record card, calculator and pen.

Fill the record card by selecting appropriate actions below:

Steps	Action	Notes/Comments
Starting a new Vaccine / Diluents / Consumables Stock record card		
1	Store name	Approved Name.
2	Name of Vaccine, diluents and devices.	Name of antigen or diluents
3	Description of Vaccine, diluents and devices.	Doses / vials of vaccines, volume of diluents, and sizes of inject able devices.
4	Minimum/maximum stock levels	Enter quantity per month.
5	Equipment name/number/code	Indicate code of equipment where vaccines are kept. E.g. Freezer 1 (Code Fr 01)
Receiving / Issuing Transactions		
1	Date of transaction.	Day, Month, and Year.
2	Name of source and Destination of stock	Examples: National, Zonal, State, LGAs' Stores.
3	Purpose of the stock	Indicate if it is RI or SIA.
4	Issue and receipt Voucher number	Serial Numbers of issues and receipts vouchers.
5	Batch numbers	Of vaccines, diluents and devices.
6	VVM status at point of issue or receipts.	Stages of VVMs. (I, II, III )
7	Quantities Issued / Received	Record individual issues or Receipts.
8	Stock balance	Final balance after transaction.
9	Initials/sign	This is of the documenting officer.

### 6.6. VM6: Vaccine, Diluent, and Consumables Ledger

This inventory control book will track the quantity of vaccine/supplies in the store, and will serve as a control for the bin cards. It will be used in addition to bin cards in large stores of National, States' and LGAs'.

Task: Completing the Vaccine, diluents, and consumables ledger.

Completed by: Cold chain/store officer

Purpose: To track the number/quantity of vaccines in the stores.

When to perform task: Each time there is a transaction that affects the stock balance of vaccines, diluents, and consumables in the store

Materials needed: Vaccine, Diluents, and Consumables, Stock ledger, calculator and pen.

Fill the ledger book by selecting appropriate actions below:

Steps	Action	Notes/Comments
<b>Starting a new Vaccine / Diluents / Consumables Stock record card</b>		
1	Name of Vaccine, diluents and devices.	Name of antigen or diluents
2	Description of Vaccine, diluents and devices.	Doses / vials of vaccines, volume of diluents, and sizes of inject able devices.
3	Minimum/maximum stock levels	Enter quantity per month.
4	Equipment name/number/code	Indicate code of equipment where vaccines are kept. E.g. Freezer 1 (Code Fr 01)
<b>Receiving / Issuing Transactions</b>		
1	Date of transaction.	Day, Month, and Year.
2	Name of source and Destination of stock	Examples: National, Zonal, State, LGAs' Stores.
3	Purpose of the stock	RI or SI
4	Issue and receipt Voucher number	Serial Numbers of issues and receipts vouchers.
5	Batch numbers	Of vaccines, diluents and devices.
6	VVM status at point of issue or receipt.	Stages of VVMs. (I .II, III )
7	Quantities Issued / Received	Record individual issues or Receipts.
8	Stock balance	Final balance after transaction.
9	Name and Signatures of Issuing and Receiving Officer.	Issuing and Receiving Officers must be documented.

## 7. PHYSICAL INVENTORY:

This is done to verify that the stock balance as reported on the inventory control cards and show the correct quantities available in the stores. It should be conducted every three months in the National and Zonal, monthly at states stores, and LGAs and bimonthly at Health facilities level. For vaccines / devices that will expire within 60 days which will not be exhausted before expiration, inform the supply level immediately for redistribution.

Task:	Conducting a physical inventory
Completed by:	Store team
Purpose:	To verify the stock level in the store at the time of physical count To detect errors in the management of stocks to detect loss in the store
When to perform physical inventory:	According to reporting period.
Materials needed:	Inventory control cards, calculator, pencil, pen and paper.

These are the steps to be taken.

- a. Count complete unopened cartons; multiply the number of cartons by the number of units in the carton. This gives the total number of antigen doses in the carton
- b. Count open cartons: if an open carton contains unopened packets, count the number of packets and multiply the number by the number of units in a packet. This will give you the total number of doses of antigens in the unopened carton.
- c. Count all the units that are in open boxes
- d. Add up the total units from the unopened cartons, unopened packets, open packets, shelves, etc. This will give you the total number of antigen doses available in the store. This is known as the actual quantity on hand.

### ON THE INVENTORY CONTROL CARD:

Mark/note the last calculated stock balance

- a. Draw a line through the next row of the Inventory control card
- b. In the next row of the inventory control card in the date column, write the date of the physical count.
- c. In the "receive from/issue to" column, write the physical count quantity
- d. In the stock balance column, write in the actual quantity on hand, the result of the physical count.

### END OF MONTH INVENTORY

At the end of each month, take inventory of vaccines and consumables available paying special attention to expiration dates. For vaccines that will expire within 60 days which cannot be exhausted before expiration, inform

the supply level immediately for redistribution to others who will need them and will be able to do so before expiration.

## **8. PEST CONTROL**

Pest control is also part of the cleaning activity that needs to be undertaken periodically. The cold room should not be left to the mercy of insects and rodents that could either cause damage to the vaccines directly or indirectly through damaging and destroying cold chain equipment. Fumigation should be carried out every six months to keep the vaccine store pest free.

## **9. BOARDING OF CLOSED WASTAGES**

Antigens and consumables that are not used due to reasons such as VVM change, expiration, label peeling off, or broken in the case of vaccines and expiring in the case of consumables will be collated at all levels following these guidelines.

- Physical inventory of all expired, vvm 3 and 4, broken, labels pilled off vaccines and expired consumables will be done and documented stating quantities, batch numbers, expiration dates, and manufacturers.
- Adjustments will be done to stock records using issue vouchers and ledger books to reflect new balances.
- These documentations will be collated for HFs and LGAs at the state levels.
- Destruction of these items for HFs, LGAs, and state levels will be done at state levels, after approval obtained from the logistics working group. A comprehensive report will then be sent to the National level through zonal stores.
- The zonal stores will documents theirs, destroy in their state of operation, after approval obtained from the logistics working group. and a comprehensive report sent to National level.
- National stores will document and destroy at their level and keep all records for the country, with copies to partners.
- All destructions will be done in consultation with relevant agencies of Federal Government of Nigeria as stipulated in government general rules on destruction of expired items.

## 10. Annex 1: How to Calculate Minimum & Maximum Stock Levels

- **Calculate minimum and maximum stock levels using:**

- Target Population, a % of annual Population as agreed by country.
- Percentage Coverage as nationally agreed.
- No of doses per child as internationally known.
- Wastage factors of 2, for BCG, 1.33 for DPT, TT, Hbv 1.5 for measles and Yellow fever vaccines and 1.11 for Syringes & Safety boxes.

### ANNUAL REQUIREMENTS - Example:

Annual Target Population (A)	×	Percentage Coverage (B)	×	Number of Doses per child (C)	×	Wastage Factor (D)	=	Annual Requirement (E)
10,000	×	80%	×	3	×	1,33	=	31,920

### MONTHLY REQUIREMENT:

	Annual Requirement (E)	÷	12	=	Monthly Requirement (F)
EXAMPLE	31,920	÷	12	=	2,660

### MINIMUM STOCK LEVEL:

	Monthly Requirement (F)	X	0.25	=	Minimum Stock Level (G)
EXAMPLE	2,660	X	0.25	=	665

### MAXIMUM STOCK LEVEL:

	Monthly Requirement (F)	X	1.25	=	Maximum Stock Level (H)
EXAMPLE	2,660	X	1.25	=	3,325

## 11. Annex 2: District Vaccine Data-Management Tool (DVD-MT)

### STARTING:

The following precautions should be observed before starting to operate the DVD-MT.

- **Save the document under a new name for the current year as follows:**

- Click on 'File'
- Select 'Save As' from the drop down menu
- Type in the new name of the document in the dialogue box.
- Click 'Save'.
  - *This is to prevent loss of document without a backup for the original document*
  - *Always have a backup of your management too in a separate location from your work station.*

- **Always protect your work sheets after data entry as follows:**
  - Click 'Tools'
  - Select 'Protection' from the drop down menu.
  - Then select 'Protect' from the options.
  - To input data on to the sheets, unprotect the selected sheet by clicking on 'Tools'. Then select 'Protection' and click on 'Unprotect' from the drop down menu.
    - **This is to prevent unlawful entries or mistakes like deleting data entered.**
- **Making entries:**
  - **DO NOT** enter data into the shaded cells or cells with dash in them. These cells contain formulas which would be deleted when data are entered into them.
  - Data can only be entered in the programme and data entry sheets. The programme sheet data is mostly based on the National expectations of coverage and other parameters such as wastage rates, list of clients reporting to that level, critical stock levels as determined, etc.
  - Operational data is mainly entered into the data entries sheets for the corresponding months.
  - Always use the '**pop ups**' as guide to input data into the tool.

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### Summary sheet:

This sheet gives a summary of all the sheets and what they are used for in terms of data capture and analysis. The tool is divided based on the following broad areas:

- **List of units and customization of parameters.**
  - Summary
  - Programme data
- **Data entry sheets**
  - For RI data entry for the months January to December.
- **Analysis on trends**
  - Completeness\_Timeliness: Records timeliness and completeness of reporting.
  - Cum\_Vaccinations: Cumulative number of target population vaccinated.
  - Cum\_Boost: Cumulative number of booster doses and non-target population vaccinated.
  - Stock\_Level: Trends of stock level.
  - Qty\_Received: Quantity of vaccination supplies that have been received during the month.
  - Supply\_Adequacy: Proportion of cumulative supplies received over the estimated needs over the same period of time.
  - Qty\_Issued: Quantity of vaccination supplies that have been issued from the facility store per month.
  - Bundling: Bundled distribution of supplies.
  - Doses\_Opened: Number of doses opened for vaccination per month.
  - Utilization: Vaccine utilization rate at service delivery (doses opened/doses issued)

- Wastage: Vaccine wastage in opened vials.
- VVM\_Discard: Quantity of vaccine doses discarded due to VVM change.
- Temp\_exposures: Status of mini & maxi temperature exposures.
- **Indicators and performance.**
  - Cum\_Coverage: Trend of DPT-3 cumulative coverage per LGAs.
  - Table\_RED: Trend of DPT-3 cumulative coverage per LGAs.
  - Table\_Cat: Trend of access and utilization categorization per LGA.
  - Indicators: Monthly trend of EPI monitoring indicators.
  - Grf\_Performance: Monitoring charts of immunization performance.
  - Grf\_Cov\_Wastage: Monitoring charts of immunization coverage and vaccine wastage rates.
  - Grf\_Im&Needs\_Cov: Monitoring charts of supply adequacy and immunization performance.
  - Grf\_Supply: Monitoring charts of availability of vaccines and injection safety equipment.

**Programme data sheet:**

- From the drop down menu in column C 2 select the corresponding entity.
- In column D 2 enter the name of the entity (country, state, LGA, etc.)
- In column K 2 enter the current year of operation.
- List of districts:
  - In column B list the states or LGAs as the case may be.
  - In column C list the LGAs or Health Facilities as the case may be.
  - In column D enter the total target population of the levels.
  - In column E enter the number of HF's offering immunization services.
- **Vaccines and vaccinations – Vaccine Programme Dada:**
  - In column I enter the number of doses in the immunization schedule for each antigen
  - In column J enter the expected coverage for each antigen
  - In column K indicate the expected wastage rate for each antigen
- **Access and utilization categorization:**
  - In column J 19 indicate the DPT 1 coverage limit for good access.
  - In column K 19 indicate the DPT 1 coverage limit for good coverage
  - In column I 20 indicate the drop out rate limit for good utilization
  - In column I 21 indicate the drop out rate limit for good utilization
- **Vaccines and injection materials critical stock levels:**
  - In column I 26 indicate reserve stock of vaccines established for lower levels
  - In column I 27 indicate reserve stock of injection equipments established for lower levels
  - In column J 26 indicate the maximum vaccines stock established for lower levels.
  - In column J 27 indicate the maximum injection equipments stock established for lower levels.
- **Supply adequacy safe zones:**
  - In column I 31 indicate the lower limit of the supply adequacy.
  - In column I 32 indicate the upper limit of the supply adequacy.

### **Data entries sheet:**

- In column C Timeliness of reports; enter T if report is received on time or L if report is received late.
- Number of HFs received:
  - In column D enter the total number of HF that has reported for the month.
  - In column E enter the number of HFs that has reported to the LGA on time.
- In column F enter the number of outreach sessions that have been conducted during the month.
- In columns G to AZ, enter the total number of children immunized during the month for the various doses of antigens and the different age groups (i.e. < 1 year and > 1 year respectively).

### **Vaccines used for service delivery (No. of doses opened for vaccinations):**

- In columns BA to BH enter the number of doses opened for vaccination during the month for each antigen.

### **Vaccine stock management at service delivery level:**

- In columns BI, BN, BS, BX, CC, CH, CR and CW enter the quantities of vaccines *for* each antigen that have been received at the LGA store during the month.
- In columns BJ, BO, BT, BY, CD, CI, CN, CS and CX enter the balance of vaccine stock in each LGA store for each antigen at the end of the month.
- In columns BZ, CE, CJ, CO and CT enter the quantities of vaccines that have been discarded from the LGA store due to VVM changes.
- In columns BL, BQ, BV, CA, CF, CK, CP and CU enter the minimum temperature recorded for each antigen from the monthly temperature monitoring chart.
- In columns BM, BR, BW, CB, CG, CL, CQ and CV enter the maximum temperature recorded for each antigen from the monthly temperature monitoring chart

## **12. Annex 3. Stock Management Tool (SMT)**

### **STARTING:**

The following precautions should be observed before starting to operate the SMT.

- **Save the document under a new name for the current year as follows:**
  - Click on 'File'
  - Select 'Save As' from the drop down menu
  - Type in the new name of the document in the dialogue box.
  - Click 'Save'.
    - *This is to prevent loss of document without a backup for the original document.*
    - *Always have a backup of your management tool in a separate location from your work station.*
- **Always protect your work sheets after data entry as follows:**
  - Click 'Tools'

- Select 'Protection' from the drop down menu.
- Then select 'Protect' from the options.
- To input data on to the sheets, unprotect the selected sheet by clicking on 'Tools'. Then select 'Protection' and click on 'Unprotect' from the drop down menu.
  - ***This is to prevent unlawful entries or mistakes like deleting data entered.***
- ***Making entries:***
  - **DO NOT** enter data into the shaded cells or cells with dash in them. These cells contain formulas which would be deleted when data are entered into them.
  - Entries should **ONLY** be made on the following sheets:
    - Programme data, subscribers, vaccines received, equipments received, individual vaccines; diluents and equipments tally sheets.
  - Always use the '**pop ups**' as guide to input data into the tool.

## CONTENTS

### Programme sheet:

- Enter name of country in the shaded cell after country.
- Enter the year of use of the tool
- Below the country, enter the level where the tool is to be used.
- Enter the name of the state in the cell after the level.
- In the column No of units put the total number of equipment in each category
- In the vaccine storage capacity column, enter the combined total volume of the equipments in each category in the previous column.
- Availability of cold chain equipment and capacity:
  - Indicate the number of available cold chain equipment at the implementing cold store in column C.
  - Indicate the total volume of available cold chain equipment in column D.
- ***Availability of dry storage capacity:***
  - Indicate the number of storage rooms available in column C.
  - Indicate the total storage capacity owned by the programme in column D.
  - Indicate the total storage capacity that can be mobilized from other programmes/services in column E.
- ***Organization of the cold chain:***
  - Indicate the number of available cold chain equipment at each storage level in column C.
  - Indicate the vaccine storage period for each level in column D.
  - Indicate the lead time between order and receipt of supplies for each level in column E.
- ***Vaccines and vaccinations:***
  - Indicate the number of doses for each antigen in the National immunization schedule in column C.
  - Indicate the target coverage for the current year for each antigen in column D.

- Indicate the size of the vaccine vial (doses/vial) in column E.
- Indicate the expected wastage rate for each antigen in column F.
- **Stock recording indications:**
  - Indicate the adopted code for the various stock movements in columns C and F.
  - Stock movement recording units
    - Select from the drop down menu the unit for recording stock movements in column C.
- **Demographic data:**
  - Indicate the proportion of the total population for each demographic data according to the national averages.
- **List of sub-depots (lower level storage sites):**
  - List all the lower level storage facilities (cold stores) in column F.
  - Indicate the total population for the current year for each lower storage level in column G
- **Currency exchange rate:**
  - Indicate the current exchange rate against the US dollar in cell C 76.
- **Vaccines and supply entry list**
  - Enter the list of abbreviations for vaccines and supplies that would be used to record stock movements in column C.

#### Subscribers List

- **Status of stock balance at the beginning of the year:**
  - Enter for each antigen and supply (injection devices and diluents inclusive) the balance as at the end of the previous year in the appropriate columns (as brought forward).

#### Vaccines received (Reception Tally sheet)

- In the date received column, enter the date of receipt of the current batch of vaccines/supplies. For brought forward stocks, enter the date as at the end of the previous year.
- In the type of receipt column select from the drop down menu the type of reception as appropriate.
- In column D indicate the origin of the antigens/supplies (eg. National Strategic Cold Store, etc)
- In column E, select from the drop down menu the name of vaccine or diluent received.
- Indicate the batch number of the vaccines/diluents received in column F.
- Indicate the expiry date of the current batch received in column G using the international date format of Day/month/year.
- In column H, indicate the purpose for which the vaccine or diluent is received e.g. campaigns, NIDs, epidemics, mop-up, etc. If supply is for routine immunization purposes leave the column blank.
- In column I, indicate the vaccine vial size (i.e. the number of doses per vial).
- Enter the number of boxes of the vaccines/diluents received in column J.
- Enter the number of vials received in column K.
- From the drop down menu in column L, select the name or identification of the manufacturer.

- In column M, indicate the source of funding for the procurement of the vaccines/diluents.
- In column N, indicate the reference number of the receipt document (Issue or receipt voucher number as appropriate).
- Status of indicators:
  - Indicate the VVM stage of the vaccines on arrival in column S. Random sampling should be employed to determine the VVM stage on arrival at the store.
  - Indicate also the stage of the cold chain monitors on arrival in column T.
- In column U, indicate the location of the vaccines in the cold chain, e.g. Freezer No. 1 or Refrigerator No. 1.

### **Equipments received (Reception Tally sheet for safe injection equipment)**

- **Reception:**
  - Indicate the date of reception of the current batch in column B.
  - In the type\_received column C, indicate the type of reception (e.g. carried forward-C/F, IN, Excess, Return, others, etc).
  - In column D, origin, indicate the origin or source of the equipment (e.g. National Strategic Cold Store).
- **Supplies Equipment:**
  - From the drop down menu in column E, select the type of equipment supplied.
- In column F, indicate the batch number of the equipment received.
- In column G, indicate the expiry date of the current batch received using the international date format of Day/month/year.
- In column H, indicate the purpose for which the equipment is received e.g. campaigns, NIDs, epidemics, mop-up, etc. If supply is for routine immunization purposes leave the column blank.
- In column I, indicate the number size of the packaging i.e. number of units per box or pack.
- Quantities received:
  - In column J, indicate the number of cartons of the current batch received.
  - In column K, indicate the number of boxes received.
- Manufacturer/Producer: In column L, indicate the identification of the equipment manufacturer or producer.
- In column M, indicate the source of funding for the procurement of the equipment.
- In column N, indicate the reference number of the receipt document (Issue or receipt voucher number as appropriate).
- Packaging for storage:
  - In column Q, indicate the number of units per carton.
- In column S, indicate the location of storage of the equipment in the dry storage.

### **Stock\_Batch: Vaccine Stock balance by Batch Sheet.**

- In column M, indicate the source of funding for the procurement of the vaccines/diluents.
- In column N, indicate the reference number of the receipt document (Issue or receipt voucher number as appropriate).
- Status of indicators:
  - Indicate the VVM stage of the vaccines on arrival in column S. Random sampling should be employed to determine the VVM stage on arrival at the store.
  - Indicate also the stage of the cold chain monitors on arrival in column T.
- In column U, indicate the location of the vaccines in the cold chain, e.g. Freezer No. 1 or Refrigerator No. 1.

### **Equipments received (Reception Tally sheet for safe injection equipment)**

- **Reception:**
  - Indicate the date of reception of the current batch in column B.
  - In the type\_received column C, indicate the type of reception (e.g. carried forward-C/F, IN, Excess, Return, others, etc).
  - In column D, origin, indicate the origin or source of the equipment (e.g. National Strategic Cold Store).
- **Supplies Equipment:**
  - From the drop down menu in column E, select the type of equipment supplied.
- In column F, indicate the batch number of the equipment received.
- In column G, indicate the expiry date of the current batch received using the international date format of Day/month/year.
- In column H, indicate the purpose for which the equipment is received e.g. campaigns, NIDs, epidemics, mop-up, etc. If supply is for routine immunization purposes leave the column blank.
- In column I, indicate the number size of the packaging i.e. number of units per box or pack.
- Quantities received:
  - In column J, indicate the number of cartons of the current batch received.
  - In column K, indicate the number of boxes received.
- **Manufacturer/Producer:** In column L, indicate the identification of the equipment manufacturer or producer.
- In column M, indicate the source of funding for the procurement of the equipment.
- In column N, indicate the reference number of the receipt document (Issue or receipt voucher number as appropriate).
- **Packaging for storage:**
  - In column Q, indicate the number of units per carton.
- In column S, indicate the location of storage of the equipment in the dry storage.

### **Stock\_Batch: Vaccine Stock balance by Batch Sheet.**

- Select the antigen/diluent/equipment from the drop down menu in cell C7 of the stock\_batch sheet.
- Count of total doses:
  - From the drop down menu in the Batch\_No, select the batch to be reviewed in cell B10.

### **Vaccine Tally Sheet**

- From the drop down menu in cell D7, select the storage period (either weeks or months).
- Dates: In the dates column A, enter the date that the stock movement took place using the format Year/Month/Day.
- Destinations/Allocation:
  - Commentaries: Indicate the type of movement using the stock recording indicator (C/F, IN, Excess, Return, Others, etc).
  - Main Allocations: Select from the drop down menu the name of the subscriber or the reason for issuing vaccine.
- In column D, indicate the issue/receipt voucher number.
- Type of SIAs; indicate the type of SIAs (campaign, NIDs, Mop-up, epidemic, etc) in column E. For routine supplies leave the column blank.
- No of vials/Quantity issued: Indicate the quantity issued in doses in column F.
- Lot No/Batch No.: indicate the batch number of the vaccine issued/received in column G.
- For diluents and equipment Sheets: Entries are done in the same manner as the vaccines tally sheets.

### **13. Annex 4 to 9: Vaccine Management Data Forms VM1 to VM6**





# MONTHLY ROUTINE IMMUNIZATION: VACCINE UTILIZATION REPORT FORM

VM3

Name of LGA:..... State:..... Month:.....20.....

No. of Health Facilities providing RI	<input type="text"/>
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No. of reporting HF's (Govt.)

No. of reporting HF's (Private)

Total No. of Health Facilities reporting

% Health Facilities reporting

Monthly target population

S/N	Antigen	LGA Estimated vaccine (doses) & Devices required for month.	LGA Vaccine (Doses) & Devices balance at beginning of month.	LGA Vaccines (Doses) & Devices received during the month.	Total Vaccine (Doses) & Devices available in the month (LGA).	Total Vaccine (Doses) & Devices used in HF's in the month.	Total Vaccine (Doses) & Devices Balance at the end of month	Vaccine balances end of month INVENTORY		Vaccine requested	No. of Children Immunized	Vaccine Wastage in the month $L = \frac{E-K}{E} \times 100$	Vaccine Discarded Due to VVM change, expired, broken, frozen (Doses)	Temperature	
								In LGA store	In HF's					Minimum for the month (°C)	Maximum for the month (°C)
		A	B	C	D = [B+C]	E	F = [D-E]	G	H	I = [G+H]	J = [A-I]	K	M	N	O
1	BCG														
	BCG Diluent														
2	OPV														
3	DPT														
4	HBV														
5	Measles														
6	Measles Diluent														
7	YF														
8	YF Diluent														
9	TT														
10	AD syringe BCG														
11	AD syringe 0.5														
12	Syringes 5ml														
13	Safety Boxes														
14															
15															

Name of Reporting Officer .....  
 Designation of Reporting Officer .....  
 Signature of Reporting Officer .....  
 Comments by Reporting Officer (if any discarded vaccines, availability of syringes etc): .....

Source(s) of Vaccine .....  
 Cold Chain Officer in-charge .....  
 Date of last vaccine supply .....







