BASIC GUIDE ON ROUTINE IMMUNIZATION FOR SERVICE PROVIDERS IN NIGERIA

Manual

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Contents

Abbreviations v

Acknowledgement xii

Preface xiii

List of Contributors xv

List of resource materials reviewed xvii

Module 1: EPI Targeted Diseases

List of Figures (1)7

List of Tables (1)8

1.1 Tuberculosis (1)11

1.2 Poliomyelitis (1)15

1.3 Hepatitis B (HebB) (1)19

1.4 Diphtheria (1)23

1.5 Pertussis (1)26

1.6 Tetanus (1)29

1.7 Haemophilus influenza type b disease (Hib) (1)35

1.8 Pneumococcal disease (1)39

1.9 Rotavirus gastroenteritis (1)43

1.10. Measles (1)46

1.11 Rubella (1)50

1.12 Yellow fever (1)54

1.13 Meningococcal disease (1)58

1.14 Human papillomavirus infection and cervical cancer (1)62

1.15 Opportunities for integration of services: EPI Plus and vitamin A deficiency (1)66

1.16 Exercises on EPI Targeted Diseases (1)74

NOT FOR PRINTING

Module 2: Vaccine and Cold Chain Management

List of Figures (2)

List of Tables (2)

2.1. Responsibilities of the health worker in vaccine and cold chain management at the health facility (2)

2.2 The cold chain (2)

2.3 Storage temperature requirements for vaccines (2)

2.4 The cold chain at health centre (2)

2.5 Temperature monitoring devices (2)

2.6 Monitoring cold chain temperatures (2)

2.7 Arranging vaccines inside cold chain equipment (2)

2.8 Basic maintenance of cold chain equipment (2)

2.9 What is the Shake Test? (2)

2.10 Vaccine management (2)

Module 3: Injection Safety and Waste Management

List of Figures (3)2

List of Tables (3)3

3.1 Using safe injection equipment and techniques (3)4

3.2 Simple ways to improve injection safety (3)7

3.3 Preventing needle-stick injuries (3)9

3.4 Disposing of used syringes and needles (Sharps) (3)13

Module 4: Micro-planning for Reaching Every Community

(1)2

NOT FOR PRINTING

List of Figures (4)2

List of Tables (4)3

4.1. Developing or updating a map (4)6

4.2. Identifying priority health facilities and settlements (4)11

4.3. Identifying barriers to access and utilization of Immunisation Services (4)14

4.4. Identifying solutions and preparing a work-plan (4)18

4.5. Developing a Health Facility Session Plan (4)22

4.6. Tracking defaulters (4)29

4.7 Group Exercises on Micro Planning for Reaching Every Community (4)29

Module 5: Managing an Immunization Session

List of Figures (5)3

List of Tables (5)4

5.1 Preparing for the session (5)5

5.2 Development of Immunization Session Plan (5)6

5.3 Prepare the Immunization Site (5)6

5.4 Assessing infants for vaccination (5)10

5.5 Giving vaccinations (5)14

5.6 Making vaccination easier and more comfortable (5)16

5.8 Recording data (5)31

5.9 Using the immunization session checklist (5)32

5.10: Exercise on immunization session (5)33

Module 6: Monitoring and Surveillance

(1)3

NOT FOR PRINTING

List of Figure (6)3

List of Tables (6)5

6.1 Routine immunization monitoring tools (6)7

6.2 Reaching Every Ward (REW) Monitoring (6)48

6.3 Timeliness & Completeness Reporting Form (6)57

6.4 The Defaulter Tracking List (6)59

6.5 Data and report storage (6)71

6.6 Surveillance (6)76

6.7 What is AEFI? (6)80

6.8 Surveillance Data Tools (6)87

6.9 Group Exercise on Monitoring and Surveillance (6)97

Module 7: Attitude for Effective Health Service Delivery, Continuous Quality Improvement and Engaging Communities

List of Figures (7)3

List of Tables (7)4

7.1 Attitude for Effective Health Service Delivery (7)5

7. 2 Continuous Quality Improvement (CQI) for RI and PHC Management (7)16

7.3 Engaging Communities (7)22

Module 8: Integration of Primary Health Care Services and Interventions

List of Tables

Table 1: Services Provided at PHC Levels Categorized by Thematic Areas of PHC focus 6

Table 2:Categorization of PHC services based on mode of delivery 7

List of Figures

(1)4

NOT FOR PRINTING

Figure 1: Schematic outline of the PHC thematic areas for the integration approach. 8
Figure 2:Identified Areas of PHC service integration at health facilities 15

8.1 About this module

8.1.1 Goal of the Module

8.1.2 Specific Objectives

8.2 Introduction to Integration of PHC services

8.2.1 Benefits of Integrating PHC services and Interventions

8.2.2 Platforms for Integration of PHC Services and Interventions

8.2.3 What Services can be integrated at PHC Level?

8. 2.4 PHC Service Integration Process

8.3 The Integration Approach

8. 4 Thematic areas for integration

8.4.1 Leadership and Coordination

8.4.2 Advocacy, Communication and Social Mobilization

8.4.3 Logistics and Supplies

8.4.4 Training and Capacity Building

8.4.5 Service Delivery

8.4.6 Supportive supervision

8.4.7 Data Management

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Abbreviations

#	Number sign
%	Percentage
<, >	Less Than, Greater Than
AD	Auto-disable
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
ATS	Anti Tetanus serum/immunoglobulins
BCG	Bacille-Calmette-Guerin
bOPV	Bivalent Oral Polio Vaccine
CBM	Childhood Bacterial Meningitis
CBOs	Community Base Organizations
CCO	Cold Chain Officer
cPAD	Compact Prefilled Auto-Disable Injection
CQI	Continuous Quality Improvement
CRS	Congenital Rubella Syndrome
CSF	Cerebro-Spinal Fluid
CSM	Cerebro-Spinal Meningitis
CSOs	Civil Society Organizations
DD/MM/YYY	Day/Month/Year
DENOM	Denominator
DHIS	District Health Information Systems
DO#	Drop Outs
DOB	Date of Birth

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DOR	Drop Out Rate
DOTS	Directly observed treatment short course
DPT	Diphtheria, Pertussis and Tetanus
DSNO	Disease Surveillance Notification Officer
DT	Diphtheria and Tetanus
DVD-MT	District Vaccination Data Monitoring Tool
e.g.	Example
EI	Emotional Intelligence
E-mail	Electronic Mail
EPI	Expanded Program on Immunization
ES	Environmental Surveillance
etc.	Etcetera
F	Female
FBOs	Faith Base Organizations
FCT	Federal Capital Territory
FP	Fixed Post
GIS	Geographical Information System
GSM	Global Satellite Mobile Technology Networks
HBV	Hepatitis B Virus
Hep.B	Hepatitis B Vaccine
HF	Health Facility
Hib	Haemophilus Influenzae Type b
HIV	Human Immunodeficiency Virus

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HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HPV	Human Papilloma Virus
HW	Health Worker
i.e.	That Is (id est;Latin)
ID	Intradermal
I.D	Identity
IDSR	Integrated Disease Surveillance and Response
IEC	Information Education and Communication
ILI	Influenza-Like Illness
IM	Intramuscular
INCINA	Incinerator
IPV	Inactivated Polio Vaccine
Kg	Kilograms
Km	Kilometer
LGA	Local Government Authority
LIDs	Local Immunization Days
LIOs	Local Immunization Officers
M	Male
MDRTB	Multi Drug Resistance TB
MDVPV	Multi Dose Vial Policy Vaccine
MenA	Meningococcal A
Min	Minutes
mls	Milliliters
MMR	Measles, Mumps and Rubella

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mOPV	Monovalent Oral Polio Vaccine
MR	Measles Rubella
MV	Measles Vaccine
NB:	Note Below
NIDs	National Immunization Days
No.	Number
NPHCDA	National Primary Health Care Development Agency
NUM	Numerator
NVI	New Vaccine Introduction
^{O}C	Temperature (Degree Celsius)
OIC	Officer In Charge
OPV	Oral Poliomyelitis Vaccine
OPV1	First Dose of Oral Polio Vaccine
OPV2	Second Dose of Oral Polio Vaccine
OPV3	Third Dose of Oral Polio Vaccine
OR	Outreach
PAN	Pediatric Association of Nigeria
PCV	Pneumococcal Conjugate Vaccine
Penta	Pentavalent Vaccine (DPT- Hep-B-hib)
Penta1/Pentavalent 1	First Dose of Pentavalent Vaccine
Penta2/Pentavalent 2	Second Dose of Pentavalent Vaccine
Penta3/Pentavalent 3	Third Dose of Pentavalent Vaccine
PHC	Primary Health Care
PRP	Progressive Rubella Pan-encephalitis

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PTA	Parent Teachers Association
RCA	Root Cause Analysis
REC	Reaching Every Community
REW	Reaching Every Ward
RI	Routine Immunization
Rota	Rota Virus Vaccine
RUP	Re – Use Prevention
S/N	Serial Number
SARS	Severe Acute Respiratory Syndrome
SC	Subcutaneous
SCD	Sickle Cell Disease
SD	Shigella Dysenteries'
SIA	Supplemental Immunization Activities
SIOs	State Immunization Officer
SMOH	State Ministry of Health
SMS	Short Message Service
TB	Tuberculosis
Td	Tetanus diphtheria
TL	Traditional Leaders
tOPV	Trivalent Oral Polio Vaccine
TP	Target Population
TT	Tetanus Toxoid
TT/Td	Tetanus Toxoid/Tetanus Diphtheria
TT/Td	Tetanus Toxoid/Tetanus Diphtheria
TT/TD	Tetanus Toxoid/Tetanus-Diphtheria Vaccine

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TTCV	Tetanus containing vaccine
TV	Television
UNICEF	United Nations Children's' Fund
VAD	Vitamin A Deficiency
VAPP	Vaccine Associated Paralytic Poliomyelitis
VCM	Voluntary Community Mobilizer
VDCs	Village Development Committee
VM 3	Vaccine Management Tool 3
VM1A	Vaccine Management Tool 1A
VM1B	Vaccine Management Tool 1B
VM2	Vaccine Management Tool 2
VMT	Vaccine Management Tools
VPDs	Vaccine Preventable Diseases
VVM	Vaccine Vial Monitor
VVMs	Vaccine Vail Monitors
WDCs	Ward Development Committee
WF	Wastage Factor
WFPs	Ward Focal Persons
WHO	World Health Organization
WPV	Wild Polio Virus
WPV1	Wild Polio Virus 1
WPV2	Wild Polio Virus 2
WPV3	Wild Polio Virus 3
WR	Wastage Rate

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YF Yellow Fever

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Preface

The decision to have a guiding document for Routine Immunisation (RI) Service Providers was made at a core group meeting during the defunct National Programme on Immunization (NPI) and subsequently mandated the ICC training working group to produce the document which gave birth to the first edition of the Basic Guide for Routine Immunisation Service Providers (BGRISP) in 2004.

Since then, the BGRISP has become close partners of not only the service Providers but also for other stakeholders, including Supervisors and training facilitators. The 2004 version was not reviewed until 2017 despite the introduction of new vaccines, strategies, techniques, and policy as well as circumstances.

However, in the last few years particularly the outbreak of Covid-19, new vaccines such as Covid-19, Inactivated Polio Vaccine (IPV) second dose, Measles second dose and MenA were introduced into the national EPI schedule. In addition, other new vaccines that will be introduced in the country such as Rota virus vaccine and Human Papilloma Virus (HPV) vaccine have been included in this document.

In September 2015, Nigeria was certified as a polio non-endemic country. This ushers in a new dawn for the country and call for enhanced and concerted efforts to eradicate Polio from the country. Part of the Polio endgame strategy includes the RI intensification that brings in innovative strategies like reaching every settlement, increased frequency of outreach service from twice in a month to 4 times, intensify defaulter tracking to minimise dropouts and improve utilization as well as the switch from tOPV for bOPV introduced in April 2016. The introduction and use of Geographical Information System (GIS) in improving the accuracy and reliability of microplanning provides another opportunity for new skills in improving immunization services. This revised document will provide an opportunity for capacity development for all RI service providers.

The revised BGRISP is made up of 8 modules that cover all the components of immunization system. Module 1 deals with **EPI target diseases and vaccines**, Module 2 covers **Vaccines and Cold Chain**, Module 3 is on **Ensuring Safe Injection** and Module 4 focuses on **Microplanning for Reaching Every Community**. Modules 5 and 6 center on **Managing an Immunization Session** and **Monitoring and**

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Surveillance respectively, Module 7 talks about **Community Engagement** and in accordance with the “One Country, One Team, One Plan, One Budget” Approach To PHC, Module 8 concentrates on **Integration of Primary Health Care Services And Interventions.**

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List of resource materials reviewed

1. WHO Immunization In Practice 2015
2. NPI Basic Guide for Routine Immunization 2004
3. Global Vaccine Action Plan 2016-2020
4. Immunization Training Manual for Pneumococcal Conjugate Vaccine 2015
5. Immunization Training Manual for Inactivated Polio Vaccine 2015
6. National Integrated Disease Surveillance and Response Technical Guide 2013

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MODULE 1

Contents

List of Figures (1)7

List of Tables (1)8

1.1 Tuberculosis (1)11

1.1.1 What is tuberculosis? (1)11

1.1.2 How is TB spread? (1)11

1.1.3 What are the symptoms and signs of TB? (1)11

1.1.4 What is the treatment for TB? (1)12

1.1.5 What are the complications of TB? (1)12

1.1.6 How is TB prevented? (1)12

1.1.7 What is BCG vaccine? (1)12

1.1.8 When and how is BCG vaccine administered? (1)13

1.1.9 How safe is BCG vaccine and what are the potential adverse events following immunization? (1)13

1.2 Poliomyelitis (1)15

1.2.1 What is Poliomyelitis? (1)15

1.2.2 How is Polio spread? (1)15

1.2.3 What are the symptoms of Polio? (1)15

1.2.4 How is Polio prevented? (1)16

1.2.5 What is polio vaccine? (1)16

1.2.6 When is polio vaccine administered? (1)16

1.2.7 How safe is polio vaccine and what are the potential adverse events following immunization? (1)17

1.3 Hepatitis B (HebB) (1)19

1.3.1 What is hepatitis B? (1)19

(1)21

NOT FOR PRINTING

1.3.2 How is hepatitis B spread? (1)19

1.3.3 What are the symptoms and signs of hepatitis B? (1)19

1.3.4 What is the treatment for hepatitis B? (1)20

1.3.5 What are the complications of hepatitis B? (1)20

1.3.6 How is hepatitis B prevented? (1)20

1.3.7 What are hepatitis B-containing vaccines? (1)21

1.3.8 How is hepatitis B vaccine administered? (1)21

1.3.9 How safe is HepB vaccine and what are the potential adverse events following immunization? (1)21

1.4 Diphtheria (1)23

1.4.1 What is diphtheria? (1)23

1.4.2 How is diphtheria spread? (1)23

1.4.3 What are the symptoms and signs of diphtheria? (1)24

1.4.4 What is the treatment for diphtheria? (1)24

1.4.5 What are the complications of diphtheria? (1)25

1.4.6 How is diphtheria prevented? (1)25

1.4.7 What are diphtheria-containing vaccines? (1)25

1.4.8 When and how are diphtheria-containing vaccines administered? (1)25

1.4.9 How safe is diphtheria vaccine and what are the potential adverse events following (1)immunization? (1)26

1.5 Pertussis (1)26

1.5.1 What is pertussis? (1)26

1.5.2 How is pertussis spread? (1)26

1.5.3 What are the symptoms and signs of pertussis? (1)27

NOT FOR PRINTING

1.5.4 What is the treatment for pertussis? (1)27

1.5.5 What are the complications of pertussis? (1)27

1.5.6 How is pertussis prevented? (1)28

1.5.7 What are pertussis-containing vaccines? (1)28

1.5.8 When and how is pertussis-containing vaccine (Penta) administered? (1)28

1.5.9 What are the potential adverse events following immunization? (1)28

1.6 Tetanus (1)29

1.6.1 What is tetanus? (1)29

1.6.2 How is tetanus spread? (1)29

1.6.3 What are the symptoms and signs of tetanus? (1)30

1.6.4 What is the treatment for tetanus? (1)30

1.6.5 What are the complications of tetanus? (1)30

1.6.6 How is tetanus prevented? (1)31

1.6.7 What are tetanus containing vaccines? (1)31

1.6.8 What are tetanus toxoid-containing (Td/TT) vaccines? (1)32

1.6.9 When and how are tetanus toxoid-containing vaccines (Td/TT) given? (1)32

1.6.10 What is Tetanus Containing Pentavalent (Penta) Vaccine? (1)32

1.6.11 When and how is Tetanus containing Pentavalent Vaccine administered (1)32

1.6.12 How is Tetanus containing Penta vaccine stored? (1)33

1.6.13 How safe are tetanus containing vaccines and what are the potential adverse events following immunization? (1)33

1.7 Haemophilus influenza type b disease (Hib) (1)35

1.7.1 What is Haemophilus influenza type b (Hib)? (1)35

1.7.2 How is Hib spread? (1)35

NOT FOR PRINTING

1.7.3 What are the symptoms and signs of Hib disease? (1)35

1.7.4 What is the treatment for Hib disease? (1)36

1.7.5 What are the complications of Hib disease? (1)36

1.7.6 How is Hib disease prevented? (1)36

1.7.7 What are Hib-containing vaccines? (1)36

1.7.8 When and how is Hib-containing vaccine administered? (1)37

1.7.9 How safe is Hib vaccine and what are the potential adverse events following immunization? (1)37

1.7.10 What is Pentavalent (Penta) Vaccine? (1)37

1.7.11 How is Penta vaccine stored? (1)37

1.8 Pneumococcal disease (1)39

1.8.1 What is pneumococcal disease? (1)39

1.8.2 How is pneumococcal disease spread? (1)39

1.8.3 What are the symptoms and signs of pneumococcal disease? (1)40

(1)40

1.8.4 What is the treatment for pneumococcal disease? (1)40

1.8.5 What are the complications of pneumococcal disease? (1)40

1.8.6 How is pneumococcal disease prevented? (1)41

1.8.7 What is pneumococcal conjugate vaccine (PCV)? (1)41

1.8.8 When and how is pneumococcal conjugate vaccine administered? (1)41

1.8.9 How safe is pneumococcal conjugate vaccine and what are the potential adverse events following immunization? (1)41

1.9 Rotavirus gastroenteritis (1)43

1.9.1 What is rotavirus gastroenteritis? (1)43

NOT FOR PRINTING

1.9.2 How is rotavirus spread? (1)43

1.9.3 What are the symptoms and signs of rotavirus gastroenteritis? (1)43

1.9.4 What is the treatment for rotavirus gastroenteritis? (1)43

1.9.5 What are the complications of rotavirus gastroenteritis? (1)43

1.9.6 How is rotavirus gastroenteritis prevented? (1)44

1.9.7 What is rotavirus vaccine? (1)44

1.9.8 When is rotavirus vaccine administered? (1)44

1.9.9 How safe are rotavirus vaccines and what are the potential adverse reactions? (1)44

1.10. Measles (1)46

1.10.1 What is measles? (1)46

1.10.2 How is measles spread? (1)46

1.10.3 What are the symptoms and signs of measles? (1)46

1.10.4 What is the treatment for measles? (1)47

1.10.5 What are the complications of measles? (1)47

1.10.6 How is measles prevented? (1)48

1.10.7 What is measles vaccine? (1)48

1.10.8 When is measles vaccine administered? (1)48

1.10.9 What are the potential adverse events following immunization? (1)48

1.11 Rubella (1)50

1.11.1 What is Rubella disease? (1)50

1.11.2 How is Rubella spread? (1)50

1.11.3 What are the Signs and symptoms of Rubella? (1)50

1.11.4 What is the treatment of Rubella? (1)50

(1)25

NOT FOR PRINTING

1.11.5 What are the Complications of Rubella? (1)50

1.11.6 What is prevention of CRS? (1)51

1.11.7 What it is Rubella (Measles Rubella (MR)) Vaccine? (1)51

1.11.8 How MR vaccine stored? (1)52

1.11.9 When and how is MR vaccine given? (1)52

1.11.10 How safe is MR vaccine? (1)52

1.12 Yellow fever (1)54

1.12.1 What is yellow fever? (1)54

1.12.2 How is yellow fever spread? (1)54

1.12.3 What are the symptoms and signs of yellow fever? (1)54

1.12.4 What is the treatment for yellow fever? (1)55

1.12.5 What are the complications of yellow fever? (1)55

1.12.6 How is yellow fever prevented? (1)55

1.12.7 What is yellow fever vaccine? (1)55

1.12.8 When and how is yellow fever vaccine administered? (1)56

1.12.9 How safe is yellow fever vaccine and what are the potential adverse events following immunization? (1)56

1.13 Meningococcal disease (1)58

1.13.1 What is meningococcal disease? (1)58

1.13.2 How is meningococcal disease spread? (1)58

1.13.3 What are the symptoms and signs of meningococcal disease? (1)58

1.13.4 What is the treatment for meningococcal disease? (1)59

1.13.5 What are the complications of meningococcal disease? (1)59

1.13.6 How is meningococcal meningitis prevented? (1)59

NOT FOR PRINTING

1.13.7 What is meningococcal vaccine (Men A)? (1)60

1.13.8 When and how are meningococcal vaccines administered? (1)60

1.13.9 How safe are meningococcal vaccines and what are the potential adverse events following immunization? (1)60

1.14 Human papillomavirus infection and cervical cancer (1)62

1.14.1 What is human papillomavirus? (1)62

1.14.2 How is HPV spread? (1)63

1.14.3 What are the symptoms and signs of cervical cancer? (1)63

1.14.4 What is the treatment for cervical cancer? (1)63

1.14.5 What can be done to prevent and control cervical cancer? (1)63

1.14.6 What is HPV vaccine? (1)64

1.14.7 When and how is HPV vaccine administered? (1)64

1.14.8 How safe is HPV vaccine and what are the potential adverse events following immunization? (1)64

1.15 Opportunities for integration of services: EPI Plus and vitamin A deficiency (1)66

1.15.1 What is vitamin A? (1)66

1.15.2 What is Vitamin A deficiency? (1)67

1.15.3 When does vitamin A deficiency occur? (1)67

1.15.4 What are symptoms and signs of vitamin A deficiency? (1)67

1.15.5 What is vitamin A supplementation? (1)67

1.15.6 Are there any side effects of vitamin A supplements? (1)68

1.15.7 What are the opportunities to link vitamin A and routine immunization? (1)68

1.16 Exercises on EPI Targeted Diseases (1)74

NOT FOR PRINTING

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List of Figures

Figure1.1: Wasting and failure to thrive 12

Figure 1.2: Paralytic poliomyelitis 15

Figure 1.3: Yellow Eyes 20

Figure 1.4: Symptoms of Diphtheria 24

Figure 1.5: A Child with Whooping cough 27

Figure 1.6 (a&b): Muscular stiffness and severe muscle spasm 31

Figure 1.7: Mode of transmission of Pneumococcal Diseases 40

Figure 1.8: Child with measles rash 47

Figure 1.9 Thrombocytopenic Purpura 51

Figure 1.10 African Child with Jaundice 54

Figure 1.11: Routes and Sites of Administration 72

Figure 1.12: Umbilical Cord Care 73

NOT FOR PRINTING

List of Tables

Table 1.1 BCG vaccine summary 14

Table 1.2 Polio vaccination summary 18

Table 1.3 HepB-vaccine summary 22

Table 1.4 Tetanus-toxoid vaccine summaries 33

Table 1.5 Administration guidelines of tetanus toxoid (TT) for women of childbearing age 34

Table 1.6 Pentavalent (DTP-HepB-Hib) summary 38

Table 1.7 Pneumococcal conjugate vaccine summary 42

Table 1.8 Rotavirus vaccines summary 45

Table 1.9 Measles vaccine summary (MV) 49

Table 1.10 Rubella vaccine (Measles Rubella (MR) summary 53

Table 1.11 Yellow fever vaccine summary 57

Table 1.12 Meningococcal conjugate vaccines summary 61

Table 1.13 Summary of HPV vaccines for girls aged 9 and 14 years 65

Table 1.14 Linking vitamin A and routine immunization 68

Table 1.15: Summary Table for EPI target diseases in Nigeria 70

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Module 1.0: EPI Targeted Diseases

About this module

This module discusses fourteen (14) diseases targeted for immunization programmes in Nigeria and describes the vaccines used to prevent them. The diseases are listed based on the National schedule with traditional and new vaccines as follows: Tuberculosis, Poliomyelitis, Hepatitis B, Diphtheria, Pertussis, Tetanus, Haemophilus influenza type b, Pneumococcal disease, Rotavirus gastroenteritis, Measles, Rubella, Yellow fever, Meningococcal disease, and Human papillomavirus infection (that causes cervical cancer).

For each disease the following information is provided:

1. ***What the disease is,***
2. ***How it is spread,***
3. ***Signs and symptoms,***
4. ***Complications,***
5. ***Treatment and prevention.***

For each vaccine the following information is provided:

1. ***What it is.***
2. ***How it is stored.***
3. ***When it is given.***
4. ***The number and amount of the dose(s).***
5. ***Where it is given (site of administration).***
6. ***How it is given (route of administration)***
7. **Any side effects that may occur and how they will be treated.**

The importance of integration of Vitamin A to prevent Vitamin A Deficiency (VAD) linked to vaccine preventable diseases such as measles is also described.

Objectives of the module:

By the end of this module, participants will be able to understand:

1. ***The infectious diseases that disable or kill children and the vaccines that can prevent them.***
2. ***The importance of vaccines and how they are used to prevent diseases.***
3. ***The contraindications and adverse events following immunization (AEFI).***

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4. ***The mode (route, dosage and sites) of administration of the various EPI vaccines.***

5. ***The importance of integration of EPI and other primary health care interventions.***

This Section should be used as training material for immunization service providers and a reference material for students in health institutions, researchers, and stakeholders in immunization service delivery.

Immunization programmes provide opportunities to promote integrated services and improve the overall health of recipients. Vitamin A supplementation is included as part of the Expanded Programme on Immunization (EPI) Plus; while pneumonia and diarrhoea control measures complement immunization as part of the 2013 integrated Global Action Plan for Pneumonia and Diarrhoea.

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1.1 Tuberculosis

1.1.1 What is tuberculosis?

1. ***Tuberculosis (TB) is a bacterial disease caused by Mycobacterium tuberculosis.***
2. Usually affects the lungs, but can also affect other parts of the body, including the bones, joints and brain.
3. Not everyone who is infected with Mycobacterium tuberculosis develops the disease.

1.1.2 How is TB spread?

1. ***TB is spread from person to person through air when an infected person coughs or sneezes.***
2. A person can contract bovine tuberculosis, another variety of TB, by ***consuming raw milk from infected cattle.***
3. It spreads rapidly in areas where people are living in crowded conditions, have poor access to health care, and/or are malnourished.
4. People of all ages can develop TB with highest risk in younger children and elderly people
5. People with TB infection who have weakened immune systems (for example, people with HIV/AIDS) are more likely to develop the disease.

1.1.3 What are the symptoms and signs of TB?

1. General symptoms*:* ***General weakness, weight loss, fever and night sweat.***
2. Other symptoms and signs depend on the part of the body that is affected
    1. In TB of the lungs (pulmonary tuberculosis*):* ***persistent cough, coughing up of blood and chest pain.***
    2. ***In young children, however, the only sign of pulmonary TB may be stunted growth or failure to thrive***
    3. In TB of the bones and joints: swelling, pain with crippling effects on the hips, knees or spine.

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Figure1.1: Wasting and failure to thrive

1.1.4 What is the treatment for TB?

1. People with TB must complete a course of therapy called ***Directly Observed Treatment Short-course (DOTS), which usually includes taking two or more anti-tuberculosis drugs for at least six months.***

6. People who fail to take the medication as prescribed or do not complete the course of therapy or are given ineffective treatment can develop **multidrug-resistant TB (MDRTB)** that is even more difficult to treat and more dangerous if spread to other people.

2. ***A person with the disease will continue to infect others until after the first 2 weeks of commencement of treatment***

1.1.5 What are the complications of TB?

7. ***Untreated pulmonary TB results in debility and death. This may be more rapid in people infected with HIV/AIDS*****.**

1.1.6 How is TB prevented?

3. ***Vaccination at birth or as soon as possible after with bacillus Calmette-Guérin (BCG) vaccine protects infants against tuberculosis*****.**

4. Infants with known HIV-positive mothers should be followed closely to monitor for any BCG-related complications.

1.1.7 What is BCG vaccine?

5. ***BCG vaccine protects infants against tuberculosis***

6. The letters, B, C and G stand for bacillus of Calmette and Guerin. Calmette and Guerin are the names of the people who developed the vaccine.

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7. It is supplied in freeze-dried powder (also called lyophilized) form.

8. It must be reconstituted with a diluent before use (see Module 5 on Managing an immunization session)

9. BCG vaccine and diluent should be stored at a temperature *between $+2^0$C and $+8^0$ C.*

1.1.8 When and how is BCG vaccine administered?

1. For best result BCG vaccine is given at birth or within the first two (2) weeks, however it can be given before 12 months of age.

2. It should not be given to children who have clinical HIV/AIDS.

3. Administered intradermally, 0.05mls on the left upper arm

Note: ***BCG vaccine is not recommended after 12 months of age because the protection provided is less certain.***

1.1.9 How safe is BCG vaccine and what are the potential adverse events following immunization?

10. BCG vaccine is safe

11. A mild reaction at the site of injection, a small raised lump, which heals after two weeks leaving a small scar about 5 mm across – the scar is a sign that the child has been effectively immunized and should come up after 6weeks for other routine immunization (RI).

12. If no scar occurs, send the child for manteaux test or GeneXpert and repeat BCG if manteaux or GeneXpert is negative.

13. Serious events occur include generalized infection primarily in HIV-infected persons or those with severe immune deficiencies, other events include swelling and abscesses, swollen glands (in the armpit or near the elbow)

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Table 1.1 BCG vaccine summary

Key points to remember about TB

TB is a bacterial disease caused by mycobacterium tuberculosis
Usually affects the lungs but can affect other parts of the body, including the bones, joints and brain and is spread through the air by coughing and sneezing.
The symptoms of TB disease include general weakness, weight loss, fever and night sweats.
People who develop TB disease must complete a course of DOTS drug therapy to cure it and to avoid spreading it to others.
The recommended method of TB prevention for children is BCG vaccine **given at birth, or as soon as possible after birth** and before an infant reaches 12 months of age.
BCG is given as a 0.05ml dose intradermally on the upper left arm.

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Type of vaccine	Live bacterial
Number of doses	1
Schedule	At or as soon as possible after birth
Contraindications	Known HIV infection or other immune deficiency
Adverse events	Mild: injection site reactions Severe: generalized disease or infections such as osteomyelitis (bone infection); abscess; regional lymphadenitis (lymph node inflammation)
Special precautions	Correct intradermal administration is essential – a specific syringe and needle are used for BCG (see Module on Managing an Immunization session)
Dosage	0.05 ml
Injection site	Upper left arm
Injection type	Intradermal
Storage	Between +2 °C and +8 °

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1.2 Poliomyelitis

1.2.1 What is Poliomyelitis?

1. It is a highly infectious viral ***disease caused by poliovirus types 1, 2 or 3 also known as wild polioviruses (WPVs)***
2. ***It is a disease targeted for eradication***.
3. It mainly affects children less than five years of age.

1.2.2 How is Polio spread?

1. ***Poliovirus spreads by the faecal-to-oral route (virus enters the body through the mouth when people eat food or drink water contaminated by faeces)***
2. ***It spreads in areas of poor sanitation***
3. The virus also occurs in throat secretions, and is sometimes spread through sneezing, coughing and close contact.
4. Most infected people do not show symptoms but can still spread the disease.

1.2.3 What are the symptoms of Polio?

1. ***Fever with sudden onset of paralysis or weakness of the limbs***
2. ***One in every 200 infections causes irreversible paralysis***



Figure 1.2: Paralytic poliomyelitis

1.2.4 How is Polio prevented?

1. Polio can be prevented through ***immunization with oral polio vaccine (bOPV) and inactivated polio vaccine (IPV).***
2. ***Good Environmental and personal hygiene*** practices

1.2.5 What is polio vaccine?

1. ***OPV is a live attenuated (weakened) poliovirus vaccine that gives protection against the three types of viruses that cause polio: types 1, 2 and 3 individually or in combination (types 1, 2 and 3 called tOPV, or 1 and 3 called bOPV).*** The bivalent OPV (bOPV) is the current OPV vaccine used in Nigeria.

   Note:

   Nigeria withdrew all the trivalent (tOPV) and switched to bivalent (bOPV) in April 2016 in line with the global recommendation for the polio end game strategy[1].

[1] **Polio end game strategy** - The Polio Eradication and Endgame Strategic Plan 2013–2018 is a comprehensive, long-term strategy that addresses what is needed to deliver a polio-free world by 2018. - See more at: http://www.polioeradication.org/resourcelibrary/strategyandwork

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2. It is very heat-sensitive and must be kept frozen during long-term storage. After thawing, it can be kept at a temperature of between +2 °C and +8 °C for a maximum of six months at the health facility.

3. IPV is the injectable form of polio vaccine that consists of inactivated (killed) strains of wild polio virus (WPV) serotypes (WPV1, WPV 2, and WPV 3).

   1. It is stable outside the cold chain but should be stored between +2 °C and +8 °C. <u>It must not be frozen</u>.

   2. The second dose of Inactivated Polio virus vaccine (IPV2) was introduced in June 2021

1.2.6 When is polio vaccine administered?

1. bOPV is given orally, dropped in the mouth with the dropper

2. *OPV is given at birth or within 2 weeks of delivery, 6 weeks of age, 10 weeks of age and at 14 weeks of age.* The interval between doses must be at least four weeks.

4. IPV is injected intramuscularly as a 0.5 ml dose and is given at 6 weeks.

5. IPV2 is injected intramuscularly as a 0.5ml dose and is given at 14 weeks

1.2.7 How safe is polio vaccine and what are the potential adverse events following immunization?

1. Polio vaccine is very safe

2. With OPV, vaccine-associated paralytic polio (VAPP) rarely occurs (1 in 2.4million population).

   1. VAPP usually occurs with the first dose of OPV, and this small risk declines further with subsequent doses. In areas of low vaccination coverage, the live attenuated viruses contained in OPV may begin to circulate and regain ability to cause paralytic cases. This is known as circulating vaccine-derived poliovirus.

3. With IPV, it is **safe, AEFIs are rare.**

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Table 1.2 Polio vaccination summary

Type of vaccine	OPV – is a live attenuated (weakened) virus; IPV – is an inactivated virus
Total number of doses	OPV 4 doses and IPV has 2 doses
Schedule OPV plus IPV	4 OPV doses initiated from birth and given at 6, 10 and 14 weeks of age; IPV1 dose should be given at 6 weeks of age (with OPV1 dose) and IPV2 dose should be given at 14 weeks of age
Contraindications	Known hypersensitivity (allergy) or anaphylaxis to a previous dose
Adverse events	OPV - vaccine-associated paralytic polio (VAPP) is rare IPV – No known serious reactions; mild injection site reactions do occur
Special precautions	Postpone vaccination if the child has severe illness (with temperature ≥39 °C)

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Dosage	OPV - 2 drops into the mouth IPV – 0.5 ml injection
Route of administration	OPV - Oral only IPV – Intramuscular injection; right Anterolateral (outer) mid-thigh in infants and children
Storage	OPV - Keep frozen; very heat sensitive; Storage in temperatures of between +2 °C and +8 °C is possible for a maximum of 6 months IPV – between +2 °C and +8 °C; Do not freeze.

Key points to remember on Polio

Polio is a viral disease caused by wild type polioviruses 1, 2 and 3

It is easily spread by the faecal-to-oral and oral-to-oral routes.

Most individuals infected do not have symptoms but can still spread the disease.

There is no cure and prevention is by vaccination with OPV and IPV (oral polio is given at birth, 6, 10 and 14 weeks while the injectable is given as 0.5ml IM at 14 weeks).

1.3 Hepatitis B (HebB)

1.3.1 What is hepatitis B?

1. **Hepatitis B is *a highly infectious viral disease caused by the Hepatitis B virus.***
2. Prolonged infection may lead to chronic liver disease and liver cancer.
3. Overall, hepatitis B is 50 to 100 times more infectious than HIV.

1.3.2 How is hepatitis B spread?

1. The ***hepatitis B virus is spread by contact with infected blood, saliva, semen, vaginal fluids and other body fluids*** in various situations below:
    1. from mother to child during birth;

2. during social interaction between children with cuts, scrapes, bites, and/or scratches;
3. from person to person during sexual intercourse;
4. through unsafe injections or needle stick accidents
5. transfusions with infected blood

1.3.3 What are the symptoms and signs of hepatitis B?

2. Acute hepatitis B infection could presents with:

1. Fatigue, nausea, vomiting, abdominal pain and jaundice (yellowing of the skin and eyes).

2.



Figure 1.3: Yellow Eyes

3. ***Chronic hepatitis B patients have signs related to liver failure*** (such as swelling of the abdomen, abnormal bleeding and changing mental status) as the disease progresses.
4. A person with no symptoms may remain infected for many years and can spread the infection.

1.3.4 What is the treatment for hepatitis B?

1. There is no specific treatment for an acute infection.
2. However, ***treatment is mainly supportive***.
3. Chronic hepatitis B can sometimes be treated with interferon and antiviral agents.

1.3.5 What are the complications of hepatitis B?

1. Chronic hepatitis, liver cirrhosis, liver failure, Liver cancer, death

1.3.6 How is hepatitis B prevented?

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1. Hepatitis B is prevented by ***immunization using HepB vaccine or pentavalent vaccine.***

2. Transmission of the disease during perinatal (around the time of birth) or postnatal (during the early days of life) period is an important cause of chronic infections globally hence all infants should receive their first dose of HepB0 as soon as possible (less than 24 hours) after birth and up to 2 weeks. Subsequent doses are given as Penta vaccine.

3. People who recover completely from acute hepatitis B have lifelong immunity.

1.3.7 What are hepatitis B-containing vaccines?

4. *It is administered as a stand-alone as HepB0 at birth, preferably within the 2weeks of birth.*

5. ***Hepatitis B (HepB)-containing vaccines are available in stand-alone (Hep B) or in combination as pentavalent vaccine (Penta)*** **Refer to table 1.6 for details on Pentavalent vaccine.**

1.3.8 How is hepatitis B vaccine administered?

6. It should be given at the same with BCG vaccine

7. ***HepB combinations in pentavalent vaccine are administered at an interval of four weeks minimum for subsequent doses at 6weeks, 10weeks and 14weeks*** (see table 1.6 on pentavalent vaccine).

1.3.9 How safe is HepB vaccine and what are the potential adverse events following immunization?

8. ***HepB vaccine is safe***

9. **Mild events may include: pain, redness, swelling and fever**

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Table 1.3 HepB-vaccine summary

Type of vaccine	Recombinant DNA or plasma-derived
Total number of doses	1 dose given at birth 3 doses in Pentavalent vaccine (see section on Penta)
Schedule	**4-doses:** stand-alone HepB as soon as possible after birth (less than 24hrs), penta1, penta2, penta3 Interval of 4 weeks between doses
Contraindications	Anaphylaxis or hypersensitivity (allergy) after a previous dose
Adverse events	Mild: injection site reactions (pain, redness, swelling); headache; fever Serious: rare anaphylaxis
Special precautions	Use only stand-alone HepB vaccine for the birth dose (do not use pentavalent vaccine for the birth dose)
Dosage	0.5 ml
Injection site	Left Upper Anterolateral (outer) thigh in infants
Route of administration	Intramuscular (IM)
Storage	Between +2 °C and +8 °C. Do not freeze

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Key points to remember about hepatitis B

1. The hepatitis B infection is a highly infectious viral disease more than HIV
2. It is spread through contact with blood or other body fluids from an infected person.
3. Chronic hepatitis B infection leads to cirrhosis, liver cancer, liver failure and death.
4. All children should receive stand-alone 0.5ml hepatitis B vaccine IM, left anterolateral (outer) thigh at birth
5. HepB should be followed by three doses given with the Penta schedule (at an interval of four weeks minimum for subsequent doses at 6weeks, 10weeks and 14weeks)

1.4 Diphtheria

1.4.1 What is diphtheria?

1. Diphtheria is *a* ***bacterial disease caused by Corynebacterium diphtheria*** that produces a toxin, which can harm or destroy human body tissues and organs.
2. It affects the throat, sometimes the tonsils and more common in the tropics causes ulcers on the skin

1.4.2 How is diphtheria spread?

1. Diphtheria is transmitted ***from person to person through droplets and secretions from the nose, throat and eyes.***
2. It can also be spread through skin ulcers often disseminated on clothing and other articles that have been contaminated with fluid from skin ulcers.
3. The spread of the disease is favoured by overcrowding and poor living conditions.

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4. Infected individuals can usually spread the disease to others for up to four weeks, or longer.

1.4.3 What are the symptoms and signs of diphtheria?

When diphtheria affects the throat and tonsils, the early symptoms and signs are:

5. Sore throat

6. Loss of appetite

7. Mild fever

8. Within two to three days, *a* ***bluish-white or grey membrane forms in the throat and tonsils*****.** If there is bleeding the membrane may become greyish-green or black. It sticks to the soft palate of the throat, and bleeding may occur if attempts are made to remove it, resulting in *severe* ***respiratory obstructive syndrome (Croup Syndrome).***

9. The patient may recover at this point or may develop severe forms of the disease. Patients with severe disease do not show high fever; may develop severe weakness, swelling of the neck and obstruction of the airway

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Figure 1.4: Symptoms of Diphtheria

1.4.4 What is the treatment for diphtheria?

10. Children should be ***given appropriate antibiotics (erythromycin or penicillin) or diphtheria antitoxin.***

11. They should be isolated to avoid exposing others to the disease. About two days after starting antibiotic treatment, patients are no longer infectious.

1.4.5 What are the complications of diphtheria?

12. Respiratory obstruction that may lead to death.

13. Abnormal heartbeats that can result in heart failure.

14. In some cases, inflammation of the heart muscle and valves may lead to chronic heart disease.

1.4.6 How is diphtheria prevented?

15. Prevented using diphtheria containing vaccine (Pentavalent vaccine (Penta)) that combines DPT with hepatitis B (HepB) and Haemophilus influenza type b (Hib) vaccines (DPT+HepB+Hib).

16. The most effective way to prevent diphtheria is to maintain a high level of immunization in the community.

1.4.7 What are diphtheria-containing vaccines?

1. Diphtheria-containing vaccines include: Diphtheria toxoid that is in combination with tetanus toxoid (DT/ dT) and pertussis (DPT); hepatitis B and Haemophilus influenza type b (pentavalent).

2. It is supplied in multi-dose presentations, stored at +2 °C and +8 °C without being frozen (Freeze sensitive).

3. Opened multi-dose vials must be handled according to national multi-dose vial policy (see vaccine cold chain Module)

4. Diphtheria-containing vaccines (Penta) are administered as 0.5 ml doses given intramuscularly in the anterolateral (outer) thigh in infants.

1.4.8 When and how are diphtheria-containing vaccines administered?

1. Diphtheria-containing vaccine is given as intramuscular (IM) at 4 weeks interval (6weeks, 10weeks and 14 weeks)

2. Administered as Pentavalent vaccine, 0.5mls dose on left upper anterolateral thigh

1.4.9 How safe is diphtheria vaccine and what are the potential adverse events following immunization?

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1. ***The vaccine is safe.***
2. ***Mild events occur more frequently which include: redness, swelling and pain*** (refer to table 1.6 on pentavalent vaccine).

Key points to remember about Diphtheria

Diphtheria a disease caused by corynebacterium diphtheria

It spreads from person to person in airborne droplets.

Symptoms of the disease include sore throat, loss of appetite and mild fever; patients with the disease can experience severe complications like heart failure.

Children with diphtheria should be treated with antibiotics and diphtheria antitoxin

Diphtheria-containing vaccine is given as Penta vaccine in 0.5 ml doses intramuscularly (IM) in the left anterolateral (outer) thigh in infants at 4 weeks interval (6weeks, 10weeks and 14 weeks)

1.5 Pertussis

1.5.1 What is pertussis?

1. Pertussis or whooping cough ***is a bacterial disease of the respiratory tract caused by Bordetella pertussis bacteria*** **that live in the mouth, nose and throat.**
2. It is highly communicable especially in crowded conditions, poor nutrition and affects unimmunized infants.

1.5.2 How is pertussis spread?

1. ***Pertussis spreads very easily from person to person in droplets produced by coughing or sneezing.***
2. Untreated patients may be infectious and spread pertussis for up to three weeks after the typical cough starts

1.5.3 What are the symptoms and signs of pertussis?

1. ***Presents with symptoms similar to a common cold; runny nose, watery eyes, sneezing, fever, cough and vomiting.***
2. **The cough worsens with many rapid bouts and at the end, the child takes in air with a high-pitched whoop**
3. **Vomiting and exhaustion often follow the coughing attacks, which are particularly frequent at night.**

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Figure 1.5: A Child with Whooping cough

1.5.4 What is the treatment for pertussis?

1. ***Treatment with an antibiotic*** (e.g. erythromycin) may reduce the severity of the illness.
2. Treatment also reduces the ability of infected people to spread pertussis to others.
3. Plenty of fluids should be given to prevent dehydration

1.5.5 What are the complications of pertussis?

1. Pneumonia is the main complication of pertussis

2. Dehydration from vomiting

3. Convulsions and seizures due to fever or reduced oxygen supply to the brain during bouts of coughing.

4. ***Inflammation of the middle ear*** *(otitis media)*

1.5.6 How is pertussis prevented?

1. Prevented using pertussis containing vaccine (Pentavalent vaccine (Penta)) that combines DPT with hepatitis B (HepB) and Haemophilus influenza type b (Hib) vaccines (DPT+HepB+Hib).

2. Improved ventilation and nutrition and avoid overcrowding

1.5.7 What are pertussis-containing vaccines?

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5. ***Pertussis-containing vaccine is a whole cell killed vaccine in combination as pentavalent vaccine (Diphtheria+ Pertussis + Tetanus toxoid (DPT); hepatitis B and Haemophilus influenza type b).***

6. It is supplied in 10 dose vial presentations, stored between +2 °C and +8 °C without being frozen (freeze sensitive).

7. Open multi-dose vials must be handled according to national multi-dose vial policy (see Module 2 for MDVP).

8. Penta is administered as 0.5 ml doses administered intramuscularly on the left anterolateral (outer) thigh in infants.

3. It is freeze-sensitive and shake test should be conducted for suspected frozen vial (see vaccine Module 2 for "shake test")

1.5.8 When and how is pertussis-containing vaccine (Penta) administered?

4. ***Penta vaccine is given at 4 weeks interval at 6weeks, 10weeks and 14 weeks***

5. ***Administered as intramuscular (IM), 0.5ml dose, left upper Anterolateral (outer) thigh in infants***

1.5.9 What are the potential adverse events following immunization?

6. Mild events occur more frequently which include: redness swelling and pain (R**efer to table 1.6 on pentavalent vaccine**).

Key points about pertussis

1. Pertussis (whooping cough) is a bacterial infection caused by bordetella pertussis
2. Spread from person to person by sneezing and coughing.
3. The disease is highly infectious, especially where people live in crowded conditions and nutrition is poor.
4. Infants and young children are most likely to be infected and have serious complications.
5. The most effective way to prevent pertussis is to immunize all infants with Penta vaccine given at 6, 10 and 14 weeks as a 0.5ml IM injection on the left anterolateral thigh.

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1.6 Tetanus

1.6.1 What is tetanus?

1. It is a bacterial disease caused by the ***Clostridium tetani, which is present in soil.***

2. ***Neonatal tetanus (in new-borns) and maternal tetanus (in mothers) is a serious problem in areas where home deliveries without sterile procedures are common.***

1.6.2 How is tetanus spread?

1. ***The bacterium can enter a wound or cut from items such as dirty nails, knives, tools, wood splinters, dirty tools used during childbirth or deep puncture wounds from animal bites*****.**

2. ***In new-borns, infection can occur when delivery occurs on dirty mats or floors, a dirty tool is use to cut the umbilical cord, dirty material is use to dress the cord or when the hands of the person delivering the baby are not clean*****.**

3. ***Infection may also occur if animal dung or ash or toothpaste is used to dress the cord (refer figure 1.12 for umbilical cord care) or if soil enters the baby's navel, circumcision, scarification and skin piercing, and when dirt, charcoal or other unclean substances are rubbed into a wound.***

4. Tetanus is **not** transmitted from person to person.

1.6.3 What are the symptoms and signs of tetanus?

1. ***New-borns with tetanus are normal at birth but stop feeding between 3 to 28 days of age.***

2. ***Muscular stiffness and severe muscle spasms occur in the jaw (trismus or lock-jaw with sardonic smile) is a common first sign of tetanus.***

3. This is followed by stiffness in the neck, abdomen and/or back, difficulty swallowing, muscle spasms, sweating and fever.

1.6.4 What is the treatment for tetanus?

1. Tetanus at any age is a medical emergency best managed in a referral hospital.

2. Wound care (thorough cleaning and removal of dead tissue) with supportive measures to respiration

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3. Antitetanus immunoglobulin (ATS), antibiotics and antispasmodics may also be used

1.6.5 What are the complications of tetanus?

1. ***Respiratory failure and death*** can occur when muscles used in breathing are affected
2. ***Pneumonia***
3. Abnormal heartbeat
4. Fractures of the spine or other bones may occur as a result of muscle spasms and convulsions.
5. ***Long-term neurologic impairment in survivors of neonatal tetanus.***
6. ***Coma and death is common in the very young***

Figure 1.6 (a&b): Muscular stiffness and severe muscle spasm

1.6.6 How is tetanus prevented?

1. ***Tetanus containing (TTCV) vaccine protects against tetanus.***
2. Clean delivery procedures are needed even when the mother has been immunized. Clean umbilical cord care for the new-born is equally important.

Note: People who recover from tetanus do not have natural immunity and can be re-infected, therefore should be given Td/TT before discharge.

1.6.7 What are tetanus containing vaccines?

1. ***Tetanus containing vaccines are available as Td/TT and pentavalent vaccine***
    1. ***Td/TT contains tetanus toxoid and lower levels of diphtheria* antigen** and should be given to women of reproductive age either during or before pregnancy to prevent maternal and neonatal tetanus.
        1. Nigeria currently uses **Td** for pregnant women in the EPI schedule.
    2. *Pentavalent vaccine contains TT* and is given to Infants and children

1.6.8 What are tetanus toxoid-containing (Td/TT) vaccines?

2. ***Td/TT vaccines are supplied as liquid in multi-dose vials.***

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3. ***Td/TT vaccine must be stored between +2 °C and +8 °C without being frozen.*** If freezing is suspected, the "shake test" should be performed to determine whether a vial is safe to use

1.6.9 When and how are tetanus toxoid-containing vaccines (Td/TT) given?

4. Td/TT is administered as 0.5 ml dose given intramuscularly in the deltoid muscle (upper arm) of adults.

5. Five doses are given to women of childbearing age:

1. Td 1: at first contact with woman of childbearing age, or as early as possible in pregnancy.
1. Td 2: At least 4 weeks after Td 1.
1. Td 3: At least 6 months after Td 2 or in the next pregnancy
1. Td 4: At least 1 year after Td 3 or in the next pregnancy
1. Td 5: At least 1 year after Td 4 or in the next pregnancy

1.6.10 What is Tetanus Containing Pentavalent (Penta) Vaccine?

1. Tetanus containing ***Pentavalent vaccine contains Diphtheria-Pertussis-Tetanus-Hepatitis B-Haemophilus influenza type b (DPT-HepB-Hib)***

2. The Vaccine is made from:

1. Diphtheria toxoid

2. Pertussis vaccine

3. Tetanus toxoid

4. Hepatitis B vaccine

5. Haemophilus influenza type b conjugate vaccine (toxoid)

1.6.11 When and how is Tetanus containing Pentavalent Vaccine administered

7. Penta vaccine is given as intramuscular (IM) at 4 weeks' interval at 6weeks, 10weeks and 14 weeks

8. Penta is administered as 0.5 ml doses, intramuscularly on the left upper anterolateral (outer) thigh in infants

1.6.12 How is Tetanus containing Penta vaccine stored?

1. Penta vaccine should be ***stored at a temperature between +2C and +8 C.***

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2. Do not freeze Penta vaccine, if freezing is suspected, conduct the Shake test (Refer vaccine cold chain module)

1.6.13 How safe are tetanus containing vaccines and what are the potential adverse events following immunization?

6. ***Mild events include injection site pain, fever, redness and/or swelling****.*

7. Serious events are rare and include anaphylaxis and neurologic problems such as brachial neuritis (inflammation of arm nerves).

Table 1.4 Tetanus-toxoid vaccine summaries

Type of vaccine	Toxoid
Total number of doses	**3** doses for children as pentavalent and **5 doses** for women as Td/TT
Schedule	For pentavalent: at age 6 ,10 and 14weeks for infants and children (see Table1.6 on Penta vaccine) For women, see Table 1.5 on Td/TT vaccines (page)
Contraindications	Known hypersensitivity (allergy) or anaphylaxis to a previous dose
Adverse events	Mild: injection site reactions and fever Serious: rare anaphylaxis, brachial neuritis
Special precautions	None
Dosage	0.5 ml as pentavalent for children and 0.5ml Td/TT for women
Injection site	Left Upper Anterolateral (outer) thigh in infants and children for Penta. Left upper arm (deltoid) in adults for Td/TT
Route of administration	Intramuscular
Storage	Between +2 °C and +8 °C Do not freeze

Table 1.5 Administration guidelines of tetanus toxoid (TT) for women of childbearing age

	Recommendation	**Comment**
	Vaccine schedule	**Period of protection**

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	Td1: at first contact with woman of childbearing age, or as early as possible in pregnancy.	No protection
	Td 2: At least 4 weeks after Td 1	3 years
	Td 3: at least 6months after Td 2 or in the next pregnancy	5 years
	Td 4: At least 1 year after Td 3 or in the next pregnancy	10 years
	Td 5: At least 1 year after Td 4 or in the next pregnancy	All childbearing years
Dose size	0.5 ml	See manufacturer's instructions
Number of doses	Five	Provides protection during child bearing years
Injection site	Left Upper arm	Never immunize into the buttock

*Recent studies suggest that the duration of protection may be longer than indicated in the table. This matter is currently under review.

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Key points to remember on Tetanus
Tetanus is bacterial disease caused by Clostridium tetani found in the soil
Infection is commoner with unclean delivery of babies, when contaminated objects are used to cut the umbilical cord, or whenever tetanus bacteria enter a wound or cut
Nearly all new-borns with tetanus die
The most important way to achieve prevention is to immunize children, pregnant women and to ensure clean delivery and cord care practices

1.7 Haemophilus influenza type b disease (Hib)

1.7.1 What is Haemophilus influenza type b (Hib)?

9. ***It is a bacterial disease caused by Haemophilus influenza found commonly in the nose and throats of children.***
10. ***Type b is the commonest cause of serious Haemophilus influenza infections.***
11. ***Hib is responsible for severe pneumonia, meningitis and other invasive diseases almost exclusively in children aged less than 5 years.***

1.7.2 How is Hib spread?

1. **Hib is spread *from person to person in droplets released when sneezing and coughing***
2. Can be rapidly spread where people are living in overcrowded places
3. Children may carry Hib in their noses and throats without showing any symptoms or signs of illness (also known as healthy carriers), but they can still infect others.

1.7.3 What are the symptoms and signs of Hib disease?

1. ***Pneumonia with symptoms such as***
   Fever, chills, cough, fast /difficulty in breathing and chest wall retractions
2. ***Meningitis with symptoms such as***

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1. ***Fever, headache, sensitivity to light, neck stiffness and sometimes confusion or altered consciousness, bulging anterior fontanelle, convulsions***

3. While Hib is not the only cause of these diseases, it should be suspected in any child with any of the above listed symptoms and signs.

1.7.4 What is the treatment for Hib disease?

4. Hib disease can be *treated with antibiotics* (ampicillin, cotrimoxazole, cephalosporins and chloramphenicol)

1.7.5 What are the complications of Hib disease?

5. ***Permanent neurological disability*****,** including brain damage, hearing loss and mental retardation.

1.7.6 How is Hib disease prevented?

6. Hib disease is ***best prevented by Penta vaccine given at 6, 10 and 14 weeks.***

1.7.7 What are Hib-containing vaccines?

7. Hib-containing vaccines are Conjugate (capsular polysaccharide) vaccine available combination as pentavalent vaccine ***(Diphtheria-Pertussis-Tetanus-Hepatitis B-Haemophilus influenza type b (DPT-HepB-Hib)***
8. Hib-containing vaccines are available in 10-dose vials, stored between +2 °C and +8 °C without being frozen.
9. If freezing is suspected, the "shake test" should be performed to determine whether a vial is safe to use (see the vaccine cold chain Module for details of shake test).
10. Opened multi-dose vials must be handled according to national multi-dose vial policy (see vaccine cold chain Module).

1.7.8 When and how is Hib-containing vaccine administered?

3. Hib-containing vaccines (pentavalent) are ***administered at 4 weeks interval (6weeks, 10weeks and 14 weeks)***

4. ***As 0.5 ml doses intramuscular (IM) in the left anterolateral (outer) thigh of infants***

1.7.9 How safe is Hib vaccine and what are the potential adverse events following immunization?

1. Hib vaccine is one of the safest vaccines in current use.

2. Mild events include injection site pain, redness, swelling and fever

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1.7.10 What is Pentavalent (Penta) Vaccine?

5. ***Pentavalent vaccine contains Diphtheria-Pertussis-Tetanus-Hepatitis B-Haemophilus influenza type b (DPT-HepB-Hib) vaccine* is made from:**
    6. Diphtheria toxoid
    7. Pertussis vaccine
    8. Tetanus toxoid
    9. Hepatitis B vaccine
    10. Haemophilus influenza type b conjugate vaccine (toxoid)

1.7.11 How is Penta vaccine stored?

3. ***Penta vaccine should be stored at a temperature between +2C and +8 C***.
4. Do not freeze Penta vaccine, if freezing is suspected, conduct the Shake test (Refer vaccine cold chain module)

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Table 1.6 Pentavalent (DTP-HepB-Hib) summary

Type of vaccine	Diphtheria toxoid Pertussis vaccine Tetanus toxoid Hepatitis B vaccine Haemophilus influenza type b conjugate vaccine (toxoid)
Number of doses	3
Schedules	Given as pentavalent at age 6, 10 and 14 weeks
Contraindications	Anaphylaxis or hypersensitivity (allergy) after a previous dose of pentavalent vaccine

Adverse events	Mild: injection site reactions, fever Serious: Anaphylaxis
Special precautions	None
Dosage	0.5 ml
Injection site	Left Upper Anterolateral (outer) thigh in infants
Route of administration	Intramuscular
Storage	Between +2 °C and +8 °C Do not freeze

Key points to remember about Hib

1. ***Hib is a bacterial disease that primarily affects children under two years of age in developing countries including Nigeria.***
2. ***Healthy carriers and sick patients can spread Hib and the most frequently seen serious diseases are pneumonia and meningitis.***
3. ***Hib conjugate vaccine protects only against the type b strain. The type b strain is found in most serious Haemophilus influenza cases.***
4. ***Hib vaccine is given as Penta in 0.5 ml doses intramuscularly (IM) in the left anterolateral (outer) thigh in infants at 4 weeks interval (6weeks, 10weeks and 14 weeks***

1.8 Pneumococcal disease

1.8.1 What is pneumococcal disease?

12. ***Pneumococcal disease is bacterial disease caused by Streptococcus pneumoniae*** (also known as the pneumococcus) and affects different parts of the body.
13. It is a ***leading cause of pneumonia, meningitis, septicaemia, sinusitis and otitis media***
14. It is most common at the extremes of ages, in very young children and elderly people.

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1.8.2 How is pneumococcal disease spread?

15. It is spread ***from person to person by coughing, sneezing or close contact with people who have pneumococcus in their noses and/or throats*** **(healthy carriers).**

16. Risk factors include lack of breastfeeding; exposure to indoor smoke; overcrowding & URTI (Influenza); and underlying diseases (measles, HIV infection, sickle cell disease, asplenia (lack of a functioning spleen) chronic kidney disease)

1.8.3 What are the symptoms and signs of pneumococcal disease?

Symptoms and signs vary depending on the site of infection and include:

1. General symptoms and signs - Fever, chills/rigors, Cough, Excessive crying / irritability

2. Chest symptoms - chest wall retractions, Fast/ difficulty in breathing. Older patients may complain of shortness of breath and pain when breathing in and on coughing
3. Patients with meningitis can present with headache, sensitivity to light, neck stiffness, convulsions and sometimes confusion or altered consciousness
4. Those with otitis or sinusitis may have pain, tenderness and/or discharge from the affected area

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Figure 1.7: Mode of transmission of Pneumococcal Diseases

1.8.4 What is the treatment for pneumococcal disease?

1. It is treated ***with antibiotics e.g. penicillin, amoxicillin or cephalosporin***.

1.8.5 What are the complications of pneumococcal disease?

1. ***Pneumonia***- Pleural effusion, Pericarditis, empyema and lung abscesses
2. ***Otitis media*** - Hearing impairment
3. ***Meningitis*** - Impaired vision, mental retardation, epilepsy, delayed development of speech, motor abnormalities and seizures
4. ***Septicaemia -*** and arthritis

1.8.6 How is pneumococcal disease prevented?

4. With the ***use of the pneumococcal conjugate vaccine (PCV 10).***

1.8.7 What is pneumococcal conjugate vaccine (PCV)?

1. It is a vaccine used to protect infants and young children against diseases caused by the streptococcus pneumoniae (pneumococcus).

2. PCV10 is a decavalent liquid vaccine, meaning that it contains 10 serotypes of pneumococcus
3. ***The vaccine does not protect against all causes of pneumonia and should be emphasized in health education*** so that it is not misunderstood as a failure of the vaccine.
4. It should be ***stored at a temperature between +2ºC and +8ºC and should not be frozen***. If freezing is suspected, conduct the "shake test" (see vaccine cold chain Module)

1.8.8 When and how is pneumococcal conjugate vaccine administered?

1. Three doses of PCV should be given to infants at the ages of 6 weeks, 10 weeks and 14 weeks. Intervals must be at least 4 weeks. If client defaulted for six months and above the cycle should be restarted all over.

2. PCV 10 is administered by intramuscular (IM) injection, 0.5 ml on the right anterolateral side of thigh.

1.8.9 How safe is pneumococcal conjugate vaccine and what are the potential adverse events following immunization?

3. PCV is safe

4. Mild events include soreness at the injection site, mild fever

5. No serious adverse events have been proven with use of these vaccines to date.

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Table 1.7 Pneumococcal conjugate vaccine summary

Type of vaccine	Conjugate (pneumococcal polysaccharide bound to a carrier protein; does not contain any live bacteria)
Total number of doses	3
Schedule	6, 10 and 14 weeks
Contraindications	Anaphylaxis or hypersensitivity (allergy) after a previous dose
Adverse events	Mild: injection site reactions and fever Serious: none is documented
Special precautions	Postpone vaccination if the child has severe illness (with temperature ≥39 °C)
Dosage	0.5 ml
Injection site	Right Upper Anterolateral (outer) thigh in infants and children
Route of administration	Intramuscular
Storage	Between +2 °C and +8 °C Do not freeze

Key points to remember about pneumococcal disease

Pneumococcal disease is a bacterial disease caused by Streptococcus pneumoniae.

It is the leading cause of death in children under five years of age causing infections such as pneumonia, meningitis and septicaemia.

Healthy carriers and patients can spread pneumococcus through sneezing, coughing and close contact.

PCV 10 should be given to prevent and protect against pneumococcal disease as a 0.5ml IM injection given on the right upper anterolateral thigh at 6, 10 and 14 weeks of age.

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1.9 Rotavirus gastroenteritis

1.9.1 What is rotavirus gastroenteritis?

6. It is a ***highly infectious viral disease caused by strains of rotavirus*** infecting the small intestine

7. It is the leading cause of severe diarrhoea in infants and young children worldwide.

1.9.2 How is rotavirus spread?

1. It spreads ***by the faecal-to-oral route.***
2. Large quantities of virus can be shed in the faeces of an infected child

3. Rotavirus is stable in the environment and ***can spread via contaminated food, water and objects.***

1.9.3 What are the symptoms and signs of rotavirus gastroenteritis?

1. Loose stools to severe watery diarrhoea (lasts for 3-7 days)

2. vomiting

3. dehydration

4. Fever

1.9.4 What is the treatment for rotavirus gastroenteritis?

1. There is no specific antiviral treatment for rotavirus gastroenteritis.

2. Symptomatic and supportive measures are fluid replacement using oral rehydration solution (ORS), Intravenous fluids (IVFs) and treatment with zinc supplementation.

3. Severe dehydration may require intravenous infusion in addition to ORS for urgent replacement of fluid and electrolytes.

1.9.5 What are the complications of rotavirus gastroenteritis?

1. Severe dehydration from vomiting and diarrhoea

2. Shock, kidney and liver failure

3. Deaths may occur mainly in infants due to severe gastroenteritis

1.9.6 How is rotavirus gastroenteritis prevented?

1. Vaccination is with the 3-dose Rotavirus vaccine

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2. Exclusive breastfeeding for six months, vitamin A supplementation, safe drinking water, hand washing with soap, hygiene and sanitation.

1.9.7 What is rotavirus vaccine?

1. The rotavirus vaccine (RV) is a vaccine used to protect against rotavirus gastroenteritis.

2. It contains one or more live attenuated (weakened) virus strains.

3. It does not protect against other causes of diarrhoea, a fact that is important to emphasize in health education.

4. The vaccine comes in four (4) formulations Rotarix™, RotaTeq™, RotaSiil™ and Rotavac™.

5. It is given orally

6. The vaccine is a ***ready-to-use liquid that should be stored at a temperature of between +2 °C and +8 °C without freezing.***

1.9.8 When is rotavirus vaccine administered?

1. It is given on *a* ***three-dose schedule (Rotavac™) along with pentavalent 1, 2 and 3 at 6, 10 and 14 weeks of age***

1.9.9 How safe are rotavirus vaccines and what are the potential adverse reactions?

1. Rota vaccine is safe

2. Mild adverse reactions included irritability, runny nose, ear infection, vomiting and diarrhoea

3. There is a low risk of intussusception.

4. Vaccine is approved for administration with other vaccines in infant immunization programmes.

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Table 1.8 Rotavirus vaccines summary

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ROTAVAC®	Characteristics
Trade name	**ROTAVAC®**
Vaccine type	**Live attenuated**
Form	**Liquid (frozen)**
Administration	**Oral using dropper**
Presentation	**5mls vial**
Dose per vial	**10 doses (0.5mls =5 drops/dose)**
Storage temperature	**-20 ^{0}C at NSCS and State Cold store, +2^{0}C to +8^{0}C at LGA**
Vaccine schedule	**3 dose schedule (6,10 and 14 weeks)**
Shelf live	**60 months (frozen), 6 months (+2^{0}C to +8^{0}C), it can be subjected to 6 freeze-thaw cycles. Once thawed, shelf life becomes a maximum of 6 months**
Wastage rate	**28% (10 dose Vial)**
VVM type	**Type 2 located on the body**
Handling open vial	**Once opened, multi-dose vails should be kept at +2^{0}C to +8^{0}C and can be used up to 28 days**

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Note	**ROTAVAC® can be subjected to 6 freeze- thaw cycles**
	Leave to thaw till liquid before administration
	The vaccine is generally pink in color and may sometimes change to orange or light yellow. This change in color does not impact the quality of the vaccine
Adverse Reaction	**No serious adverse reactions** **Fever and diarrhea are very common side effects**
Contraindication	**Previous Severe (anaphylactic) allergic reaction to the vaccine or any component of the vaccine** **History of intussusception** **Severe Combined immunodeficiency disease (SCID)**

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1.10. Measles

1.10.1 What is measles?

1. ***Measles is a highly infectious viral disease caused by the measles virus.***
2. It is an important cause of death among young children globally.
3. Epidemics and severe cases tend to occur in poorly nourished children, especially those who do not receive sufficient vitamin A and whose immune systems have been weakened by HIV/AIDS or other diseases.

1.10.2 How is measles spread?

1. Measles is spread ***through contact with nose and throat secretions in airborne droplets released when an infected person sneezes or coughs*****.**
2. The disease spreads easily with overcrowding and poverty in places where infants and children gather (where large number of unimmunized children are in close contact), such as health centres, schools and camps.

1.10.3 What are the symptoms and signs of measles?

1. Fever with rash and any of the following 3Cs (Cough, conjunctivitis and catarrh)

2. The rash develops usually on the face and upper neck, and spreads to the body and then to the hands and feet. It lasts for five to six days and then fades.
3. Patient may also develop small white spots (Koplik spots) inside their cheeks.

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Figure 1.8: Child with measles rash

1.10.4 What is the treatment for measles?

1. There is no specific antiviral treatment for measles and ***management is mainly supportive.***

2. Antibiotics should be prescribed only for bacterial ear infections and pneumonia.

3. General nutrition support and treatment of dehydration with oral rehydration solution

4. Two doses of vitamin A supplement given 24 hours apart to help prevent eye damage and blindness.

1.10.5 What are the complications of measles?

5. ***Dehydration due to severe diarrhoea.***
6. ***Pneumonia***
7. ***Malnutrition***
8. ***Blindness***
9. ***Inflammation of the middle ear (Otitis media)***
10. Reactivation on tuberculosis from reduced immunity
11. Encephalitis (brain infection).
12. Commoner in unimmunized children under five years of age and, especially, infants

1.10.6 How is measles prevented?

1. Measles is prevented by ***immunization with measles vaccine***

1.10.7 What is measles vaccine?

13. ***Measles vaccine comes in powder form together with a diluent and must be reconstituted before use*** (see module 2 on vaccine and cold chain).
14. ***Reconstituted measles vaccine must be used within six hours then discarded according to national multi-dose vial policy*** (see vaccine cold chain Module on MDVPV)

15. Measles vaccines must be ***stored between +2 °C and +8 °C and protected from sunlight because they are sensitive to heat and light.***

16. Dry measles vaccine is not easily damage by freezing/Freezing does not damage dry measles vaccine.

1.10.8 When is measles vaccine administered?

1. ***Vaccine is administered by subcutaneous injection on left upper arm***

2. ***Measles vaccine is given at 9 months or as soon as possible after 9 months regardless of whether the child had measles before or no and at 15 months***

Maternal antibodies against measles last longer than other antibodies, so immunization with measles vaccine is often not effective before 9 months of age.

1.10.9 What are the potential adverse events following immunization?

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3. ***Mild events are more common and include: local injection site pain and tenderness, fever and rash which may occur 5 to 12 days after vaccination.***

4. Serious events are rare and include anaphylaxis, thrombocytopenia (decreased platelet count) and encephalitis (brain infection) has been reported

Table 1.9 Measles vaccine summary (MV)

Type of vaccine	Live attenuated (weakened) viral
Total number of doses	2
Schedule	MCV1: 9 months of age and MCV2 at 18 months of age
Contraindications	Known allergy to vaccine components (including neomycin and gelatin); severe congenital or acquired immune disorders
Adverse events	Mild: fever, rash 5–12 days following administration Serious: thrombocytopenia (decreased platelets), anaphylaxis, encephalitis (brain infection, though causal link not certain)
Special precautions	None
Dosage	0.5 ml
Injection site	Left upper arm
Injection type	Subcutaneous
Storage	Between +2 °C and +8 °C Keep all MVs away from sunlight

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1.11 Rubella

1.11.1 What is Rubella disease?

1. A viral disease caused by rubella virus

1.11.2 How is Rubella spread?

2. Rubella is spread through contact with nose and throat secretions when an infected person sneezes or coughs

3. Humans are the only reservoir

1.11.3 What are the Signs and symptoms of Rubella?

1. More common in children than adults
2. ***Maculopapular rash (that does not coalesce, unlike measles) and is milder than measles rash***
3. ***20-50% of infections are without rash or asymptomatic***
4. Swelling of the lymph nodes (Lymphadenopathy)
5. Fever is low grade or sub-clinical

1.11.4 What is the treatment of Rubella?

17. There is no specific antiviral treatment for rubella infection and ***management is mainly supportive with fluids and rest.***

1.11.5 What are the Complications of Rubella?

1. ***Encephalitis 1 in 6,000 cases which could progress to Progressive rubella panencephalitis (PRP)***
    1. ***Usually occurs 6 months – 4 years after primary infection***
2. ***Infection at birth results in Congenital rubella syndrome (CRS);***
    1. ***CRS occurs among newborn children of mothers infected during pregnancy. Features include***
        1. Cataracts and also glaucoma
        2. Microcephaly
        3. Developmental Delay
        4. Bone alterations
        5. Liver and spleen damage
    2. ***Infection may also cause fetal death, premature delivery and/or congenital defects***

1. ***Infection during first trimester carries highest risk of CRS*** and could lead to Sensorineural hearing Impairment (60%) and Heart defects.

Figure 1.9 Thrombocytopenic Purpura

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1.11.6 What is prevention of CRS?

2. Immunization with Rubella (Measles Rubella) vaccine

3. Single dose of rubella vaccine as early as 9 months of age confers 95% protection
4. Rubella/CRS elimination goal achievable by targeting children and adolescents through existing measles elimination strategies

1.11.7 What it is Rubella (Measles Rubella (MR)) Vaccine?

1. It is Live attenuated vaccine

2. It comes as Lyophilized = freeze dried powder

3. ***Requires reconstitution with diluent*** from same manufacturer and ***must be used within six hours of reconstitution*** and discarded according to the national multi-dose vial policy.

1.11.8 How MR vaccine stored?

8. Store at temperatures of 2º to 8ºC

9. Protect from light and heat, especially after reconstitution
10. Discard reconstituted vaccine after 6 hours

1.11.9 When and how is MR vaccine given?

11. Use the two dose measles vaccine strategy to include rubella vaccine as MR or MMR vaccine.

12. ***The first dose of MR vaccine can be delivered at 9 months*** or 12 months of age depending on the level of measles virus transmission

13. Administered by subcutaneous injection on left upper arm

1.11.10 How safe is MR vaccine?

5. MR vaccine is safe

6. ***Mild events are more common and include: local injection site pain and tenderness, fever and rash*** which may occur 5 to 12 days after vaccination.
7. Serious events are rare and include anaphylaxis, thrombocytopenia

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Table 1.10 Rubella vaccine (Measles Rubella (MR) summary

Type of vaccine	Live attenuated (weakened) viral
Total number of doses	2
Schedule	MR: 9 months of age and at 15 months of age
Contraindications	Known allergy to vaccine components (including neomycin and gelatin); severe congenital or acquired immune disorders
Adverse events	Mild: fever, rash 5–12 days following administration Serious: thrombocytopenia (decreased platelets), anaphylaxis, encephalitis (brain infection, though causal link not certain)
Special precautions	None
Dosage	0.5 ml
Injection site	Left upper arm
Injection type	Subcutaneous
Storage	Between +2 °C and +8 °C Keep all MR vaccines away from sunlight

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1.12 Yellow fever

1.12.1 What is yellow fever?

14. Yellow fever (YF) is an acute viral haemorrhagic disease of high mortality caused by the yellow fever virus.

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15. It affects all age groups

1.12.2 How is yellow fever spread?

1. The yellow fever virus is spread ***by mosquitoes of the Aedes species when they bite humans.***

2. ***Mosquitoes may acquire the virus by biting either infected monkeys or humans, and they can then spread it to humans***

3. It is not spread directly from person to person.

1.12.3 What are the symptoms and signs of yellow fever?

1. Infection with YF virus can in some cases causes no symptoms or signs.

2. ***Nonspecific symptoms include fever, headache, muscle pain, shivering, loss of appetite, nausea and vomiting, congestion of the conjunctivae and face and a relatively slow heart rate during fever.***

3. ***Severe symptoms include jaundice (yellowing of the conjunctivae and skin), bleeding of gums and blood in urine and black vomitus***

4. Severe YF infection can be confused with malaria, viral hepatitis, poisoning and other types of haemorrhagic fevers.

Figure 1.10 African Child with Jaundice

1.12.4 What is the treatment for yellow fever?

1. There is no specific antiviral medication for YF treatment.

2. ***Supportive measures to improve symptoms should be taken.***

3. Severe cases usually require hospital care.

4. ***Aspirin and similar medications should be avoided since they may cause bleeding, particularly in the stomach and intestines.***

1.12.5 What are the complications of yellow fever?

1. ***Convulsion***

2. ***Coma***

3. The disease usually lasts two weeks, after which the patient either recovers or dies usually from liver and kidney failure

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5. Survivors may experience prolonged weakness and fatigue, but the liver and kidneys usually heal completely.

1.12.6 How is yellow fever prevented?

1. YF is prevented by ***vaccination with YF vaccine***
2. Large-scale YF vaccination in campaigns has been very effective in endemic areas
3. Measures to control mosquito populations are part of prevention strategies.

1.12.7 What is yellow fever vaccine?

1. Live attenuated (weakened) virus vaccines for preventing YF

2. *They are supplied in freeze-dried (also called lyophilized) form and must be reconstituted with the diluent supplied by the manufacturer before use: see* Module on managing an immunization session.

3. YF vaccine must be ***stored between +2 °C and +8 °C.*** It is not damaged if accidentally frozen. Open multi-dose vials must be handled according to national multi-dose vial policy: see Module 2 on vaccine cold chain

1.12.8 When and how is yellow fever vaccine administered?

1. A single dose of YF vaccine is given at aged 9 months at the same time as measles vaccine.

2. It is administered as a single 0.5 ml dose subcutaneously in the right upper arm

3. Preventive mass immunization campaigns are also recommended.

YF vaccine is contraindicated in children under six months and not recommended for children aged six to eight months, except during epidemics. It is contraindicated in anyone with allergies to egg antigens. In HIV-infected individuals should be properly screened before vaccination (it is contraindicated in client with CD4 T-cell values of <200 counts per mm[3)]

1.12.9 How safe is yellow fever vaccine and what are the potential adverse events following immunization?

1. Yellow fever vaccine is safe

2. Mild adverse events include injection site pain, headache, muscle ache, low-grade fever, itching, hives and other rashes

3. Serious adverse events include

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1. Hypersensitivity (allergy) or anaphylaxis.
2. YF vaccine-associated neurologic disease (inflammation of different parts of the nervous system, including the brain)
3. YF vaccine associated viscerotropic disease (affecting internal organs)

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Table 1.11 Yellow fever vaccine summary

Type of vaccine	Live attenuated (weakened) virus
Number of doses	1
Schedule	9 months of age
Contraindications	Age <6 months; age 6–8 months except during epidemics Known allergy to egg antigens or to a previous dose HIV infection with CD4 T-cell counts <200 per mm^3
Adverse events	Mild**:** headache, muscle pain, fever Serious**:** anaphylaxis; YF vaccine-associated neurologic (nerve) disease and viscerotropic (affecting internal organs) disease; encephalitis in infants aged <6 months
Special precautions	Risk-benefit assessment before administering to pregnant women or people aged >60 years
Dosage	0.5 ml
Injection site	Outer upper right arm (for subcutaneous); or anterolateral (outer) thigh in infants and children (for intramuscular)

Route of administration	Subcutaneous or intramuscular
Storage	Between +2 °C and +8 °C

1.13 Meningococcal disease

1.13.1 What is meningococcal disease?

2. ***Meningococcal meningitis (Cerebrospinal meningitis, CSM) is a bacterial infection of the meninges (membranes covering the brain and spinal cord) caused by the Neisseria meningitidis*** (also known as the meningococcus).
3. Neisseria meningitidis serogroups A, B, C, X, W135 and Y cause most cases of meningococcal meningitis.
4. In Nigeria, epidemics occur between the months of December and June.

1.13.2 How is meningococcal disease spread?

5. It is spread from person to person via droplets and direct contact with infected people.

6. It can spread rapidly in overcrowded and poor sanitary conditions.
7. Children and young adults are the most susceptible but during epidemics all age groups may be affected.

1.13.3 What are the symptoms and signs of meningococcal disease?

8. CSM can present in many ways ranging from mild fever to severe disease with shock, circulatory collapse and septicaemia

9. Signs and symptoms of meningitis include:

1. ***Fever***
2. ***Sudden onset of intense headache***
3. ***Nausea and vomiting***
4. ***Irritability***
5. ***Neck stiffness***
6. ***Convulsions***

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7. Loss of consciousness

8. Others; lethargy, delirium, coma

10. A petechial rash (petechiae are small spots of bleeding into the skin) is the **key sign of meningococcal septicaemia (blood infection)**.

1.13.4 What is the treatment for meningococcal disease?

1. Each case should be considered as a medical emergency and referred to a hospital to reduce the risk of death from rapidly progressing disease.

2. Antibiotics such as ceftriaxone, chloramphenicol and penicillin G are effective in treatment.

1.13.5 What are the complications of meningococcal disease?

11. Deafness

12. Paralysis and seizures

13. Mental retardation

14. Arthritis

15. ***Death occurs in almost all untreated cases***.

1.13.6 How is meningococcal meningitis prevented?

1. Several vaccines are available to protect against meningococcal serogroups A, C, W135 and Y: polysaccharide A,C,Y,W135 and MenAfriVac A (Men A)

2. For the RI schedule, Men A is used

1.13.7 What is meningococcal vaccine (Men A)?

3. ***Meningococcal vaccine (MenAfriVac A) is a conjugate monovalent lyophilized vaccine*** covalently bonded to the tetanus antitoxin as a carrier protein

4. It comes in powder form and before use ***must be reconstituted with accompanying diluent.***

5. ***Reconstituted vaccine must be used within 6 hours then discarded*** (see vaccine cold chain Module on MDVPV).

6. It should be ***stored between +2 °C and +8 °C.***

1.13.8 When and how are meningococcal vaccines administered?

1. Administered at 9months of age

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2. ***0.5 ml dose is administered intramuscularly on the left anterolateral (outer) aspect of the thigh.***

1.13.9 How safe are meningococcal vaccines and what are the potential adverse events following immunization?

1. ***Meningococcal vaccines are safe***
2. ***Mild events include local injection site reactions, fever and irritability in children.***
3. No serious adverse events have been associated with them.

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Table 1.12 Meningococcal conjugate vaccines summary

Type of vaccine	Purified bacterial capsular polysaccharide bound to protein; (monovalent, quadrivalent)
Number of doses	1
Schedule	Single dose at 9months for monovalent **MenA conjugate**
Contraindications	Anaphylaxis or hypersensitivity (allergy) after a previous dose
Adverse events	Mild: injection site reactions, fever Serious: rare anaphylaxis
Special precautions	Severe acute illness
Dosage	0.5 ml

Injection site	Left upper Anterolateral (outer) thigh in infants
Route of administration	Intramuscular
Storage	Between +2 °C and +8 °C

1.14 Human papillomavirus infection and cervical cancer

1.14.1 What is human papillomavirus?

1. ***Human papillomavirus (HPV) is a sexually transmitted virus that causes genital warts and cancers.***
2. It is of particular concern in women since it is now known to be the cause of 99% of cervical cancers. It also causes cancer of the anus, external genitalia and oral cavity in both sexes.
3. An estimated 47.72 million women aged 15 years and older are at risk of developing cervical cancer in Nigeria.[2] ***About 14,000 women are diagnosed with new cervical cancer cases and 8,000 die from this disease every year.[3]***

1.14.2 How is HPV spread?

1. ***HPV spreads easily by skin-to-skin contact.***
2. ***It is transmitted through sex with a person who has the virus.***
3. Condoms do not provide full protection against HPV, as most people infected with the virus do not develop signs or symptoms.

1.14.3 What are the symptoms and signs of cervical cancer?

Most HPV infections do not cause symptoms or disease and usually clear within a few months. Continued infection can progress to cervical cancer; this progression takes 20 years on average and tends to cause symptoms only after the cancer has reached an advanced stage.

[2]ICO Information Centre on Human Papilloma Virus (HPV) and Cancer (2015) *Human Papillomavirus and Related Diseases Report: NIGERIA*. Available at: http://www.hpvcentre.net/statistics/reports/NGA.pdf (accessed 10/2/2016).

[3] Bruni L, Barrionuevo-Rosas L, Albero G, Aldea M, Serrano B, Valencia S, Brotons M, Mena M, Cosano R, Muñoz J, Bosch FX, de Sanjosé S, Castellsagué X (2015) Human Papillomavirus and Related Diseases in Nigeria. ICO Information Centre on HPV and Cancer (HPV Information Centre). Available at: http://www.hpvcentre.net/statistics/reports/NGA.pdf (accessed 11/02/2016)

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1. Symptoms and signs of cervical cancer include
    1. ***abnormal vaginal bleeding (after sexual intercourse and/or between menstrual periods);***
    2. ***pelvic, back and/or leg pain;***
    3. ***vaginal discharge;***
    4. ***fatigue***
    5. ***Weight loss.***
    6. ***Anaemia, renal failure and fistulae can also occur in advanced stages of cervical cancer.***

1.14.4 What is the treatment for cervical cancer?

1. ***Localized treatment with cryotherapy may be effective if cervical cancer is detected early by screening*** methods such as the Papanicolaou smear (Pap smear), HPV-DNA tests and/or visual inspection with acetic acid).
2. ***Treatment of advanced cancer is complicated and usually involves combinations of surgery, radiotherapy and chemotherapy.***

1.14.5 What can be done to prevent and control cervical cancer?

1. ***Primary prevention is by vaccination against HPV infection for girls 9 – 14 years of age***
2. Health education warning against tobacco use, sexual education and promotion of condom use, and male circumcision
3. ***Secondary prevention in women aged 30-49 years is with 'screen and treat' approach***
4. Tertiary prevention by treatment of invasive cancer at any age.

1.14.6 What is HPV vaccine?

1. I***t is a vaccine that protect against Human papillomavirus infection***
2. Two HPV vaccines are currently available worldwide: a bivalent vaccine ***Cervarix®, which protects against HPV types 16 and 18, and a quadrivalent vaccine Gardasil®, which protects against four HPV types 6, 11, 16 and 18.***
3. ***These vaccines do not require reconstitution and must be stored between +2 °C and +8 °C.***

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4. Open multi-dose vials must be handled according to national policy (see Module2).

1.14.7 When and how is HPV vaccine administered?

5. The recommended target population for the prevention of cervical cancer for the Nigerian schedule is ***females aged 9 to 14 years, prior to becoming sexually active.***

6. ***A two-dose schedule with an interval of six months is recommended*** (an interval of not greater than 12-15 months is suggested in order to complete the schedule)

7. Administered intramuscularly in two separate 0.5 ml doses to girls aged 9years to 14 years interval of 6month apart in the upper arm

8. Females who are **above15** year**s** at the time of the second dose are adequately protected by the 2 doses.

1.14.8 How safe is HPV vaccine and what are the potential adverse events following immunization?

9. HPV vaccine is safe

10. Mild events include local injection site reactions (pain, redness and swelling), fever, dizziness and nausea

11. Serious events are rare and include anaphylaxis

Table 1.13 Summary of HPV vaccines for girls aged 9 and 14 years

Type of vaccine	Recombinant protein capsid, liquid vaccine
Total number of doses	2
Schedule –	**Quadrivalent (**Merck Gardasil®) is administered at least 6 months interval to girls aged 9 to 14 years
Contraindications	Anaphylaxis or hypersensitivity (allergy) after a previous dose
Adverse events	Mild: injection site reactions; fever, dizziness, nausea Serious: rare anaphylaxis
Special precautions	Postpone vaccination for pregnancy

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	Adolescents should be seated during injections and for 15 minutes afterwards since they sometimes faint
Dosage	0.5 ml
Injection site	Deltoid muscle of upper arm
Route of administration	Intramuscular
Storage	Between +2 °C and +8 °C Do not freeze

Key points about HPV and cervical cancer

1. Human papilloma virus infection is the commonest cause of cervical cancer in women and is sexually transmitted
2. Cervical cancer is the leading cause of cancer deaths among women in developing countries, Nigeria inclusive.
3. Cervical cancer develops many years after initial HPV infection and does not usually show symptoms and signs until it is late stage and difficult to treat.

1.15 Opportunities for integration of services: EPI Plus and vitamin A deficiency

Immunization programmes provide an opportunity to deliver other essential health services such as vitamin A supplementation, de-worming, malaria prevention with insecticide-treated nets and Integrated Management of Childhood Illness. These additional services are part of EPI Plus programmes. Vitamin A deficiency is discussed further here.

1.15.1 What is vitamin A?

Vitamin A is a substance that is required by the human body.

It strengthens resistance to infection, increases a child's chances of surviving an infection, promotes growth and protects the cornea (the transparent part of the eye).

Lack of vitamin A, or vitamin A deficiency, can result in poor vision in dim light.

1. The human body cannot make vitamin A so all the vitamin A needed by the body must come from food intake.
2. ***Vitamin A is present in the following foods:***
    1. ***breast milk;***
    2. ***red palm oil***
    3. ***fruits and vegetables such as dark green, leafy vegetables, mangoes, papayas, pumpkins and carrots***
    4. ***liver, eggs, meat, fish-liver oil;***
    5. ***milk, cheese and other dairy products;***
    6. ***nuts and seeds***

Vitamin A can be added to such foods as sugar, vegetable oil and wheat flour during processing. This is called food fortification.

1.15.2 What is Vitamin A deficiency?

This is insufficient level of Vitamin A in the body.

1.15.3 When does vitamin A deficiency occur?

1. ***Vitamin A deficiency occurs when a person does not eat enough food containing vitamin A or when the body uses it up too fast.***
2. This often happens during illness, during pregnancy and lactation, and when children's growth is most rapid – from six months to five years of age.

1.15.4 What are symptoms and signs of vitamin A deficiency?

1. ***Vitamin A deficiency (VAD) reduces resistance to infections*** causing diseases such as measles, diarrhoea leading to more severe and prolonged illnesses and increasing the risk of death.
2. ***It can cause eye damage***, such as corneal lesions and, when severe, can cause blindness.

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3. Generally, the first clinical sign of vitamin A deficiency is night blindness (impaired vision in dim light).

1.15.5 What is vitamin A supplementation?

1. ***It is treating children aged 6months to 59months at high risk of vitamin A deficiency with high doses of vitamin A supplement.***
2. When food does not contain enough vitamin A, it is possible to increase vitamin A levels by periodically taking a concentrated dose in the form of a capsule.
3. For children, vitamin A capsules are cut open and the drops of liquid inside are squeezed into the mouth.
4. Vitamin A supplementation can be combined with immunization services for children when vitamin A deficiency is present in an area.
5. In addition***, vitamin A supplements are also given for treatment of measles and xerophthalmia*** (dryness of the eyes that can lead to corneal damage and blindness).

1.15.6 Are there any side effects of vitamin A supplements?

1. ***Usually, there are no side effects***.
2. On rare occasions, a child may experience headache, loss of appetite or vomiting. These symptoms pass in time, and no treatment is necessary. Parents should be advised that this is normal.

1.15.7 What are the opportunities to link vitamin A and routine immunization?

The table below shows how vitamin A supplementation can be linked with routine immunization.

Table 1.14 Linking vitamin A and routine immunization

Target for vitamin A	**Vitamin A dose**	**Presentation (formulation) and How to administer**		**Immunization contact**
		If 100,000 IU **(blue)**capsule is given	If 200,000 IU (**red)** capsule is given	
Infants 6–11 months	100,000 IU	**All** drops in **one** blue capsule	**Half** of the drops in **one** red capsule (4 drops)	Measles/Yellow fever

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Children 12- 59 months	200 000 IU	All drops in **two** blue capsules	All drops in **one** red capsule. (8 drops).	Polio NIDs Booster Other EPI campaigns e.g. during MNCH week

NOTE: The optimal interval between doses of vitamin A is four to six months. The minimum recommended safe interval between doses is one month. The interval between doses can be reduced to treat clinical vitamin A deficiency and measles cases. Follow national guidelines for the appropriate measles treatment schedule.

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Table 1.15: Summary Table for EPI target diseases in Nigeria

Vaccine	Diseases	No. of Doses	Age	Minimum Interval between doses	Route of administration	Dose	Vaccination site
BCG	Tuberculosis	1	At birth or within 2 weeks of birth	NA	Intradermal	0.05 ml	**left** Upper arm
OPV	Poliomyelitis	4	At birth or within 2 weeks of birth and at 6, 10 and 14 weeks of age	4 weeks	Oral	2 drops	Mouth
IPV	Poliomyelitis	2	At 6 and 14 weeks of age	8 weeks	Intramuscular	0.5ml	Right Upper outer thigh
Hepatitis B Vaccine	Hepatitis B infection	1	At birth within 24 hrs and up to 2 weeks of birth	4 weeks before penta 1	Intramuscular	0.5 ml	Left Upper Outer part of thigh
Penta vaccine	Diphtheria, Pertussis, Tetanus, Hib disease, Hepatitis B infection	3	At 6, 10 and 14 weeks of age	4 weeks	Intramuscular	0.5 ml	Left Upper Outer part of thigh

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PCV	Pneumonia (strep pneumoniae)	3	At 6, 10 and 14 weeks of age	4 weeks	Intramuscular	0.5ml	Right Upper outer thigh
Rotavirus Vaccine	Rotavirus infection.	3	At 6, 10 and 14 weeks of age	4 weeks	Oral	0.5ml (5 drops)	Mouth
Measles Vaccine	Measles	2	At 9 months of age and at 15 months	6 months	Subcutaneous	0.5 ml	**left** Upper arm
Yellow fever vaccine	Yellow fever	1	At 9 months of age	NA	Subcutaneous	0.5 ml	**right** Upper arm
Rubella (Measles Rubella MR)) vaccine	Rubella	2	At 9 months of age and at 15months	6 months	Subcutaneous	0.5 ml	**left** Upper arm
HPV	Cervical cancer	2	9-13 years	6 months	Intramuscular	0.5ml	Deltoid muscle (upper arm)
Men A	Meningitis	1	At 9 months of age	NA	Intramuscular	0.5 ml	Left Upper Outer part of thigh
Vitamin A	Vit A deficiency	2	At 6 months and 12 months	6 months	Oral	100,000 / 200 000 IU	Mouth

Note: Intradermal = into the skin; Intramuscular = into a muscle; Subcutaneous = under the skin.

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Figure 1.11: Needle positions, Routes and Sites of Administration of Vaccines

Figure 1.12: Umbilical Cord Care

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1.16 Exercises on EPI Targeted Diseases

Exercise One:

Rachel Bassey is the only health worker working at Ja Abdulkadir Dispensary of Kyutta LGA, Katsina state, Nigeria. She was approached by Gloria Dangana, who is visiting the health facility for the very first time with Belinda Attah, a nine months' old baby girl that was due for Yellow fever and Measles vaccination. During the conversation of Rachel Bassey with Gloria Dangana, she wanted to know if baby **Belinda** has received any vaccination since birth.

TASK:

1. Discuss which vaccines baby Belinda should have received before this visit at nine months. (5mins)
2. Discuss what advice Rachel Bassey should provide to Gloria Dangana if the child has never been vaccinated since birth. (5mins)
3. Briefly enumerate the type(s) of Adverse events following immunization that could likely occur when baby Belinda is given the following vaccines (Pentavalent, IPV, PCV, Measles and Yellow Fever) (5mins)

4. The mother (Gloria Dangana) further enquired from the health worker how vaccines differ from the normal drugs she gets from the health facility for her baby when she presented sick; Discuss. (5mins)

Guide on how to attempt the above question

The questions are to be answered based on the current national immunization schedule. Below is an attempt to guide the facilitator on how to provide the answers to the above questions:

1. At birth the baby is given BCG, HB0 and OPV0. At six weeks; OPV1, Pentavalent1, PCV1, IPV1 and RVV1 (Rotavirus). At 10 weeks; OPV2, Pentavalent 2, PCV2, RVV2. At 14 weeks OPV3, Pentavalent 3, PCV3, IPV2 and finally at 6 months Vitamin A100, 000IU is given to the child.

2. Talk to the mother about the vaccine preventable diseases and the availability and importance of vaccination as well as the likely implications of not vaccinating a child. Inform the mother on the benefits of fully immunizing her child and that vaccines are free and available at the facility during every immunization day. Then the child should be given BCG, OPV1, Pentavalent1, PCV1, IPV1 and RVV1. Furthermore, advice should be given to the mother on when next to come and the importance of completing the schedule. NOTE: it is important for the child to be fully immunized; to achieve this aim the caregiver should visit the facility not less than five times (five finger model).

3. The adverse events following immunization are divided into following: either (a) Mild or Serious or (b) local or systemic. However mild and local are commoner and mostly self-limiting, however serious and systemic may occur occasionally and both cases the caregivers are counsel prior to immunization to report any events to the health facility. The following events are occasionally seen as indicated below:

    1. Pentavalent: the adverse events includes mild injection site reactions, fever, swelling, and Anaphylaxis,
    2. IPV: mild injection site reactions
    3. PCV: mild injection reactions and fever
    4. Measles: mild fever, rash ,thrombocytopenia, anaphylaxis and encephalitis
    5. Yellow fever: headache, muscles pain, fever, neurologic deficit, viscerotropic disease and encephalitis

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4. Below table gave a summarize tabular approach on how to answer question 4;

S/N	Vaccines	Drugs
1	Prevention of disease	Treatment of disease
2	Given to healthy people	Usually given to people who have disease condition
3	Stimulate the body to produce agents (antibodies) that fight to prevent the occurrence of the disease	Drugs act on the already existing disease condition to treat the disease

NOTE: The above answers are non-exhaustive only given as a guide to stimulate discussion during the session. Facilitators are to guide the discussion. This is believed to help the participants to appreciate the vaccines and disease relationship and can help them during interaction with clients especially in resolving cases of Noncompliance.

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Exercise Two:

List the diseases that these vaccines prevent and the route and sites of administration of the vaccines? (5mins)

Vaccine	BCG	HepB0	BOPV	Pentavalent	PCV	IPV	RotaVV	Measles	Rubella	YF Vac	Men A	HPV V	Vit A
Disease the vaccine prevent	Tuberculosis	Liver disease/ hepatitis	poliomyelitis	Diphtheria, pertussis, tetanus, liver disease, meningitis pneumonia, sepsis etc	Pneumonia, meningitis cellulitis, sepsis etc	poliomyelitis	Diarrhoea	Measles disease	Rubella encephalitis, CRS etc	Yellow Fever infection	meningitis	Cervical cancer	Vit A Deficiency
Site of administration	Left upper arm	Left upper outer thigh	Mouth	Left upper outer tigh	Right upper outer thigh	Right upper outer thigh	Mouth	Left upper arm	Left upper arm	Right upper arm	Left outer thigh	Deltoid muscles	Mouth
Route of administration	Intradermal	IM	Oral	IM	IM	IM	Oral	Subcutaneous	Subcutaneous	Subcutaneous	IM	IM	Oral
Age of administration	At birth ,within 2 weeks and upto 1 year	At birth or within the 1st 2 weeks	At birth, then 6, 10 and 14 weeks of age	At 6, 10 and 14 weeks of age	At 6, 10 and 14 weeks of age	At 14 weeks of age	At 6, 10 and 14 weeks of age	9 and 15 months	9 and 15 months	9 months	9 Months	9 months	6 Months
Dose	0.05ml	0.5ml	2 drops	0.5mls	1ml	0.5ml	0.5ml (5 drops)	0.5ml	0.5ml	0.5ml	0.5ml	0.5ml	100000/ 200000 IU

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MODULE 2: VACCINE AND COLDCHAIN MANAGEMENT

Contents

List of Figures (2)2

List of Tables (2)3

2.1. Responsibilities of the health worker in vaccine and cold chain management at the health facility (2)5

2.2 The cold chain (2)6

2.3 Storage temperature requirements for vaccines (2)7

2.3.1 Sensitivity to heat and freezing (2)8

2.3.2 Sensitivity to light (2)9

2.4 The cold chain at health centre (2)10

2.4.1 Refrigerators (2)11

2.4.2 Cold boxes (2)13

2.4.3 Vaccine carriers (2)14

2.4.4 Ice packs (2)15

2.4.5 Foam pads (2)16

2.5 Temperature monitoring devices (2)17

2.5.1 Vaccine Vial Monitors (VVMs) for monitoring heat exposure (2)17

2.5.2 Monitoring Temperature of Cold Chain Equipment (2)19

2.5.2a 30-day electronic temperature loggers (30 DTR) (2)19

2.5.2b Electronic freeze indicators (2)22

2.5.2c Integrated digital thermometers (2)22

2.5.2d Stem thermometers (2)23

2.5.2e Recommended equipment (2)24

2.6 Monitoring cold chain temperatures (2)24

2.6.1 Monitoring vaccine refrigerator temperature (2)24

2.6.2 Maintaining the correct temperature in cold boxes and vaccine carriers (2)28

2.7 Arranging vaccines inside cold chain equipment (2)29

2.7.1 General rules for using vaccine refrigerators (2)29

2.7.2 Preparing ice packs and conditioned ice packs (2)35

2.8 Basic maintenance of cold chain equipment (2)38

2.8.1 Defrosting vaccine refrigerators (2)38

2.8.2 Maintaining solar power systems (2)39

NOT FOR PRINTING

2.8.3 Managing vaccine refrigerator breakdowns (2)42
2.9 What is the Shake Test? (2)43
2.9.1 When is the Shake Test needed? (2)44
2.9.2 How is the Shake Test done? (2)44
2.10 Vaccine management (2)45
2.10.1 Vaccine Storage Capacity (2)45
2.10.2 Estimating Vaccine Needs (2)47
2.10.3 Deciding when to supply vaccines to a facility - “Supply Period”? (2)48

NOT FOR PRINTING

List of Figures

Figure 2.1: The cold chain 6

Figure 2.2: Light sensitive vaccines in dark glass ampoule/vial 10

Figure 2.3: Schematics of Solar Refrigerators (with battery and SDD) 13

Figure 2.4: Vaccine Cold Box 14

Figure 2.5: Vaccine Carrier 15

Figure 2.6: Ice Packs 15

Figure 2.7: Foam Pad in Vaccine Carrier 17

Figure 2.8: VVM Stages 18

Figure 2.9: Location of VVMs on ampoules and vials 19

Figure 2.10: Example of Temperature Loggers 20

Figure 2.11: Setting up and Reading a 30- Day Temperature Logger 21

Figure 2.12: How to read FridgeTag2 21

Figure 2.13: Freeze-tagR 22

Figure 2.14: Integrated digital thermometer 23

Figure 2.15: Dial and Stem Thermometers 23

Figure 2.16: Sample of filled Temperature Chart 26

Figure 2.17: Commonly Used Refrigerators 30

Figure 2.18: Arrangement of vaccines and diluents in a front opening refrigerator 30

Figure 2.19: Purpose-made tray for vials and ampoules 32

Figure 2.20: Loading Top-Opening Refrigerators 35

Figure 2.21: Conditioning Ice Packs 37

Figure 2.22: Arranging ice packs and vaccines in a vaccine carriier 38

Figure 2.23: Daily Solar Maintenance Tasks 40

Figure 2.24: Weekly Solar Maintenance Tasks 40

Figure 2.25: Monthly Solar Maintenance Tasks (Cabinet) 41

NOT FOR PRINTING

Figure 2.26: Monthly Solar Maintenance Tasks (Power source) 42

Figure 2.27: The shake Test 45

Figure 2.28: Calculating the storage capacity of a vaccine refrigerator using the internal dimensions of the equipment 46

Figure 2.29: Calculation of Space Requirement for FIC 47

List of Tables

Table 2.1: Vaccine heat sensitivity 9

Table 2.2: Freeze Sensitive Vaccines 10

Table 2.3 Types of vaccine refrigerators 13

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Module 2: Vaccine and Cold Chain Management

Module Objective:

At the end of this session, participants should be able to

1. Describe what the Cold Chain is.
2. List and describe the Cold Chain Equipment used at the Health Facility level.
3. Practice proper vaccine handling and management procedures including storage of different vaccines in the Cold Chain Equipment.
4. Use the different temperature monitors available (especially the VVM and the 30-day temperature monitoring devices) to monitor the Cold Chain.
5. List the basic daily and monthly tasks required to maintain functional cold chain and report cold chain equipment failure.
6. Estimate bundled vaccines requirements for the catchments population and set vaccine stock management parameters

Trainers' note:

This facilitator should:

1. Elicit from the participants the definition of Cold Chain.
2. Ask the participants why vaccines require the Cold chain.

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3. Ask participants to name specific vaccines and their recommended storage temperatures.

2.1. Responsibilities of the health worker in vaccine and cold chain management at the health facility

At the health facility, one person must have overall responsibility for managing the vaccine cold chain. A second person can fill in when the primary person is absent. Their responsibilities should include:

- Checking and recording vaccine temperatures twice daily on the temperature monitoring chart; typically, in the morning and at the end of the session or day;
- Properly storing vaccines, diluents and ice packs
- Carry out daily and weekly tasks for the maintenance of the cold chain equipment as described in section 2.7 of this module; and
- Record vaccine transactions in the appropriate record books (vaccine management tools or ledgers)

2.2 The cold chain

The system used for storing vaccines in good condition is called the cold chain. It is sometimes referred to as the vaccine supply chain. The cold chain consists of a series of links that are designed to keep vaccines within recommended temperature ranges, from the point of manufacture to the point of administration. Figure 2.1 illustrates the cold chain system design in Nigeria. The green arrows show the flow of bundled vaccines down to the health facilities; the red arrows show the flow of information and data. The black broken arrows show feedback flow. Following this sequence ensures that cold chain performance is properly monitored and that the necessary information is gathered for vaccine forecasting.

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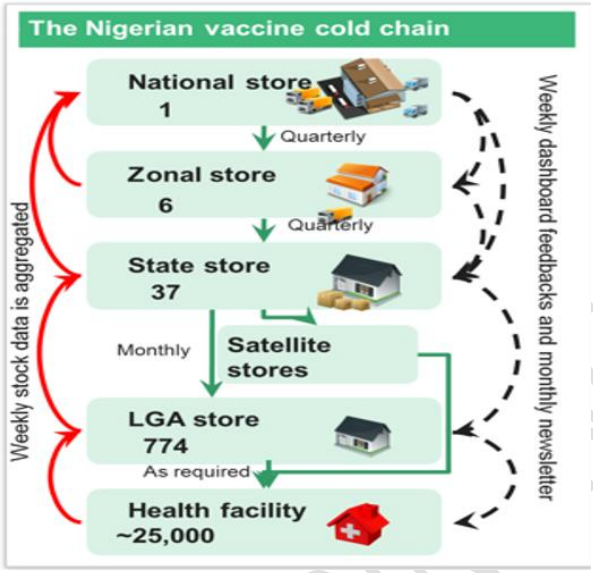


Figure 2.1: The cold chain

Different levels within the national cold chain system require different types of equipment for transporting and storing vaccines and diluents within the required temperature range.

At the Health facility level, vaccines are kept in the cold chain in either solar or electric refrigerators. Where refrigerators are not available, passive cold chain equipment like cold boxes and longer range passive storage devices may be used for storage of vaccines. Vaccine carriers are used for storage of vaccines during immunization sessions.

To maintain quality of vaccines through a reliable vaccine cold chain system at the health facility level, the following key procedures must be observed:

- Store ALL vaccines within the required temperature range at +2 to +8^{o}C.
- Pack and transport vaccines to and from outreach sites according to recommended procedures (refer to section 2.6).
- Though diluents may be stored outside the cold chain before use, vaccines and diluents must be kept within recommended cold chain conditions (+2^{o}C - +8^{o}C) shortly before and during immunization sessions.

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2.3 Storage temperature requirements for vaccines

Vaccines are sensitive biological products. Some vaccines are sensitive to freezing, some vaccines are sensitive to light and all vaccines are sensitive to heat. ***Vaccine potency*** is the ability of the vaccine to adequately protect the vaccinated client. Potency can be diminished when the vaccine is exposed to inappropriate temperatures. Once lost, vaccine potency cannot be regained. To maintain quality, vaccines must be protected from extreme temperatures. Vaccine quality is maintained using a cold chain that meets specific temperature requirements. At the health facility level, all vaccines should be kept within +2 °C to +8 °C.

Note:

1. Diluents should never be frozen.
2. If diluents are packaged with the vaccine, the combined product should be stored at +2 °C to +8 °C.

2.3.1 Sensitivity to heat and freezing

Trainer's notes:

1. Ask participants to look at Figure 2.2w - Vaccine heat sensitivity.
2. Ask participants to highlight the implications of vaccine heat sensitivity on the potency of the vaccine.
3. Ask participants to highlight the implications of vaccine freeze sensitivity on the potency of the vaccine.
4. Guide the conversation to the importance of storing vaccines at +2 °C and +8 °C at all times.

Table 2.1 shows the relative heat sensitivity of vaccines. These vaccines are grouped into six categories. Within each of these six categories, the vaccines are arranged in alphabetical order, not in order of sensitivity to heat within the group. The most heat sensitive vaccines are in Group A and the least heat sensitive are in Group F.

Table 2.1: Vaccine heat sensitivity

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GroupA	GroupB	GroupC	GroupD	GroupE	GroupF
Oral poliovirus (OPV)	Influenza	Inactivated poliovirus (IPV) (Freeze-dried) Measles Measles-Rubella Measles-Mumps-Rubella (freeze-dried)	Cholera DPT-HepB-Hib (pentavalent) Hib (liquid) Rotavirus (liquid and freeze-dried) Yellow fever (freeze-dried)	Bacillus Calmette-Guerin (BCG) Human papillomavirus (HPV) Tetanus, TD, Td	Hepatitis B Hib (freeze-dried) Meningococcal A Pneumococcal conjugate (PCV)

Note that the heat stability information shown for freeze-dried vaccines applies only to unopened vials; most freeze-dried vaccines rapidly lose potency after reconstitution. In addition, it is important to keep opened multi-dose vaccine vials that do not contain preservative, whether powdered or liquid, cooled at temperatures between +2 °C and +8 °C during the immunization session. They should however be discarded at the end of the immunization session or after six hours of opening, whichever comes first.

Vaccines that are sensitive to freezing that should be protected from sub-zero temperatures are listed in Table 2.2.

Table 2.2: Freeze Sensitive Vaccines

DO NOT FREEZE THESE VACCINES!!!
Cholera vaccine
DPT-HepB-Hib (Pentavalent) vaccine
Hepatitis B (HepB) vaccine
Hib (Liquid) vaccine
Human Papilloma virus (HPV) vaccine
Inactivated Polio Virus (IPV) vaccine
Influenza vaccine
Pneumococcal Conjugate (PCV) vaccine

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Tetanus-diphtheria (Td) vaccine
Meningococcal Conjugate (MenA) vaccine
Rotavirus vaccine (liquid and reconstituted)

2.3.2 Sensitivity to light

Some vaccines are very sensitive to light and loose potency when exposed to a source of light. Such vaccines should always be protected against sunlight or to artificial light sources such as fluorescent light (energy savers or fluorescent tubes). Thus, exposure to these light sources should be minimized. Vaccines that are sensitive to light include ***BCG, Measles, Measles-Rubella, Measles-Mumps-Rubella and Rubella.*** These vaccines are often supplied in dark glass vials that give them some protection from light damage. It is advisable to keep them in their secondary packaging for as long as possible to protect them during storage and transportation (see Fig. 2.5)



Figure 2.2: Light sensitive vaccines in dark glass ampoule/vial

2.4 The cold chain at health centre

Trainer's Notes:

1. To stimulate discussion, ask participants how vaccines are stored in their health facilities.

2. Ask for examples of how vaccines are stored in remote communities. What conditions are necessary? How is the cold chain guaranteed?

At the health facility level (usually health centres and health posts), health workers can adequately protect vaccines by doing the following:

- Store vaccines in appropriate solar or electric refrigerator.
- Monitor that the refrigerator temperature is between +2 °C and +8 °C using a temperature monitoring device.
- Transport vaccines to immunization sessions in a vaccine carrier, correctly packed, using conditioned ice packs. available (described in Section 2.4 of this module).
- During immunization sessions, fit a foam pad at the top of the vaccine carrier, as described in Section 2.3.5 of this module.

All health workers in a facility should know how to monitor the cold chain and what to do if temperatures are out of range (<2^{o}c or >8^{o}c), as described in Section 2.5.1 of this module.

Trainers' note

Facilitator should get the participants to list and describe the various Cold Chain Equipment at their places of work and what they use each of the equipment for

2.4.1 Refrigerators

Health facility refrigerators may be powered by electricity or solar energy. A health facility refrigerator is chosen based on the most reliable power supply available and the capacity needed for vaccine storage and ice pack freezing. Table 2 .1 briefly describes the different refrigerator categories.

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Table 2.3 Types of vaccine refrigerators

Types of vaccine refrigerator	Description
Solar refrigerators (also referred to as photovoltaic units)	Solar refrigerators are cold chain equipment that derive their power source from the sun. The two types are: a) Solar-battery units connected to a battery bank, which is charged by the solar panels. b) Solar Direct Drive (SDD) units that are powered directly by the solar panels and have no battery
Electric refrigerator (also referred to as compression units)	Ice-lined refrigerators are cold chain equipment that derive their power source from electricity. They are the preferred option where there is reliable means of electricity for at least eight hours per day. Even with periodic breaks in electricity, the inner lining of the unit can preserve the cold chain between the

	recommended temperature range of +2˚C to +8˚C for a length of time, which is dependent on the model of the refrigerator. **Ice-lined refrigerators can expose vaccines to freezing temperatures if vaccines are not arranged properly i.e. in baskets which are always provided in the ice-lined refrigerators**.

Since 2009, all WHO prequalified ice-lined electric, solar battery and solar direct-drive refrigerators have been fitted with thermostats that cannot be adjusted by the user. Provided power cuts are not for extended periods, the temperature in these refrigerators will always remain between +2 °C and +8 °C. If there is a recurring problem with the temperature control in these models, you must notify your supervisor and call the refrigerator technician. These newer refrigerators all carry a round red and blue sticker: the top red semi-circle shows the maximum allowable operating temperature and the bottom blue semi-circle shows the minimum operating temperature.

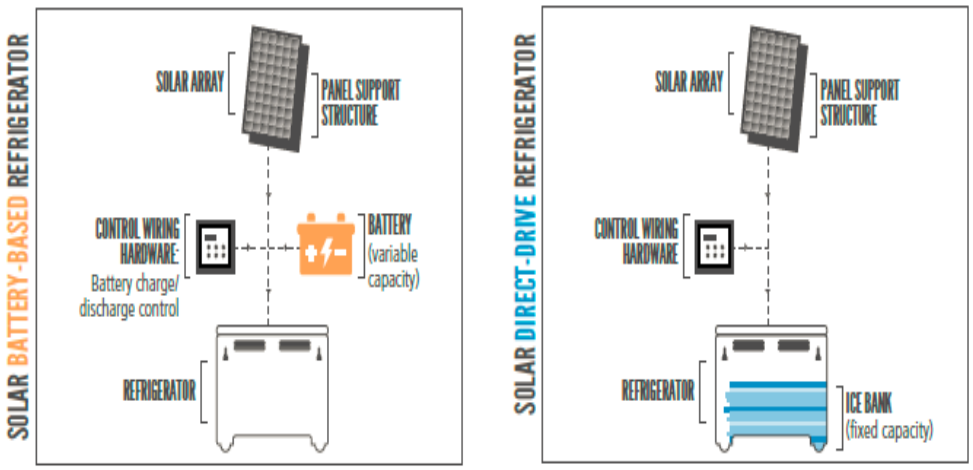


Figure 2.3: Schematics of Solar Refrigerators (with battery and SDD)

Domestic refrigerators should not be used for storing vaccines. This is because they do not have good temperature control and they cannot keep vaccines cool during electricity cuts of more than one or two hours. These units are not specifically built or designed to store vaccines.

2.4.2 Cold boxes

A cold box is an insulated container that can be lined with ice packs to keep vaccines and diluents in the required temperature range during transport or short-term storage – see Figure 2.7. Depending on the model, cold boxes can be used to store vaccines for periods of up to two days or more when there is no electricity available, when the health facility refrigerator is out of order, or when a passive device is needed while the refrigerator is being defrosted. Once packed, cold boxes should not be opened until the vaccine is needed.

Different models of cold boxes have different vaccine storage capacities and need different numbers and sizes of ice packs. It is important to use the correct number and size of ice packs, exactly as specified by the container manufacturer, otherwise the ability of the cold box to maintain temperature within range will be affected.

Cold boxes can be used to carry monthly vaccine supplies from LGA stores to the health facility and from the health facility to outreach sessions if a vaccine carrier is too small (see Section 2.3.3). In general, a cold box in a health facility should be large enough to transport at least a one-month supply of vaccines.

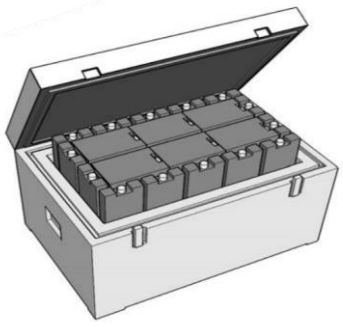


Figure 2.4: Vaccine Cold Box

2.4.3 Vaccine carriers

Vaccine carriers are smaller than cold boxes and easier to carry (see Figure 2.8).

Current prequalified vaccine carriers with appropriate ice packs can maintain recommended temperature between 6 and 50 hours and with conditioned ice packs between 3 and 18 hours at +43 °C, depending on the model of the vaccine carrier.

Vaccine carriers are generally used for the following purposes:

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- To transport vaccines and diluents to outreach sites and store them during health facility immunization sessions.
- To store vaccines temporarily when the health facility refrigerator is out of order or is being defrosted.
- To transport monthly vaccine supplies from the LGA store to small health facilities.

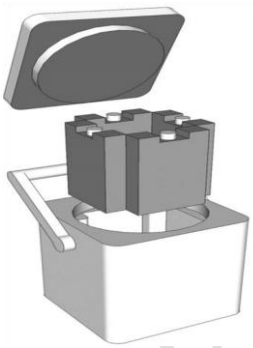


Figure 2.5: Vaccine Carrier

2.4.4 Ice packs

Ice packs are flat, leak-proof plastic containers that can be filled with water. They are used to line the inside of the cold box or vaccine carrier (see Figure 2.9). Ice packs are used to keep vaccines at the required temperature range inside cold boxes and vaccine carriers. In order to protect the vaccines it is important to use the correct number and size of ice packs and to follow the instructions printed inside the lid of the container. To ensure optimal performance, the WHO recommends the use of PQS pre-qualified ice packs.

Health facilities must have a minimum of two complete sets of ice packs for each of their cold boxes and vaccine carriers so that one set can be frozen or cooled in the freezer/refrigerator while the other set is being used in the cold box or vaccine carrier.

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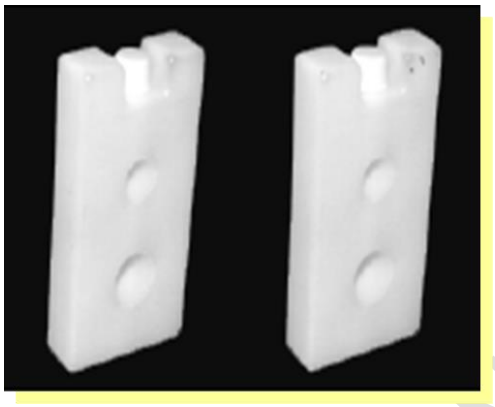


Figure 2.6: Ice Packs

The recommended type of ice pack to be used at health facilities is conditioned ice packs.

Note that taking ice packs out of the vaccine carrier will shorten their ability to retain the cold chain within recommended temperature range. Opened vials should be placed in the foam pad that is provided with the vaccine carrier (ice packs should not be removed from the vaccine carrier during immunization sessions). Refer to figure 2.7 in section 2.3.5 for illustration.

2.4.5 Foam pads

A foam pad is a piece of soft sponge-like material that fits precisely on top of the ice packs inside a vaccine carrier (see Figure 2.7) while still permitting the lid of the vaccine carrier to be fully closed.

The foam pad is provided by the manufacturer of the vaccine carrier. The foam pad usually has slits in which vaccine vials can be inserted securely and protected. The foam pad should be used during an immunization session as a temporary lid to securely hold opened vials, while protecting unopened vials in the cool chamber below inside the carrier.

Note that opened vials of all vaccines can be protected from heat damage for longer periods during immunization sessions if they are fitted into the slits in the foam pad. Even with a foam pad, however, it is important to keep the hard vaccine carrier lid closed whenever possible to conserve the inner temperature.

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Health workers should use the pad supplied with the vaccine carrier and try to keep it clean and free from dirt or dust.



Figure 2.7: Foam Pad in Vaccine Carrier

2.5 Temperature monitoring devices

Trainers' note

Facilitator should ask participants why Cold Chain Equipment need to be monitored.

Participants should also be prompted to list and describe various types of temperature monitoring equipment.

It is essential to monitor and record the temperature of vaccines throughout the supply chain. This is the only way to prove that vaccines have been kept at the right temperature during storage and transport. Temperature monitoring also shows up any problems with equipment and procedures. This section only describes the type of temperature monitoring equipment that are used in health facilities: these facilities are generally equipped with one or two vaccine refrigerators, cold boxes and vaccine carriers.

2.5.1 Vaccine Vial Monitors (VVMs) for monitoring heat exposure

Vaccine Vial Monitors (VVMs) are the only temperature monitoring devices that routinely accompany vaccines throughout the entire supply chain. A VVM is a chemical indicator label attached to the vaccine container (vial and ampoule) by the vaccine manufacturer. As the container moves through the supply chain, the VVM records its

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cumulative heat exposure through a gradual change in colour (see Figure 2.11). If the colour of the inner square is the same colour or darker than the outer circle, the vaccine has been exposed to too much heat and should be discarded.

The main purpose of VVMs is to ensure that heat-damaged vaccines are not administered. The VVM status is also used to decide which vaccines can safely be kept after a cold chain break occurs thus minimizing unnecessary vaccine wastage. In addition, VVM status helps the user decide which vaccine should be used first. A batch of vaccine showing significant heat exposure should be distributed and used before a batch that shows lower heat exposure, even if its expiry date is longer.

VVM status should always be checked and recorded manually on the arrival voucher when it first reaches the health facility. The vaccinator must also check the VVM before the vaccine is opened to see whether the vaccine has been damaged by heat. Only use the vial if the expiry date has not passed, **and if the inner square of the VVM is lighter in colour than the outside circle**. VVMs do not measure exposure to freezing temperatures. If the vaccine is freeze-sensitive and freezing is suspected, then the Shake Test must be conducted (see Section 2.8 of this module).

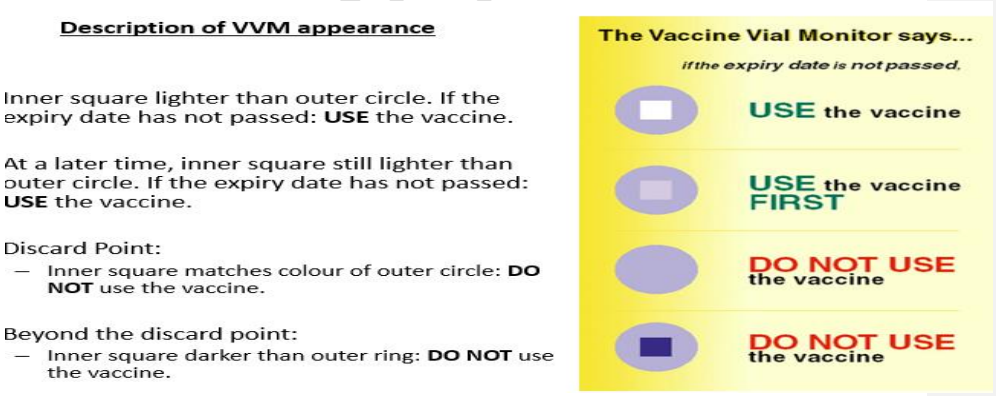


Figure 2.8: VVM Stages

Where is the VVM located?

There are two different locations for VVMs (see Figure 2.9) and each is associated with specific guidance for handling opened multi-dose vials of vaccine:

1. Where the VVM is on the label of the vaccine, the vaccine vial, once opened, can be kept for subsequent immunization sessions up to 28 days, regardless of the formulation of the product (liquid or freeze-dried).

2. Where the VVM is attached in a location other than on the label (e.g., cap or neck of ampoule), the vaccine vial, once opened, must be discarded at the end of the immunization session or within six hours of opening, whichever comes first.

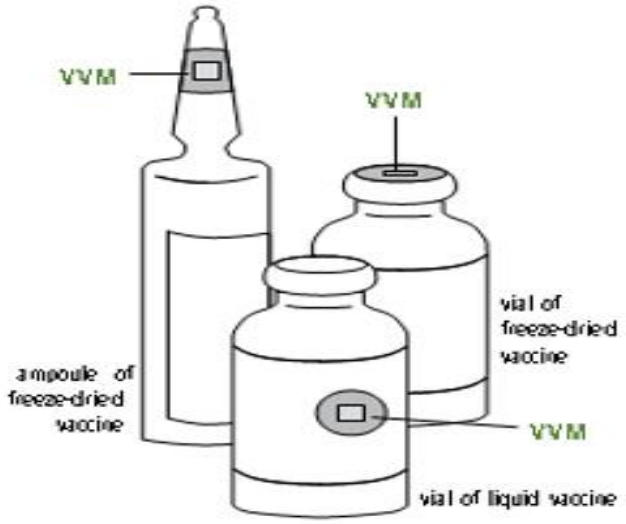


Figure 2.9: Location of VVMs on ampoules and vials

2.5.2 Monitoring Temperature of Cold Chain Equipment

There are series of devices which are used to monitor the temperature in Cold Chain equipment. These include Temperature Loggers, Fridge Tags, Freeze Tags, Integrated digital thermometers, Stem thermometers, and Dial thermometers.

2.5.2a 30-day electronic temperature loggers (30 DTR)

These devices are placed with the vaccine load in a vaccine refrigerator. They record the refrigerator temperature at no more than 10-minute intervals and show the temperature history in the last 30 days. They record and display a 30-day history of any heat and freeze alarms that have occurred. If the temperature has remained within the recommended range, the device displays **"OK"** or **a tick symbol.**

Alarms are triggered if the temperature of the refrigerator drops to −0.5 °C or below for 60 minutes or if it exceeds +10 °C for a continuous period of 10 hours. **A cross symbol** is then displayed. Figure 2.13 shows two examples of recommended 30 DTRs. On newer models, data can also be downloaded via a connection to a computer. **30 DTRs should not be used in vaccine freezers**. Current models have built in batteries with a battery alarm feature; the device must be discarded and replaced when the battery expires, which is every two or three years.

30 DTRs should be placed in an accessible position where they can be read easily and are unlikely to be damaged. This will vary depending on the type of refrigerator. Try to observe the following rules:

- The device should preferably be placed in the coldest part of the refrigerator that is being used to store vaccines. This will be the **bottom of a basket in chest refrigerators** or nearest to the evaporator plate in front-opening models and absorption units.

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Figure 2.10: Example of Temperature Loggers

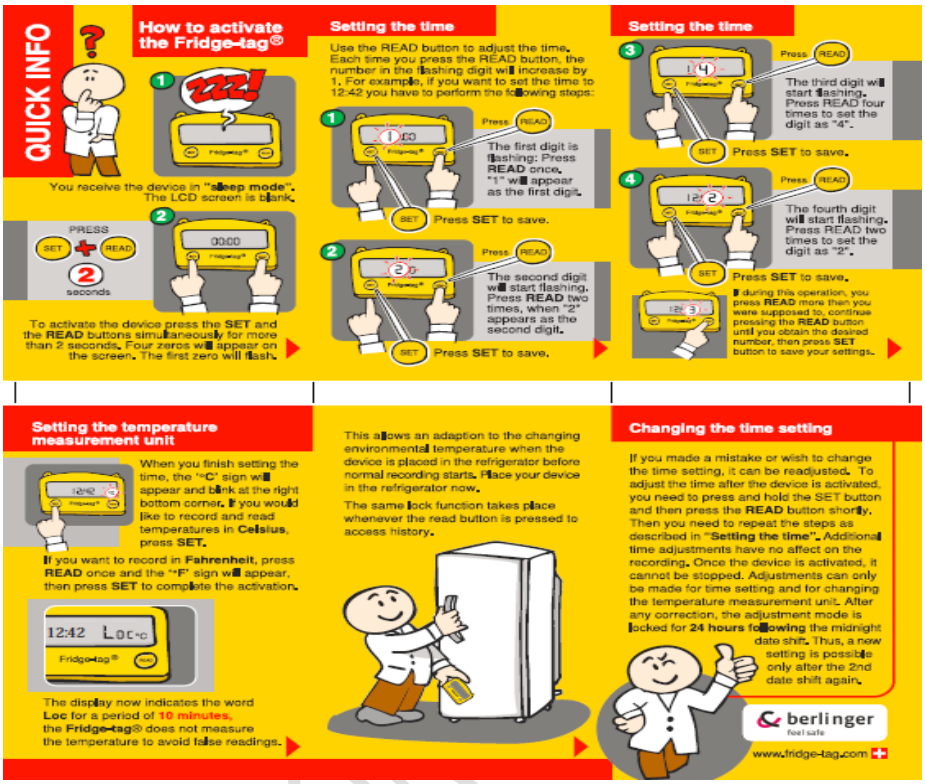


Figure 2.11: Setting up and Reading a 30- Day Temperature Logger

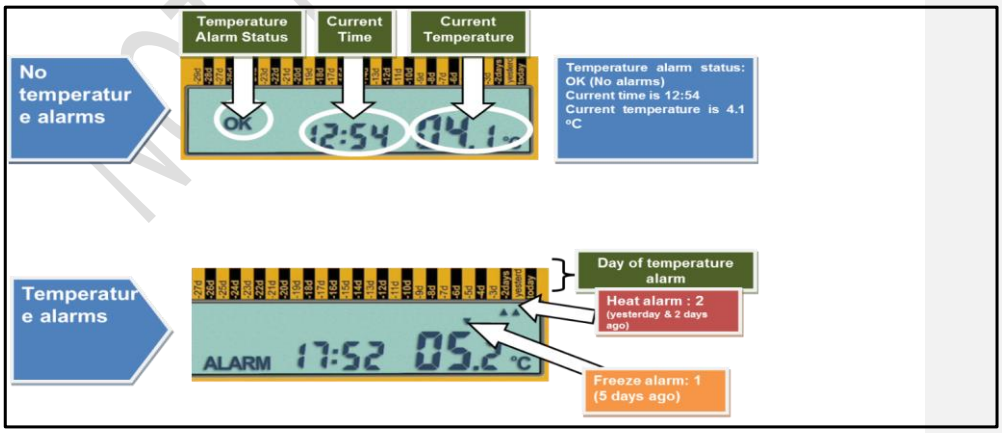


Figure 2.12: How to read FridgeTag2

2.5.2b Electronic freeze indicators

These are small digital devices that are placed with freeze-sensitive vaccines during transport or storage. The devices have a visual indicator that shows whether the vaccine has been exposed to freezing temperatures. Once the alarm indicator is triggered, the device is no longer usable and should be discarded. Otherwise the device can be used until the built-in battery expires. The Shake Test must be conducted to determine whether the vaccine may still be used. Figure 2.16 shows two types of Freeze Indicators.

Note that electronic freeze indicators are not needed in refrigerators where a 30 DTR is used.



Figure 2.13: Freeze-tagR

2.5.2c Integrated digital thermometers

Current prequalified vaccine refrigerators and freezers are equipped with devices like the one shown in Figure 2.18. An internal temperature sensor monitors the storage compartment and an instantaneous temperature reading is displayed on the unit's control panel. Solar direct-drive refrigerators typically have a device powered by an integrated photovoltaic cell; these do not work at night or in dim light and may have to be activated by shining a torch onto the display.



Source: Dulas Solar

Figure 2.14: Integrated digital thermometer

2.5.2d Stem thermometers

These devices only provide an instantaneous temperature reading. For this reason, WHO no longer recommends them as the main monitoring device in vaccine refrigerators. However, they remain an essential back-up device because they do not require a battery or other power source. Figure 2.19 shows an example. The WHO no longer recommends bi-metallic dial thermometers (see Figure 2.19) for any purpose because they lose their calibration over time, especially if they are dropped. Table 2.2 sets out the temperature monitoring options for health facility vaccine storage, in order of preference.

The stem or dial thermometer only indicates the temperature at the time a reading is taken, which is no more than 14 times per week.

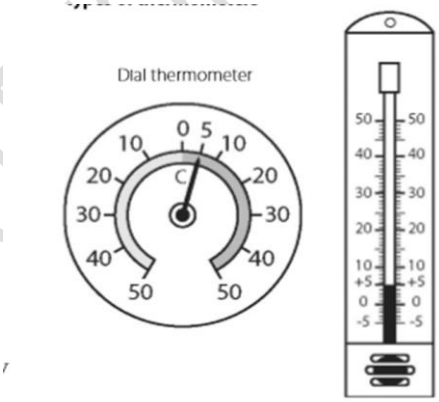


Figure 2.15: Dial and Stem Thermometers

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2.5.2e Recommended equipment

Recommended temperature monitoring devices for health facilities are fridge tags and where available, freeze tags. Stem thermometers are to be used as back up to the fridge and freeze tags.

2.6 Monitoring cold chain temperatures

Trainers' note

- Facilitator to ask the participants how they have been monitoring the performance of their Cold Chain equipment
- Facilitator to then describe the process of temperature monitoring to ensure vaccine security
- Participants to be guided through use of temperature monitoring data for necessary action and mention the need for contingency planning

The data gathered from temperature monitoring devices must be recorded and analysed on a regular basis to demonstrate that vaccines are being stored and transported at the correct temperatures. This section reviews the processes of monitoring temperature of vaccine refrigerators, cold boxes and vaccine carriers at the health facility level.

2.6.1 Monitoring vaccine refrigerator temperature

A standard manual temperature-recording chart should be attached to the door or lid of every vaccine refrigerator. Readings should be taken twice a day every day, including weekends and holidays. Daily readings should be taken from the same temperature monitoring device each time. The health worker should read the 30 DTR and write the data on the chart. In health facilities where stem thermometers are used as back up, temperature readings from the thermometers should be triangulated with the reading on the 30 DTR as a check. Where 30 DTR is not available, check and record the indicated temperature reading of the integrated dial thermometer or, where necessary, the stem thermometer.

Recording temperatures in this way provides evidence that the refrigerator is being monitored and that regular readings are being taken. This can help identify performance trends, sometimes even before automatic alarms are generated.

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Manual readings should be recorded on a temperature chart attached to the refrigerator door using the following procedure:

- Check the refrigerator temperature first thing in the morning and at the end of the working day.
- Record the temperature by date and time on the temperature chart (an example specifically designed for 30 DTRs is shown in Figure 2.20). When a chart is completed, replace it with a new one. Keep completed charts together in a file for future reference. (Note: action should be taken when the temperature goes out of range).
- Review the temperature chart monthly indicating action(s) taken when the temperature went out of range if it occurred and ensure documentation of the review in a file for future reference.

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Temperature monitoring chart for temperature logger devices

Cold room/refrigerator number : ILR # 1
Equipment model : MFR 123

Start date: <dd/mm/yyyy> 03 Oct 2015
Location: Erewhon HC

Key: FI = freeze indicator (status OK or X)

Temperature chart

Day		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	°C	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
	+16																															
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	+8																															
	+7	X																														
	+6		X	X		X													X													
	+5				X		X							X	X		X			X												
	+4					X	X						X	X	X	X		X														
	+3							X	X				X				X															
	+2									X																						
	+1									X	X	X																				
	0										X																					
	−1										X	X																				
	−2											X																				
	−3																															
	−4																															
	−5																															
FI (x or OK)																																
>+8 °C alarm		Once every 24 hours, enter high alarm status and maximum temperature recorded by the continuous temperature monitoring device																														
Alarm or OK		OK		OK		OK		OK		OK		OK		OK		OK		OK														
Maximum °C		+7.5		+6.5		+6.3		+4.5		+5.2		+3.3		+3.0		+1.8		+0.2		−0.8		−0.5		+5.2		+5.4		+5.3		+6.1		+5.5		+6.1
<−5 °C alarm		Once every 24 hours, enter low alarm status and maximum temperature recorded by the continuous temperature monitoring device																														
Alarm or OK		OK		OK		OK		OK		OK		OK		OK		X		X		OK		OK		OK		OK		OK		OK		
Min °C		+5.8		+5.4		+4.8		+3.5		+3.6		+2.8		+1.7		+0.8		−0.5		−1.5		−1.3		+0.9		+3.5		+3.8		+3.6		+4.6		+3.9
Initials:		JWL		JWL		JWL		JWL		RC		RC		RC		RC		RC		JWL		JWL		JWL		JWL		JWL		JWL		JWL		JWL

Province: Jazir
District: District 9
Health centre: Erewhon

Month: October
Year: 2015
Supervisor: AG

Remarks: Thermostat incorrectly adjusted by temporary health worker. Corrected on 12 Oct

Figure 2.16: Sample of filled Temperature Chart

Taking action when a vaccine refrigerator temperature is out of range

If the temperature of the refrigerator is below +2 °C, which is too low, a report should be made to the supervisor. The corrective action includes the following procedure:

- Turn the thermostat knob (for older refrigerators) so the arrow points to a lower number. This will make the refrigerator warmer.
- If the temperature has fallen below 0 °C for any length of time, check freeze sensitive vaccines to see if they have been damaged by freezing. Only Td vaccine can be used to conduct Shake Test.

Remember: slight heat exposure is less damaging to vaccines and diluents than freezing exposure.

If the temperature is above +8 °C, which is too high, a report should be made to the supervisor. The corrective action includes the following procedure:

- Make sure that the refrigerator is working. If it is not working, check whether there is power supply (electricity or solar) to the equipment.
- Check whether the door of the refrigerator or the freezing compartment closes properly; if the seal is broken, the temperature will fluctuate. Call a technician to make repairs.
- Check whether frost is forming in the equipment. Defrost if necessary. (See section on Planned Preventive Maintenance - PPM).
- If the power supply, door seal and frost levels are all OK, turn the thermostat knob so that the arrow points to a higher number. This will make the refrigerator cooler.
- If the temperature cannot be maintained between +2 °C and +8 °C, store vaccines in other cold chain equipment that can maintain this temperature range until the refrigerator is repaired.

Remember: to avoid freezing vaccines, do not adjust the thermostat to a cooler (higher number) setting after a power cut or when vaccines arrive.

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NOTE: For older ice-lined and solar equipment, proceed as follows:

- When the refrigerator is first installed, set the thermostat so that the refrigerator compartment stays between +2 °C and +5 °C during the coldest part of the day (typically the morning). It is essential to avoid freezing temperatures and the freezing risk is greatest when the ambient room temperature is low.
- Once you can see that the daily temperature range remains consistently between +2 °C and +8 °C, the thermostat is correctly adjusted and the setting should not be changed, even if electrical power is lost.
- Do not adjust the thermostat if the temperature occasionally rises a degree or so

2.6.2 Maintaining the correct temperature in cold boxes and vaccine carriers

To maintain correct temperature in cold boxes and vaccine carriers, proceed as follows:

- Place the correct number and type of conditioned ice packs in the cold box or vaccine carrier.
- If conditioned ice packs are being used, you should preferably put an electronic freeze indicator in each cold box or vaccine carrier containing freeze-sensitive vaccines.
- Keep the cold box or vaccine carrier in the shade.
- Keep the lid tightly closed.
- NEVER sit on top of Cold Boxes or Vaccine carriers!
- Use the foam pad at the top of the vaccine carrier to hold opened vials during an immunization session; keep the hard carrier lid closed whenever possible.
- During the immunization session, vaccines must be kept at the recommended temperatures after opening. It is important to keep opened multi-dose vaccine vials that do not contain preservative, whether powdered or liquid, cooled at temperatures between +2 °C and +8 °C.

At the end of the immunization session, health workers should follow national policy in handling remaining vials. In general, this means:

- Discarding all opened vials of vaccines that do not contain preservative; this includes all reconstituted vaccines and some liquid multi-dose vaccines
- Checking the VVMs of all unopened vials and returning the unopened vials with VVMs stages 1 and 2 (that have not past the discard point) to a working refrigerator or appropriate cold box as soon as possible

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- Where multi-dose vial policy applies to a vaccine, check the VVM on all opened vials that contain preservative and return those with VVMs that are not past the discard point to a working refrigerator or appropriate cold box as soon as possible. Use these vaccines first for the next immunization session.

2.7 Arranging vaccines inside cold chain equipment

Trainers' note

1. This section should best be explained through a practical session in loading of Cold Chain equipment.
2. Participants should be asked to load vaccines into Cold Chain equipment after which the correct method is demonstrated for each type of Cold Chain equipment in use at health facility level

Vaccines must be arranged inside cold chain equipment in a way that ensures that they remain in good condition with minimum risk of exposure to damaging temperatures. This section describes how to arrange vaccines inside vaccine refrigerators and passive cold chain equipment (cold boxes and vaccine carriers).

2.7.1 General rules for using vaccine refrigerators

Health facility refrigerators are used to store vaccines and diluents. Several types of refrigerator are available and the arrangement of items inside them varies according to the type.

A health facility refrigerator must never be tightly packed – always leave plenty of space around the vaccines and diluents to allow air to circulate freely, and to make vaccine handling easier.

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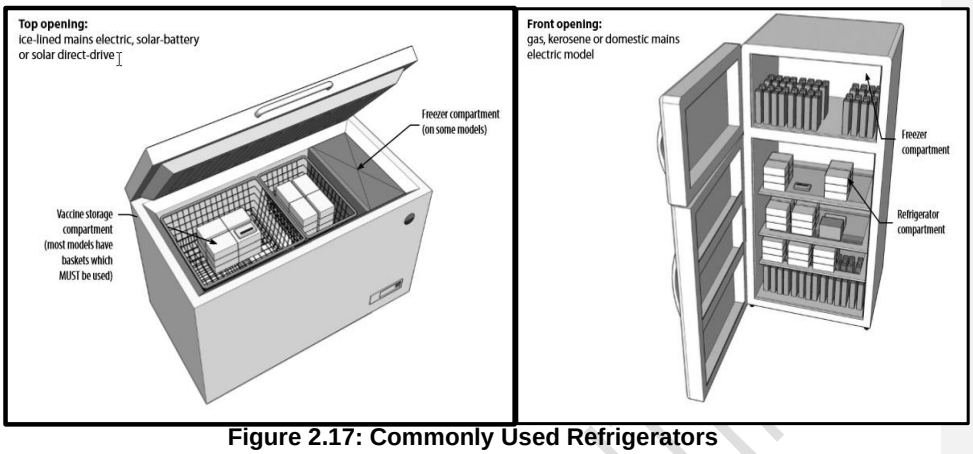


Figure 2.17: Commonly Used Refrigerators

The following general rules (Do's and Don'ts) apply to all health facility refrigerators.

The DO's

Arrange the vaccines in the health facility refrigerator like this if you have a front opening refrigerator

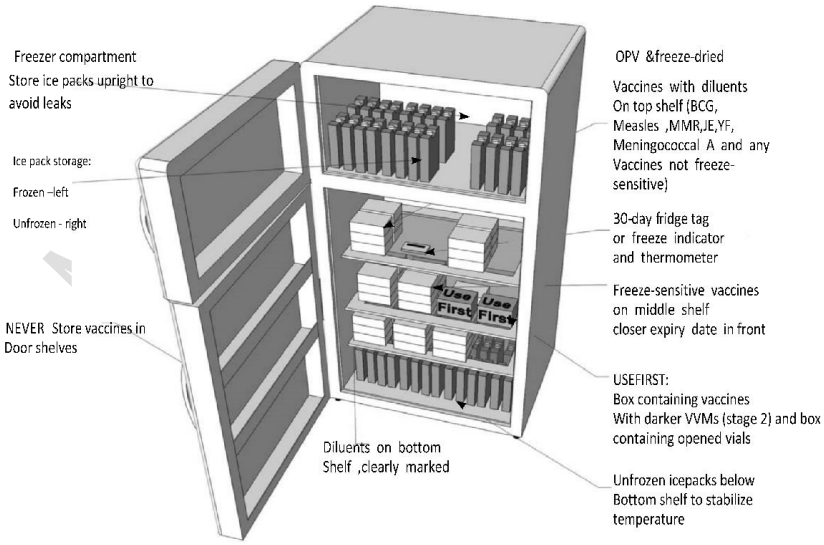


Figure 2.18: Arrangement of vaccines and diluents in a front opening refrigerator

The following rules apply for front-opening refrigerators:

1. **Never** store vaccines or diluents in the door shelves. The temperature is too warm for vaccine storage and vaccines are exposed to room temperature each time the door is opened.
2. **Neve**r store freeze-sensitive vaccines in contact with, or close to, the evaporator plate in the refrigerator.
3. Store Measles, MR, MMR, BCG, OPV, Yellow Fever, Meningococcal A conjugate and/or any other vaccines not damaged by freezing on the top shelf.
4. Store DTP, DT, Td, HepB, DTP+HepB, DTP-HepB-Hib, Hib, HPV, Rotavirus and/or any other freeze-sensitive vaccines on the middle or lower shelves.
5. Store the diluents next to the freeze-dried vaccine with which they are supplied, on the appropriate shelf. If there is not enough space on the shelf, put the diluents on the bottom shelf, clearly labelled so they can easily be identified and matched to their vaccines.

Figure 2.18 shows the recommended arrangement for an upright ice-lined refrigerator. In these models, there is very little variation in the temperature inside the refrigerator compartment, so vaccines and diluents can be placed safely on any of the shelves. However, in humid climates, there is a risk of condensation. Cartons and vials should be stored in plastic boxes with tightly fitting lids to reduce the risk of moisture damage. Never store vaccines below the bottom shelf – this area may be wet because it collects and drains the condensation from the roof and walls of the compartment.

1. Wherever possible, store vaccines and diluents in a refrigerator that is reserved for this purpose only. ***NEVER STORE OTHER ITEMS IN THE VACCINE REFRIGERATOR!***
2. Always arrange vaccines and diluents so that air can circulate freely; this also makes it easier to handle the vaccines.
3. If vaccines or diluents are supplied in their original cartons, arrange the boxes so that there is at least a two-centimetre space between stacks. Mark the cartons clearly and make sure the markings are visible when the door or lid is opened.

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4. If vaccines or diluents are supplied as individual containers (vials, ampoules or tubes), use a plastic tray, plastic box or other arrangement to store the vaccines in an orderly fashion. Figure 2.19 shows a good arrangement using locally made stacking boxes. However individual vials/ampoules must be protected with cellophane bags to avoid label loss.
5. If diluents are packaged with the vaccines, store the complete packaged product in the refrigerator. But if diluents are supplied separately from the vaccine, store them in the refrigerator if there is adequate space. If space is not adequate move the diluents to the refrigerator at **least 24 hours** before they are needed so they are cooled.
6. Place vaccines with VVM that show the most heat exposure (darker squares-stage 2) in a separate container in the refrigerator, clearly marked "**Heat-exposed vials – use first**". If there are other vaccines of the same type in the refrigerator, the vaccines with the darker squares should always be used first **even if the expiry date is later than the vaccines with the lighter squares**.
7. For multi-dose vials of vaccine, follow the instructions for handling opened multi-dose vials as described in the national policy. If the opened multi-dose vials will be used for the next session, the vials must be placed in a separate container in the refrigerator, which is clearly marked "**Opened vials – use first**." A summary of the Nigeria National Multi-dose Vial Policy 2009 is outlined in the below.



Source: Anthony Battersby

Figure 2.19: Purpose-made tray for vials and ampoules

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Summary of Nigeria National Multi-dose Vial Policy (MDVP), 2009

Open multi-dose vial policy states that liquid vaccines opened for an immunization session, can be used within 4 weeks in subsequent sessions provided that all the following conditions are met:

• The expiry date is still within limits.

• The vaccines are stored under appropriate cold chain conditions.

• The VVM if attached has not reached discard point.

• The septum is not submerged in water

• Aseptic technique has been used

These apply to vaccine vials used in outreach and mass campaigns provided that standard handling procedures are followed.

Vaccine vials may be discarded immediately if:

• Sterile procedures have not been fully observed.

• Contamination of the opened vial is suspected. Evidence of contamination is change in appearance, visible and floating particles.

Reconstituted freeze-dried vaccines should be discarded at the end of 6 hours or at the end of the immunization session or whichever comes first.

If ALL of the criteria cited above are met the vaccine vial may be kept and used for up to 28 days after opening, or until all the doses are administered, whichever comes first.

The DON'Ts

1. **NEVER** store **food or drink** in a vaccine refrigerator.
2. Do not open the door or lid unless it is essential to do so. Frequent opening raises the temperature inside the refrigerator.
3. If there is a freezer compartment, do not use it to store vaccines and diluents.
4. Do not keep **expired** vaccines in the refrigerator. Do not keep vaccines with **VVM stages 3 and 4** (that have reached, or are beyond, their discard point) in the refrigerator. Do not keep reconstituted vaccines for more than **six**

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hours, or after the **end** of an immunization session. Discard all these items immediately according to our national guidelines. Refer any questions to your supervisor.

5. Do not store vaccines without labels in the refrigerator.

Specific rules for using top-opening refrigerators with baskets

Many top-opening ice-lined refrigerators are supplied with baskets for storing vaccines. There are also a few top-opening solar-battery models; typically, these models do not have an ice lining, but they generally have baskets. Figure 2.23 shows how these refrigerators should be organized.

The following rules apply to these refrigerators:

1. Always store vaccines and diluents in the baskets provided. Never store them outside the baskets.
2. If there is an internal lid on the freezer compartment and/or the refrigerator compartment, always replace it before closing the main lid.
3. Some Solar Direct-Drive refrigerators have an ice-bank at one end. **Never** remove ice packs from this area.
4. Some Solar Direct-Drive refrigerators have a separate ice pack freezing compartment. Make sure you follow the manufacturer's instruction on the use of this feature – instructions vary.
5. Use the bottom baskets to store Measles, MR, MMR, BCG, OPV, Yellow Fever and/or any other vaccines not damaged by freezing.
6. Use the top baskets to store products for immediate use and to store diluents, DTP, DT, Td, HepB, DTP+HepB, DTP-HepB-Hib, Hib, HPV, Rotavirus and/or any other freeze-sensitive vaccines. Never put freeze-sensitive vaccines in the bottom baskets. In some models, there is a risk of freezing in these areas.
7. Store the diluents close to the freeze-dried vaccines with which they were supplied. If this is not possible, make sure the diluents are clearly labelled so they can be easily identified to their matching vaccines.

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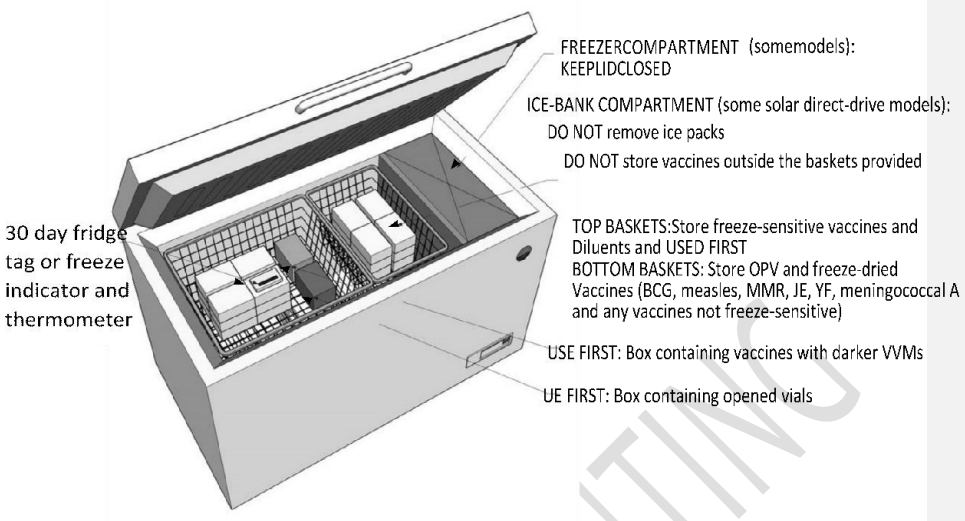


Figure 2.20: Loading Top-Opening Refrigerators

2.7.2 Preparing ice packs and conditioned ice packs

If the vaccine refrigerator has a freezer compartment, this can be used to freeze and store ice packs. Every health facility should have at least two sets of ice packs that correspond in size and number to its stock of cold boxes and vaccine carriers.

Filling and checking ice packs

New ice packs are supplied empty and must be filled before use. All ice packs should be checked for leakages. Proceed as follows:

1. New empty ice packs: Fill each pack with clean water, up to the fill line. Do not over-fill; leave a little air space at the top. Fix the cap on tightly.
2. Used ice packs: It is not necessary to empty and refill ice packs unless they have leaked. If there is a leak, top up the water and make sure the cap is fixed securely.
3. Before use: Hold each pack upside down and squeeze it to make sure it does not leak. If the pack has been damaged, discard it.

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Freezing ice packs

Depending on a range of factors, it can take 24 hours or more to fully freeze a batch of ice packs.

Some recent solar direct-drive refrigerators can also freeze ice packs. However, their freezing capacity depends on the amount of sunshine available, and in cloudy weather it may not be possible to freeze any ice packs. The ice packs will always melt slightly overnight when there is no power and there may well be some liquid water in the packs at the beginning of the day, but this is normal.

Newer models of Solar Chill and some Solar Direct-Drive models have a bank of standard ice packs in a compartment that looks like a freezer compartment. These ice packs must **never be removed** for use in vaccine carriers.

Always follow the manufacturer's instructions and never overload the freezing compartment. Put ice packs in the freezer, arranged upright or on their sides so that the surface is touching the evaporator plate. If there is a door or lid to the compartment, make sure it is properly closed.

The more packs placed in the freezing compartment, the longer they will take to freeze. If too many ice packs are placed in the unit, they may not freeze at all. Keep extra ice packs that do not fit into the freezer in the bottom part of the main refrigerator compartment to keep this section cold in case of a power failure. When these ice packs are placed in the freezer, they will freeze relatively quickly because they are already cold.

Never store frozen ice packs in the refrigerator compartment; this will lower the temperature and increase the risk of freezing vaccines.

Conditioning frozen ice packs

Frozen ice packs, taken directly from the freezer, are not suitable for immediate use. If they are not correctly conditioned, it is very likely that freeze-sensitive vaccines will be frozen and destroyed. ***Wrapping vaccines in newspaper or other materials does not protect against freezing***.

The WHO recommends the use of conditioned ice packs for transporting and storage of vaccines in cold boxes and vaccine carriers. . An ice pack is correctly

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conditioned when it has melted enough to allow the ice to move inside the pack. The following procedure is used to achieve this:

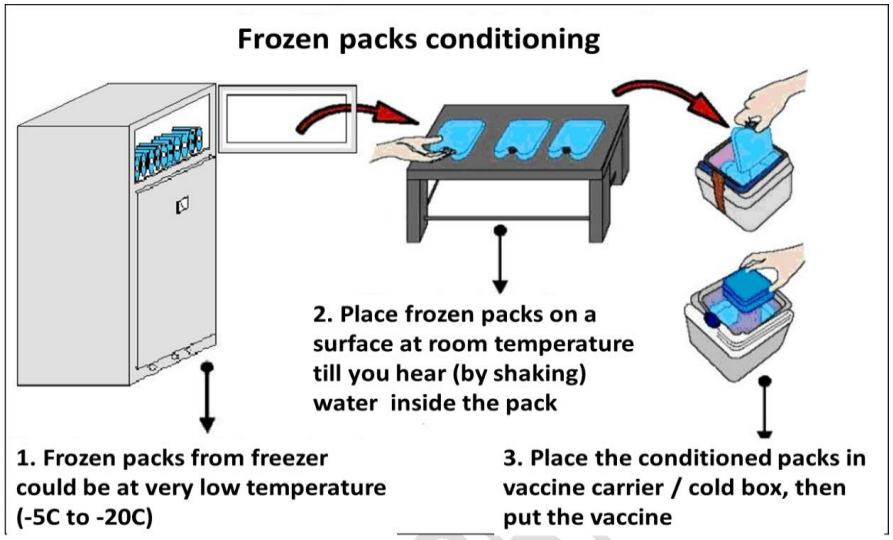


Figure 2.21: Conditioning Ice Packs

Note: It is important that enough quantity of conditioned ice packs are placed in the vaccine carrier during outreach sessions. This is to ensure that vaccine vials are kept at recommended temperatures of between +2°C and +8 °C during the session.

Packing vaccines in cold boxes and vaccine carriers

It is very important to pack cold boxes and vaccine carriers correctly. Proceed as follows.

1. Arrange the conditioned ice packs in the cold boxes and/or vaccine carriers exactly as shown on the manufacturer's instructions on the inside of the lid.
2. Put the vaccines and diluents in a plastic bag in the middle of the cold box or vaccine carrier to protect them from damage (removal of labels) due to condensation.
3. If conditioned ice packs are used in cold boxes, put an electronic freeze indicator with the vaccines.
4. For vaccine carriers, place the foam pad on top of the ice packs inside the vaccine carrier.

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5. Close the cold box or vaccine carrier lid tightly.

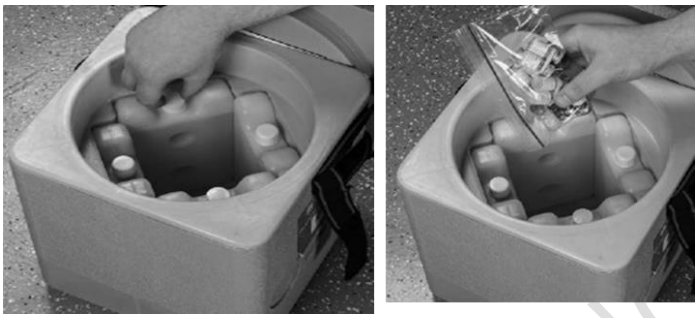


Figure 2.22: Arranging ice packs and vaccines in a vaccine carriier

Remember

1. ***Collect vaccines in the carrier on the session day (note that vaccine carriers may not store vaccines effectively beyond 12 hours).***
2. ***Do not drop or sit on the vaccine carrier***
3. ***Do not leave in sunlight. Keep in shade.***
4. ***Do not leave the lid open once packed***.

2.8 Basic maintenance of cold chain equipment

Trainers' notes

Facilitator to probe with a view to knowing what participants know about Cold Chain Equipment maintenance.

Facilitator then discusses the various maintenance tasks and the reasons for these tasks.

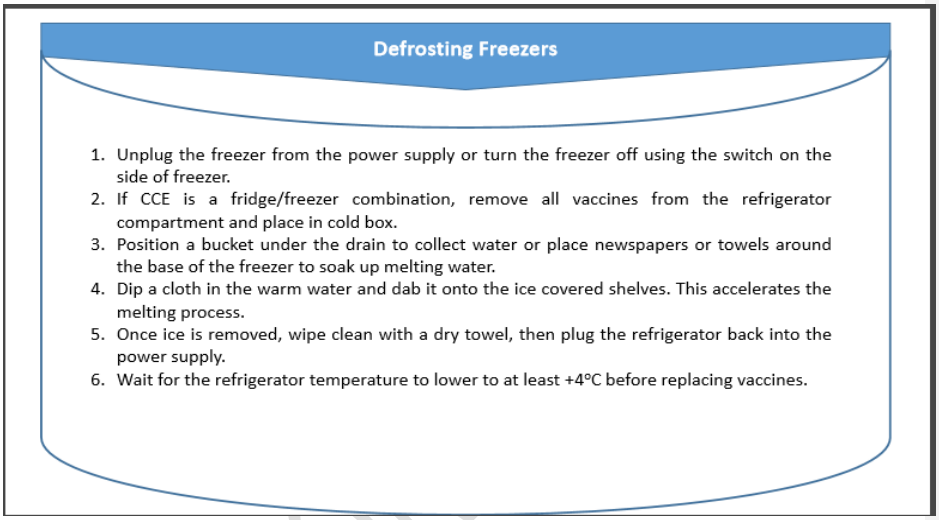
2.8.1 Defrosting vaccine refrigerators

A refrigerator only works well if it is properly installed and maintained by cleaning and defrosting regularly. Thick ice in the freezer compartment and on the evaporator plate does not keep a refrigerator cool. Instead, it makes the refrigerator work harder and uses more electricity, gas or solar power. Refrigerators should be defrosted regularly, or when the ice is more than 0.5 cm thick.

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If a refrigerator needs to be defrosted more than once a month, check for these common problems:

1. Staff are opening the door too often (more than three times daily).
2. The door is not closing properly.
3. The door seal needs to be replaced.



Note: Solar battery and Solar Direct-Drive refrigerators should be defrosted only on a sunny day; they should never be defrosted in cloudy or rainy weather. An SDD refrigerator should generally be defrosted in the early morning. It will have partly defrosted overnight so this will speed up the process. Defrosting in the early morning will also allow the refrigerator to make best use of the day's supply of solar power (sun).

2.8.2 Maintaining solar power systems

Solar panels need to be cleaned and checked and the batteries of solar battery refrigerators must be inspected and maintained. Tasks can be divided into daily, periodic/monthly and annual.

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Daily Tasks

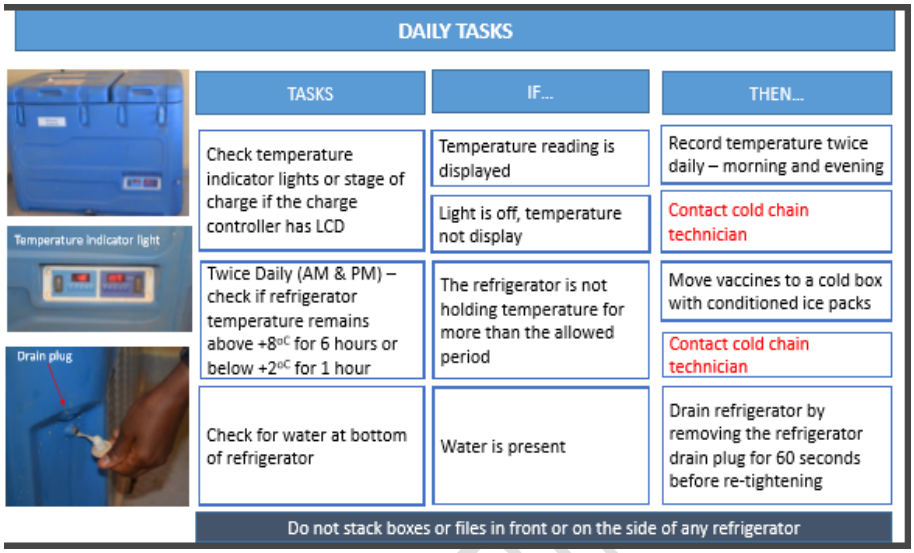


Figure 2.23: Daily Solar Maintenance Tasks

For battery systems only: Check the indicator lights on the battery charge regulator every day. **Do not freeze ice packs if the low battery warning light is on**. Move vaccines to a safe location if the load-disconnect warning light or alarm sounder are activated.

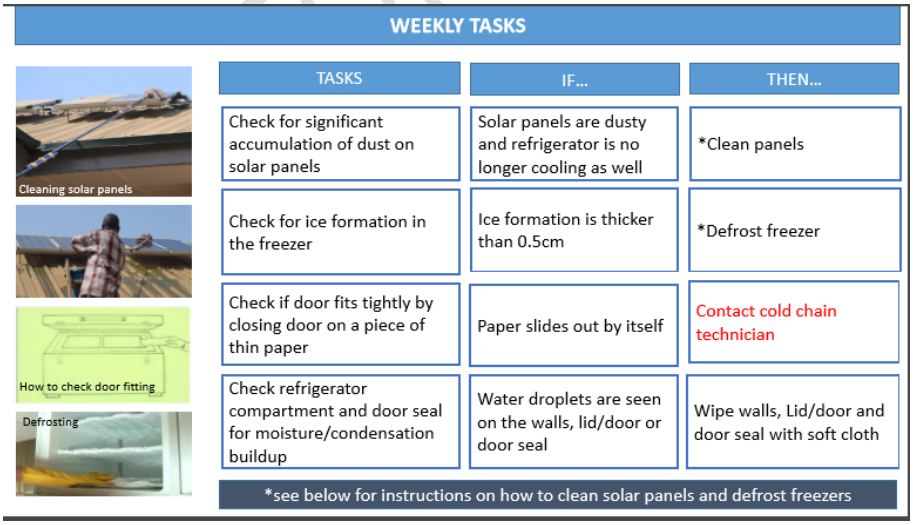


Figure 2.24: Weekly Solar Maintenance Tasks

Cleaning Solar Panels

1. Always be safety conscious. Never clean panels in dangerous weather (lightening, rain, wind).
2. Always clean solar panels first thing in the morning.
3. Use a good ladder made of wood or aluminum, long enough to reach the roof top or above it.
4. Wear safety shoes with a gripping sole to protect you from slipping down from the roof top.
5. Get a half-filled bucket of soapy water and clean cloth or soft sponge (DO NOT use any cloth that could scratch the glass panels).
6. Mount the ladder gradually, holding the ladder with both hands climb to top of the rooftop. Always have someone support the ladder at the bottom while you climb. Once you reach the rooftop, have someone give you the bucket of water and place it comfortably on the rooftop.
7. At the roof top look for where nails lines are and gradually walk along the nails until you get to the solar panel.
8. Position yourself safely and clean the surface of the panel until all dirt removed.
9. Gradually return back to the ladder and climb down safely.

MONTHLY TASKS

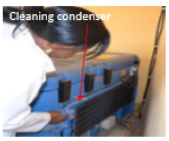
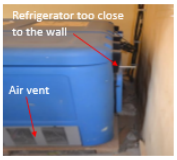
	TASKS	IF...	THEN...
	Check refrigerator cabinets, condenser and compressor	Dust settlement on condenser and compressor Cabinets not clean	Clean refrigerator cabinets, condenser and compressors
	Check for free air circulation around the refrigerator	Equipment is too close to the wall (less than 10cm)	Move equipment away from the wall to allow air flow
		Air vent is blocked	Remove object(s) away from air vent
	Check the lid/door seal for proper closure	Door seal loose or falling off	Tighten door seal, replace seal if necessary

Figure 2.25: Monthly Solar Maintenance Tasks (Cabinet)

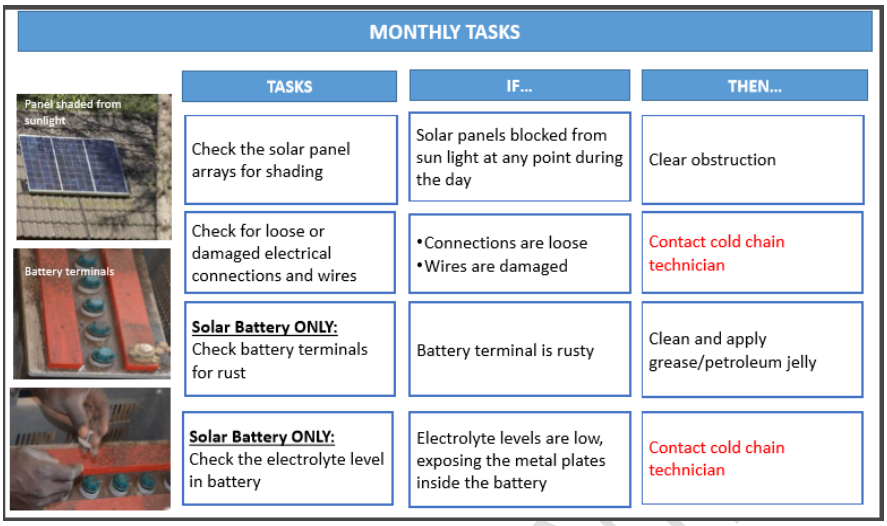


Figure 2.26: Monthly Solar Maintenance Tasks (Power source)

Annual tasks

Make sure the solar panels are not shaded by trees, plants, new buildings or overhead cables between 9.00 am and 3.00 pm. If there is shading from vegetation, arrange for the vegetation to be cut back. If there is shading from newly constructed buildings or new overhead cables, contact your supervisor. The solar array may have to be moved or increased in capacity.

Check the electric cables between the solar array, the charge regulator, the batteries and the refrigerator. Inspect grounding/lightning protection. If you see any damage, contact your supervisor.

2.8.3 Managing vaccine refrigerator breakdowns

If a vaccine refrigerator stops working, first protect the vaccines and then check the cause of the problem.

Protecting the vaccines

Move the vaccines to other cold chain equipment until the refrigerator is repaired. For a problem that can be solved quickly, a cold box or vaccine carrier lined with conditioned ice packs can be used for temporary storage. For a problem that might take longer to solve, another refrigerator is needed. Always keep a freeze indicator with the freeze-sensitive vaccines.

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Restoring the refrigerator to working order

1. Check the electricity or solar power supply and make arrangements to deal with any interruptions.
2. If a lack of electricity or solar power is not the problem, contact your supervisor and ask for a repair service visit. Do not attempt to repair the refrigerator yourself unless the problem is a simple one that you have been trained to deal with.
3. Record the breakdown on the daily temperature monitoring chart.

Maintaining cold boxes and vaccine carriers

Vaccine carriers and cold boxes must be dried well after use, with their lids propped open. If they are left wet with their lids closed, they will become mouldy. Mould and damp can affect the seal of the cold boxes and vaccine carriers and may contaminate the vaccines. If possible, store cold boxes and vaccine carriers with the lids open.

Knocks and sunlight can cause cracks in the walls and lids of cold boxes and vaccine carriers. This exposes the insulation and increases the risk of heat exposure to the vaccines inside. If a cold box or vaccine carrier wall has a small crack, use adhesive tape to cover it until an undamaged container becomes available.

2.9 What is the Shake Test?

The Shake Test is used to check whether freeze-sensitive vaccines have been damaged by exposure to temperatures below 0 °C. After it has thawed, a vial of vaccine that has been frozen no longer has the appearance of a cloudy liquid, but tends to form flakes that settle at the bottom of the vial.

The Shake Test requires two vials of the same vaccine from the same manufacturer and with the same batch number. One of these is a vial that you suspect has been frozen and the other is a vial that you have deliberately frozen solid overnight. Allow the frozen test vial to melt completely, shake the two vials in the same hand, place them side-by-side and watch the contents settle. If the suspect vial settles at the same speed or faster as the frozen vial you know that it has been frozen. If it settles more slowly, it has not been frozen.

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2.9.1 When is the Shake Test needed?

If a freeze indicator is activated, or temperature recordings show negative temperatures, freeze-sensitive vaccines may have been damaged. If this occurs, notify your supervisor and carry out the Shake Test on a sample of the suspected vaccines.

2.9.2 How is the Shake Test done?

The Shake Test protocol is shown below

<table>
<tr><td colspan="2">This protocol must not be altered. There is only one correct way to conduct a Shake Test. The test procedure described below should be repeated with all suspect batches. In the case of international arrivals, the shake test should be conducted on a random sample of vaccine. However, if there is more than one lot in the shipment, the random sample must include a vial taken from each and every lot.</td></tr>
<tr><td colspan="2">1. Take a vial of vaccine of the same type and batch number as the vaccine you want to test, and made by the same manufacturer.
2. Clearly mark the vial as “FROZEN.”
3. Freeze the vial in a freezer or the freezing compartment of a refrigerator until the contents are completely solid.
4. Let it thaw. Do NOT heat it!
5. Take your “TEST” vial from the batch that you suspect has been frozen.
6. Hold the “FROZEN” vial and the “TEST” vial together in one hand.
7. Shake both vials vigorously for 10–15 seconds.
8. Place both vials on a flat surface side-by-side and start continuous observation of the vials until the test is finished.

(NOTE: If the vials have large labels that conceal the vial contents, turn both vials upside down and observe sedimentation in the neck of the vial.)

Use an adequate source of light to compare the sedimentation rates between vials.

IF</td></tr>
<tr><td>The TEST vial sediments slower than the deliberately FROZEN vial</td><td>Sedimentation is similar in both vials OR The TEST vial sediments faster than the FROZEN</td></tr>
</table>

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Use the vaccine batch.	**Vaccine damaged:** Notify your supervisor. Set aside all affected vaccine in a container marked “DAMAGED VACCINE FOR DISPOSAL – DO NOT USE’’ 1. Discard all affected vaccine once you have received permission to do so. 2. Fill in the Loss/Adjustment Form.

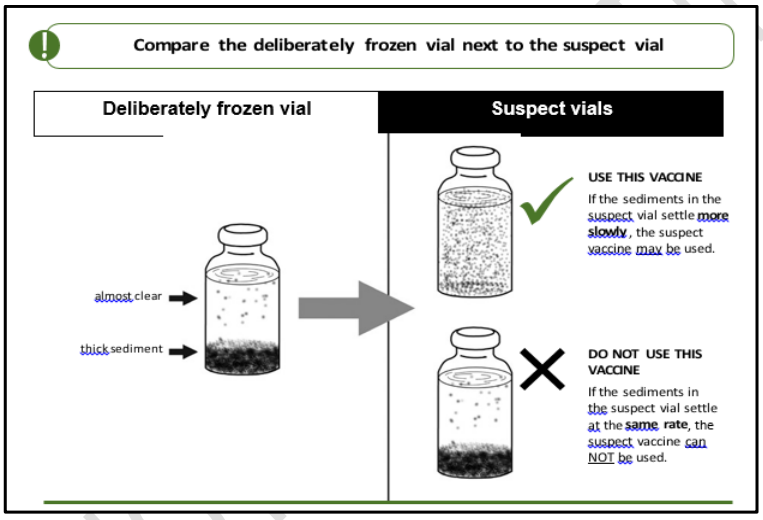


Figure 2.27: The shake Test

2.10 Vaccine management

2.10.1 Vaccine Storage Capacity

The vaccine storage capacity is a measure of the net space in a refrigerator, freezer, cold box or vaccine carrier available for the storage of vaccines. To determine CCE storage capacity, the following must be considered:

- Refrigerators: air space of 15 mm between each column of vaccine packets and between the packets and any adjoining wall.

- Freezers: the same vaccine boxes are used as above, but no space is left between the boxes or from the walls.
- Cold boxes: vaccine storage capacity is obtained by multiplying the vaccine storage dimensions, i.e. the gross internal volume minus the volume taken by the icepacks.

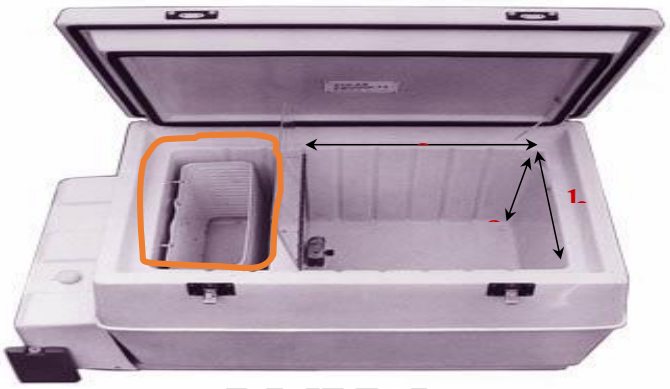


Figure 2.28: Calculating the storage capacity of a vaccine refrigerator using the internal dimensions of the equipment

Rule of Thumb in Estimating Vaccine Storage Capacity

1. For refrigerator (chest type or top opening), estimated storage capacity is around 55-75% of gross storage volume.
2. For refrigerator (front opening), estimated storage capacity is around 40-45% of its gross storage volume.

3. Use of Storage capacity Data

4. Data on available storage capacity supports decision on choice of equipment to procure and deploy for use in a facility (state store, LGA store or Health Facility).
5. The volume required is a function of the space required per Fully Immunized Child (FIC):

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Vaccine Example	Dose/ Vials	Dose/ Schedule		Target Coverage		Parked volume (cm^3)		Wastage Factor	Storage Volume (cm3)	
BCG	20	1	x		x		x	3.03	=	
HepB	10	1	x		x		x	1.10	=	
BOPV-	20	4	x		x		x	1.10	=	
DTP-HepB-Hib	10	3	x		x		x	1.09	=	
PCV	4	3	x		x		x	1.09	=	
IPV	10	2	x		x		x	1.09	=	
Measle	10	2	x		x		x	1.39	=	
YF	10	1	x		x		x	1.39	=	
Mening A	10	1	x		x		x	1.39	=	
RV1	10	3	x		x		x	1.09	=	
HPV	1	1	x		x		x	1.05	=	
Td	10	3	x		x		x	1.09	=	
Storage volume per FIC without OPV and Diluents (Store Level)										
Storage volume per FIC with OPV and Diluents (Facility Level)										

Figure 2.29: Calculation of Space Requirement for FIC

6. **Note: Space required at State/LGA stores = Required Space per FIC x Target Population x 1.25**
7. For example, if the total vaccine volume needed for a health facility for 3 months' supply is 90 Litres and the health facility desires to procure 40-liter refrigerators (top opening equipment), how will you help the health facility in arriving at the right number of the 40-Litre equipment?

2.10.2 Estimating Vaccine Needs

The three methods for vaccine estimation are based on:

1. Target populations
2. Past consumption
3. Vaccination sessions

Target Population Method (currently used in Nigeria for calculating estimates)

- Target population (P_{targ})
- Vaccination coverage (T_{vc})
- No of doses in vaccination schedule (N_{dose})
- Wastage factor (F_{waste})

Vaccine requirement = $P_{targ} \times T_{vc} \times N_{dose} \times F_{waste}$

E.g. a Health Facility with a target population of 1,200 per annum

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Number of doses of BCG required for the year with the following parameters

Vaccination Coverage = 90%

No of doses in schedule = 1

Wastage factor = 2

Number of doses required for the year = 1,200 x 90% x 1 x 2 = 2,160 doses

2.10.3 Deciding when to supply vaccines to a facility - "Supply Period"?

Supply period is a period between two supplies and it depends upon:

- Storage capacity
- Reliability of store
- Lead time, etc.

The national recommended supply period at health facility level is 4 weeks (1 month).

Quantity Needed Per Supply Period

This can be calculated using months or weeks of supply. In either cases, the same figure (value) will be obtained. The formula is

1) Using months: Quantity for supply period= Total quantity for the year x supply period in months/12
2) Using weeks: Quantity for supply period = Total quantity for the year x supply period in weeks/52

Three critical stock levels are defined as follows:

1. Minimum stock level, Smin (25% of total stock needed)
    1. (minimum quantity of supplies in store on arrival of supply, also reserve)
    2. LGA level = 1 week
2. Maximum stock level, Smax (125% of total stock needed)
    1. (maximum quantity of supplies in store after supply)
    2. LGA level = 5 weeks
3. Re-Order stock level, Sorder
    1. (quantity of supplies in store absolutely necessary to place order)

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MODULE 3: INJECTION SAFETY AND WASTE MANAGEMENT

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Contents

List of Figures (3)2

List of Tables (3)3

3.1 Using safe injection equipment and techniques (3)4

3.1.1 Types of injection equipment (3)4

3.1.2 Auto-disable (AD) syringes for immunization (3)5

3.1.3 General steps for using AD syringes (3)6

3.1.4 Hypodermic syringes with reuse prevention (RUP) features (3)7

3.1.5 General steps for using Hypodermic RUP syringes for reconstitution (3)7

3.2 Simple ways to improve injection safety (3)8

3.3 Preventing needle-stick injuries (3)10

3.3.1 Minimizing the need to handle needles and syringes (3)10

3.3.2 Handling syringes and needles safely (3)11

3.3.3 Setting up the immunization work area to minimize risk of injury (3)12

3.3.4 Positioning children correctly for injections (3)12

3.4 Disposing of used syringes and needles (Sharps) (3)13

3.4.2 Dangers to the environment (3)13

3.4.3 Safety boxes (3)13

3.4.3.1 How to assemble a safety box (3)14

3. 4.3.2 what to do if safety boxes are not available (3)14

3.4.3.3 How to create a good sharps container if a safety box is not available (3)14

3.4.3.4 How to ensure safe handling of safety boxes (3)15

3.4. 4 Using safety boxes (3)15

3.4.5 Disposing of filled safety boxes (3)17

3.4.5.1 Incineration (3)17

NOT FOR PRINTING

List of Figures

Figure 3.1 Hypodermic syringes with re-use prevention feature (RUP) 5

Figure 3.2 Parts of a syringe and needle that may be touched 11

Figure 3.3 Parts of a syringe and needle that must be touched 11

Figure 3.4 Positioning of a child for vaccination 13

Figure 3.6 Safety box assembly 14

Figure 3.7 Wrong methods of disposal of sharps 16

Figure 3.8 INCINER 8 supplied by NPHCDA in support of MenAfrivac campaign 17

NOT FOR PRINTING

NOT FOR PRINTING

List of Tables

Table 3.1 Types of equipment used to administer injectable vaccines 5

Table 3.2 Examples of incorrect immunization practices and possible adverse events following immunization 9

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Module 3: Injection Safety and Waste Management

Injection safety, or safe injection practices, is a set of measures taken to perform injections in an optimally safe manner for patients, healthcare personnel, and others.

Trainer's Notes:

1. To stimulate discussion, ask participants what they know about injection safety and waste management, how this is practiced in their facilities and the types of injection safety equipment available and in use.
2. Introduce and discuss current procedures to ensure injection safety including safe disposal of sharps, preventing harm to the client, care-giver and the community.
3. Demonstrate the proper assembling of a safety box and its location during immunization session.
4. After your demonstration you must provide an opportunity for each participant to demonstrate back to you what you have just done. This is the time when you can guide them on how to perform the skill correctly.
5. Correct any mistakes and answer any remaining questions about injection safety and safe disposal of sharps.
6. Stimulate discussion on immunization waste management – including the policy of replacing burn and bury with incinerators

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3.1 Using safe injection equipment and techniques

3.1.1 Types of injection equipment

The types of equipment used to administer injectable vaccines are listed in Table 3.1.

Equipment	Remarks	Use
Auto-disable (AD) syringes	equipment of choice	✓
Prefilled AD injection devices	available for some antigens only	✓
Reusable syringes and needles	not recommended	X
Hypodermic syringes with reuse prevention feature (RUP) and needles as shown in figure 3.1	for reconstitution purposes only	✓

Table 3.1 Types of equipment used to administer injectable vaccines

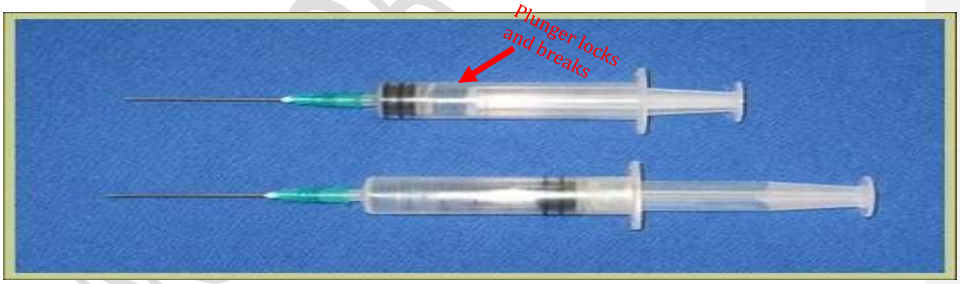


Figure 3.1 Hypodermic syringes with re-use prevention feature (RUP)

3.1.2 Auto-disable (AD) syringes for immunization

AD syringes are recommended for all types of immunization sessions because they can only be used once and can reduce disease transmission from contaminated equipment.

AD syringes for fixed-dose immunization have the following main features:

- a self-locking mechanism that allows only one use; this is called a Reuse Prevention Feature (RUP)
- a fixed needle (usually 23G x 25 mm, but various sizes are manufactured)
- A specific scale mark showing only the quantity to be administered.

Each AD syringe is sterilized and sealed in plastic or paper blisters by the manufacturer. All AD syringes have plastic caps to keep the needle sterile; some also have caps on the plungers. They are supplied in three volumes: 0.5 ml for most vaccines and 0.05 ml or 0.1 ml for BCG.

AD syringes have different types of locking mechanisms that are triggered at different times. Some syringes lock their plunger at the start of the injection while others do so at the end. AD syringes that lock at the start are preferred since they completely prevent reuse. Some AD syringes are retractable, meaning that the needle can be pulled into the barrel. This mechanism adds stick injury protection (SIP) to reduce the risk of needle-stick injuries.

3.1.3 General steps for using AD syringes

Each type of AD syringe requires a specific technique for its use. But for all types, the plunger can go back and forth **only once**. Health workers should not move the plunger unnecessarily and should **not inject air** into a vaccine vial when using an AD syringe, as this might disable it.

The general steps to follow when using AD syringes are given below. Note that the steps should be adapted depending on manufacturer's instructions for the type of syringe being used.

1. Remove the syringe from its plastic wrapping (peel the package open from the syringe plunger end) or detach the plastic cap.
2. Take off the needle cap without touching the needle.
3. Insert the needle in the vaccine vial – its tip should be in the **lowest** part or bottom of the vial.
4. Pull the plunger back to fill the syringe just past the 0.5 ml or 0.1 ml or 0.05 ml mark, depending on the volume required.
5. Remove the needle from the vial. To remove air bubbles, hold the syringe upright and tap the barrel. Then carefully push the plunger to the volume mark.

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For the last dose of a multi-dose vial, keep the needle tip in the fluid at all times, making sure to empty the full contents of the vial.

6. Proceed with administering the injection at the appropriate site (see Module 5 (Managing an immunization session), for details on injection technique).
7. Push the plunger forward and inject the vaccine. At the beginning or just at the end of the injection, the plunger will automatically lock so the syringe cannot be reused.
8. Do **not recap** the needle after use.
9. Dispose the needle and syringe in a safety box, which is a leak-proof, puncture-resistant container for sharps waste.

3.1.4 Hypodermic syringes with reuse prevention (RUP) features

Hypodermic syringes with reuse prevention feature and needles are disposable syringes with **self-locking** mechanisms that allow only **one use** (see figure 3.1). They are the recommended choice for **reconstituting vaccines**, just as AD syringes are recommended for administering vaccines.

3.1.5 General steps for using Hypodermic RUP syringes for reconstitution

Just as with AD syringes, each type of hypodermic RUP syringe requires a specific technique for its use. For all types, the plunger can go back and forth only once and so health workers should take care not to move it **unnecessarily**.

General steps to follow when using hypodermic RUP syringes are given below. Note that they should be adapted depending on manufacturer's instructions for the type of syringe being used.

1 Remove the hypodermic RUP syringe from its wrapping (peel the package open from the syringe plunger end) or detach the plastic caps.
2 If there is a detachable needle, fit it onto the hub of the syringe and take off the cap without touching the needle.
3 Insert the needle in the diluent vial and move the tip of the needle to the lowest part or bottom of the vial.
4 Pull the plunger back to fill the syringe, making sure to empty the full contents of the vial.

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5 Remove the needle and syringe from the vial. If needed, remove air in the syringe by holding it upright and pushing the plunger slowly until the air goes out.
6 Insert the needle and syringe into the vaccine vial.
7 Push the plunger in completely to ensure that all the diluent goes into the vaccine vial.
8 Remove the needle and syringe from the vial and ensure that the syringe is locked.
9 Do **not recap** the needle after use.
10 Dispose of the needle and syringe directly in a safety box.
11 Shake the vial to mix the diluent with the vaccine (see Module 5 (Managing an immunization session), Section 4 for details on reconstitution technique).

3.2 Simple ways to improve injection safety

The following is a summary of points to improve injection safety discussed in more detail in Module 2 (The vaccine cold chain) and Module 5 (Managing an immunization session):

1 The health worker should wash his /her hands with soap and water before any procedure.
2 Prepare injections in a clean, designated area that is free from blood and body fluid contamination.
3 Inspect the packaging very carefully (Expiry date).
4 Follow product-specific recommendations for storage, handling and use of vaccines.
5 Diluent must be cooled before reconstitution
6 Follow safe procedures to reconstitute vaccines. The correct diluent must be used for reconstituting freeze-dried vaccines
7 Use only the diluent supplied by the manufacturer for each vaccine (check the labels).Prepare each dose immediately before its administration – **do not prepare several syringes in advance.**
8 Never leave the needle on the top of the vaccine vial.
9 Follow national multi-dose vial policy for opened vials.
10 Use a new AD needle and syringe for every child:
11 Dispose of used AD and RUP needles and syringes in a safety box

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12 Discard the needle and syringe if the package has been punctured, expired, torn or damaged in any way.

13 Do not touch any part of the needle.

14 Discard a needle that has touched any non-sterile surface.

15 Position the child carefully to minimize risk of movement and injury.

Table 3.2 introduces some examples of incorrect immunization practices, and Adverse Events Following Immunization (AEFI) that may follow (details are in Module 5: Managing immunization session and Module 6: Monitoring and surveillance).

Table 3.2 Examples of incorrect immunization practices and possible adverse events following immunization

Incorrect practice	**Possible adverse events following immunization**
Non-sterile injection due to: • Reuse of disposable syringe or needle • Improperly sterilized syringe or needle • Contaminated vaccine or diluent	• Infections such as local abscess at injection site, sepsis, toxic shock syndrome, or death • Transmission of blood borne infections such as hepatitis or HIV
Reconstitution error due to: • inadequate mixing of vaccine • reconstitution with incorrect diluent • drug substituted for vaccine or diluent • inappropriate reuse of reconstituted vaccine at subsequent session	• Local abscess at injection site Vaccine ineffective* • Negative effect of drug (for example, insulin, oxytocin, muscle relaxants) • Death
Injection using incorrect technique and site such as: • BCG given subcutaneously instead of intra-dermally • DTP(Penta)/DT/dT/TT too superficial • injection into buttocks	• Local reaction or abscess • Local reaction or abscess • Sciatic nerve damage

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Vaccine transportation/storage incorrect such as: • VVM changed colour beyond Stage 2 • clumping of adsorbed vaccine • Expired vaccine and diluent	• Local reaction • Vaccine ineffective*
Contraindications ignored	• Avoidable severe reaction

Practices that can Harm Recipients

- Re-using syringe or needle
- Changing the needle but re – using the syringe.
- Giving an injection when there are safer alternatives.
- Keeping freeze-dried vaccine more than 6 hours after reconstitution.
- Sterilizing injection equipment for re-use
- Boiling and leaving injection materials in 10 percent bleach for 30 minutes prior to re-use
- Boiling injection equipment for reuse.
- Applying pressure to bleeding sites with used materials
- Vaccinating in the buttocks.
- Leaving a needle in the vial to withdraw additional doses.
- Mixing (decanting) two partially opened vials of vaccine.
- Touching the needle.
- Flaming needles
- Storing medications and vaccines in the same refrigerator.

Practices that can harm: Health Workers/Community

Health Worker

- Recapping needles
- Placing needles on a surface or carrying them at a distance prior to disposal
- Reaching into a mass of used syringe or sorting waste.

The Community

- Leaving used syringe in areas where children play with them giving or selling used syringes to Vendors who will re-sell them
- Leaving used syringes to areas accessible to the public
- Inappropriate injection waste material disposal

Safe Injection Practices

- Use a sterile syringe and needle to vaccinate each client
- Use an AD syringe and needle for each injection (check the package for any possible damages)
- Protect fingers with small gauze pad when opening ampoule.
- Discard a needle that has touched any non-sterile surfaces (hands, environmental surfaces)
- Prevent needle sticks

• Use a disposable syringe and needle to reconstitute each vaccine • Prevent contamination of equipment and vaccines • Always pierce the septum of multi-dose vials with a sterile syringe • Do not leave a needle in the stopper	• Anticipate and take measures to prevent sudden patient movement during and after injection. • Collect used syringes and needles at the point of use in safety box, enclosed sharp container, that is sealed when ¾ full (do not over fill safety boxes).

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3.3 Preventing needle-stick injuries

Needle-stick injuries are wounds caused by **needles** that accidentally puncture the skin. **Needle-stick injuries** are a hazard for people who work with hypodermic syringes and other **needle** equipment. These **injuries** can occur at any time when people use, disassemble, or dispose of **needles**.

The needles can injure health workers and, if contaminated with hepatitis B, hepatitis C, HIV or other infections, they can transmit diseases. This risk is increased when:

1. Health workers recap needles or walk around carrying used needles.
2. Children are not properly positioned during injections.
3. Unsafe disposal practices leave people and/or animals exposed to used needles and syringes.

This section describes steps to prevent needle-stick injuries by addressing potential risks from handling equipment, workspace arrangement, positioning of children and waste disposal.

3.3.1 Minimizing the need to handle needles and syringes

In general, the more injection equipment is handled, the greater the risk of needle stick injuries. Reduce risk due to handling of equipment through the following steps.

1. Place a safety box close to the person giving vaccinations so that used needles and syringes can be disposed of immediately, easily and without walking to find a sharps container.
2. Avoid recapping the needle. If recapping is necessary, for example, if the injection is delayed because the child is too agitated, use the one-hand technique of placing the cap on a table or tray and reinserting the needle by sliding it inside without using the other hand.
3. Do not remove the used needle from the syringe with your hands.
4. Do not carry used syringes and needles around the work site for any reason.
5. When ready to administer, draw the vaccine into the syringe, give the injection, dispose of the syringe and needle in the safety box without putting it down.
6. Close the safety box securely when it is three quarters full (100 pieces).
7. Do not manually sort needles and syringes.

3.3.2 Handling syringes and needles safely

Any part of the syringe that is touched becomes contaminated. Although the barrel and plunger of a syringe have to be touched to prepare and give an injection (see Figure 3.3), care should be taken to avoid touching any part that comes into contact with the vaccine or the child (see Figure 3.4).

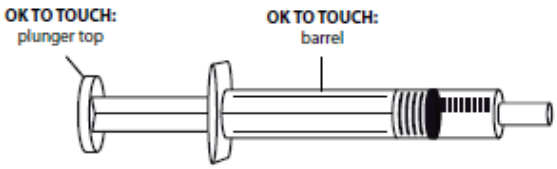


Figure 3.2 Parts of a syringe and needle that may be touched

Do not touch:

- The shaft of the needle
- The bevel of the needle
- The adapter of the needle

- The adapter of the syringe
- The plunger seal of the syringe.

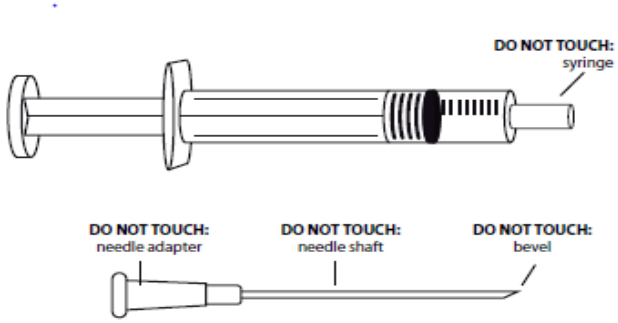


Figure 3.3 Parts of a syringe and needle that must be touched

IMPORTANT:
If any of these parts are touched, discard the needle and syringe and get new sterile ones.

3.3.3 Setting up the immunization work area to minimize risk of injury

To minimize risk of needle-stick injury, staff should arrange their workspace these following general rules:

1 The vaccinator (person giving doses of vaccine) should be between the client and all needles and sharp objects.

2 The vaccinator should be able to see the opening of the safety box when discarding needles. The safety box may be on a table or the floor depending on whether the vaccinator is standing or sitting. He or she should be able to reach it easily and without much change in position.

3 The vaccinator should be able to dispose of used needles and syringes directly in the safety box without putting them down on other surfaces.

4 The vaccinator should have only one child/client with caregiver(s) at a time in their workspace.

5 Each vaccinator should have a separate safety box, especially at busy sites.

6 The vaccine carrier should be in the shade, if vaccination is taking place outside.

7 Tally sheets should be within easy reach.

See Module 5 (Managing an immunization session) for more details and illustrations.

3.3.4 Positioning children correctly for injections

Unexpected motion at the time of injection can lead to needle-stick injuries. This may occur more often with children who are not positioned properly before injections are given. Figure 3.5 are illustrations on positioning children for vaccinations to minimize the risk of needle stick injuries.



Figure 3.4 Positioning of a child for vaccination

3.4 Waste Management

Objectives

- Know the procedure for handling waste in the PHC
- Understand the procedure for sterilizing medical instruments during vaccination
- Know environmental cleaning procedures

Health Care Waste is defined as total waste product from a health facility

– Includes both potential infectious waste and non- infectious waste materials

Infectious waste includes infectious sharps and infectious non- sharp materials

– Infectious sharps: Syringes, needles, blades, infusion sets, broken glass or other items that can cause direct injury

– Infectious non-sharps: Materials in contact with human blood or its derivatives

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– Non-infectious wastes: Materials that have not been in contact with clients such as paper and plastic packaging, metal, glass etc.

3.4.1 Disposing of used syringes and needles (Sharps)

Sharps refers to any device with sharp points or edges, which could readily puncture or cut the skin of an individual when encountered. This includes needles and syringes used for immunization. Sharps waste can cause serious health and environmental problems. Unsafe disposal of sharps can spread diseases (hepatitis B, hepatitis C, HIV).

Leaving used syringes and needles in the open or on the ground puts the community at risk. Most frequently, children are the unfortunate victims of needle-stick injuries from haphazard disposal of needle.

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3.4.2 **Management of Health Care Waste**

Management of healthcare waste involves:

Planning, implementation and monitoring of actions that aim to:

- Prevent exposure
- Ensure the safety of health care workers and clients
- Prevent the occurrence of environmental hazards
- During epidemics, medical waste generation increases exponentially and if improperly collected and disposed, could accelerate disease spread and pose a significant risk on medical staff, clients and the public



3.4.3 Dangers to the environment

Inappropriate treatment of waste leads to environmental pollution. Open burning and low-temperature incinerators release toxins into the air; they should be used only as temporary emergency solutions when no other options are available. Throwing used needles and syringes into bodies of water can contaminate the natural environment and injure wildlife.

3.4.4 Standards for Colour Coding of HCW Containers

- Coloured waste bins should be used to differentiate the segregated HCW

– Standard colours recommended are **Red** for highly infectious,
– **Yellow** for infectious, **Black** or **Blue** for non-infectious
– Mixed waste will be considered as hazardous waste

Procedures

• Place the color-coded waste bins with appropriate bin liners at every functional unit (where there are no color-coded bins, available bins can paint with respective colors and labeled) Store each segregated waste in the container corresponding to its coded colour



Color coding for various Health Care Waste Categories

Waste category	Type of Waste	Colour of waste containers and liner
Non-infectious waste	Paper, packaging materials, plastic bottles, food remains, boxes, cartons	Blue or Black or
Infectious Waste	Used gloves, dressing materials, specimen containers, infusion packages, catheters, urinal bags	Yellow
Highly infectious waste	Anatomical waste, blood, body fluids, pathological waste, culture materials, stocks, petri dishes, waste from isolation ward or camp.	Red
Sharps waste	Used Syringes and needles, surgical blades, scalpels, needles, blades, broken glass (e.g., pipettes, ampoules, vials)	Yellow Safety boxes

3.4.5 Safety boxes

Safety boxes are sharps waste containers that needles cannot pierce and can be disposed of when full. All used injection equipment should be disposed of in a safety box immediately (see Figure 3.6). When a safety box is not in use, close the opening on the top.

Figure 3.5 Safety box





3.4.3.1 How to assemble a safety box

Safety boxes require proper assembly before use, as shown in Figure 3.7. Many come with picture instructions printed on the side.

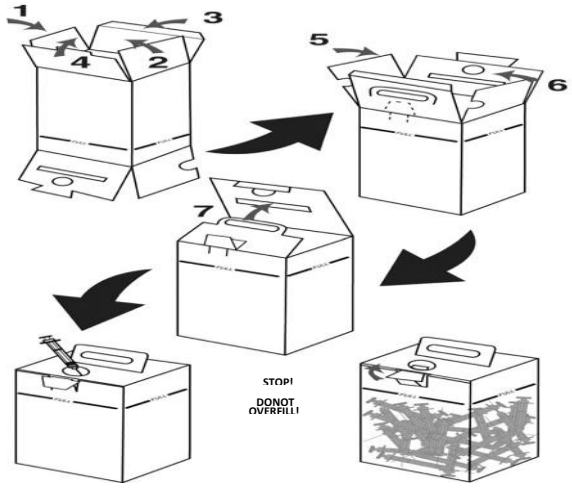


Figure 3.7 Safety box assembly

3. 4.3.2 what to do if safety boxes are not available

If a safety box is unavailable, locally available materials such as strong cardboard boxes, metal cans or thick plastic containers may be used to collect needles and syringes and transport them to a site where they can be properly treated (buried, incinerated or autoclaved and shredded). Containers should be sealed when they are three-quarters full. These containers should not be re-used once filled. Emptying sharps containers for re-use increases the risk of accidental needle-stick injuries and infections.

3.4.3.3 How to create a good sharps container if a safety box is not available

1. Find a strong cardboard box (a local shop may have some). Ideally, the walls of the box should be strong enough to keep needles from piercing through and causing needle-stick injuries.
2. If needed, place one box inside another to create a stronger container that can prevent needles piercing through.
3. Close the box securely at the top and bottom – seal it with strong adhesive tape or similar material.
4. Make a circular opening at the top. It should be just big enough for a needle and syringe to enter (maximum 38 mm).
5. When the box is three quarters full, seal the opening.
6. Dispose of the box properly (see next sections of this module).

3.4.3.4 How to ensure safe handling of safety boxes

1. Do not squeeze, sit or stand on safety boxes.
2. Do not handle or shake the safety box more than necessary.
3. Take extra care when carrying safety boxes to disposal sites. Hold the box by the handle on top (or at the top above the level of the needles and syringes if there is no handle).
4. Keep safety boxes in dry places that are out of children's and other people's reach.
5. Train staff on safe handling; do not ask untrained staff to handle safety boxes.

3.4. 4 Using safety boxes

Collecting sharps waste in safety boxes or similar containers both decreases risk of injury during handling and helps ensure proper disposal.

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Safety boxes should be placed within reach of the staff administering injections so that needles and syringes can be disposed-off immediately. Safety boxes should be closed when they are three quarters full. A five-litre safety box can hold about 100 syringes and needles.

When the health worker starts seeing the needles and syringes through the open hole of the safety box, then it is three quarters full and should be closed.

Used needles and syringes should never be transferred from safety boxes to other containers.

If needle removers or needle cutters are available, used needles and syringes should be separated immediately after each injection. After removing the needle with one of these devices, the syringe should go in the safety box. Needles remain in a separate safe container, which, when almost full, should be closed and disposed of properly (see next section for disposal methods).

For the best use of safety boxes, you should never dispose the following items in them:

- empty or discarded vials
- cotton pads
- dressing materials
- intravenous bags or tubes
- latex gloves
- any plastic material or waste products.

Once three quarters full, safety boxes should be closed and destroyed appropriately preferably at a nearby site to minimize handling. **Used needles and syringes must never be dumped in open areas** where people might step on them or children might find them (inside safety boxes or loose) as shown in figures 3.8 below. They should never be disposed of along with general non-sharps types of waste.

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Figure 3.7 Wrong methods of disposal of sharps

3.4.5 Disposing of filled safety boxes

All injection equipment should be destroyed by proper waste disposal methods

The National Policy on Health Care Waste Management recommends incineration as the method of disposal of filled safety boxes.

Health facilities with incinerators should dispose of the filled safety boxes by incineration.

Health facilities without incinerators, should collected filled safety boxes and store them in a secure place pending collection and transportation to incinerator sites within the LGA. Where the LGA has no incinerator, the filled safety boxes will be collected at the LGA store then transported to designated incineration points outside the LGA.

3.4.5.1 Incineration

Incineration can completely destroy needles and syringes. Fires burning at temperatures higher than 800 °C will kill microorganisms and reduce the volume of waste to a minimum. Properly functioning incinerators ensure the most complete destruction of needles and syringes. High temperature, dual-combustion incinerators with air filters produce less air pollution than incinerators burning at lower temperatures (see Figure 3.9). Some hospitals have on-site incinerators.

The compound in which incineration takes place must be secure. Staff members conducting the incineration should wear safety glasses, heavy gloves and any other personal protective equipment required by local and national guidelines.

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Figure 3.8 INCINER 8 supplied by NPHCDA in support of MenAfrivac campaign

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Procedure for handling Solid Medical Waste

- Line appropriate-sized waste containers with a leak-proof biohazard bag
- Place non-sharps solid waste in the biohazard bag or black polythene bag
- Bags should not be filled beyond two thirds to allow safe closure
- Close the bag using a method that will not tear or puncture the bag – e.g. tying the neck of bag with a goose neck knot; ensure no leaks

• Carefully place sharps in safety boxes and close the container when three quarter filled **After closure of bag and sharps container, prepare waste for onsite autoclaving /incineration**
• Apply disinfectant or bleach to the outside surface of the closed bag – Place the wiped/sprayed closed bag into a second biohazard bag
• Close the bag with a method that will not tear or puncture the outer bag and will ensure no leaks (e.g. tying the neck of bag with a knot)
• Apply disinfectant or bleach (wipe or spray) to the outside surface of the secondary bag

Procedures for handling Liquid Waste
(Body Fluids including Blood, Urine, Vomit, Faeces)
Primary handling of liquid waste should occur in the client's room and be performed by the healthcare workers (i.e., Clinicians, Nurses, CHEWs etc.) wearing recommended PPE
• Pour waste, avoiding splashing by pouring from a low level, into the toilet
• Close the lid first, and then flush toilet
• Clean and disinfect flush handles, toilet seat, and lid surfaces with disinfectants or bleach
• Discard cleaning cloths in biohazard bags
• Recommended PPE should be worn by the clinicians, Nurses, CHEWs caring for the Covid-19 client (or suspected case) before handing spills

Segregation of Health Care Waste



DOs and DON'Ts of Proper Sharps Disposal

1. DO immediately place used needles and other sharps in a sharps disposal container to reduce the risk of needle sticks, cuts or punctures from loose sharps.
2. DO make sure that if a household container is used, it has the basic features of a good disposal container.
3. DO keep all sharps and sharps disposal containers out of reach of children and pets.
4. DO seal sharps disposal containers when disposing of them, label them properly and dispose of them using the national health care waste guidelines.
5. DO NOT throw loose needles and other sharps into the trash.
6. DO NOT flush needles and other sharps down the toilet.
7. DO NOT put needles and other sharps in your recycling bin -- they are not recyclable.
8. DO NOT try to remove, bend, break, or recap needles used by another person. This can lead to accidental needle sticks, which may cause serious infections.

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9. DO NOT attempt to remove the needle without a needle clipper because the needle could fall, fly off, or get lost and injure someone.

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MODULE 4: MICRO-PLANNING FOR REACHING EVERY COMMUNITY

List of Figures (4)2
List of Tables (4)3
4.1. Developing or updating a map (4)6
4.1.1 LGA/Ward Maps (4)6
4.1.2 Health Facility Map (4)9
4.2. Identifying priority health facilities and settlements (4)11
4.2.1 Analysis of LGA immunization data (4)11
4.2.2 Analysis of health facility immunization data (4)12
4.3. Identifying barriers to access and utilization of Immunisation Services (4)14
4.3.1 Household survey of immunization status (4)14
4.3.2 Community discussion (4)17
4.4. Identifying solutions and preparing a work-plan (4)18
4.4.1 Outline solutions (4)18
4.4.2 Make a work-plan to implement identified solutions (4)19
4.5. Developing a Health Facility Session Plan (4)22
4.5.1 Immunization session plan (4)22
4.5.2 Determine the frequency of sessions for the Health Facility by Strategy (4)25
4.5.3 Immunization session supplies (move to Vaccine and Cold Chain) (4)27
4.6. Tracking defaulters (4)29
4.6.1 Defaulter tracking list (4)29
4.6.2 Other opportunities (4)29
4.7 Group Exercises on Micro Planning for Reaching Every Community (4)30

NOT FOR PRINTING

List of Figures

Figure 4.1: LGA/Ward level map 1 7
Figure 4.2: Example of a Map using GIS 8
Figure 4.3: Example health facility catchment area map 10
Figure 4.4: Illustration of fixed, outreach and mobile strategy 31

NOT FOR PRINTING

List of Tables

Table 4.1: LGA list of health facilities and their catchment area populations 8
Table 4.2: Health facility-level list of catchment area settlements and populations 10
Table 4.3: Health facility data analysis 13
Table 4.4: Household immunization status questionnaire assessing children aged 12–23 months 16
Table 4.5: Community discussion guide 17
Table 4.6: Format for Outlining Solution 20
Table 4.7: Format for scheduling identified Solutions 21
Table 4.8: Format for Health Facility overall session plan 30
Table 4.9: Estimated supplies for monthly Immunisation Sessions 35

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Module 4: Micro-planning for Reaching Every Community

Trainers Note:

1. The following materials should be made available during the training for participants' use: Cardboard paper, markers, pencils, pen, eraser, ruler, GIS Maps

2. This module should be delivered in a participatory learning mode.

3. Before going through this module, the facilitator should ask participants to share experiences on how they develop micro-plan in their respective health facilities.

4. The Facilitator should ask participants to sketch a catchment area map of a health facility.

5, The Facilitator should confirm from participants if they have ward GIS maps

6. The Facilitator should make sure that participants take turn to read the sections of the manual.

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Module Objectives:

This module discusses the process of developing a micro plan at the LGA, Ward and Health Facility levels. It includes:

1. Development of maps at local government area (LGA), ward and health facility levels which show all settlements in the catchment area, with their target population.
2. Description on how to identify barriers to accessing and utilizing immunization services in priority settlements and develop work plans for solutions.
3. Description on how to identify priority settlements based on the number of unimmunized children.
4. The process of working with the Community in micro planning.
5. Development of session and outreach plans to track and reach defaulters and zero dose children and communities.

Introduction

Routine Immunisation delivery reached an important milestone with the adoption of Reaching Every District (RED) in 2003. This was adapted as Reaching Every Ward (REW) in Nigeria in 2004. REW is a client centred strategy which focuses on the ward/community as the operational levelRED further revised in 2017 RED guide and intended for adaptation and use by national immunization programs. It is primarily designed as a resource for district, health facility, and community teams to improve their immunization services. It targets various global initiatives that provide new resources and renewed focus on targets for sustainability, address inequities between communities and better integration across health programs through implementation of innovative strategies to reduce these pockets of local inequities are referred to as "Reaching Every Community"or "Reaching Every Child"(REC). ***It aims at providing regular, effective, quality and sustainable RI services to improve coverage and guarantee equitable access to all eligible groups. There are five components of REC and they include:***

- ***Planning and Management of Resources (better management of human and financial resources).***
- ***Improving Access to Immunisation Services (establishing or re-establishing fixed or outreach immunisation sites).***
- ***Supportive Supervision (On-the-job training by Supervisors).***
- ***Community Links with Service Delivery (regular meeting with Community and health staff).***
- ***Monitoring and Use of Data for Action (review meeting, monitoring chart etc)***

Microplanning in Immunisation is a detailed exercise that results in comprehensive and realistic information on resources needed for carrying out immunisation services. This includes settlements to be covered, target population, strategy (number and type of vaccination post), vaccine logistics and transportation and the number/distribution of health workers required. Others include number and distribution of schools, churches/mosques and other religious centres; markets, motor parks; number and types of health facilities (public or private) and estimation of cold chain and dry storage capacity.

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The steps in Microplanning at the LGA, Ward and HF levels are similar and should include an initial planning meeting at each of the level, with the ward focal persons, Heads of HFs and representatives of the Community. During the meeting, a comprehensive situation analysis should be conducted and the catchment area of each health facility should be defined as practicably as possible using GIS maps and guided by local knowledge. A catchment area is an area from which a facility population is drawn and it is usually determined by the LGA authorities to help ensure service delivery reaches all areas/settlements.

***Every LGA, ward and health facility should display a map that shows the location and the population of the settlements in their catchment area and distance of each settlement from the designated health facility. Each health facility is responsible for the population living in its catchment area*.**

LGA, ward and health facility maps should include all eligible populations in their catchment areas; see Figures 4.1, 4.2 and 4.3. A table listing the population of communities and their settlements should be displayed next to each map, see Tables 4.1 and 4.2. The maps should be updated regularly to include any changes in the catchment areas, including new settlements. Priority and high-risk areas identified based on high numbers of unimmunized and zero dose children and outbreak of vaccine preventable diseases should be clearly marked.

Community leaders and administrative officials should be involved in all the steps in the development and updating of maps. Maps should be drawn locally with the use of hands and if online access is available, Internet-based tools, such as Google Maps with its Map Maker (www.google.com/maps), GRID3 and Geographical Information System (GIS) can be used to develop and update catchment area maps and identify missed, and zero dose settlements.

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4.1. Developing or updating a map

4.1.1 LGA/Ward Maps

The LGA map should display the important geographical features and settlement of the whole LGA. It should also show the locations of all the Wards and health facilities (See Fig 4.1).

The Ward map, as in the LGA map, should display the important geographical features and settlements of the Ward. It should also show the locations of all the health facilities/facilities in the Ward. In a situation where the Ward does not have a health facility, the health facility in the adjacent Ward should cover the settlements in that Ward in its catchment map. Where the Ward is too big to be handled by one health facility, the settlements in the Ward should be shared to other facilities surrounding the Ward with the LGA authority providing guidance.

The map should include:

- health facilities with their catchment areas showing boundaries, and their distances to the LGA cold store;
- urban settlements, towns, villages, rural settlements, isolated households and their target population;
- rivers, mountains, valleys and other similar geographical features and landmarks;
- natural seasonal barriers, such as flood zones during the rainy season;
- internally displaced camps;
- Identification of high risk wards
- Roads and footpaths.

The table to be displayed next to the map should include:

- the total population and target population in the catchment area of each health facility;
- approximate distances and travel times from each facility to the LGA cold store;
- health facility contact name and phone number that may be useful for the purpose of coordination and supervision

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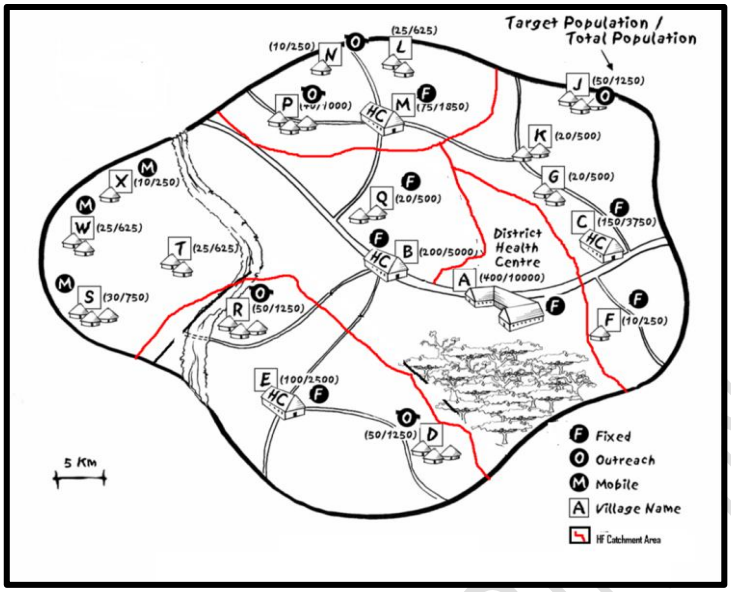


Figure 4.1: LGA/Ward level map

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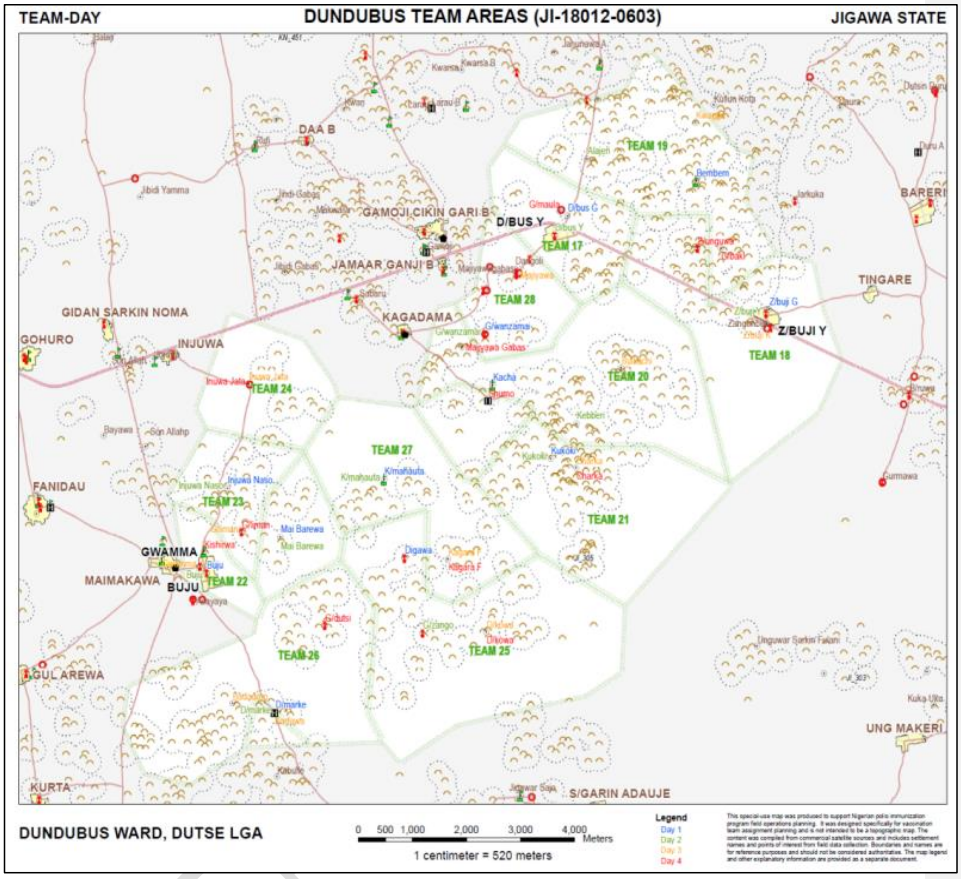


Figure 4.2: Example of a Map using GIS

Table 4.1: LGA list of health facilities and their catchment area populations

Ward	Health facility name	Total population in health facility catchment area*	Population <1 year of age in health facility catchment area	Pregnant population in health facility catchment area	Distance between health facility and LGA cold store		Name of health facility contact person	Phone number of health facility contact person
					Distance (km)	Travel time (min)		

*State source of population data

4.1.2 Health Facility Map

Each health facility should develop a simple map of its catchment area. The settlements in the catchment area should be listed and the list updated regularly. Settlements boundaries should be confirmed with the help of community leaders. See Module 7 on engaging communities for more details on how to involve the communities in Microplanning activities. The health facility catchment area map should be an operational diagram with details that can help with planning.

The health facility map should include:

- Location of every settlement in the catchment area, including those that are not reached and/or new;
- Landmarks and significant buildings, for example, religious centres, markets, schools, motor parks etc.;
- Settlements of urban poor and migrants within towns and cities;
- Settlements of migrants and/or displaced persons in rural areas.
- Outreach settlements should be clearly identified

The table displayed next to the health facility map should include:

- The total population and target populations in each settlement in the catchment area;
- Approximate distances and travel times to each settlement from the facility;
- Community volunteer names and their mobile phone numbers.

Include every settlement on the map even if accurate populations are not available. This applies particularly to communities of migrant workers, urban poor, ethnic minorities, new rural settlements and nomadic/displaced groups.

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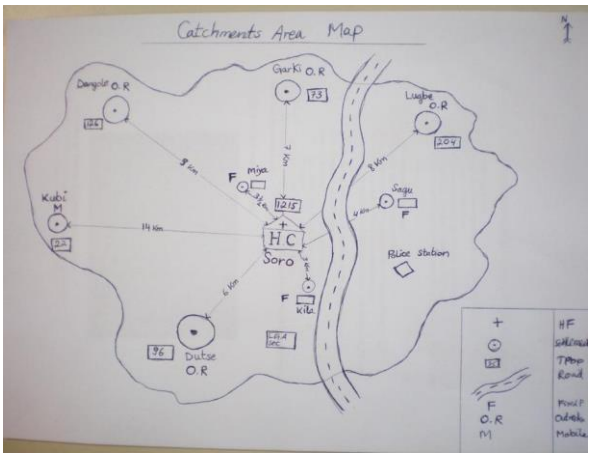


Figure 4.3: Example health facility catchment area map

Table 4.2: Health facility-level list of catchment area settlements and populations

Settlement name	Total population in settlement*	Population <1 year of age in settlement	Pregnant population in settlement	Distance between settlement and health facility		Name of community contact person	Phone number of community contact person
				Distance (km)	Travel time (min)		

*State source of population data

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4.2. Identifying priority health facilities and settlements

Trainers Notes:
Ask participants to explain how they can identify priority settlements for focused intervention.

Two levels of analysis lead to the identification of priority health facilities and settlements:

1. ***At LGA and ward level, analysis of health facility immunization data for last year should identify those health facilities and settlements in need of priority support.***
2. ***At health facility level, analysis of settlement immunization data for last year should identify those in need of priority interventions. Visits may be needed for evaluation of low coverage and the reasons behind it (see Section 4.3).***

4.2.1 Analysis of LGA immunization data

Table 4.3 shows a format for analysis of LGA immunization data for the preceding 12 months. The format identifies and prioritizes high-risk health facilities where immunization performance is low (see Module 6: Monitoring and Surveillance, for more details). Health facilities are ranked and prioritized by the number of unimmunized infants in their catchment areas.

The 'unimmunised' are individuals who have not received a scheduled vaccine. The term refers to a specific vaccine (antigen) or dose for example 'unimmunised for Penta' are children of the target population that did not receive a dose of Penta vaccine or complete the 3 doses (target population minus population that received Penta 3) and 'unimmunised for measles vaccine' are the individuals that did not receive Measles (target population minus the population who have received measles vaccine). Unimmunised includes the under-immunised (individuals who have received at least one dose of scheduled vaccines but failed to receive all doses in the schedule) and the unreached (individuals who are not immunized because the immunization services do not reach them, or because the services that are provided may not meet the needs of the clients). **In line with global standards, zero dose is operationally defined**

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as children of the target population that did not receive the first dose of Penta vaccine.

How to prioritize health facilities using LGA immunization data

- Use all available information from the data analysis table to complete the analysis of immunization data; to best assemble all available information, the input of community and administrative leaders is needed.
- ***Rank health facility by the number of unimmunized infants; the one with the highest number of unimmunized children is ranked first (1) and so on. The health facility ranked 1 has the highest priority, and so on.***
- Consider prioritizing health facility with inaccurate data; for example, a health facility that shows negative values for unimmunized children due to inaccurate population data or negative vaccine wastage and dropout rates may need to be given priority.
- Consider prioritizing health facilities with known management problems.

4.2.2 Analysis of health facility immunization data

Table 4.3 shows a format for analysis of health facility data from the preceding 12 months. The format further identifies priority settlements by indicators of access and utilization. Data to complete this table should be taken from monthly reports (Health facility summary and vaccine management tools).

How to prioritize settlements using health facility immunization data

- Use all available information to complete the data analysis table 4.4 of health facility data; to best assemble all available information, the input of community and administrative leaders is needed.
- ***List every settlement, including new ones and those that do not have regular access to services (for example, urban slums, and distant rural communities).***
- ***Rank settlements by number of unimmunized infants; the one with the highest number of unimmunized children is ranked first (1) and so on. The settlement ranked 1 has the highest priority, and so on.***
- Look for any monthly variation in immunizations given in a settlement when reviewing data from the preceding 12 months and note any seasonal changes in the last column (for example, decrease during rainy season).

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Table 4.3: Health facility data analysis

Routine Immunization Data Analysis Table

State:..... LGA:..... Ward:..... Health Facility:..... Year Analysed:.....

Name of Health Facility	Compile population, immunization coverage data either previous month or 12 months										Analyse problem							Prioritize area
	Target pop.	Target pop.	Total number administered with vaccine				Immunization coverage (%)				Un-immunized		Drop-out rates (%)		Identify problems (Indicate Good or Poor)**		Categorize the problem	
	<1 year (4% of total population)	Pregnant Women (5% of Total Population)	Penta 1	Penta3	Measles	TT2+	Penta1	Penta3	Measles	TT2+	Penta3	Measles	Penta1 to Penta3	Penta1 to Msl	Access	Utilisation	Category 1,2,3,4	priority 1,2,3, 4,5.....
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*	*m*	*n*	*o*	*p*	*q*	*r*	*s*

Page 1

* Name: 1. Indicate the list of settlement if data is captured by settlement of enter total for cacthment Area if no data by settlement when compiling for Health facility, 2. Indicate names of Health Facility when compiling for LGA; 3. Inidate names of LGAs when compiling for state; 4. Indicate States when compiling for national level

**Identify problems (Indicate Good or Poor)*: Penta 1 coverage > 80% Good Access, Penta 1 coverage < 80% Poor Access ; Penta1-Penta3 Drop Out Rate of > 10% Poor Utilization, Penta 1-Penta 3 Drop Out Rate <10% is Good Utilization

Note that this format uses major indicators to evaluate unimmunized children, categorise and prioritize health facilities for targeted interventions; to include data from all settlements in the catchment area over the last 12 months. (Number of Unimmunised is used for prioritisation of HFs; Different programmes may use different antigens however Penta-3 is recommended).

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4.3. Identifying barriers to access and utilization of Immunisation Services

Trainers Notes:
1. Ask participants to explain barriers to immunisation services.
2. How can these barriers be addressed to improve access and utilization of immunization service?

To identify and understand barriers to accessing and utilizing immunisation services, prioritized settlements should be visited by teams of health facility and LGA staff. Easy to conduct surveys (Household Survey of Immunisation Status and Community Survey using the Community discussion guide) could be used to better understand the issues and agree on feasible solutions. Community chiefs, leaders and volunteers must be engaged in the evaluation process. Permission from community authorities is essential before conducting surveys, focus groups and similar exercises. Though Module 7 on "Attitude for Effective Health Service Delivery, Continuous Quality Improvement and Engaging Communities" discusses information gathering in more detail, the two basic evaluation exercises are included here.

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4.3.1 Household survey of immunization status

Table 4.4 shows a questionnaire format for evaluating the immunization status of children aged 12–23 months by household. In a small settlement, a sample of five partially immunized or unimmunized children may be sufficient, but in a larger settlement where there may be different subgroups of people, a sample of at least 10 may be needed. Vaccine information given by households can be checked with the immunization register.

How to complete the household questionnaire

In the top section of the form:

- Tally each household with eligible children visited;
- Tally the total number of children aged 12–23 months in the household;

- Tally the number of children with immunization cards.

Under “Immunization status of child”:

- For each child with an available card, tally whether s/he is fully, partially or never immunized under “From card – tally”;
- If the card is not available but the caregiver gives the immunization history (in response to prompting questions), tally whether the child is fully/partially/never immunized under “By recall – tally”.

In the lower part of the form:

- If a child is partially or never immunized, write the name of the child and ask the caregiver the question, “Why was the child not fully immunized?”
- Mark the row with the choice that best matches the answer the caregiver gives.

After noting the answer to the question about a child not being fully immunized, try to understand issues from the household’s point of view. For example, when a caregiver says she is “too busy” you may need to find out whether she may be able to attend sessions at specific times, or whether there are additional problems such as canceled sessions that discourage people from going to the next session. Understanding the situation will help in adding appropriate solutions to the work plan (discussed further in Section 4 of this module).

Partially or never immunized children identified in this exercise should be added to defaulter tracking lists.

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Table 4.4: Household immunization status questionnaire assessing children aged 12–23 months

Household Immunization Status Questionnaire Assessing Children aged 12-23 months				
Date:		Settlement Name:		
Distance from Health Facility (in Km):		Health Facility Name:		
	Tally			
Name of visited households with children 12-23 months				Total
Total number of children 12-23 months				
Number of children with immunization cards				
Immunization status of child	From Card- tally	By recall- tally		**Total**
Fully immunized for age				
Partially immunized				
Never immunized				
For each child who is partially or never immunized, ask only one question- why was the child not fully immunized? Then mark an 'X' next to the reason that best matches the answer given				
Child,s name or ID number				
Lack of information	Uware of need for immunization			
	Unaware of need to return for 2nd or 3rd dose			
	Place & or time of immunization unknown			
	Fear of adverse reactions			
	Incorrect ideas about contradictions			
	Others			
Lack of Motivation	Postponed until another time			
	No faith in immunization			
	Rumours			
	Others			
Obstacles	Place of immunization to far			
	Time of immunization inconvinient			
	vaccinator absent			
	vaccine not available			
	caregiver too busy			
	Family problem, including illness of caregiver			
	Child ill- not taken for immunization			
	Child ill- taken for immunization but not vaccinated			
	Long waiting time			
	others			

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4.3.2 Community discussion

Table 4.5 is a guide to community discussions on barriers. It aims to gather information on community perceptions and ideas for improvement and is meant to complement the household survey. It requires the involvement of caregivers, community health workers and community leaders. Interviews may be done with individuals or groups separately or together as appropriate for the situation. The questions can be modified as needed and the exercise is intended to take about an hour. Responses will be applicable only to the community involved but are necessary for solving local issues.

Table 4.5: Community discussion guide

Community description	
Distance from health centre - km and time	
Total population from health centre data	
Total population from community leaders' information	
Results of household immunization status questionnaire*	
Number of children 12-23 months of age partially or never immunized	
Discussion with caregivers (done after completing the household survey) – suggested questions:	
Where do you get immunizations? (Outreach/HC fixed site/other)	
Where was your last child delivered?	
If at home, what was your main reason for not using a health facility?	
Where do you take sick children? (Traditional healer/HC/District/private/other)	
How much does it cost to travel to the HC/District?	
Do you have to pay any fees at the HC/District facilities?	
When was the last outreach visit from the health centre to your community?	
What do you think the health facility can do to get children fully immunized?	
Discussion with community health worker(s) – suggested questions:	
What supplies of medicines do you have in the community? (ORS, antibiotics, paracetamol, antimalarials, etc.)	
In what health programmes do you work? (for example, ANC, nutrition, EPI, TB, malaria)	
Do you have mobile phone #s?	
Are you informed in advance of outreach sessions?	
If so, how?	
How are the communities you work with informed about an outreach session before and on the day of the session?	
When did you last receive any training?	
Do you do defaulter follow up for the immunization programme?	
Discussion with community leader(s) – suggested questions:	
What do you see as the main health problems in your community?	
How can the health facility improve services for the community?	

*from Figure 4E

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4.4. Identifying solutions and preparing a work-plan

Trainers Notes:
Ask participants to describe a health facility work-plan.

Some people do not live within reach of health services, whether they are in permanent or mobile nomad/seasonal migrant communities. In many countries, geographical barriers are not the only or even the primary reason that limits access and utilization of immunization services. Accessing immunisation services is also made difficult by inconvenient scheduling, lack of information and/or lack of opportunities. All these problems can be solved by improving scheduling, raising awareness and/or expanding outreach.

This section is a guide to taking the information collected in Sections 4.1–4.3 and planning solutions to overcome the barriers to accessing and utilizing immunisation services and reducing zero dose children. Solutions should be added to a work-plan to guide a practical approach, and a work-plan should be developed for each priority settlement. The table in Module 6 (Monitoring and Surveillance) lists common problems and possible solutions. While not exhaustive, this may help to complete a work-plan.

4.4.1 Outline solutions

Table 4.6 shows a format for outlining solutions at health facility, settlement and LGA levels.

How to list identified solutions

- Hold a brainstorming session with key people from the health facility, settlement and LGA to gather ideas. Be sure to include a session on how high performing health facilities and settlements have been able to solve their problems and achieve improvements (this will give evidenced-based ideas).
- Get consensus on the main problems (note every problem) and list the priority ones. To address the problems, limit priority problems to about three. Working on a longer list of problems usually becomes too difficult for a practical approach.
- Choose practical and feasible activities to solve the prioritized problems, since:

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- health facility problem-solving activities should be within existing capacity and resources;
- settlement activities may be limited to the capacity of its volunteers since additional resources are often not available;
- LGA-level activities may provide support to the health facility with extra technical or financial resources.

4.4.2 Make a work-plan to implement identified solutions

Table 4.7 shows a format for scheduling identified solutions planned for health facilities and settlements over a period of six-month.

How to complete the health facility work-plan

- Complete one form for each responsible person; the same form can be used for both health facility staff and community workers.
- List the main health facility and settlement-level problem-solving activities as in table 4.7. Activities should be defined as specific tasks for the person named on the form.
- Make a schedule for completing the activities over the next six months (see Table 4.8). The person named on the form should track their progress as the activities/tasks are completed each month.

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Table 4.6: Format for Outlining Solution

Settlement name:	Village One		
Main problems	**SOLUTIONS**		
Description of the main problems identified for the settlement	**HEALTH Facility activities**	**COMMUNITY activities**	**LGA activities**
Example: Poor community attendance at outreach sessions	Call the community chief or community worker by mobile phone in advance of the session to confirm time and place	Mobilize mothers and children by informing them in advance and encouraging attendance at session	Ensure costs of outreach sessions are budgeted (transport and per diem) according to HC session plan

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Table 4.7: Format for scheduling identified Solutions

Name of health centre staff or community worker:						
	Schedule by month					
ACTIVITIES to be done by health centre staff or community worker	**Month 1**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**
Example: Mobilize mothers and children by informing them in advance and encouraging attendance at session	Done 1 week before session	Done 1 week before session				

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4.5. Developing a Health Facility Session Plan

Trainers Notes:
1. Ask the participants if they have their health facility session plan which include outreaches.
2. What are the factors to be considered when developing a session plan?
3. How often do they update the session plan?

A session plan lists all settlements served by the health facility and specifies how frequently each facility will be reached based on distance, target population, workload and other relevant operational factors. This section provides a format and gives a simple method for choosing session frequency, scheduling dates and organizing the supplies needed to complete a session plan that reaches every settlement in a health facility's catchment area. It is based on an estimated workload of about 15 clients per vaccinator per session. It assumes an immunization schedule that requires a minimum of five contacts during the first year of life. The aim is to plan sessions so that staff time is used efficiently.

4.5.1 Immunization session plan

Table 4.8 shows an example of immunization session plan format. It compiles a list of settlements and the distances from the health facility that is responsible for their immunization services. The type of session needed – fixed (at the health facility) or outreach (at a site in the settlement) – for rural settlements usually depends on the distance of the settlement from the health facility or on the travel time needed if the terrain is difficult. The frequency of sessions needed depends on the number of infants expected at each session. The number of infants an immunization programme should expect to serve in a settlement depends on its total population. An example format in Table 4.8; shows fixed and outreach session plan.

Every health facility should develop, display and monitor the schedule to show the date and place of each session, the means of transport and the person responsible for conducting it. It should also include a community contact

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person who will communicate session dates and other reminders to the wider community.

Outreach sessions are often planned for rural settlements that are 2-5km from the health facility and for urban populations who use convenient locations such as markets, community centres, schools and in urban slums who, though leave close to health facilities, have issues with accessing services. Outreach sessions may also need to be planned to take place before and/or after seasonal rains or other factors that make populations hard to reach at certain times of the year, IDP camps and in.

For settlements more than 5 km away from the health facility, mobile activities should be organized from LGA level with support from the state team, as shown in Figure 4.4

Immunization sessions activities should be implemented in an integrated manner in the optimized integrated routine immunization sessions (OIRIS) approach , EPI Plus and maternal-child health interventions should be integrated in immunization sessions. Follow national guidelines on including additional staff, logistics and financial resources as needed.

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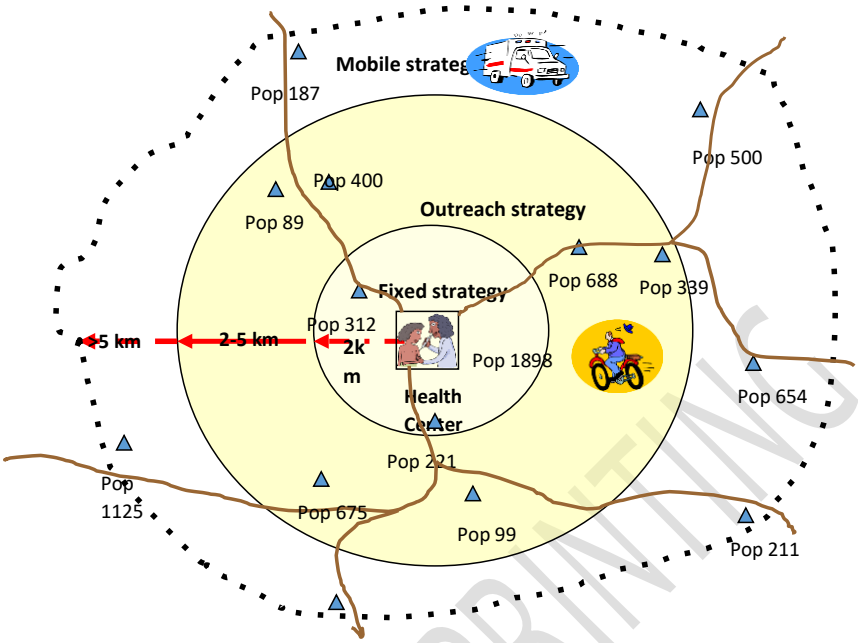


Figure 4.4: Illustration of fixed, outreach and mobile strategy

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Table 4.8: Format for Health Facility overall session plan

Example of a Quarterly Immunization Work plan for a Health Facility in a Ward

VACCINATION WORKPLAN FOR BORGU HEALTH FACILITY

Health Facility:…… **Ward:**…… **LGA:**……

Period (month): From…… **To**……

Wards	Settlements	Total Population	Target Population		Vaccination Strategy			Immunization session plan	Months			Transport means	**Distance in km from health facility to and fro outreach post	Total Distance (km/quarter)	Fuel cost per quarter @ N100/km
			< 1 Yr	Pregnant women	Fixed Post <5Km	Outreach (5-10 km)	Mobile >10km		April	May	June				
JAGA	Soro	35375	1415	1769	Fixed			8/month Every Tuesday and Thursday	Number Scheduled…. Number Held……	Number Scheduled…. Number Held……	Number Scheduled…. Number Held……				
	Borgu	29000	1160	1450											
	Tukpa	6525	261	327		Outreach (8 Km)		1st Wednesday at Tupka Town Hall	Date schedule: 5th April Dates held:……	Date schedule: 3rd May and 17th May Dates held:……	Date schedule: 7th June and 21st June Dates held:……	Motor Cycle	16	16 X 6 = 96	9,600
	Daram	2500	100	125		Outreach (6 km)		3rd Wednesday at village Head Palace	Date schedule: and 19th April Dates held:……	Date schedule: 10th May and 24th May Dates held:……	Date schedule: 14th June and 28th June Dates held:……	Motor cycle	12	12 X 6 = 72	7,200
		Activities planned for this quarter													
		New Activities to solve problems (based on data analysis and monitoring)													

Note that this includes all settlements, some of which may be scheduled for fixed session (at the health facility) and for outreach

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4.5.2 Determine the frequency of sessions for the Health Facility by Strategy

The health team at health facility, using the target population, number of settlements and distances from the health facility, calculates the number of sessions.

The purpose for planning for RI sessions is to avoid too many children per session as this will lead to overcrowding and long waiting-time for the mothers. It is also to avoid too few clients per session as this may not be cost-effective.

Health Facility fixed sessions (settlements to be served by fixed site):

Step 1: Determine the monthly target population:

- ***Add the target populations (TPs) of both infants and pregnant women from all the settlements to be served by the Fixed Post (FP) and divide by 12***

Step 2: Determine the number of sessions per month:

- ***Divide the Monthly TP by 15 clients multiplied by the number of vaccinators (health workers) carrying out the vaccination session. For example, if the session will be conducted by 2 vaccinators then determine as follows: [TP/ (15 x 2)].***

The results from the calculations above will give the number of fixed sessions to be carried out per month. For example, if you get:

- ***1 = 1 session/month***
- ***2 = 2 sessions/ month***
- ***3-5 = 3-5 sessions/month = 1 session a week***
- ***6-9 = 6-9 sessions/month = 2 sessions /week***
- ***10-12= 10-12 sessions/month = 3 sessions /week***
- ***Above 12 = Daily sessions.***

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Outreach sites (settlements to be served by outreaches)

Step 1: Determine the monthly target population:

- ***Add the target populations (TPs) of both infants and pregnant women from all the settlements to be served by the outreach (O/R) and divide by 12***

Step 2: Determine the number of sessions per month:

- ***Divide the Monthly TP by 10 clients multiplied by the number of vaccinators (health workers) carrying out the vaccination session. For example, if the session will be conducted by 2 vaccinators then determine as follows: [TP/(10 x 2)].***

The results from the calculations above will give the number of outreach sessions to be carried out per month. For example, if you get:

- ***1 = 1 session/month***
- ***2 = 2 sessions/ month***
- ***3-5 = 3-5 sessions/month = 1 session a week***

While trying to keep to 15 clients per vaccinator per session for FP and 10 for outreach sessions remember these are guides for planning purposes only.

Session plans should be reviewed quarterly with corresponding monitoring data for communities served (see Module 6: Monitoring and surveillance). Any missed or incomplete sessions should be rescheduled and adjustments should be made. The session frequency may need to change if population numbers change significantly.

Tertiary, secondary facilities and Urban PHCs with high client turnout should conduct daily Fixed sessions

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4.5.3 Immunization session supplies

Immunisation teams must ensure they have sufficient supplies to complete the sessions planned. Table 4.9 will help to organize supplies that are required monthly.

The quantity of supplies is calculated for the number of infants expected per session. The number of infants expected is based on the total population and session frequency indicated in Table 4.9 Ideally, health facilities should calculate the supplies needed for each session from lists of infants compiled by reviewing immunization register appointments, defaulter tracking and newborn infant lists (see Module 6 (Monitoring and Surveillance).

Note that Table 4.9 is a rough estimate of needs that includes wastage. Each health facility should calculate its supply quantities based on the national immunization schedule and any known variations, such as increased numbers of infants in sessions where defaulters are expected to catch up even if a list of expected infants is not compiled. Health facility wastage rates and other similar factors should also be taken into account for both vaccine vial and AD syringe numbers. Quantities may be rounded off based on packaging and/or ease of dispensing from the pharmacy or stockroom. Supplies for EPI Plus or other activities integrated with immunization sessions should be planned for based on stock lists as directed by national guidelines

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Table 4.9: Estimated supplies for monthly Immunisation Sessions

Form 5: Vaccine & Supplies Requirements

Health Facility_____ **Ward**_____ **LGA**_____

Name of Vaccine	Target Pop	Target coverage	No. of Doses in schedule	Number of Doses per vial	Wastage factor	Vaccine Required	Vaccine Buffer	Annual Requirement	Monthly Vaccine Need	AD syringes (0.05ml)	Syringes for reconstitution (2ml)	AD syringes (0.5ml)	Syringes for reconstitution (5ml)	Safety boxes*
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
BCG			1		2									
Polio			4		1.33									
DPT			3		1.33									
Penta			3		1.43									
PCV			3		1.11									
IPV			1		1.33									
Measles			1		1.43									
Tetanus Toxoid			2		1.33									
Hep B Vaccine			3		1.33									
Yellow Fever			1		1.43									
Hep B Vaccine (birth dose)			1		1.33									
Total														

Key:

Column "A"	Type of vaccine	Column "H"	Buffer stock=G x 0.25
Column "B"	< 1 yr for BCG, DTP, Penta, Measles; WCBA (15-49) for TT	Column "I"	Annual needs = H + G
		Column "J"	Monthly needs = I/12
Column "C"	National target coverage	Column "K"	Annual needs= BxCxDx 1.1x 1.25
Column "D"	No. of doses Polio =4 BCG, Yellow fever and Measles =1; DPT, Penta and HepB =3; TT =2; HepB birth dose = 1.	Column "L"	Annual needs= I/E
Column "E"	Number of doses per vial	Column "M"	Annual needs= BxCxDx 1.1x 1.25
Column "F"	Wastage Factor=100/(100-WR)	Column "N"	Annual needs= I/E
Column "G"	Vaccines required=B x C x D x F	Column "O"	Annual needs= (K + L) x 1.1/100 + (M + N) x 1.1/100

In Charge of Health Facility:_____ Sign:_____

4.6. Tracking defaulters

Trainers Notes:

1. Ask a participant who is a “defaulter”?

2. Ask the participants if they have a defaulter tracking system in place in their facilities.

3. What are the tools used in tracking defaulters?

Every health facility needs to plan to follow up defaulters or infants who miss scheduled vaccinations. **These are the unimmunized or under immunized group. Refer to Module 6: Monitoring and Surveillance, for details on defaulter tracking methods*. This section is a brief reminder of how opportunities to complete vaccinations can be linked to regularly scheduled immunization services.***

4.6.1 Defaulter tracking list

An example of a defaulter-tracking list is shown in Module 6 (Monitoring and Surveillance). This list should be completed regularly at the end of each session or monthly, depending on health facility practice. A community worker or other staff should be assigned to find defaulters and give them appointments for the next immunization session. For outreach sessions, this list should be sent to the community **at least a week in advance before the next sessions**.

4.6.2 Missed opportunities for Vaccination (MOV)

Immunization status should be reviewed at all health care visits to avoid missed opportunities for vaccination. Children who are due or overdue should be vaccinated immediately whenever possible. If vaccines are not immediately available for administration during the same visit, the infant should be referred to the earliest possible immunization session. There should be linkage between the immunization clinic, maternity and paediatric wards and outpatient department to avoid MOVs. The caregiver should be informed of the time, date and location of the immunization session, and the infant’s name should be added to the health facility default-tracking list to help ensure the follow-up visit is made.

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4.7 Group Exercises on Micro Planning for Reaching Every Community

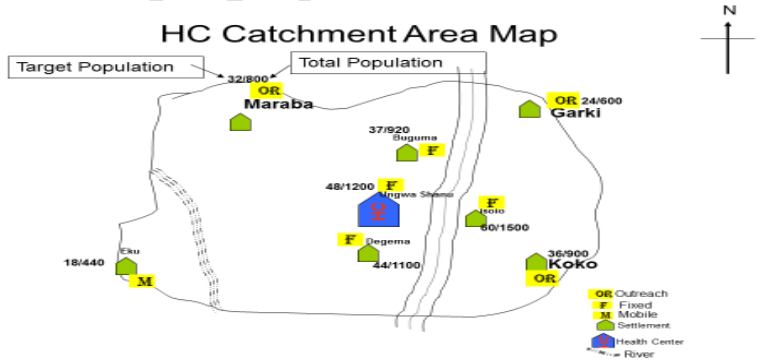
Group Work 1: Using the settlements and their population figures as well their distances from the Yelwa Health Facility:

- Fill in the background information for the HF
- Develop a catchment area map for the HF
- Show distance of settlements to HF on map
- Indicate settlements for fixed and outreaches

Question 1: Background Information

Name of settlements	Total Population	Target Population		Distances from the HFs		
		0-11 Months (4% of Total Pop.	Pregant Woment (5% of Total Pop.)	< 2Km	2-5Km	> 5Km
Angwan Shanu	1200	48	60	X		
Maraba	800	32	40		X	
Garki	600	24	30		X	
Koko	800	32	40		X	
Degema	1100	44	55	X		
Buguma	920	36.8	46	X		
Eku	440	17.6	22			X
Isolo	1500	60	75	X		

Solutions to Group Exercises: Group Work 1



Group Work 2

Using the settlements and their population figures as well as their distances from the HF from the table below:

Name of Settlements	Total Populations	Target Population		Distances from the HF		
		0-11 months	Pregnant Women	<2Km	2-5Km	**>5km**
Ungwa Shanu	1200			√		
Doguwa	800				√	
Buguma	600				√	
Hantsi	900				√	
Lugbe	1100			√		
Mairoba	920			√		
G/Malam	440					√
Kilasa	1500			√		

- Calculate number of sessions/month (by strategy)
- Develop a 3 month work plan for the HF
  Assume one health worker in HF

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Solutions to Group Exerci

Health Facility Immunization Session Work plan for 3 months

Ward	Target Population			Vaccination Strategy			Immunization Session Plan	Months			Transport Means	***Distance in km from health facility to outreach post	Total Distance (km/month)	Fuel cost @ KSh/km
	Settlements	0-11 months	Pregnant Women	Fixed Session(<5kms)	Outreach Sessions(5-15kms)	Mobile Sessions(>15kms)		October	November	December				
	Ungwa Shanu	4	5	Fixed Session			1st, 2nd & 3rd Tuesday of the month	No. Scheduled.....	No. Scheduled.....	No. Scheduled.....				
	Lugbe	4	5											
	Mairoba	3	4											
	Kilasa	5	6											
		16	20											
	Dogowa	3	3		Outreach		1st & 4th Thursday in a month	Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....	Motocycle	2k	16	1200
	Buguma	2	3					Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....	Motocycle	1K	18	1600
	Hantsi	3	4					Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....				
		8	10											
	G/Mala	1	2			Mobile	4th Wednesday of the month	Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....	Date Scheduled:..... Date Held:.....	Motocycle	3K	30	4000
	Activities Planned for this quarter													
	New activities to solve problems (based on data analysis and monitoring)													
	Monitoring of session implementation							No. of sessions planned: Fixed: Outreaches	No. of sessions planned: Fixed: Outreaches	No. of sessions planned: Fixed: Outreaches				
								No. of sessions held Fixed: Outreaches:	No. of sessions held Fixed: Outreaches:	No. of sessions held Fixed: Outreaches:				

***Distances to & from (estimates)

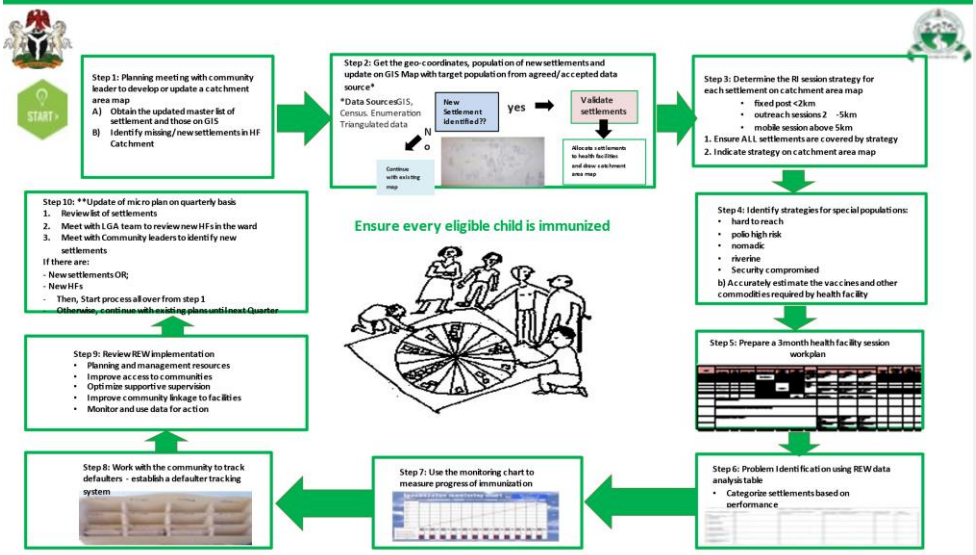
ses: Group Work 2

Immunization Session Strategies

Settlement	Total Population	monthly TP (0-11months)	Monthly TP Pregnant	Strategy	No of sessions/ Month
Ungwa Shanu	1200	4	5	Fixed	
Lugbe	1100	4	5	Fixed	
Mairoba	920	3	4	Fixed	
Kilasa	1500	5	6	Fixed	
		16	20	36	3
Dogowa	800	3	3	O/R	
Buguma	600	2	3	O/R	
Hantsi	900	3	4	O/R	
		8	10	18	2
G/Mala	440	1	2	M	Take to Ward

REW SOP

SOP IN DEVELOPING/UPDATING REW MICROPLANS



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MODULE 5: MANAGING AN IMMUNIZATION SESSION

Contents

List of Figures (5)3

List of Tables (5)4

5.1 Preparing for the session (5)5

5.2 Development of Immunization Session Plan (5)6

5.3 Prepare the Immunization Site (5)6

5.3.1 Assemble essential materials and equipment for an immunization session (5)8

5.3.2 Package required vaccines and safe injection supplies (5)8

5.3.3 Verify that vaccines are safe to use (5)9

5.3.4 Include an adequate number of auto-disable syringes and safety boxes (5)10

5.3.5 Ensure correct use of ice packs and vaccine carriers (5)10

5.4 Assessing infants for vaccination (5)10

5.4.1 Assess eligibility for immunization (5)10

5.4.2 Assess possible contraindications (5)12

5.4.3 Immunizing sick infants (5)13

5.4.4 Other conditions when infants should be immunized (5)14

5.5 Giving vaccinations (5)14

5.5.1 Preparing to vaccinate (5)14

5.5.2 Reconstituting vaccines (5)15

5.5.3 Steps for reconstitution (5)15

5.6 Making vaccination easier and more comfortable (5)16

5.6.1 Good general techniques (5)17

5.6.2 Positioning the infant for vaccination (5)18

5.6.3 Good oral administration technique (5)25

5.6.4 Good injection technique (5)25

NOT FOR PRINTING

5.7 Closing the session (5)29
5.7.1 Discard or store opened vials depending on vaccine type (5)29
5.7.2 Dispose of used vaccine vials and injection equipment safely (5)30
5.7.3 Leave the site clean and tidy (5)30
5.8 Recording data (5)31
5.8.1 Complete the infant immunization and reminder cards (5)31
5.8.2 Prepare a summary of the session (5)31
5.8.3 Prepare a defaulter tracking list (5)32
5.9 Using the immunization session checklist (5)32
5.10: Exercise on immunization session (5)33

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List of Figures

Figure 5.1: Example of an Immunization site plan 7

Figure 5.2: How to read a VVM 10

Figure 5.3: Scratching and Breaking the neck of the vial 16

Figure 5.4: Intradermal Injection Technique 26

Figure 5.5: Subcutaneous injection Technique **Error! Bookmark not defined.**

Figure 5.6: Intramuscular injection Technique 27

Figure 5.7: Multiple injection Technique 28

Figure 5.8: Summary on needle positions for ID, SC, and IM injections 29

Figure 5.9: Immunization session checklist 33

NOT FOR PRINTING

List of Tables

Table 5.1: Recommendation for Immunization of HIV-infected children 13

Table 5.2: Vaccination positions, their advantages and disadvantages 19

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Module 5: Managing an Immunization Session

Introduction to Module

Trainer's Note and Module Objective

This module describes the tasks a health worker needs to perform to ensure a quality immunization session

Module Objectives:

1. Adequate preparation at the health facility and the immunization site before the clients arrive.
2. Effective communication with clients/caregivers during the session.
3. Assessment of clients before vaccination.
4. Correct technique for administering vaccines.
5. Instructions for closing the session.
6. Recording data during and after session.
7. Introduction to a checklist that can serve as a reminder to ensure safety before, during and after immunization sessions.

5.1 Preparing for the session

Preparation for sessions should be part of micro-planning. This begins well before the day of the session and should continue throughout the session to include feedback for improving the planning of the next sessions.

The main objectives are:

a) To inform the community in advance: the community should be aware of the session and those who are due for immunization should know about the location and time.

b) To set up the site for safe immunization: staff should organize adequate quantities of vaccines, safe injection materials, safe disposal containers and reporting tools as well as an adequate cold chain for storage of vaccines.

The order of the steps may vary by session; for example, for outreach sessions, vaccines have to be packed for transport at the health facility. Community contact person or volunteers should prepare the outreach site before the vaccinators arrive.

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5.2 Development of Immunization Session Plan

Each health facility should have a session plan showing where and when immunizations take place. This session plan should be developed with the community as part of micro-planning. Immunization sessions may be held daily, weekly, every two weeks, monthly or quarterly at fixed or outreach sites. The frequency of the sessions depends on the size of the community to be served and the workload for staff, as described in Module 4 (Micro-planning for reaching every community).

For outreach, health facility staff should get to know people in the community and learn who can help with arranging the session, including choosing a suitable time (for example, market day) and tracking clients who are due and overdue for immunization. Signs should be placed at the site to let people know when immunizations will be available. Clients include infants, girls aged nine years, pregnant women, and adults aged 18 years and above. Module 7 (Attitude for Effective Health Service Delivery, Continuous Quality Improvement and Engaging Communities) contains details on involving the community overall.

5.3 Prepare the Immunization Site

The final arrangement of space for an immunization session will depend on whether it is being held in a fixed health facility or outreach site, and whether other services are being provided (for example, nutrition screening, antenatal care, health education and other PHC services as provided by the HF). Figure 5.1 shows an example of the basic requirements for a fixed or outreach site.

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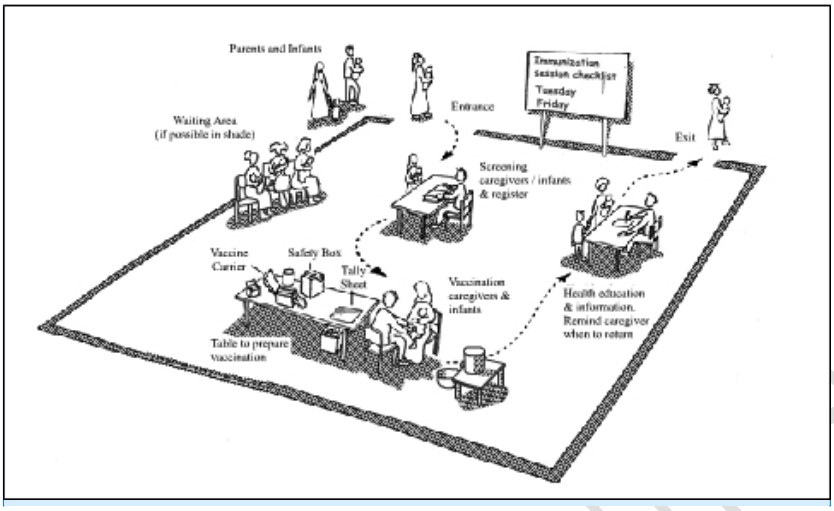


Figure 5.1: Example of an Immunization site plan

The ideal site should be:

i. Easily accessible and identified with a sign stating “Immunization Site”;
ii. Located in the same place each time;
iii. In a clean and secure area, out of the sun, rain and dust;
iv. Near a sheltered/shaded area where those needing vaccination can wait; large enough to provide space to have separate stations for screening, registration and assessment, immunization and record keeping, health talk/education and provision of PHC services;
v. Quiet enough for health workers to be able to explain what they are doing and to give advice.

Ideally, the whole circuit should have an entrance and an exit, and be well marked with signs, ropes and other visual aids through which community members or health workers may guide those attending. In practice, immunization sites are often less than ideal. Large numbers of people crowding the area may cause safety issues, as well as confusion and stress, not just for the health worker, but also for everyone concerned. Careful preparation and a positive welcoming manner help ensure a successful immunization session.

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5.3.1 Assemble essential materials and equipment for an immunization session

A list of needed materials should be reviewed before all sessions; see Section 5.9 of this module for a proposed checklist. Figure 5.1 above shows an example of an immunization session site.

A list of essential items includes:

i. Adverse Events Following Immunization (AEFI) kit;
ii. water container, basin, soap, towel for hand washing and drying or an alcohol-based hand-sanitizer;
iii. immunization register;
iv. new child health cards;
v. immunization tally sheets;
vi. cotton wool;
vii. safety box for used syringes and needles
viii. container for rubbish that does not go into a safety box;
ix. paper, pencils and pens;
x. table(s);
xi. chair(s)/Bench;

5.3.2 Package required vaccines and safe injection supplies

For sessions at the health facility, required vaccines should be taken from the fridge/cold box beforehand to reduce the number of times the fridge/cold box is opened.

For outreach, enough vaccine has to be taken to meet demand since the refrigerator will not be nearby during the session. Extra vaccine should be added to meet unexpectedly high demand at the session. For example, an extra 10% can be added to the estimated need. Ideally, the quantity of each type of vaccine should be calculated from a list of all eligible clients who are due and overdue. When such lists are not available, the quantity can be estimated based on previous session demand, especially if this is stable. Tables in Module 4 (Micro planning for Reaching Every Community), table 4:9 show estimated numbers of infants, girls aged nine years pregnant women and adults aged 18 years and above and supplies needed for each session based on total population data.

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5.3.3 Verify that vaccines are safe to use

Before opening the refrigerator/cold box, estimate the number of each vaccine needed for the session as noted above. On opening the fridge/cold box, first check the temperature, the Vaccine Vial Monitor (VVM) and the expiry date. If there has been freeze exposure, set the affected vials aside and return to the Apex health facility or LGA Cold Store after session. At the LGA Cold Store, a shake test will be carried out on the freeze-sensitive vaccines as described in Module 2 (The vaccine cold chain) by the LGA CCO.

Select vaccines from the refrigerator in the order given below.

1. Opened vials kept in the “use first” box in the fridge/cold box (if in agreement with national multi-dose vial policy; see Module 2 for WHO policy).
2. Unopened vaccine vials that have been returned from outreach sessions or have been outside of the refrigerator/cold box and returned (usually also in the use first box).
3. Vaccine vials with vaccine vial monitors (VVMs) that have started to change to a darker colour but have not gone past the discard point, as shown in Figure 5.2.

In general, vaccines should be organized in the refrigerator by expiry date, with those with the closest expiry date kept in front and used first.

When selecting vials from the refrigerator/cold box, check each vaccine and diluent vial/ampoule and remember to:

i. Use only vials/ampoules in good condition; return vials/ampoules that are damaged and/or have no label to the Apex health facility or LGA Cold store;
ii. Return any vials/ampoules that have passed their expiry date to the Apex health facility or LGA Cold store;
iii. Return any vials/ampoules with VVMs past the discard point (Stages 3 & 4) as shown in Figure 5.2 to the Apex health facility or LGA Cold store;
iv. Do not use any vials/ampoules with fluid that has changed colour or contains particles: seek the advice of your supervisor if any are found and return to the Apex health facility or LGA Cold store.

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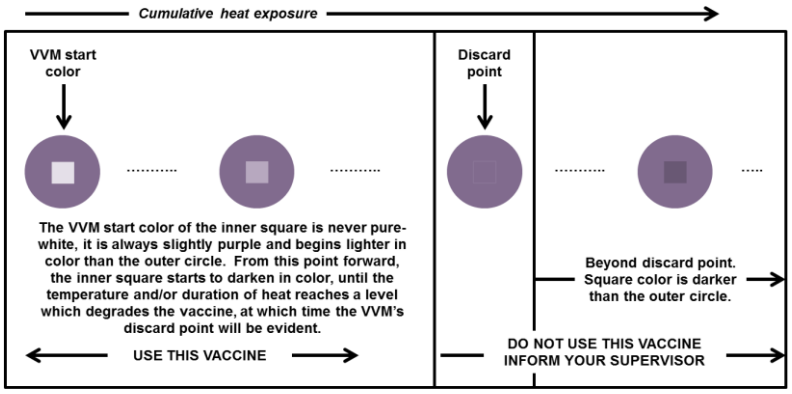


Figure 5.2: How to read a VVM

5.3.4 Include an adequate number of auto-disable syringes and safety boxes

Take one AD syringe for each dose of injectable vaccine and add 10% buffer stock. Note that separate calculations for two types of syringes, AD and BCG AD, are needed in most programmes. Take one reconstitution syringe and needle for each vial of vaccine to be used. Take one safety box for every 100 AD syringes.

5.3.5 Ensure correct use of ice packs and vaccine carriers

Do not use frozen ice packs for vials that will be out of the cold chain for a limited time at fixed or outreach immunization sessions as the risk of freezing is greater than the risk of damage from heat for vials kept in a vaccine carrier for less than a day. ***Conditioned ice packs are recommended to avoid freezing vaccines.*** Keep open vials inserted in the foam pad of the vaccine carrier during immunization sessions. ***Do not keep opened vials on ice packs.***

5.4 Assessing clients for vaccination

Before administering a vaccine to a client, it is important to check which vaccines they are due to collect.

5.4.1 Assess eligibility for immunization

Whenever a client visits the health facility, s/he should be screened for immunization and given all the vaccines needed. If there is no immunization session that day, the earliest possible appointment should be made and explained to the client/caregiver.

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The steps below should be followed at any health care visit as well as at any immunization session.

i. **Verify the client's age on the immunization card**

   a. If the client does not have an immunization card, ask for his/her age. If client is an infant or a girl, ask the caregiver.

   b. If the client does not know his/her age, estimate it by asking if the client was born during/around a notable community event, for example during a certain season or celebration. A local events calendar can help with this. If client is an infant or a girl, ask the caregiver.

ii. **Verify which vaccines the client has received by reviewing the immunization card**

   a. If the client does not have an immunization card but has come to the health facility before, check the register and fill out a new card. If the client is new to the health facility, ask questions to prompt recall of each vaccine the client should have received and fill out a new card. If client is an infant or a girl, ask the caregiver.

   b. Check for a BCG scar (usually on the left arm/shoulder) if there is no record or recall. (Only applicable to infants)

   a. If the health worker cannot ascertain immunization status of a client with or without the card, recall or a scar (for infants), the client is assumed not to have received any vaccination and should be treated as unvaccinated. Follow immunization schedule to administer appropriate vaccine, if immunization status is in doubt and there are no known contraindications (see Section 5.4.2 of this module).

iii. **Verify all vaccines the client needs at this session to allow efficient preparation**

   Follow the national schedule (see Module 1 (Target diseases and vaccines) for WHO recommendations on each vaccine) remembering these general points:

      a. If the client, usually an infant, is eligible for more than one type of vaccine, it is safe to give the different vaccines at different injection sites during the same session (see Figure 1.11).

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b. Never give more than one dose of the same vaccine at one time.

c. If the vaccine is overdue, do not restart the schedule. Simply provide the next needed dose in the series.

d. If there is a delay in starting the immunization schedule, give the vaccine(s) and an appointment for the next dose at the interval recommended in the national schedule.

5.4.2 Assess possible contraindications

For the first dose of a vaccine, assess the general status of the client to rule out signs of serious illness. For a subsequent dose in a vaccine series, ask the client or caregiver of an infant or a girl whether any adverse events, including anaphylaxis, occurred following the previous dose(s).

The following applies to routine immunization for infants.

All infants should be immunized except in these situations:

a. *Do not give a vaccine if the infant has had anaphylaxis (a serious allergic reaction) or other severe reaction to a previous dose of the vaccine or a vaccine component.*

b. *Refer to Table 5.1 for guidance on vaccinating HIV-infected children.*

c. *Do not give a vaccine if the caregiver objects to immunization for a sick infant after explanation that mild illness is not a contraindication. Ask the caregiver to come back when the infant is well.*

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Table 5.1: Recommendation for Immunization of HIV-infected infants

Vaccine	Asymptomatic HIV infection/HIV+	Symptomatic HIV infection/AIDS
Rotavirus Vaccine	Vaccinate	Vaccinate
OPV and/or IPV	Vaccinate	Vaccinate
BCG	**Do not vaccinate**	**Do not vaccinate**
Pneumococcal Conjugate Vaccine	Vaccinate	Vaccinate
DTP-containing (Pentavalent Vaccine).	Vaccinate	Vaccinate
Hepatitis B	Vaccinate	Vaccinate
Measles	Vaccinate	**Do not vaccinate**
Yellow fever	Vaccinate	**Do not vaccinate***
Tetanus toxoid-diphtheria	Vaccinate	Vaccinate
Meningococcal	Vaccinate	Vaccinate
Influenza (inactivated)	Vaccinate	Vaccinate
Human Papilloma virus	Vaccinate	Vaccinate

*pending further studies

5.4.3 Immunizing sick infants

Many health workers do not like vaccinating an infant who is ill. Infants can have many illnesses, but delaying immunization puts them at risk of vaccine-preventable diseases when they could receive the protection safely.

a. *For infants with a minor illness and/or fever below 38.5 °C, vaccinate as usual. This includes respiratory tract infections, diarrhoea and similar mild infections without significant fever.*

b. *For very ill infants who need to go to hospital, or infants who have a very high fever, vaccinate if possible. A senior health worker may have to decide in each case, but infants do need protection from diseases that could be transmissible in hospital (measles, for example).*

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c. *For malnourished infants, vaccinate as usual. Malnourished infants do develop immunity after vaccination, and when they do not receive vaccines, they are more likely than well-nourished children to die from vaccine-preventable diseases.*

5.4.4 Other conditions when infants should be immunized

The following are not contraindications and infants with these conditions or circumstances should be immunized:

a. *allergies or asthma, with the exception of a known allergy to a specific component of the vaccine as mentioned;*
b. *ongoing treatment with antibiotics;*
c. *family history of adverse events following immunization;*
d. *prematurity or low birth weight;*
e. *history of jaundice at birth;*
f. *ongoing breastfeeding;*
g. *recent or upcoming surgery;*
h. *chronic non-communicable diseases of the heart, lung, kidney or liver;*
i. *stable neurological conditions, such as cerebral palsy or Downs syndrome;*
j. *Family history of convulsions, seizures or fits*.

5.5 Giving vaccinations

This section focuses on techniques for injection preparation, comfortable and safe positioning of clients, especially infants, and safe disposal of materials.

5.5.1 Preparing to vaccinate

Injectable vaccines can be ready to use or can require reconstitution (mixing) with diluent. Oral vaccines may require manipulation of the packaging to enable administration. With the increasing range of products and presentations available, the aim of this section is to cover general principles that can be adapted to specific vaccines in each programme.

Firstly, use aseptic technique to prepare vaccines:

a. *start with hand washing; use soap and water and dry your hands thoroughly;*

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b. work on a clean table;

c. Prepare vaccines individually for each client; do not prefill syringes.

Whenever possible, prepare the vaccine away from the client or caregiver of infant/girl; be aware that injection materials may cause anxiety. If this is not possible, turn away slightly to shield the preparation. Try to talk to the client or caregiver of infant/girl while preparing injections as showing interest in them is reassuring.

5.5.2 Reconstituting vaccines

Common vaccines that need to be mixed with diluent before use include BCG, yellow fever, measles, MR and MMR. *The correct diluent must be used.*

Points to remember about diluents

a. *Always use diluent from the same manufacturer as the vaccine.*
b. *Diluent is not interchangeable, different vaccines have different diluents. Administering a vaccine with the wrong diluent has led to serious adverse events, including death.*
c. *Diluent should be cooled before being mixed with the vaccine.*
d. *Vaccines should be reconstituted with diluent immediately before use.*
e. *Unused reconstituted vaccine must be handled according to national multi-dose vial policy; WHO policy is outlined in Module 2 (The vaccine cold chain).*

5.5.3 Steps for reconstitution

1. *For vials with VVMs, double check that the vaccine can be used.*
2. *Double check each vial/ampoule to make sure it is not past its expiry date and read the label carefully.*
3. Open the vial. For a metal cap, use a file to lift the pre-cut centre and bend it back; for a plastic cap, flip it off with your thumb or slowly twist it depending on the specific instructions for the type of vial.
4. Open the glass ampoule by holding the ampoule between the thumb and middle finger and supporting the top with the index finger; scratch the ampoule neck with a file, then gently break off the top, taking care to avoid injury from the sharp glass (see Figure 5.3). If you injure yourself, discard the ampoule since the contents may have been contaminated. Cover the wound before opening a new ampoule.

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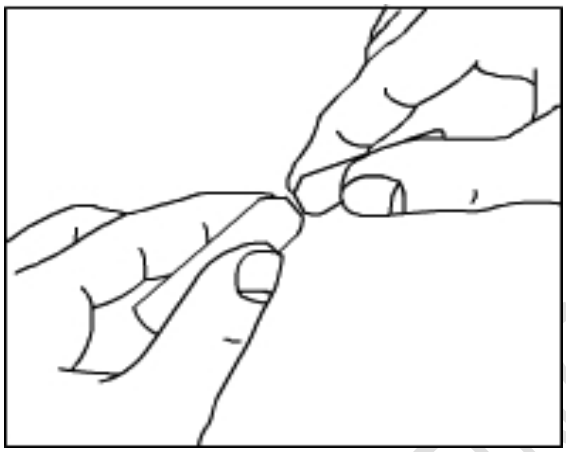


Figure 5.3: Scratching and Breaking the neck of the vial

5. *Draw all of the diluent out with a new disposable reconstitution needle and syringe.*
6. *Insert the needle of the reconstitution syringe into the vaccine vial and empty all the diluent; depress the plunger slowly to avoid frothing inside the vaccine vial.*
7. Draw the fluid slowly and gently in and out of the vial several times to mix the diluent and vaccine or gently swirl the vial to mix the diluent and vaccine; take care not to touch the rubber membrane or opening.
8. Remove the reconstitution needle and syringe and discard them in the safety box.
9. *Put the reconstituted vaccine vial in the foam pad of your vaccine carrier.*

5.6 Making vaccination easier and more comfortable

The way a health worker interacts with client or caregiver of infant/girl has a huge impact and they will respond positively to a friendly, welcoming attitude.

Recent recommendations for new vaccines and catch-up dose schedules often mean giving two (or more) injections to clients, especially infants, during the same session. Giving multiple injections at the same time is, of course, more difficult, but it is a skill that must be learnt. With practice, giving injections quickly and safely with little distress to the client or caregiver of infant/girl will become routine. Even the most experienced vaccinator should take time to review their injection technique and seek out refresher materials that might improve their skills. Vaccinators should also share their knowledge and learn from each other.

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5.6.1 Good general techniques

The following are applicable to all clients:

a. **Welcome the family**: Put them at ease by smiling and maintaining a kind, reassuring manner. Ask if they have any questions or concerns and take time to answer them. Complete the assessment as described in Section 5.4.2 of this module and, if more than one injection is needed, explain this and confirm that the caregiver of infant agrees that it is better to vaccinate according to the schedule than to miss the opportunity.
b. **Be prepared:** After assessing the client as described in Section 5.4.2 of this module, prepare the necessary vaccines and place them nearby in the order of administration. The order in which vaccines should be given will based on national guidelines (see Table 1.15).

The following are applicable only to clients who are infants:

a. **Take time to position the infant with the caregiver:** Explain what will happen. This will help plan movements. Always have the infant's whole limb(s) for injection bare before starting. The vaccinator needs to move from one site to another, with minimum delay. See table 5.2.
b. Follow the sequence for administering the vaccines based on national guidelines: Using the same site for each infant can help during follow up (for example, if the card is lost and recall questions need to be asked, or if any adverse events occur). The order in which vaccines are given to each infant can help make administering them easier; in general, the suggestion is to give oral vaccines first, while the infant is still calm, and then follow with the injectable ones. The choice of whether to give a new vaccine first or last usually depends on local factors. Table 1.15 shows the national immunization schedule. ***Note that rotavirus vaccine comes before polio since it has a larger volume and it may be better to give it when the infant is most calm.***

Remember that spending a little time, particularly on welcoming and positioning, will help the procedure go more smoothly and efficiently.

5.6.2 Positioning the infant for vaccination

The choice of position will depend on the number of vaccines to be given, the age of the child and the materials available. The aim of positioning is to keep the child still and the caregiver and vaccinator comfortable. Table 5.2 shows different positions for

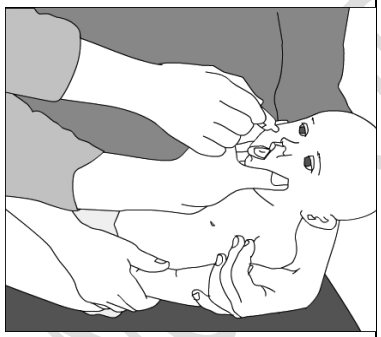
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vaccinating. The first three are for infants and the fourth and fifth are for children aged 12 months or older and adolescents/adults respectively. Reviewing the positions and picturing movements to give vaccinations will help you be more confident during the actual immunization encounter. You should try different positions to find the one that suits you best.

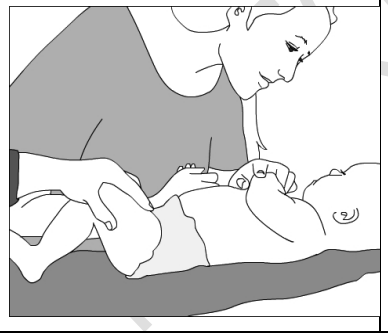
Check that the caregiver is willing to hold the child while the injection/s is/are given. If s/he is not willing, ask someone else to help.

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Table 5.2: Vaccination positions, their advantages and disadvantages

Position	Illustration	Directions for caregiver	Advantages	Disadvantages
Cuddle position: Semi-recumbent on caregiver's lap.	 	Sit on a chair holding the infant sideways on lap with one arm behind infant's back. Tuck the infant's inside arm around her/his own back or against her/his body. Bring her/his arm around the infant's back to hug the shoulders and upper body close to her/his body.	Infant's arm and legs securely held by caregiver Infant comforted by close contact and eye contact with caregiver Leg and arm injections possible without	Delay between injections if 2 IM injections given Possibility that secure restraint may not occur after position change

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		Tuck the infant's legs between her/his own to secure them or hold them with her/his other .arm Vaccinator should position her/himself to avoid strain while giving vaccines at the correct angle.	position change	
Bed position: Lying on back on flat surface		Lay the infant, with both legs bare, on a flat surface. Stand on the other side of the bed and hold the	Infant's arms held securely by caregiver. Infant comforted by close contact	Vaccinator responsible for restraint of the legs.

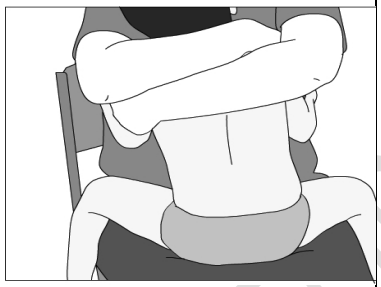
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		infant's hands and arms. Vaccinator should stand at the infant's feet and use non-injecting hand to gently cup the slightly bent knee of the leg to receive the vaccine.	and eye contact with caregiver. Injection in both legs possible without change in position of infant.	

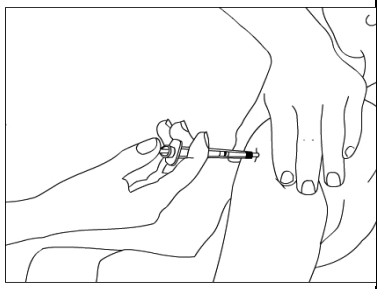
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Upright position: Sitting upright on caregiver's lap, facing straight outwards	 	Sit on a chair holding the infant sitting facing straight outwards on her/his lap. Rest the infant's back against her/his chest. Encircle (hug) the infant's upper body and arms with one arm and use the other arm or her/his knees to hold the infant's lower legs (lower legs and feet one behind the other between the caregiver's knees).	Infant's arms and legs held securely by caregiver. Multiple injections possible without change in position	Security of leg restraint dependent on caregiver – if too tight, muscles tense, if too loose leg may jerk out of restraint. No eye contact with caregiver.

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		Vaccinator should stand on the side of the first injection and at the level where it can be given at a 90 degree angle		
Straddle position: Child ≥12 months of age vaccinated sitting upright on caregiver's lap, facing towards her/him with legs straddling over hers/his.		Sit on a chair holding the child facing her/him and sitting astride her/his knees. Encircle (hug) the child's upper body and arms with her/his arms. If necessary, use one arm to secure the child's leg. Vaccinator should stand on the side of the injection.	Child's arms tucked securely under caregiver's arms. Child comforted by close contact with caregiver. Multiple injections possible without change in position	Thigh muscles may be tense. Vaccinator responsible for restraint of legs (unless caregiver helps).

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Independent position: Adolescent/adult vaccinated sitting on chair			Good access to deltoid	Restraint, if required, dependent on vaccinator

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5.6.3 Good oral administration technique

This example is based on oral rotavirus vaccine and OPV but it also applies to other oral vaccines.

i. Position: Use the cuddle position on the caregiver's lap with the head supported and tilted slightly back. Vaccinator stands to one side (see Table 5.2).

ii. Administration: Open the infant's mouth by gently squeezing the cheeks between your thumb and index finger using gentle pressure. Firm squeezing can cause distress.
   a. For rotavirus vaccine in tubes, angle the tube towards the inner cheek. Administer the entire contents by squeezing the tube several times.
   b. For OPV, let two drops of vaccine fall from the dropper onto the tongue. Do not let the dropper touch the infant.

iii. Disposal: Discard the used oral vaccine tube into the rubbish.

5.6.4 Good injection technique

Good injection technique includes administering all injectable vaccines with a single-use/auto-disable (AD) syringe. To use AD syringes correctly, remember that the plunger of an AD syringe can only go back and forth once; so:

- Do not draw up air to inject into the vaccine vial when filling the AD syringe;
- Do not aspirate first when you insert the needle into the infant for the injection.

Summary of injection steps

i. Wash skin that looks dirty with water. Swabbing clean skin is not necessary. **Do not use alcohol to clean the skin before giving vaccinations.**

ii. Hold the syringe barrel between the thumb, index and middle fingers. Do not touch the needle.

iii. For intradermal (ID) injections, gently stretch and support the skin with the thumb and forefinger. Lay the syringe and needle almost flat along the infant's skin. Gently insert the needle into the top layer of the skin

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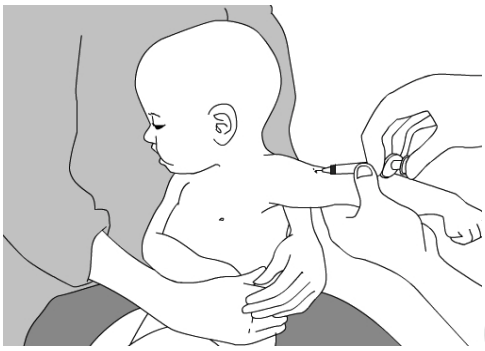
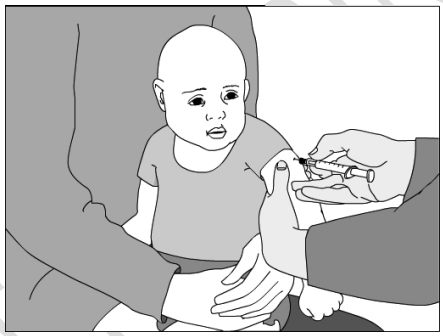


Figure 5.4: Intradermal Injection Technique

iv. For subcutaneous injections (SC), gently squeeze the skin. Insert the entire needle at a 45 degree angle (towards the shoulder) with a quick, smooth action



v. For intramuscular injections (IM), gently stretch and support the skin between thumb and forefinger. Push the entire needle in at a 90 degree angle with a quick, smooth action

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Figure 5.6: Intramuscular injection Technique

For all injections;

i. Depress the plunger slowly and smoothly, taking care not to move the syringe around.

ii. Pull the needle out quickly and smoothly at the same angle that it went in.

iii. The client or caregiver may hold a clean swab gently over the site if it is bleeding after injection.

iv. Dispose of the needle and syringe immediately in the safety box.

v. Soothe and distract the child/girl when all the vaccines have been given.

WHO recommendation on IPV administration and multiple IM injections

For IM injections in infants below 12 months of age, the deltoid injection site (upper arm) should NOT be used due to its inadequate muscle mass.

When three IM injections are scheduled at the same time in an infant under 12 months of age, it is correct and safe to give two injections in the same thigh as follows:

One thigh – PCV + IPV, separated by 2.5 cm (shown in Figure 5.10 below);

The other thigh – Pentavalent.

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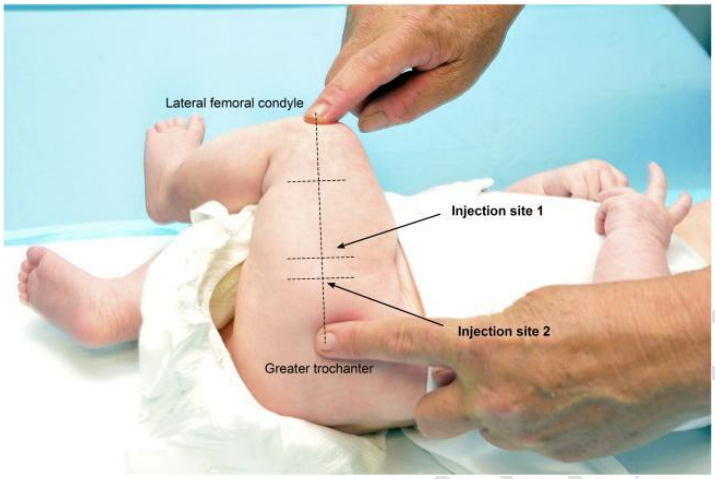


Figure 5.7: Multiple injection Technique

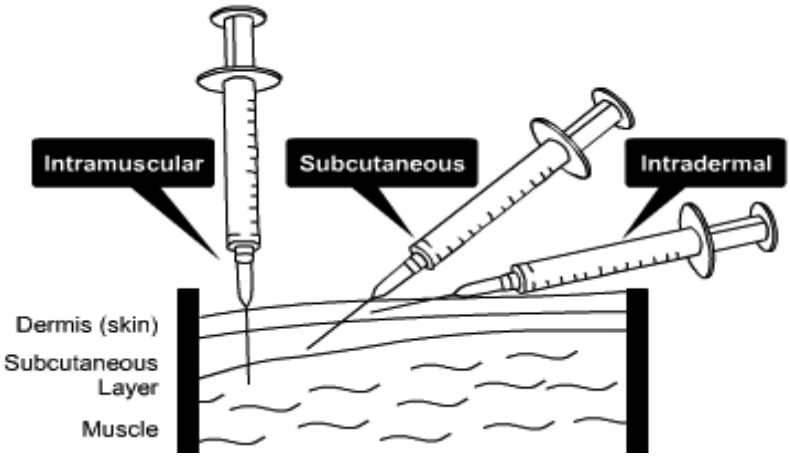


Figure 5.8: Summary on needle positions for ID, SC, and IM injections

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5.7 Closing the session

Materials must be stored safely or disposed of after immunization sessions. Equipment and sites must be cleaned and maintained for their next use.

5.7.1 Discard or store opened vials depending on vaccine type

Refer to national policy on open multi-dose vials and act accordingly; WHO multi-dose vial policy is included in Module 2 (The vaccine cold chain).

After each session, the following steps are required for vaccines and supplies.

1. Pack the vaccine carrier
    a. Check the conditioned ice packs to make sure that the ice has not melted completely. If conditioned ice packs have completely melted and/or the thermometer in the vaccine carrier shows a temperature above +8 °C, all vaccines inside the vaccine carrier should be discarded unless they have VVMs that show they are still safe to use; so check each vial.
    b. Place unopened vaccines and opened vials for which the multi-dose vial policy is applicable inside the carrier.
    c. Put empty vials and opened vials of reconstituted vaccines in a separate container for transport to the Apex health facility or LGA Cold Store.
2. Return vaccines to the refrigerator
    a. Return vaccines with acceptable VVMs to the use-first-box in the refrigerator. If the conditioned ice packs in the vaccine carrier have melted during the trip back to the health centre, return the vaccine vials to the Apex health facility or LGA Cold Store unless the VVMs indicate that they are safe to use.
    b. Put the ice packs from the carrier into the freezer and record the temperature of the refrigerator.
3. Clean the vaccine carrier
    a. Wipe the carrier with a damp cloth and check it for cracks. Repair any cracks with adhesive tape and leave the carrier open to dry.
4. Return other supplies

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a. For example, place immunization registers, unused AD syringes and immunization cards in their designated storage areas.

5.7.2 Dispose of used vaccine vials and injection equipment safely

a. Safety boxes containing used needles and syringes must be disposed of properly, see Module 3 (Injection Safety).

5.7.3 Leave the site clean and tidy

Specifically, after using an outreach site:

i. Do not leave anything behind that might be a health threat to the community.

ii. Clean and return tables, chairs and other equipment to their owners.

iii. Thank the local people who have helped to organize the session and remind them of the date of the next session.

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5.8 Recording data

Accurate and reliable records are vital, not only for the individual client but also to track the immunization status of communities through monthly and annual reporting (see Module 6: Monitoring and surveillance for details). During a session, individual immunization cards and health records such as registers, and tally sheets have to be completed. Tally sheets need to be summed as total after the session and these totals need to be added to programme monitoring data.

5.8.1 Complete the client immunization cards

Follow these steps to complete client immunization cards:

1. Write the date for each vaccine administered in its corresponding section on the card.
2. Mark the next immunization due date on the card if another dose is needed and ensure that the caregiver understands when and where to return for the next dose(s) of vaccine(s).
3. If new vaccines are not included on immunization registers and/or cards, ask your supervisor for instructions about how to record them on all reporting tools.
4. Update the reminder section on the immunization card where applicable for all clients. The immunization card for infant is in triplicate, fill the all the sections.
5. Return the immunization card to the client/caregiver. If it is an immunization card for infant, return the immunization card with the reminder section to the caregiver, keep one of the tear-able part in the health facility and give the second tear-able part to the community leader as shown in Module 6 (Monitoring and surveillance).
6. Explain to the client/caregiver that the immunization card must be kept in good condition since it is an important document for future health care visits.
7. Remind the client/caregiver that the card should be taken to all of the client's health care visits for review.

Do not miss any opportunity to vaccinate an eligible client. Health workers should be in the habit of asking for and reviewing immunization cards for each client at each visit regardless of the reason for coming.

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5.8.2 Prepare a summary of the session

Calculate total numbers of vaccines given, supplies used and stock remaining for inclusion in monthly report data, as described in Module 6 (Monitoring and surveillance).

5.8.3 Prepare a defaulter tracking list

At the end of each session, use the immunization register and tear-able part of the immunization card kept at the health facility to make a list of children who were due for vaccines but did not attend the session. The format for the list is as shown in Module 6 (Figure: 6.17). The list should be used for defaulter tracking and for programme monitoring activities. Inform community members who help with defaulter tracking of the infants on the list. Ask them to mobilize the defaulters for the next immunization session.

5.9 Using the immunization session checklist

Figure 5.9 shows a checklist that can help ensure safety before, during and after immunization. This checklist is a reminder of key points in preparation, vaccination and closure of sessions described above. It will help to reinforce positive actions. Health workers should be familiar with national immunization schedules, vaccine administration, waste disposal, data collection and other details of standard operating procedure from relevant national programme documents and be able to quickly recognize and complete the checklist items. A printed copy of this checklist can be posted on a wall in the immunization area for easy viewing throughout sessions.

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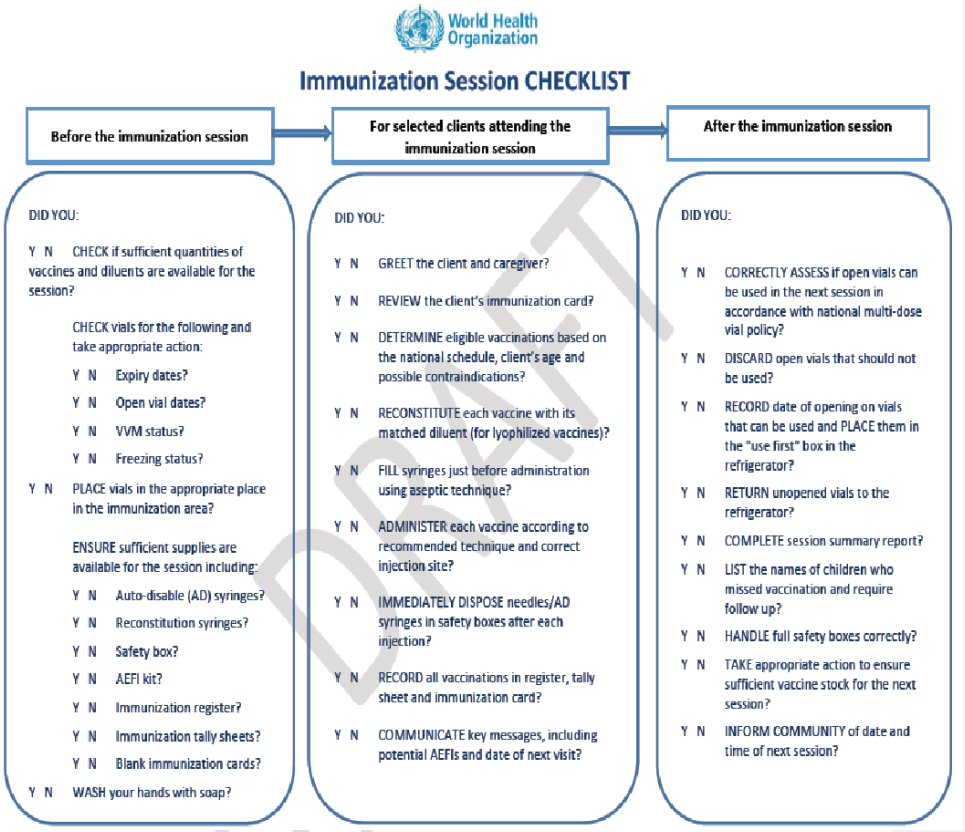


Figure 5.9: Immunization session checklist

5.10: Exercise on immunization session

Share participants into groups (4-5 participants per group) to go through the following exercises:

1. Mrs Sander came to your health facility with a premature baby that is one week old, as a health worker should the baby be immunized? If "No", Why and if "Yes" give reason and what antigen should the baby receive. 5 minutes.
2. Demonstrate the possible positions for administration of vaccines in infants and children above 1 year of age. Which position is most suitable position for multiple injections? (5 minutes).

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3. Mrs Adam is HIV Positive; she gave birth to her son in your health facility around 3:00am in the morning. What are the vaccines Mrs Adam's baby is eligible to take? (5 minutes).

Facilitator then Identify 3 groups to present at plenary. Each group to present an exercise and then discuss (Total time for discussion is 15 minutes).

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MODULE 6: MONITORING AND SURVEILLANCE

Contents

List of Figure (6)2

List of Tables (6)4

6.1 Routine immunization monitoring tools (6)7

6.1.1 The Child Health card (6)8

6.1.2 The Immunization tally sheet (6)23

6.1.3 The Child immunization register (6)28

6.1.4 Monthly summary Forms (6)32

6.1.5 Immunization monitoring chart (6)36

6.1.6 Vaccine Management Tools (VMT) (6)42

6.2 Reaching Every Ward (REW) Monitoring (6)56

6.2.1 Definition of REW (6)56

6.2.2 Components of REW (6)56

6.2.3 How do you monitor the implementation of REW in your HF/LGA/state? (6)57

6.2.4 REW Monitoring Tools (6)59

6.3 Timeliness & Completeness Reporting Form (6)68

6.4 The Defaulter Tracking List (6)69

6.4.1 What information is commonly included on a defaulter list? (6)69

6.4.2 How to use the defaulter tracking list (6)69

6.4.3 Listing defaulters using the immunization register (6)71

6.4.4 Suggested steps in filling the revised register for purpose of defaulter tracking (6)73

6.4.5 Advantages of the revised register (6)76

6.4.6 Listing defaulters using reminder cards (6)77

6.4.7 Reminder Box (6)77

6.4.8 Guide on How to use the “Reminder Box” (6)78

NOT FOR PRINTING

6.5 Data and report storage (6)81
6.5.1 Analysis of data (6)82
6.5.2 Vaccination coverage data analysis (6)82
6.5.3 How to complete the compilation and analysis table 6.6 (6)82
6.5.4 Identify and categorize problems for each area (6)83
6.6 Surveillance (6)86
6.6.1 What is surveillance? (6)87
6.6.2 What is Integrated Disease Surveillance and Response? (6)87
6.6.3 Three types of disease surveillance used in national programs: (6)87
6.6.4 Descriptive Analysis for Basic Epidemiology Data (6)88
6.7 What is AEFI? (6)90
6.7.1 Categorization of AEFI (6)91
6.7.2 How to avoid/minimize immunization error (6)92
6.7.3 AEFI Reporting Channel (6)93
6.7.4 AEFI Surveillance Tools (6)94
6.8 Surveillance Data Tools (6)98
6.9 Group Exercise on Monitoring and Surveillance (6)110

NOT FOR PRINTING

List of Figure

Figure 6.1: TT containing Immunization Card for Pregnant Women 15

Figure 6.2 a: Front View of the Child Health Card with cut away reminder part detached. 17

Figure 6.2b: Back view of the Child Health Card. 18

Figure 6.2c: Tear away view of the Child Reminder Card (Front). 19

Figure 6.2d: Tear away view of the Child Reminder Card (Back) 20

Figure 6.3a: Infant Immunization Tally Sheet 22

Figure 6.3b: Tetanus Toxoid/Diphtheria Immunization Tally Sheet for Pregnant Women 23

Figure 6.4: Child Immunization Register 26

Figure 6.5a: Health Facility Summary Form 29

Figure 6.5b: LGA summary form. 31

Figure 6.6a: Penta 1 and Penta 3 monitoring Chart 35

Figure 6.6b: Monitoring Chart BCG-Measles 1. 36

Figure 6.7a: Monthly Health Facility Vaccine Utilization Reporting Form: VM1A. 39

Figure 6.7b: Monthly Health Facility Devices/Others Materials Utilization Reporting Form: VM1B. 42

Figure 6.8 Monthly LGA Vaccine Utilization Summary Form VM2. 44

NOT FOR PRINTING

Figure 6.9: Monthly Vaccine and Devices Utilization Reporting Form: VM3. 46

Figure 6.10 Vaccines/Diluents/Equipment Ledgers. 48

Figure 6.11 Requisition/Issue/Receipt Voucher. 49

Figure 6.12: Monthly Health Facility Vaccine Utilization Summary Form. 50

Figure 6.13: Chart of REW Components 53

Figure 6.14: Health Facility Performance Form. 57

Figure 6.15: LGA Health Facility Summary Forms: REW LGA 1. 59

Figure 6.16: LGA level Performance Monitoring Tool and Summary of Health Facilities in LGA REW-LG-2 60

Figure 6.17: Defaulters tracking form. 65

Figure 6.18: Register for defaulter tracking. 67

Figure 6.19: Immunization Register after insertion of tabs. 69

Figure 6.20: Indexing of Settlements in RI Register. 70

Figure 6.21: Tabs to guide the entry into appropriate settlements. 70

Figure 6.22: A reminder/tickler box. 73

Figure 6.23: Follow up book for defaulter tracking. 75

Figure 6.24: Flow chart showing categorization of EPI problems. 79

Figure 6.25: Diagram showing data analysis by Time, Person and Place. 84

Figure 6.26: AEFI Reporting Form. 91

Figure 6.27: AEFI Line list Form. 92

Figure 6.28: Immediate Case based reporting form IDRS 001A 95

Figure 6.29: Immediate AFP Case Notification Form F001. 96

Figure 6.30: Laboratory Collection Form IDSR 001B. 98

Figure 6.31: IDSR 002 102

Figure 6.32 IDSR 003 Form. 103

NOT FOR PRINTING

NOT FOR PRINTING

List of Tables

Table 6.1: Current Vaccine schedule in Nigeria 12

Table 6.2: TT Containing Vaccine Schedule for Pregnant women and women of childbearing age 14

Table 6.3: Common mistakes in tallying 24

Table 6.4: Preparing an Index of Settlements with page numbers 68

Table 6.5: Example of corrective actions taken by health workers using the register as defaulter tracker 72

Table 6.6: Sample format for compilation and analysis of health facility data 80

Table 6.7: Table showing data analysis by age and sex 85

Table 6.8: Types of Immunization Error 87

Table 6.9: Minor and serious reaction 88

Table 6.10: Line List (IDSR 001C) – Report from HF to LGA and for use during outbreak 101

Table 6.11: Scenario on immunization history of clients at a health facility A 105

Table 6.12: Scenario of monthly vaccination performance in health facility A Jan-Dec 2015 106

Table 6.13a: Case Scenario on routine immunization data in January 2016 for all the health facilities in Dogowa LGA 108

Table 6.13b: Case Scenario on routine immunization data at LGA level in January 2016 for Dogowa LGA 109

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Module 6: Monitoring and Surveillance

Introduction to the module

This module explains how to collect and report data for monitoring of immunization services, surveillance of vaccine-preventable diseases and Adverse Events Following Immunization (AEFI)*.* Monitoring and surveillance are included together, since data from both are usually reported in a summary form and forwarded to the national level. The process of recording the data is described first. This is followed by a description of the summary reporting process and the ways in which these data can be analysed and used.

Monitoring of immunization services helps to improve performance, identify and solve any problems of access and utilization detected in communities with high numbers of unimmunized children. Surveillance of vaccine-preventable diseases helps guide disease control activities by detecting warning signs of disease outbreaks, identifying high-risk groups or areas and evaluating the impact of immunization services*. Surveillance of AEFI cases helps to identify the causes of adverse events and, if needed, triggers a review of proper vaccine handling and administration.*

This module focuses on infants and pregnant women, but the methods can be applied to older age groups. The examples show paper-based recording and reporting, but data collection principles apply to other modalities. While the use of electronic tools for LGA data monitoring is encouraged by the government and partners, their implementation and instructions for use will depend on availability and national guidelines.

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6.1 Routine immunization monitoring tools

Trainers note:

1. Ask participants to define monitoring and why it is important in routine immunization.
2. Ask participants to list the monitoring tools they know and use for Routine Immunization.
3. Each participant must have the data tools for hands-on training.
4. Emphasize on the importance of correct documentation in this session.
5. Give more emphasis to practical demonstrations/role play on data collection, collation, analysis and interpretation.
6. Make sure the number of participants is manageable (30-40) per class.
7. ***Each time a section on data tool is read, reference should be made to the relevant figure and table of that tool***
8. ***Facilitator should take the participants through the forms as it relates to their level (state level = All forms; LGA = LGA & HF; HF = HF only HF form.***

Objectives of this module

At the end of this session, participants should be able to:

1. Understand all the data tools in use at the lower level.
2. Understand how to collect data correctly.
3. Collate, analyse and interpret data correctly.
4. Use data for action.

Every health facility needs a system of recording routine immunization data for monitoring immunization services. Systematically and regularly recording the immunizations given at each session ensures that services meet coverage targets,

identifies defaulters, and helps to actively follow up all those who need to complete their immunizations.

The tools required for effective monitoring are as follows:

1. Child Health card
2. Immunization tally sheet
3. Child Immunization register
4. Immunization monitoring chart
5. Monthly summary report
6. Reaching Every Ward monitoring forms
7. Timeliness & completeness reporting form
8. Vaccine Management Tools (VMT)
9. Community survey tool
10. Defaulter tracking list
11. Monthly Health Vaccine Utilization form
12. AEFI reporting and line listing forms.

6.1.1 The Child Health card

The child health card is used to record the immunizations a child has received. It may be a separate document or part of a general infant or mother/child health record, such as a Road to Health Card or Child Health Booklet, and is important for several reasons:

1. It serves to remind caregivers to return to the clinic for the next dose(s) of vaccine(s);
2. It helps the health worker determine an infant's immunization status;
3. It is useful when conducting coverage surveys.
4. It is useful in obtaining AEFI history in vaccinated children as well as tracking of AEFI.
5. It provides information on management of diarrhea in children.
6. It helps the health workers to monitor growth of the child.
7. Provides information on the breast-feeding status of the child.

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8. Provides information on the state of health and numbers of mother's other children.

Key points

Remember that the child health card may be the only record of immunization status available for health workers if registers are not well maintained or if families move from one health facility to another.

Each infant should have a card with vaccination details entered correctly.

What information is commonly included on a child health card?

A child health card usually includes the following information:

1. Card number (this is a unique identification number which is the same number written in the immunization register as shown in Figure 6.1a);
2. Childs bio data (name, position in family, sex, birth date and weight)
3. Childs residential address (name and address of mother and father or caregiver(s), including mobile/phone number if available
4. Mother's other children (year of birth, sex and state of health)
5. Vaccine schedule, batch number, date of administration and next visit
6. Date and dose of vitamin A supplementation given, if applicable;
7. Growth monitoring chart.
8. AEFI history
9. Breast feeding status
10. Information on management of diarrhoea

Note: The caregiver should be reminded to keep the immunization card in a safe place and to take it to all immunization and other health care visits.

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How to fill the Child Health Card

- **Card number:** Enter the number assigned to the child.

Information about Child

- **Child's Name:** Enter the first name and surname of the child.
- **Childs Sex (M/F):** Enter M or F in the applicable space for a male or female child.
- Childs position in the family: Enter position of the child in the family (1st, 2nd, 3rd etc.)
- **Date of birth (day/month/year):** Enter the date on which the child was born in the order dd/mm/yyyy.
- **Weight at birth (in kg):** Enter weight of child in kilogrammes (kg).

Child's Residential Address

- **House Number:** Enter the house number of residence of child
- **Village/settlement/street name:** Enter the village name, settlement name or street name of residence of the child as applicable.
- **Town/city:** Enter name of town or city of residence of child
- **Ward:** Enter name of ward of residence of child
- **LGA:** Enter name of LGA of residence of child
- **State:** Enter name of state of residence of child
- **Mother's Name:** Enter the name of mother of child.
- **Mother's GSM No:** Enter the GSM number of mother of child.
- **Father's Name:** Enter the name of father of child.
- **Father's GSM No:** Enter the GSM number of father of child
- **Care givers Name:** Enter the name of caregiver of child
- **Caregivers GSM No**: Enter the GSM number of caregiver of child

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Mother's Other Children

- **Year of Birth:** Enter year of birth
- **Sex:** Enter sex of child (F or M for female or male respectively)

State of Health of Mothers other children: Enter state of health (alive and well, underlying diseases; SCD, Asthma or dead)

Check If Extra Care is needed and answer yes or no to Q1-6 on the child health card

Enter day, month and year the child is given the appropriate vaccine based on the schedule during the visit, date of next visit (day, month and year) and other remarks (out of stock or given). The entries should be placed under the appropriate columns i.e. 'date given', 'date next visit' and 'other Remarks' columns respectively.

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Table 6.1: Current Vaccine schedule in Nigeria

Contact	Minimum Target Age Of Child	Type Of Vaccine	Dosage	Route of administration	Site
1st	At birth	BCG	0.05ml	Intra dermal	Left Upper Arm
		*OPV0	2 drops	Oral	Mouth
		**Hep B birth	0.5ml	Intra muscular	Antero- lateral aspect of Right thigh
2nd	6 weeks	Pentavalent (DPT, Hep B and Hib) 1,	0.5ml	Intra muscular	Antero- lateral aspect of left thigh
		Pnemococcal Conjugate Vaccine 1	0.5ml	Intra muscular	Antero- lateral aspect of Right thigh
		OPV1	2 drops	Oral	Mouth
		Rota 1	1ml	Oral	Mouth
		IPV1	0.5ml	Intramuscular	Antero- lateral aspect of Right thigh (2.5cm apart from PCV)
3rd	10 weeks of age	Pentavalent (DPT, Hep B and Hib) 2	0.5ml	Intra muscular	Antero-lateral aspect of left thigh

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		Pnemococcal Conjugate Vaccine 2	0.5ml	Intra muscular	Antero- lateral aspect of Right thigh
		OPV2	2 drops	Oral	Mouth
		Rota 2	1ml	Oral	Mouth
4th	14 weeks of age	Pentavalent 3 (DPT, Hep B and Hib)	0.5ml	Intra- muscular	Antero-lateral aspect of left thigh
		Pnemococcal Conjugate Vaccine 3	0.5ml	intra muscular	Antero- lateral aspect of Right thigh
		OPV3	2 drops	Oral	Mouth
		IPV2	0.5ml	Intramuscular	Antero- lateral aspect of Right thigh (2.5cm apart from PCV)
	6 months	Vitamin A 1st dose	100,000 IU	Oral	Mouth
5th	9months	Measles 1st dose	0.5ml	Subcutaneous	Left upper arm
		Yellow Fever	0.5ml	Subcutaneous	Right upper arm
		***Men AfriVac	0.5ml	IM	Antero- lateral aspect of Left thigh
	12 months	Vitamin A 2nd dose	200,000 IU	Oral	Mouth
	18 months	Measles 2 dose	0.5ml	Subcutaneous	Left upper arm
	9 – 14 years	HPV	0.5ml	Intramuscular	Deltoid muscle (upper arm)

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*OPV0 must be given before the age of two weeks **Hep B at birth should be given within 24 hours of birth but can be given up to 14 days of birth. ***Men AfriVac: to be introduced in 2017. BCG should be given within two weeks of birth and can be given up until 11 months.

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Table 6.2: TT Containing Vaccine Schedule for Pregnant women and women of childbearing age

Vaccine TT/Td Immunization schedule for pregnant women	**WHEN TO GIVE**	**EXPECTED DURATION OF PROTECTION**
TT/Td1	At first contact or as early as possible in pregnancy	None
TT/Td2	At least 4 weeks after TT/Td1	1-3 years
TT/Td3	At least 6 months after TT/Td2 or during subsequent pregnancy within 3 years.	5 years
TT/Td4	At least 1 year after TT/Td3 or during subsequent pregnancy	10 years
TT/Td5	At least 1 year after TT/Td4 or during subsequent pregnancy	All the childbearing years

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NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

PREGNANT WOMAN TETANUS TOXOID VACCINATION CARD

ENTER CARD NUMBER HERE:

NAME OF CLIENT_____ DATE OF BIRTH OF CLIENT_____

SETTLEMENT/VILLAGE/STREET_____ SETTLEMENT/VILLAGE/STREET_____

NAME OF LGA_____ NAME OF STATE_____

DOSE OF TETANUS TOXOID (TT)	DATE VACCINE			BATCH NO	DATE FOR NEXT VISIT		
	DAY	MONTH	YEAR		DAY	MONTH	YEAR
FIRST DOSE (TT1)							
SECOND DOSE (TT2) (At least 4 weeks after the first)							
THIRD DOSE (TT3) (At least 6 months after the second)							
FOURTH DOSE (TT4) (At least 1 year after the third)							
FIFTH DOSE (TT5) (At least 1 year after the fourth)							

TT DOSE	LENTH OF PROTECTION FOR MOTHER
TT1	NONE
TT2	3 YEARS
TT3	5 YEARS
TT4	10 YEARS
TT5	LIFETIME

AEFI Reported? Describe_____

_____

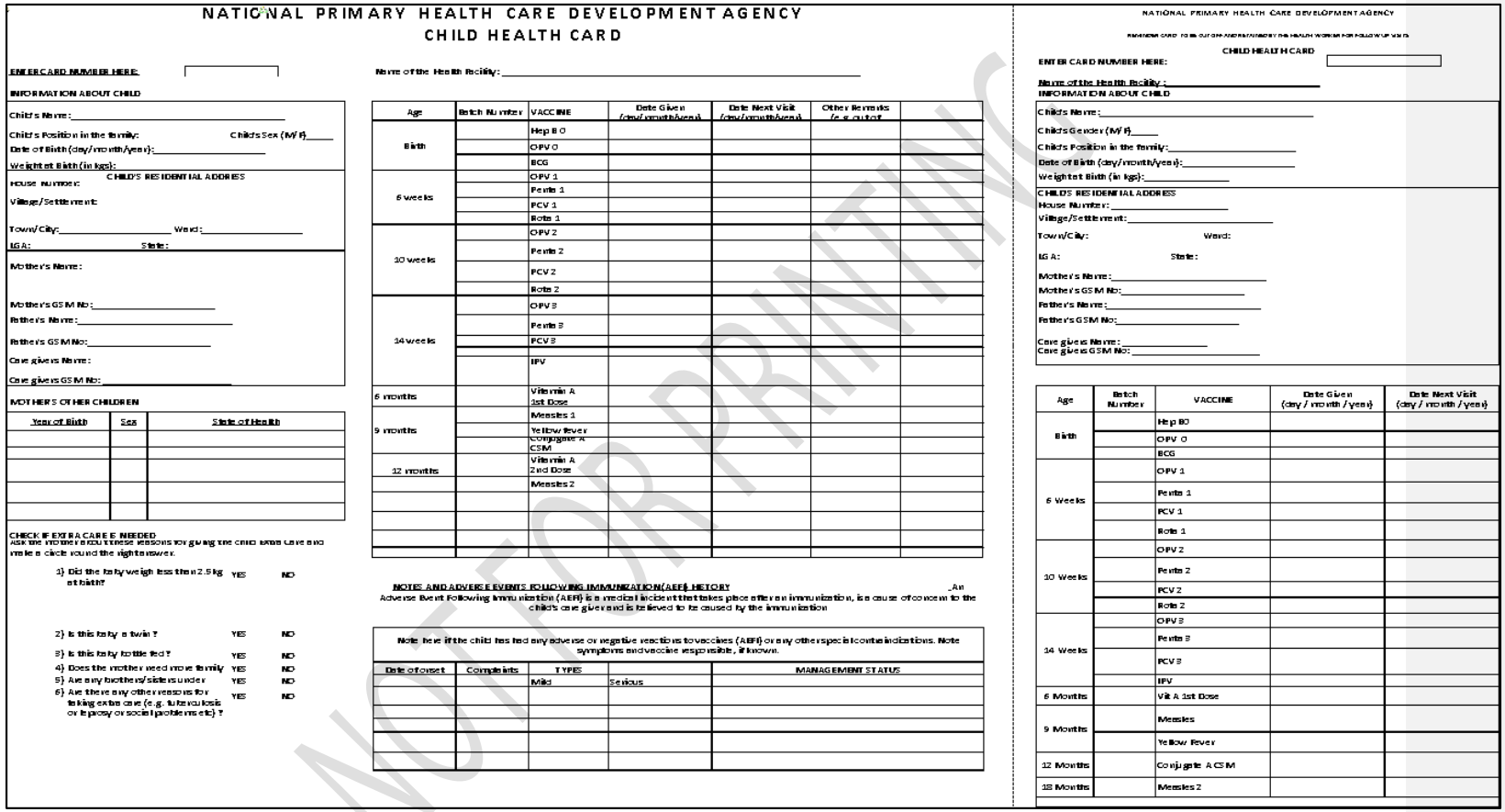
NOT FOR PRINTING

Figure 6.1: TT containing Immunization Card for Pregnant Women

Key points

Remember to write the next appointment date on the child health card. Make sure that the appointment corresponds to a planned immunization session.
Inform the caregiver of the next appointment verbally as well as in writing on the card.
Always return the child health card to the caregiver.
Remind the caregiver to keep the child health card in a safe place even after completion of immunization. Caregivers should take the card to all health facilities for all health care and immunization visits.

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NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

CHILD HEALTH CARD

ENTER CARD NUMBER HERE:

Name of the Health Facility: _____

INFORMATION ABOUT CHILD

Child's Name: _____

Child's Position in the family: Child's Sex (M/F)_____

Date of Birth (day/month/year): _____

Weight at Birth (in kgs): _____

CHILD'S RESIDENTIAL ADDRESS

House number: _____

Village/Settlement: _____

Town/City: _____ Ward: _____

LGA: State:

Mother's Name: _____

Mother's GSM No: _____

Father's Name: _____

Father's GSM No: _____

Care giver's Name: _____

Care giver's GSM No: _____

MOTHER'S OTHER CHILDREN

Year of Birth	Sex	State of Health

CHECK IF EXTRA CARE IS NEEDED

Ask the mother and record these reasons for giving the child extra care and make a circle round the right answer.

1) Did the baby weigh less than 2.5kg at birth? YES NO

2) Is this baby a twin? YES NO

3) Is this baby bottle fed? YES NO

4) Does the mother need more family YES NO

5) Are any brothers/sisters under YES NO

6) Are there any other reasons for taking extra care (e.g. tuberculosis or leprosy or social problems etc)? YES NO

Age	Batch Number	VACCINE	Date Given (day/month/year)	Date Next Visit (day/month/year)	Other Remarks (e.g. cut out	
Birth		Hep B 0				
		OPV 0				
		BCG				
6 weeks		OPV 1				
		Penta 1				
		PCV 1				
		Rota 1				
10 weeks		OPV 2				
		Penta 2				
		PCV 2				
		Rota 2				
14 weeks		OPV 3				
		Penta 3				
		PCV 3				
		IPV				
6 months		Vitamin A 1st Dose				
9 months		Measles 1				
		Yellow fever				
		Conjugate A CSM				
12 months		Vitamin A 2nd Dose				
		Measles 2				

NOTES AND ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI) HISTORY

Adverse Event Following Immunization (AEFI) is a medical incident that takes place after an immunization, is a cause of concern to the child's care giver and is believed to be caused by the immunization

Note here if the child has had any adverse or negative reactions to vaccines (AEFI) or any other special contraindications. Note symptoms and vaccine responsible, if known.

Date of onset	Complaints	TYPES		MANAGEMENT STATUS
		Mild	Serious	

NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

REMINDER CARD TO BE CUT OFF AND RETURNED BY THE HEALTH WORKER FOR FOLLOW UP VISITS

CHILD HEALTH CARD

ENTER CARD NUMBER HERE:

Name of the Health Facility: _____

INFORMATION ABOUT CHILD

Child's Name: _____

Child's Gender (M/F)_____

Child's Position in the family: _____

Date of Birth (day/month/year): _____

Weight at Birth (in kgs): _____

CHILD'S RESIDENTIAL ADDRESS

House Number: _____

Village/Settlement: _____

Town/City: Ward:

LGA: State:

Mother's Name: _____

Mother's GSM No: _____

Father's Name: _____

Father's GSM No: _____

Care giver's Name: _____

Care giver's GSM No: _____

Age	Batch Number	VACCINE	Date Given (day / month / year)	Date Next Visit (day / month / year)
Birth		Hep B0		
		OPV 0		
		BCG		
6 Weeks		OPV 1		
		Penta 1		
		PCV 1		
		Rota 1		
10 Weeks		OPV 2		
		Penta 2		
		PCV 2		
		Rota 2		
14 Weeks		OPV 3		
		Penta 3		
		PCV 3		
		IPV		
6 Months		Vit A 1st Dose		
9 Months		Measles		
		Yellow Fever		
12 Months		Conjugate A CSM		
18 Months		Measles 2		

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Figure 6.2 a: Front View of the Child Health Card with cut away reminder part detached.

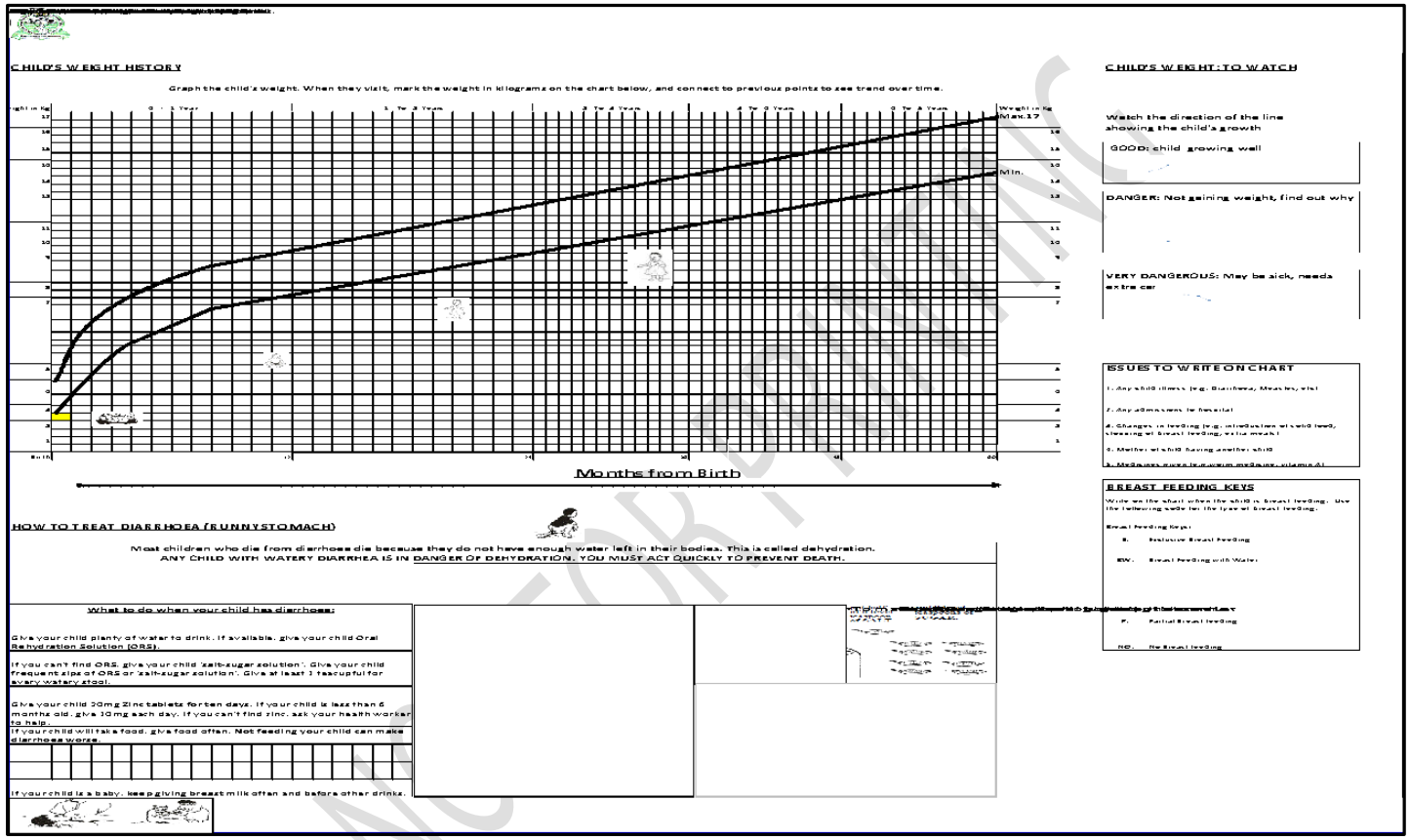


Figure 6.2b: Back view of the Child Health Card.

NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

TO BE CUT OFF AND RETAINED BY THE HEALTH WORKER FOR FOLLOW UP VISITS

CHILD HEALTH CARD

ENTER CARD NUMBER HERE: Card No

INFORMATION ABOUT CHILD

Child's Name:_____

Child's Gender (M/F)_____

Child's Position in the family:_____

Date of Birth (day/month/year):_____

Weight at Birth (in kg):_____

CHILD'S RESIDENTIAL ADDRESS

House Number: _____

Village/Settlement: _____

Town/City:_____ Ward:_____

LGA:_____ State:_____

Mother's Name:_____

Mother's GSM No:_____

Father's Name:_____

Father's GSM No:_____

Care givers Name: _____

Care givers GSM No: _____

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Figure 6.2c: Tear away view of the Child Reminder Card (Front).

Age	Batch No.	VACCINE	Date Given (day / month / year)	Date Next Visit (day / month / year)
Birth		Hep B 0		
		OPV 0		
		BCG		
6 weeks		OPV 1		
		Penta 1		
		PCV 1		
		Rota 1		
10 weeks		OPV 2		
		Penta 2		
		PCV 2		
		Rota 2		
14 weeks		OPV 3		
		Penta 3		
		PCV 3		
		IPV		
6 months		Vit A - 1st Dose		
9 months		Measles 1		
		Yellow fever		
		Conjugate A CSM		
12 months		Vitamin A - 2nd Dose		

Figure 6.2d: Tear away view of the Child Reminder Card (Back)

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6.1.2 The Immunization tally sheet

Tally sheets are forms that are marked every time a health worker administers a dose of vaccine. They are used to monitor performance.

What information is commonly included on a tally sheet?

Tally sheets record immunizations actually given by marking them after an infant receives a dose. The dose is recorded in the immunization register and on the child health card and the caregiver is informed of which immunizations were given.

How to use a tally sheet

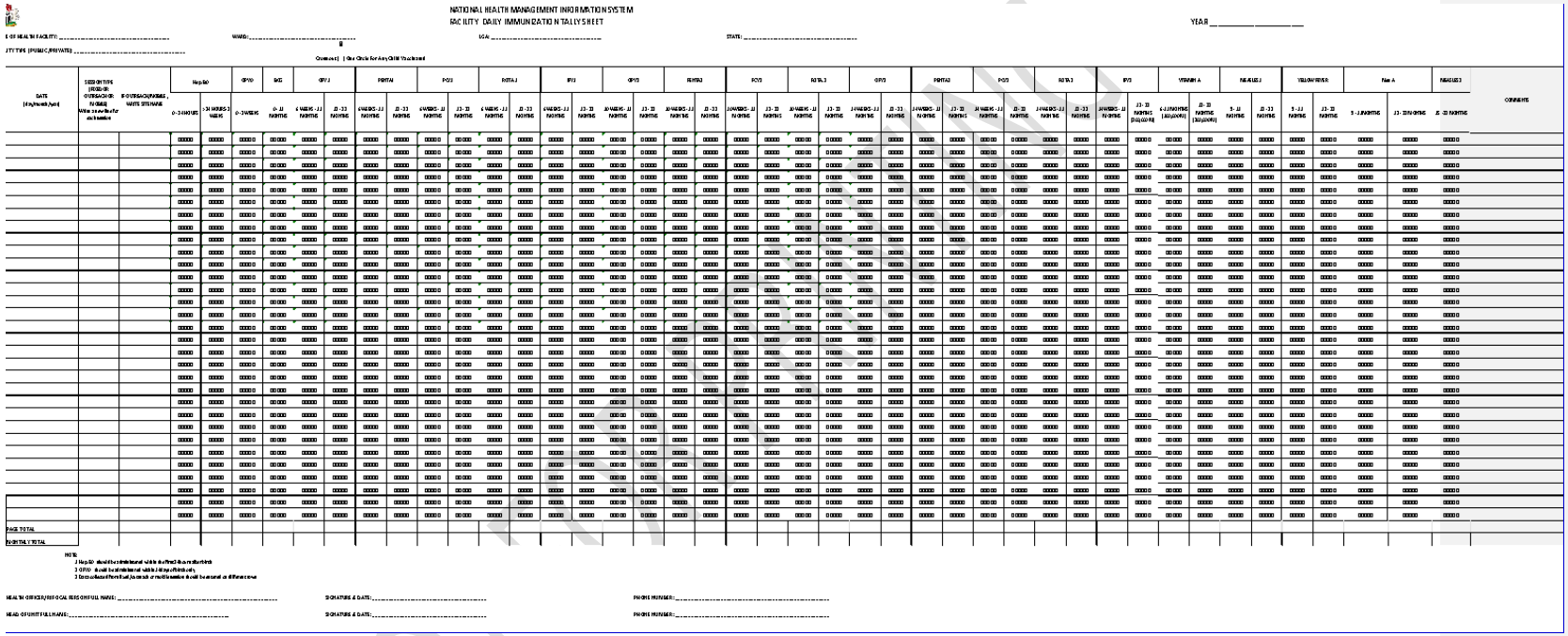
Mark the tally sheet next to the dose received with ink (there are various ways of making tally marks, for example: \or ////). Tally sheets with pre-printed symbols that can be marked through may help to ensure more accurate counting of totals for reports (for example, a line can be drawn through each “0” shown in Figure 6.3aafter each dose given).

In Figure 6.3a, after immunizing an infant (a child who is less than one year of age), mark in the column headed ‘0-11months’. If the child is older, place the mark under ‘Age 12-23 months’.

At the end of each immunization session, add up the number of marks recorded. This gives the total number of immunizations given with each antigen and each dose in its series. Keep the tally sheet/s for the supervisor to review.

Note: TD Tally Sheet and TD register have been revised to document number of girls (9-14 years) given HPV vaccine

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NATIONAL HEALTH MANAGEMENT INFORMATION SYSTEM
FACILITY DAILY IMMUNIZATION TALLY SHEET

YEAR _____

I. OF HEALTH FACILITY: _____ WARD: _____ LGA: _____ STATE: _____

ITY TYPE: (PRIMARY/PRIVATE) _____

Comment [ ] Use Circle for Any Child Vaccinated

DATE (dd/month/year)	SEX (WRITE 'M' FOR MALE OUTREACH OR 'F' FOR FEMALE OUTREACH)	IF OUTREACH, NAME OF VILLAGE VISITED	Hep B0	OPV0	BCG	OPV 1		PENTA 1		POV 2		PENTA 2		IPV2		OPV3		PENTA3		POV2		ROTA 2		OPV3		PENTA3		POV2		ROTA 2		IPV2	VITAMIN A		MEASLES		YELLOW FEVER		Men A		MEASLES2	COMMENTS
			0 - 24 HOURS	0 - 1 WEEK	0 - 11 MONTHS	6 WEEKS - 11 MONTHS	12 - 23 MONTHS	6 WEEKS - 11 MONTHS	12 - 23 MONTHS	6 WEEKS - 11 MONTHS	12 - 23 MONTHS	6 WEEKS - 11 MONTHS	12 - 23 MONTHS	6 WEEKS - 11 MONTHS	12 - 23 MONTHS	10 WEEKS - 11 MONTHS	12 - 23 MONTHS	10 WEEKS - 11 MONTHS	12 - 23 MONTHS	10 WEEKS - 11 MONTHS	12 - 23 MONTHS	14 WEEKS - 11 MONTHS	12 - 23 MONTHS	14 WEEKS - 11 MONTHS	12 - 23 MONTHS	14 WEEKS - 11 MONTHS	12 - 23 MONTHS	14 WEEKS - 11 MONTHS	12 - 23 MONTHS	14 WEEKS - 11 MONTHS	12 - 23 MONTHS (SECOND DOSE)	6 - 11 MONTHS (1ST DOSE)	12 - 23 MONTHS (2ND DOSE)	9 - 11 MONTHS	12 - 23 MONTHS	9 - 11 MONTHS	12 - 23 MONTHS	9 - 11 MONTHS	12 - 23 MONTHS	9 - 11 MONTHS	12 - 23 MONTHS	
PAGE TOTAL																																							
MONTHLY TOTAL																																							

NOTE
1 Hep B0 should be administered within the first 24 hours of birth
2 OPV0 should be administered within 15 days of birth only
3 Contraindications: Premature, low birth weight and illness should be treated as a different case

HEALTH OFFICER/BIRTH ATTENDANT FULL NAME: _____ SIGNATURE & DATE: _____ PHONE NUMBER: _____

HEAD OF UNIT FULL NAME: _____ SIGNATURE & DATE: _____ PHONE NUMBER: _____

Figure 6.3a: Infant Immunization Tally Sheet

NATIONAL HEALTH MANAGEMENT INFORMATION SYSTEM
FACILITY DAILY IMMUNIZATION TALLY SHEET

NAME OF HEALTH FACILITY: _____ WARD: _____ LGA: _____ STATE: _____ MONTH/YEAR: _____

FACILITY TYPE (PUBLIC /PRIVATE): _____

TETANUS DIPHTHERIA FOR PREGNANT AND NON PREGNANT WOMEN

PLEASE TICK EACH VACCINE GIVEN IN APPROPRIATE COLUMN

DATE (day/month/year)	SESSION TYPE (FIXED OR OUTREACH OR MOBILE) Write a new line for each session	IF OUTREACH/MOBILE , WRITE SITE NAME	Td1		Td2		Td3		Td4		Td5		HPV		COMMENTS
			P	NP	P	NP	P	NP	P	NP	P	NP	9 Years	10 - 14 Years	
			00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
			00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
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			00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
TOTAL															

NOTE: A WOMAN WHO HAD TAKEN TD1/TD2 DURING PREGNANCY SHOULD PROCEED TO COMPLETE THE SCHEDULE EVEN WHEN SHE IS NOT PREGNANT

HEALTH OFFICER/RI FOCAL PERSON FULL NAME: _____ SIGNATURE & DATE: _____ PHONE NUMBER: _____

HEAD OF UNIT FULL NAME: _____ SIGNATURE & DATE: _____ PHONE NUMBER: _____

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Figure 6.3b: Tetanus Toxoid/Diphtheria Immunization Tally Sheet for Pregnant Women

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Table 6.3: Common mistakes in tallying

Mistake in tallying	Possible problem that may occur	Correct practice
Tallying before the immunization is given	The child may not receive the vaccine	Immunize first, then mark it on the tally sheet
Tallying at the end of a session according to number of doses contained in the used vials	Wasted and unused doses may be counted	Tally each dose as it is given
Tallying all vaccines under one age group (to include those outside the targeted age)	Will result in inaccurate coverage data	Separate tally for under 1 and over 1 year old

6.1.3 The Child immunization register

The immunization register is used to record the immunizations received by each child. It is a book or a form that stays in the health facility. Its main purpose is to keep track of the immunization services provided to each infant over time. It lists each infant on a separate line and is important for several reasons.

- It is the health facility's primary source of information on a child's immunization status. This information is particularly helpful if an infant is taken for a follow-up visit without her/his immunization card.
- It helps identify children who miss scheduled immunizations and who need to be added to the defaulter-tracking list.
- It is a source of data for monthly immunization reports and other reports.

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What information is commonly included in the immunization register?

An immunization register usually includes the following information:

1. Name of Health Facility
2. Facility type (Public/Private)
3. Settlement / Community
4. Ward
5. Birth Month
6. Birth Year
7. Date of child visit
8. Childs Name
9. Childs Card Number
10. Sex (M or F)
11. Follow up address
12. Phone number
13. Date of Birth
14. Dates of administration of each antigen

The immunization register can also be used as a birth register. As soon as an infant is born in the community, her/his name can be entered in the register even before receiving any immunizations. This will help to follow up new children along with older ones on the defaulter tracking list.

- Documentation is done by settlement.
- The vaccines on the immunization register are arranged according to the immunization schedule.

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Figure 6.4: Child Immunization Register

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How to complete an immunization register

Children should be registered as soon as they arrive at the health facility or outreach site. Fill in all information except the space provided for immunizations. Date of immunizations should be indicated in appropriate column only after vaccine (s) have been administered.

Use a unique identification number on the register for each infant and write the same number on the child health card. A unique identification number is easier to locate in the register if the card is available during follow-up appointments.

Do not create a new entry in the register each time the mother brings the infant for immunization. Ask the caregiver for the immunization card and look for a corresponding entry in the register. If the child health card is not available, ask the caregiver for the child's name, age, settlement/community and other details of the first immunization, then locate her/his line in the register.

For every new infant who has never been immunized (i.e. zero dose), create a new entry in the register and issue a new child health card.

For an infant who has come to the health facility for the first time but has received immunizations in another facility, create a new entry in the register in the appropriate month of birth column. Then ask for the child health card and write immunizations that the infant has already received in the register.

If there is no immunization card, review the vaccines the child should have received (by age according to the national immunization schedule) with the caregiver and record the ones she/he can recall been given.

If the caregiver is not able to recall the vaccines given, the immunization schedule should be started all over again.

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Key points

Fill in all information on the register line for each infant with ink.

Indicate the date in the appropriate column in the register only after immunizing the infant.

When a child returns for a follow up visit, find the register line for the child using the child health card.

6.1.4 Monthly summary Forms

Health facility Summary Form

The Health Facility summary form is used to collate the tally sheet data:

- ***At the end of each session the health worker counts the tallying by antigen, dose and age group. The sums are then entered into the corresponding sections of the facility summary sheet in the row denoting the immunization date.***
- Outreach data should similarly be entered.
- This process is done on every immunization session.
- End of the month the columns are totaled for all antigens, doses and age group.
- ***The signature sections are entered by the appropriate authority*.**
- The original copy of the signed form is submitted timely to the LGA level.

Note: The duplicate copy of the facility immunization summary (monthly) form is kept well in the facility.

Use the numbers from the facility immunization summary (monthly) form to complete the immunization monitoring charts.

NOT FOR PRINTING

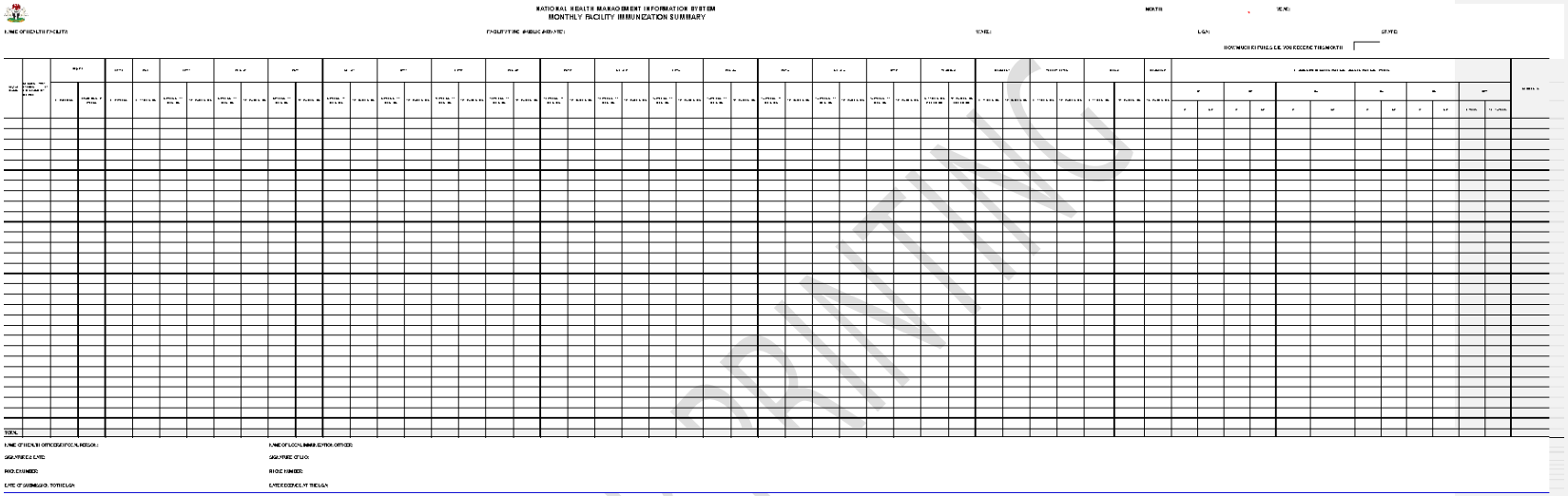


Figure 6.5a: Health Facility Summary Form

NOT FOR PRINTING

LGA Summary Form

The LGA summary form is used to collate the HF summary data:

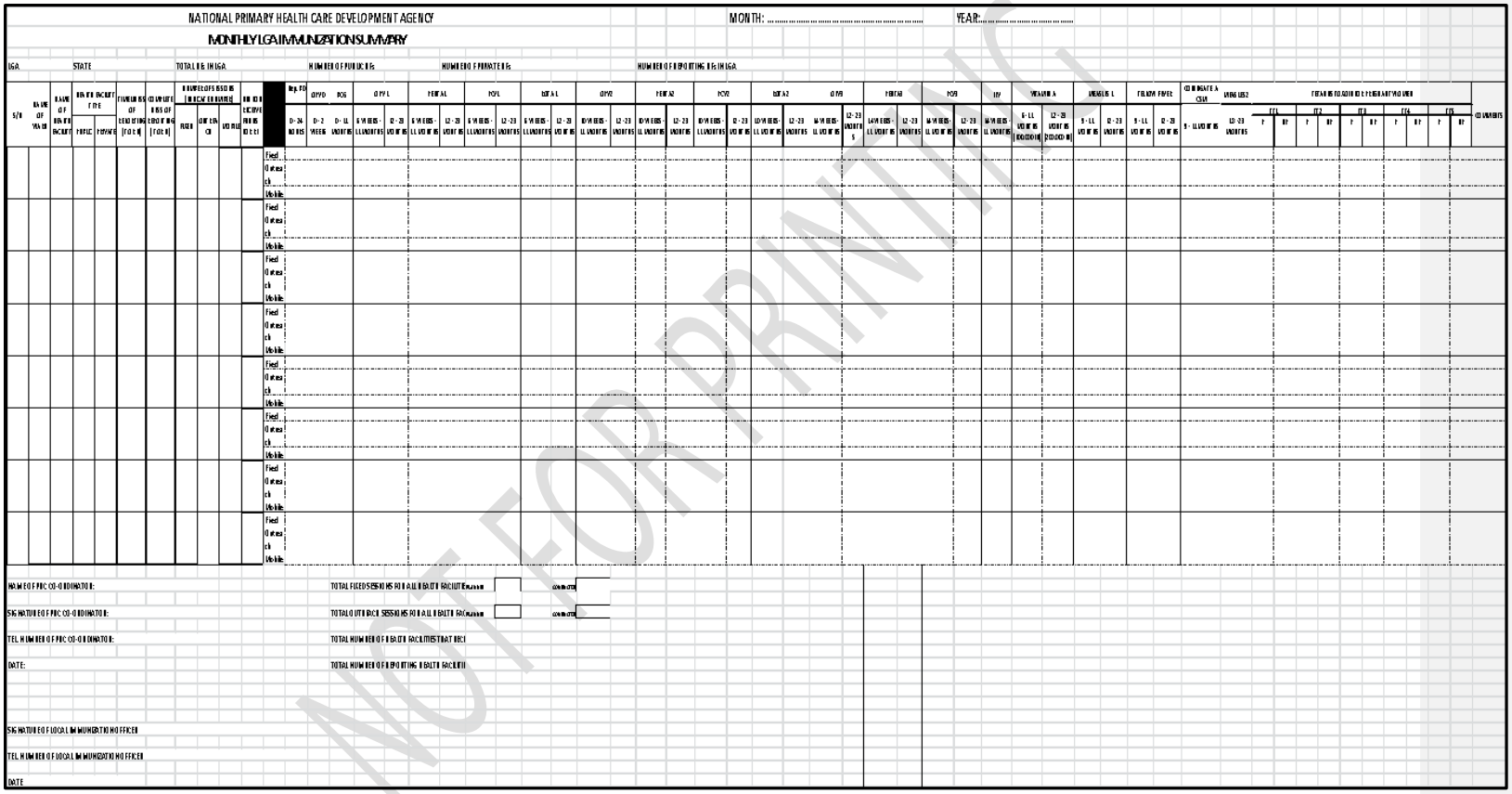
- Every month, the LGA monthly (routine immunization) activities report is compiled from the immunization reports of all the health facilities in that LGA.
- The LGA monthly (routine immunization) activities report will be used to prepare graphs of performance of health facilities to guide action.
- The original copy is submitted to the next higher level.
- The duplicate copy of the LGA summary (monthly) form is kept in the LGA.

Note: Health workers should ensure that reports are:

- ***Complete. All sections of the summary reports should be filled in and no parts left blank. All reports due from different services and/or outreach sites should be received, and their data included in the summary report.***
- ***Timely. All summary reports should be submitted to the next level before the assigned deadline. Summary reports completed and submitted on time help to ensure prompt and effective disease control response.***
- ***Accurate. All summary reports should contain figures/values that correspond to the actual figures from the health facilities and that are double-checked for correct calculations and totals.***

Health facility, LGA, State and national levels should keep track of the completeness and timeliness of reporting by health facilities and remind them of missing or late reports. Timeliness and completeness of reporting should be used as an indicator for measuring the performance of health facilities.
DHIS 2 used at the LGA, State and national levels also track the completeness, timeliness and accuracy of routine immunization data.

NOT FOR PRINTING



NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

MONTHLY LGA IMMUNIZATION SUMMARY

MONTH: ..... YEAR: .....

LGA: STATE: TOTAL NO. IN LGA: NUMBER OF PUBLIC HFs: NUMBER OF PRIVATE HFs: NUMBER OF REPORTING HFs IN LGA:

S/N | NAME OF WARD | NAME OF HEALTH FACILITY | HEALTH FACILITY TYPE (PUBLIC / PRIVATE) | NUMBER OF CATCHMENT POPULATION (TOTAL) | CATCHMENT POPULATION (TOTAL) | NUMBER OF SESSIONS HELD (BCG OR OPV/BIRTH) (FIXED / OUTREACH / MOBILE) | NO. OF DAYS VACCINE RECEIVED

Reg. FO | OPV0 | BCG | OPV 1 | PENTA1 | PCV1 | DPT-A1 | OPV2 | PENTA2 | PCV2 | DPT-A2 | OPV3 | PENTA3 | PCV3 | IPV | YELLOW FEVER | MEASLES 1 | MEASLES 2 | COMBINATION A (DTP-HEP B-HIB) | VITAMIN A | TOTAL DOSES ADMINISTERED DURING ANTI-NATAL VISIT | CO-MMENTS

0-24 HOURS | 0-2 WEEKS | 0-11 MONTHS | 6 WEEKS - 11 MONTHS | 12-23 MONTHS | 6 WEEKS - 11 MONTHS | 12-23 MONTHS | 6 WEEKS - 11 MONTHS | 12-23 MONTHS | 10 WEEKS - 11 MONTHS | 12-23 MONTHS | 10 WEEKS - 11 MONTHS | 12-23 MONTHS | 14 WEEKS - 11 MONTHS | 12-23 MONTHS | 9-11 MONTHS | 12-23 MONTHS | 9-11 MONTHS | 12-23 MONTHS | 9-11 MONTHS (100,000 IU) | 12-23 MONTHS (200,000 IU) | 9-11 MONTHS | 12-23 MONTHS | 9 - 11 MONTHS | 12-23 MONTHS | ANC1 | BY | ANC2 | BY | ANC3 | BY | ANC4 | BY

Fixed
Outreach
Mobile

NAME OF PHC CO-ORDINATOR:

SIGNATURE OF PHC CO-ORDINATOR:

TEL. NUMBER OF PHC CO-ORDINATOR:

DATE:

SIGNATURE OF LOCAL IMMUNIZATION OFFICER

TEL. NUMBER OF LOCAL IMMUNIZATION OFFICER

DATE

TOTAL FIXED SESSIONS FOR ALL HEALTH FACILITIES (sum) ..... (summation) .....

TOTAL OUTREACH SESSIONS FOR ALL HEALTH FACILITIES (sum) ..... (summation) .....

TOTAL NUMBER OF HEALTH FACILITIES THAT REC'D .....

TOTAL NUMBER OF REPORTING HEALTH FACILITY .....

NOT FOR PRINTING

Figure 6.5b: LGA summary form.

6.1.5 Immunization monitoring chart

Trainers Note

Reference should be made to monitoring chart (figure 6.6a and 6.6b) when each particular step is read.

A monitoring chart is a simple and effective tool which shows number of children immunized and dropout rates for every health facility and LGA on a monthly basis.

How to prepare monitoring chart for children less than one year of age

Step 1: Calculate the annual and monthly target populations for immunization

a) Annual target population

Obtain existing population figures for children under one year of age from official census data or multiply the total population by 4%. (Example= If the total population is 391,217 then children under one year would be 391,217 x 4/100 = 15,649).

b) Monthly target

To get a monthly target population, divide the number of children under one year of age by 12 (If annual target under one year is 15,649, monthly target is 15,649/12 = 1,304).

Step 2: Label the chart

a) Complete the information on the top of the chart, i.e. antigen, name of Health Facility/LGA/State and year.

b) Label the left of the chart (y-axis) with the monthly target figures. (multiplying the monthly target population with 0,1,2,3…12 from the zero point until the top row of the chart)

c) Label the boxes at the bottom (x-axis) with the name of the vaccine/s and doses, e.g. Penta 1 and measles, or Penta 1 and Penta 3. Record the monthly and cumulative number of children vaccinated with the antigen per month

NOT FOR PRINTING

Step 3: Target Lines

a) Draw a diagonal line from zero to the top right-hand corner to show the ideal rate of progress if every infant is immunized on time.

b) Draw another diagonal line from zero to the position of the national desired coverage for the year on the x-axis to show the target line

Step 4: Plot immunization data on the chart.

a) Locate the row of boxes underneath the graph. Locate the spaces for the month you are recording. Enter the monthly total of the antigen given.

b) Add the current month's total to the previous cumulative total to calculate the current cumulative total and enter it in the box for cumulative total of the month column you are recording.

c) Make a dot on the graph for the cumulative total recorded for the new month.

d) Connect the new dot to the previous month's dot with a straight line.

e) Repeat above (a-d) every month until the end of the year.

f) In this way plot any antigen being monitored (following steps a-e).

Step 5: Calculate the total number of drop outs

a) For Penta 1 and Penta 3 drop out (DO#).

Subtract the cumulative total for Penta 3 from the cumulative total for Penta 1

DO = Penta 1 – Penta 3

b) For Penta 1 and Penta 3 dropout Rate (DO#).

Subtract the cumulative total for Penta 3 from the cumulative total for Penta 1 and Divide by cumulative total for Penta 1 and multiply by 100

DOR = ((Penta1-Penta3)/Penta 1) x 100

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Suggested charts

There are many ways to monitor coverage and drop- outs using charts:

- Penta 1 and Penta 3
- BCG and Measles
- OPV1 and OPV3
- Td2+ (TT/Td2 and TT/Td5)

NOT FOR PRINTING

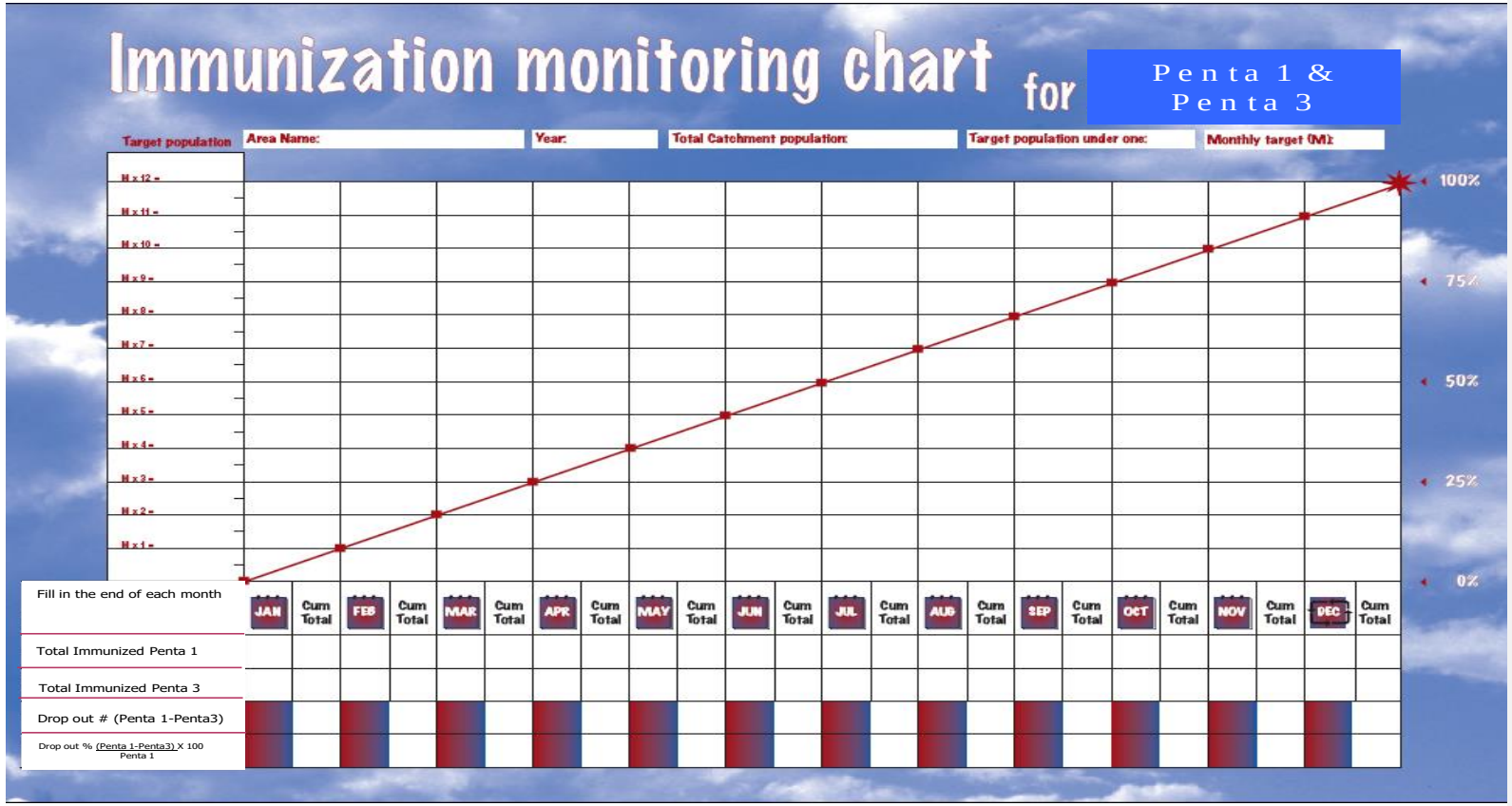


Figure 6.6a: Penta 1 and Penta 3 monitoring Chart

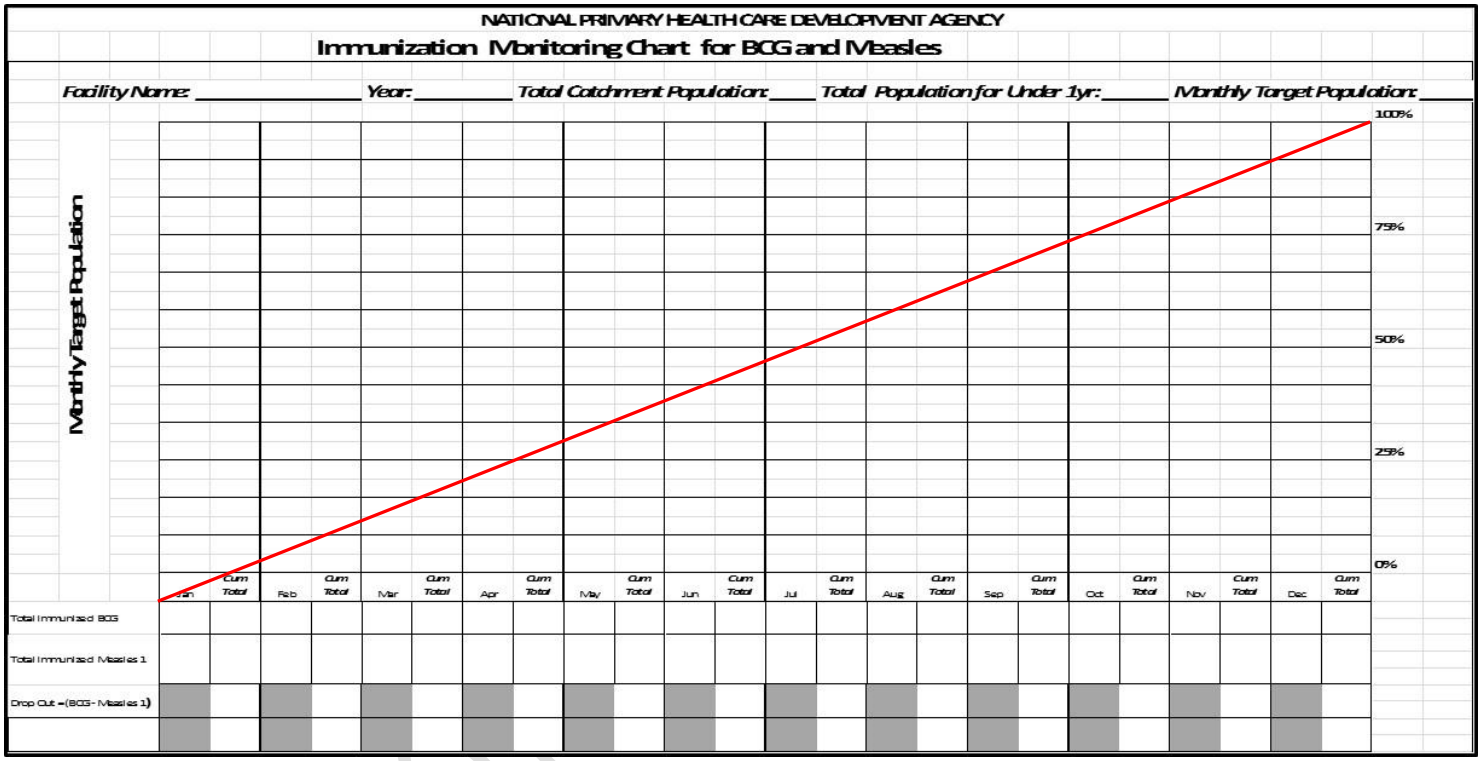


Figure 6.6b: Monitoring Chart BCG-Measles 1.

NOT

6.1.6 Vaccine Management Tools (VMT)

i. VM1 A tool (Monthly Health Facility Vaccine Utilization Reporting Form).

ii. VM1 B tool (Monthly Health Facility Vaccine Utilization Reporting Form).

iii. VM2 tool (Monthly LGA Health Facility Vaccines Utilization Summary Form).

iv. VM3 tool (Monthly Routine Immunization: Vaccines Utilization Reporting Form).

v. Vaccine/diluents/Injection devices ledgers.

vi. Requisition/issue/receipt vouchers.

i. Monthly Health Facility Vaccine Utilization Reporting form: VM1A

This is used to track the quantities of vaccines received/used/balance on a daily basis, and also serves as ledger book at the health facility level.

FREQUENCY:

☐ This is to be filled each time vaccines are received and/or used.

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 'Opening balance' row.

☐ Minimum and maximum stock levels of all antigens 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' row.

☐ All vaccine doses opened for sessions must be written in 'Doses Opened' row

☐ The balances should be calculated and written in 'Ending balance' row

☐ At the end of the session, the 'quantity returned to the LGA' should be written

☐ At the end of the month, add all 'Received' and 'Doses opened'

NOT FOR PRINTING

☐ At the end of every month a copy of this form is to be submitted to the LGA, together with Monthly RI Health Facility Summary form

NOT FOR PRINTING

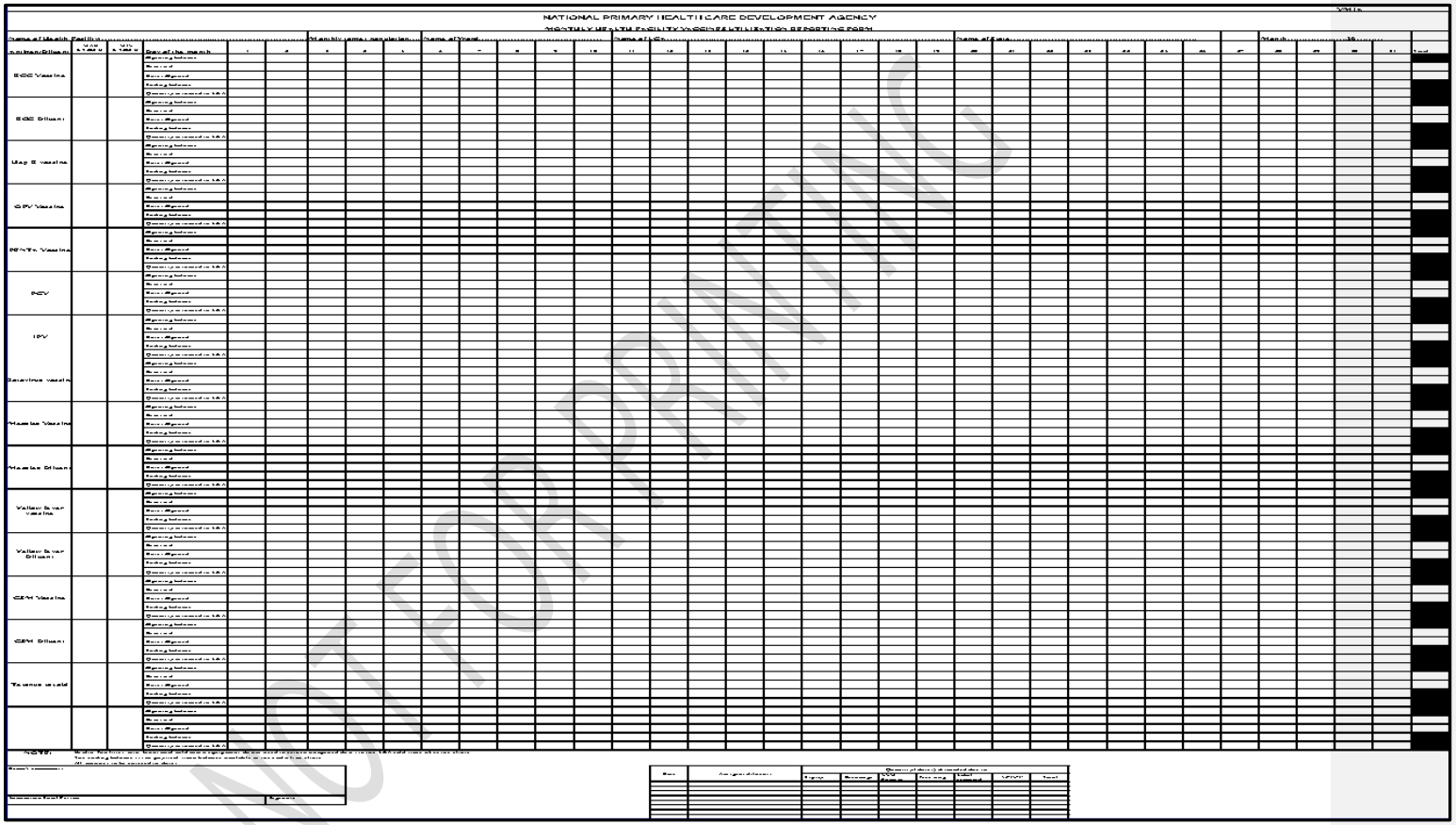


Figure 6.7a: Monthly Health Facility Vaccine Utilization Reporting Form: VM1A.

ii. Monthly Health Facility Devices/Other Materials Utilization Reporting form: VM1B

This is used to track the quantities of devices received/used/balance on a daily basis

FREQUENCY:

☐ This is to be filled each time devices are received and/or used

BY WHOM:

To be filled by Health Facility Routine Immunization focal person

HOW:

☐ Balances from the previous month will be carried into current month, in 'Opening balance' row.

☐ Minimum and maximum stock levels of all devices are to be entered at the beginning of the month and to be calculated by LGA Cold Chain Officers.

☐ All items received from the LGA must be entered into 'Received' row

☐ All items used for each session must be written in 'Used' row

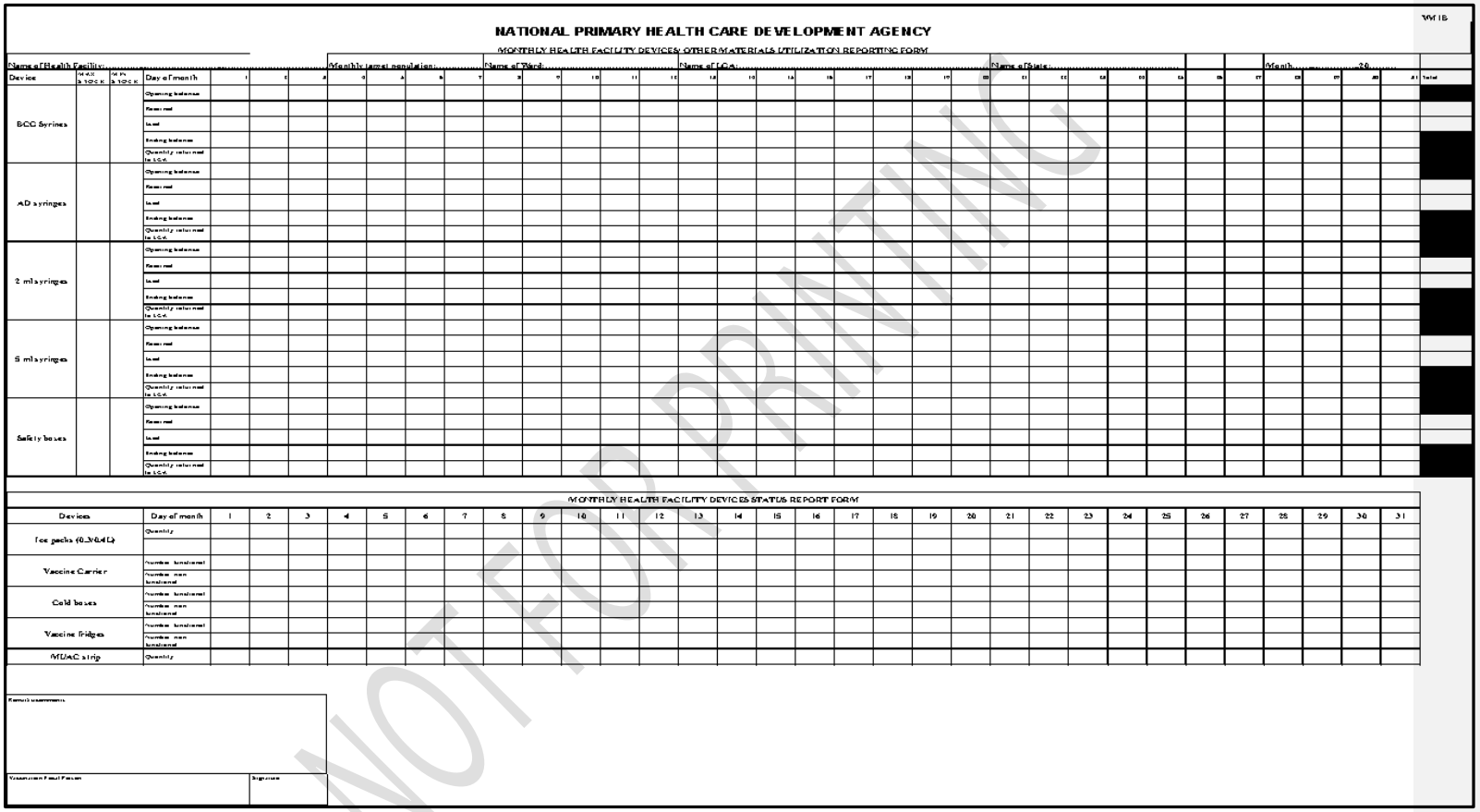
☐ The balances should be calculated and written in 'Ending balance' row

☐ At the end of the session, the 'Quantity returned to the LGA' should be documented

☐ At the end of the month, total all 'Received' and 'Used' items

☐ A copy of this form is to be submitted to the LGA, along with the VM1A, Monthly RI Health Facility Summary and other tools

NOT FOR PRINTING



VM1B

NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

MONTHLY HEALTH FACILITY DEVICES/ OTHER MATERIALS UTILIZATION REPORTING FORM

Name of Health Facility: Monthly target population: Name of Ward: Name of LGA: Name of State: Month 20

Device	MAX 3 10C K	MIN 3 10C K	Day of month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
BCG Syrines			Opening balance																																
			Received																																
			Used																																
			Ending balance																																
			Quantity returned to LGA																																
AD syringes			Opening balance																																
			Received																																
			Used																																
			Ending balance																																
			Quantity returned to LGA																																
2 ml syringes			Opening balance																																
			Received																																
			Used																																
			Ending balance																																
			Quantity returned to LGA																																
5 ml syringes			Opening balance																																
			Received																																
			Used																																
			Ending balance																																
			Quantity returned to LGA																																
Safety boxes			Opening balance																																
			Received																																
			Used																																
			Ending balance																																
			Quantity returned to LGA																																

MONTHLY HEALTH FACILITY DEVICES STATUS REPORT FORM

Devices	Day of month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Ice packs (0.V0.4L)	Quantity																															
Vaccine Carrier	Number functional																															
	Number non functional																															
Cold boxes	Number functional																															
	Number non functional																															
Vaccine fridges	Number functional																															
	Number non functional																															
MUAC strip	Quantity																															

Remark/comments:

Vaccinator/Head Person: Signature:

NOT FOR PRINTING

Figure 6.7b: Monthly Health Facility Devices/Others Materials Utilization Reporting Form: VM1B.

iii. Monthly LGA Health facility Vaccine Utilization Summary Form: VM2

OBJECTIVE:

- ☐ To track the quantities of vaccines and devices received/used/balance from all the health facilities offering RI in the LGA monthly.

FREQUENCY:

- ☐ This is to be filled after receiving the VM1A and VM1B from the health facilities at the end of every month.

BY WHOM:

To be filled by LGA Cold Chain Officer or any other designated officer

HOW:

- ☐ Enter the doses/quantity of the Received/Used/Balance of all the vaccines and devices received from all the health facilities (VM1A and VM1B) in the reporting month
- ☐ Total all the items at the end of each columns

Fill in the reasons (Expiry, VVM change, Breakage, Frozen, Label removed, others) and quantity of all the vaccine doses/diluents discarded at the end of the month

NOT FOR PRINTING

NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

MONTHLY LGA HEALTH FACILITY VACCINES UTILIZATION SUMMARY FORM VM2

Name of LGA………………………………………………… Name of State………………………………… Month…………20……

Monthly target population………………………

Name of Health facility	BCG doses			BCG Diluent			HBV doses			OPV doses			PENTA Doses			PCV doses			IPV doses			Rotavirus vaccine doses			Measles doses			Measles Diluent		
	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance
Health Facility Total																														

Name of Health facility	Yellow Fever doses			Yellow Fever Diluent			Tetanus Toxoid doses			CSM			CSM Diluent			Tetanus Toxoid doses			BCG Syringes			Auto Disable Syringes			Sols Syringes			Safety boxes		
	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance
Health Facility Total																														

Name of Health facility	MUAC strips	Ice packs	Vaccine Carriers		Cold boxes		Vaccine Refrigerators											
	Quantity	Quantity	Functional	Non-functional	Functional	Non-functional	Functional	Non-functional	Received	Used	Balance	Received	Used	Balance	Received	Used	Balance
Health Facility Total																	

Remarks/comments

Date	Antigen/diluent	Quantity (doses) discarded due to					
		Expiry	VVM Change	Breakage	Frozen	Label removed	TOTAL

Full name: Head of unit signature:

Figure 6.8 Monthly LGA Vaccine Utilization Summary Form VM2.

NOT FOR PRINTING

iv. Monthly Routine Immunization Vaccines and Devices Utilization Reporting Form: VM3

Objective

To track the quantities of vaccines and devices required, balance, received, available, issued out and used by the health facilities offering RI in the LGA on a monthly basis. It also contains details of the physical inventory at the LGA store and HFs, the vaccine doses to be requested for the next month and children immunized.

FREQUENCY:

☐ This is to be filled monthly

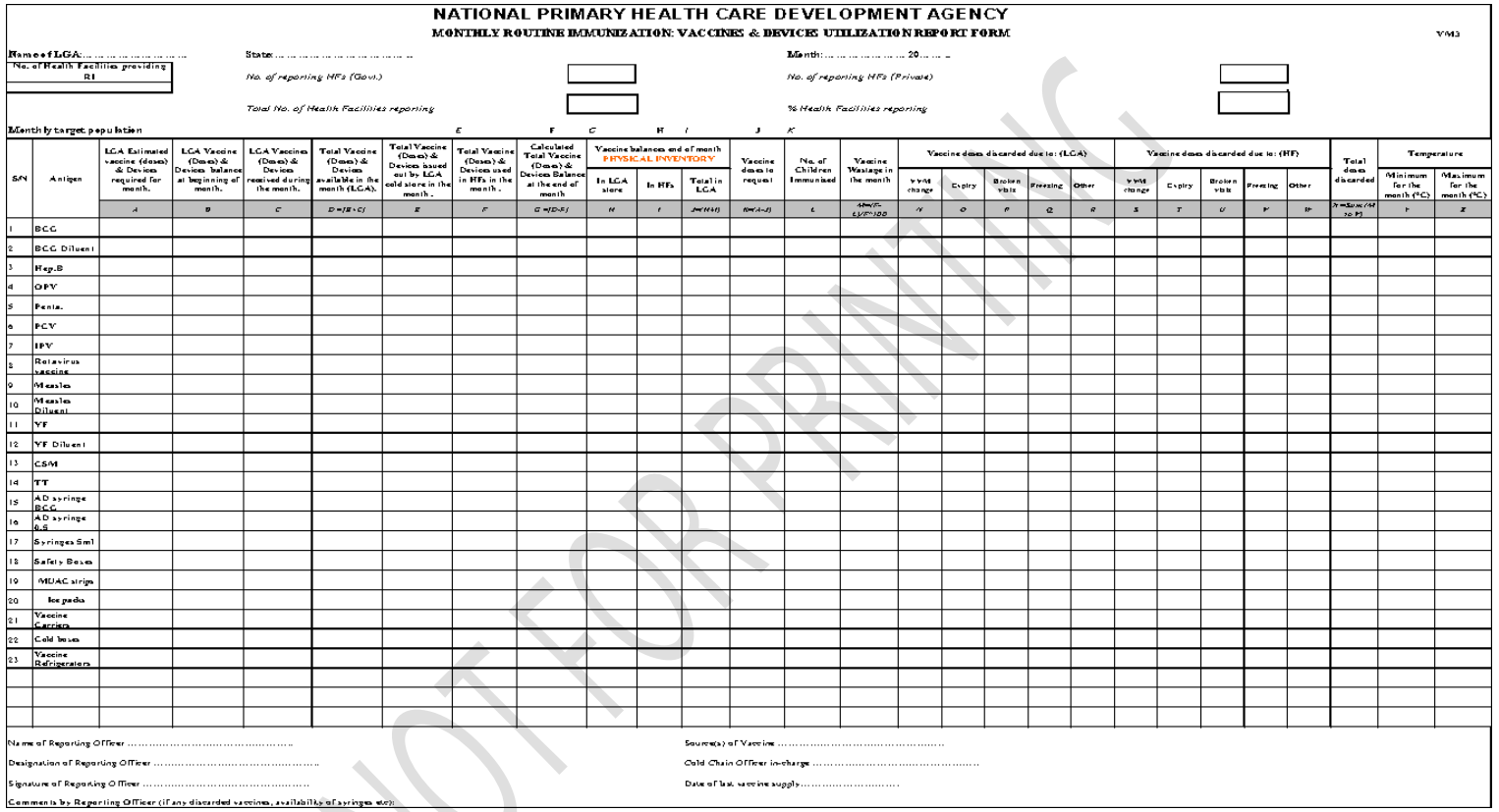
☐ BY WHOM:

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

HOW:

- ☐ Enter the quantities of each vaccines and devices required/balance/received/Available/Issued out and used by the health facilities offering RI in the LGA monthly
- ☐ Enter the physical inventory of vaccines and devices at the HFs and LGAs
- ☐ Calculate the doses of vaccines to be requested
- ☐ Enter the number of children immunized with each of the vaccines and devices in the month
- ☐ Calculate the vaccine wastage in the month
- ☐ Enter the quantity of each vaccine doses discarded/damaged at the LGA and HF level
- ☐ Enter the minimum and maximum temperature recorded at the LGA cold store for the month

NOT FOR PRINTING



NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

MONTHLY ROUTINE IMMUNIZATION: VACCINES & DEVICES UTILIZATION REPORT FORM VM3

Name of LGA:…… State:…… Month:…… 20……

No. of Health Facilities providing RI

No. of reporting HFs (Gov.) | No. of reporting HFs (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 issued out by LGA cold stores in the month.	Total Vaccine (Doses) & Devices used in HFs in the month.	Calculated Total Vaccine (Doses) & Devices Balance at the end of month	Vaccine balances end of month PHYSICAL INVENTORY			Vaccine doses requested	No. of Children Immunised	Vaccine Wastage in the month	Vaccine doses discarded due to: (LGA)					Vaccine doses discarded due to: (HF)					Total doses discarded	Temperature	
									In LGA store	In HFs	Total in LGA				VVM change	Expiry	Broken vials	Freezing	Other	VVM change	Expiry	Broken vials	Freezing	Other		Minimum for the month (°C)	Maximum for the month (°C)
		A	B	C	D=(B+C)	E	F	G=(D-E)	H	I	J=(H+I)	K=(A-J)	L	M=(E-L)/E*100	N	O	P	Q	R	S	T	U	V	W	X=Sum(N to W)	Y	Z
1	BCG																									
2	BCG Diluent																									
3	Hep.B																									
4	OPV																									
5	Penta.																									
6	PCV																									
7	IPV																									
8	Rotavirus vaccine																									
9	Measles																									
10	Measles Diluent																									
11	YF																									
12	YF Diluent																									
13	CSM																									
14	TT																									
15	AD syringe BCG																									
16	AD syringe 0.5																									
17	Syringes 5ml																									
18	Safety Boxes																									
19	MUAC strips																									
20	Ice packs																									
21	Vaccine Carriers																									
22	Cold boxes																									
23	Vaccine Refrigerators																									

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:……

NOT FOR PRINTING

Figure 6.9: Monthly Vaccine and Devices Utilization Reporting Form: VM3.

v. Vaccine/diluents/Injection devices ledgers

To track the quantities of vaccines and devices received in the LGA/State. *One ledger should be used for one antigen at the LGA/State.*

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NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

VACCINES/DILUENTS/INJECTION EQUIPMENT LEDGER

Antigen/Diluents/Device Name:_____

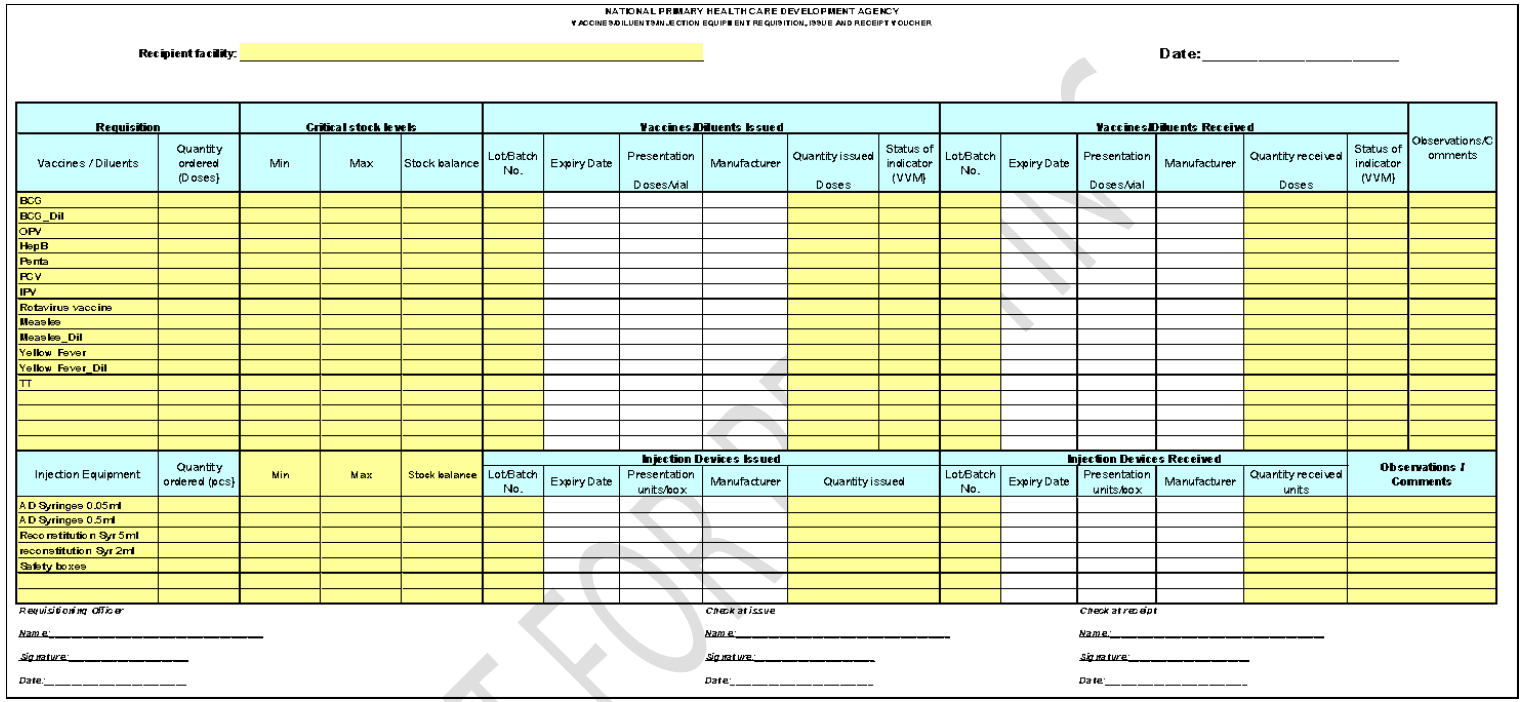
Date	Receipts												Issues							Stock balance	Signature
	Type_Receipt	Origin	PRODUCTS	Lot/Batch No.	Expiry Date	Status of Indicator		Presentation	QUANTITIES RECEIVED	Manufacturer	Voucher_No.	Indication for use (RI or SIAs)	Recipient	Quantity issued	Lot/Batch No.	Expiry Date	Status of Indicator	Presentation	Comments/Remarks		
			Vaccines/Diluents/Devices			VVM	CCM	doses/vial	Doses					Doses			VVM	Doses/vial			

NOT FOR PRINTING

Figure 6.10 Vaccines/Diluents/Equipment Ledgers.

vi. Requisition/issue/receipt vouchers

This is used to document/record vaccine and injection devices movement form one level to another.



NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY
VACCINE/DILUENT/INJECTION EQUIPMENT REQUISITION, ISSUE AND RECEIPT VOUCHER

Recipient facility: _____ **Date:** _____

Requisition		Critical stock levels			Vaccines/Diluents Issued						Vaccines/Diluents Received						Observations/Comments
Vaccines / Diluents	Quantity ordered (Doses)	Min	Max	Stock balance	Lot/Batch No.	Expiry Date	Presentation Doses/Vial	Manufacturer	Quantity issued Doses	Status of indicator (VVM)	Lot/Batch No.	Expiry Date	Presentation Doses/Vial	Manufacturer	Quantity received Doses	Status of indicator (VVM)	
BCG																	
BCG_Dil																	
OPV																	
HepB																	
Penta																	
PCV																	
IPV																	
Rotavirus vaccine																	
Measles																	
Measles_Dil																	
Yellow Fever																	
Yellow Fever_Dil																	
TT																	

Injection Equipment	Quantity ordered (pcs)	Min	Max	Stock balance	Injection Devices Issued					Injection Devices Received					Observations / Comments
					Lot/Batch No.	Expiry Date	Presentation units/box	Manufacturer	Quantity issued	Lot/Batch No.	Expiry Date	Presentation units/box	Manufacturer	Quantity received units	
AD Syringes 0.05ml															
AD Syringes 0.5ml															
Reconstitution Syr 5ml															
reconstitution Syr 2ml															
Safety boxes															

Requisitioning Officer
Name: _____
Signature: _____
Date: _____

Check at issue
Name: _____
Signature: _____
Date: _____

Check at receipt
Name: _____
Signature: _____
Date: _____

Figure 6.11 Requisition/Issue/Receipt Voucher.

vii. Monthly Health Facility Vaccine Utilization Summary Form

This form captures information on both vaccines and devices; the VM1 A and VM1 B are summarized into this form for entry unto the DHIS2 platform.

MoMS Monthly Health Facility Vaccine Utilization Summary Form

Name of Health Facility:	Name of LGA:
Name of Ward:	Month:

Antigen/ Diluent (Doses)	Maximum Stock	Minimum Stock	Opening Balance	Quantity Received	Doses Opened	Quantity returned to LGA/Facility	Any Stock Out this month (Yes/No)
BCG Vaccine							
BCG Diluent							
Hepb Vaccine							
OPV Vaccine							
Penta Vaccine							
PCV Vaccine							
IPV Vaccine							
Rotavirus Vaccine							
Measles Vaccine							
Measles Diluent							
Yellow Fever Vaccine							
Yellow Fever Diluent							
Meningitis Vaccine							
Meningitis Diluent							
Tetanus Diphtheria (TD) Vaccine							

Quantity of Doses Discarded Due to

Antigen/ Diluent	Expiry	Breakage	VVM Change	Frozen	Label Removed
BCG Vaccine Dose Discarded					
BCG Diluent Dose Discarded					
Hepb Vaccine Dose Discarded					
OPV Vaccine Dose Discarded					
Penta Vaccine Dose Discarded					
PCV Vaccine Dose Discarded					
IPV Vaccine Dose Discarded					
Rotavirus Vaccine Dose Discarded					
Measles Vaccine Dose Discarded					
Measles Diluent Dose Discarded					
Yellow Fever Vaccine Dose Discarded					
Yellow Fever Diluent Dose Discarded					
Meningitis Vaccine Dose Discarded					
Meningitis Diluent Dose Discarded					
Tetanus Diphtheria Vaccine Dose Discarded					

Monthly Devices / Other Materials

Device	Opening Balance	Received	Used	Ending Balance	Quantity Returned to LGA
BCG Syringes					
AD Syringes					
2ml Syringes					
5ml Syringes					
Safety Boxes					

Monthly Devices Status Report

Device	Quantity	Number Functional	Number non-functional
Ice Packs (EA/EAL)	[redacted]		
Vaccine Carrier			
Cold Boxes			
Vaccine Fridge			
MUAC Strip			

HEALTH OFFICER/RI FOCAL PERSON FULL NAME:

HEAD OF UNIT FULL NAME:

SIGNATURE & DATE:

SIGNATURE & DATE:

PHONE NUMBER :

PHONE NUMBER :

NOT FOR PRINTING

Figure 6.12: Monthly Health Facility Vaccine Utilization Summary Form.

NOT FOR PRINTING

Trainers Note on Exercise 1:

- *Facilitator stops at this point to guide the participants on hands-on:*
    1. *Child Health Card*
    2. *Child Immunization Register*
    3. *Tally sheet*
    4. *Summary sheets and*
    5. *VM Tools.*
- *This should last for 30 minutes.*

Trainers Note on Exercise 2:

- *Facilitator stops at this point to guide the participants on hands-on:*
    6. *Monitoring Chart*
- *This should last for 30 minutes.*

6.2 Reaching Every Ward (REW) Monitoring

6.2.1 Definition of REW

Reaching Every Ward approach is a strategy aimed at restoring regular, effective, quality and sustainable routine immunization activities in every ward, so as to improve immunization coverage. It focuses on improving the organization and availability of immunization services for every child.

6.2.2 Components of REW

Based on the understanding of the common barriers to achieving immunization goals, the REW approach comprises of the following five operational components:

1. Planning and Management of Resources
2. Improving Access to Immunization Service Delivery
3. Supportive Supervision
4. Linking Services with Community
5. Monitoring for Action

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6.2.3 How do you monitor the implementation of REW in your HF/LGA/state?

The REW core indicators are meant to monitor the implementation of REW using key selected indicators. Each State can however, have additional indicators to monitor.

Using the attached forms, each State is expected to report on these indicators through the normal route to national level on monthly basis.

The Health facilities fill only the REW-HF-1 and submit to LGAs; the LGAs are to fill REW-LG-1 &2 for submission to State level; while the States complete REW-ST-1&2 and submit to national level through the zones. Feedback will be given to the lower levels using the monthly routine immunization performance feedback and any other possible means.

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REACHING EVERY WARD APPROACH

CORE PERFORMANCE INDICATORS

S/N	REW Component	Area	Core Indicator Standard	Core Indicator Definition, Unit of Measurement and Suggested Frequency of Collection		
				LGA	State	National
1	PLANNING AND MANAGEMENT OF RESOURCES	PLANNING	Microplans up-to-date	Number of HFs with microplans up-to-date / Total number of HFs	Number of LGAs with microplans up-to-date / Total number of LGAs	Number of States with EPI plans / Total number of States
				Measurement: percentage Frequency: quarterly	*Measurement: percentage Frequency: quarterly / 6 months*	*Measurement: Y/N Frequency: annual*
2		VACCINE MANAGEMENT	No vaccine stock-outs of any antigen	Number of HFs with no vaccine stock-outs of any antigen / Total number of HFs	Number of LGAs with no vaccine stock-outs of any antigen / Total number of LGAs	Number of States with no vaccine stock-outs of any antigen / Total number of States
				Measurement: percentage Frequency: monthly	*Measurement: percentage Frequency: monthly*	*Measurement: Y/N Frequency: monthly*
3		SAFETY	No AD syringe stock-out	Number of HFs with no AD syringe stock-outs / Total number of HFs	Number of LGAs with no AD syringe stock-outs / Total number of LGAs	Number of states with no AD syringe stock-outs / Total number of States
				Measurement: percentage Frequency: monthly	*Measurement: percentage Frequency: monthly*	*Measurement: Y/N Frequency: monthly*
4		PERSONNEL	At least one personnel trained in immunization	Number of HFs with at least one staff trained on immunization in the previous year / Total number of HFs	Number of LGAs with at least one staff trained on immunization in the previous year / Total number of LGAs	
				Measurement: percentage Frequency: annual	*Measurement: percentage Frequency: annual*	
5		FINANCING	Disbursement of funds for routine immunization	Number of HFs with funds disbursed for outreach activities / Total number of HFs	Number of LGAs with funds disbursed for routine immunization activities / Total number of LGAs	Funds disbursed for routine immunization activities to State level?
				Measurement: percentage Frequency: quarterly	*Measurement: percentage Frequency: quarterly*	*Measurement: Y/N Frequency: Quarterly*
6	LINKING SERVICES WITH THE COMMUNITY		Community meetings conducted	Number of HFs with at least 1 meeting conducted with community / Total number of HFs	Number of LGAs with at least 1 meeting conducted with the community (CBOs and/or local authorities) / Total number of LGAs	
				Measurement: percentage Frequency: quarterly	*Measurement: percentage Frequency: quarterly*	
S/N	**RED Component**		**Core Indicator Standard**	**Core Indicator Definition, Unit of Measurement and Suggested Frequency of Collection**		
				HF	**LGA**	**National**
7	REACHING THE TARGET POPULATIONS		**Effective outreach*** *where target population for outreach sites is not well defined, use # sessions conducted / # sessions planned*	*Number of outreach sessions conducted by HFs / Total number of sessions planned by HFs*		
				Meas: num/denom & percentage Frequency: monthly		
8	SUPPORTIVE SUPERVISION		Supportive supervision conducted		Number of HFs with supportive supervisory visits by LGA teams / Total number of HFs	Number of LGAs/States with supportive supervisory visits conducted by national level / Total number of LGA/State
					Measurement: percentage Frequency: Monthly	*Measurement: percentage Frequency: monthly*
9	MONITORING FOR ACTION		Timely reporting		Number of immunization reports received by LGAs from HFs / Total number of HFs	Number of immunization reports received at national level from LGA/States/ Total number of LGAs/States
					Measurement: percentage Frequency: monthly	*Measurement: percentage Frequency: monthly*
10			Review meetings conducted			Number of LGAs/States conducting review meetings / Total number of LGAs/States
						Measurement: percentage Frequency: monthly
11			Data monitored		Number of HFs with monitoring chart up-to-date and correctly drawn / Total number of HFs	Number of LGAs with monitoring chart up-to-date and correctly drawn / Total number of LGAs
					Measurement: percentage Frequency: monthly	*Measurement: percentage Frequency: monthly*
S/N	**RED Component**		**Core Indicator Standard**	**Core Indicator Definition, Unit of Measurement and Suggested Frequency of Collection**		
				HF	**LGA**	**National**
					Performance Categories	
12	PERFORMANCE	ACCESS	Penta1-containing coverage rate	Number of children < 12 months immunized with Penta1-containing vaccine / Number of surviving infants < 12 months of age X 100		
				Meas: num/denom & percentage Frequency: monthly (cumulative)		
13		UTILIZATION	Penta1-containing to Penta3-containing drop-out rate	Penta1-containing coverage minus Penta3-containing coverage / Penta1-containing coverage X 100*		
				Measurement: percentage Frequency: monthly (cumulative)		

Figure 6.13: Chart of REW Components

6.2.4 REW Monitoring Tools

i. Health Facility level form (REW-HF-1)

ii. LGA level reporting form (REW-LG-1/2)

   a. REW-LG-1

   b. REW-LG-2

Trainer's Note

Reference should be made to relevant form when delivering this session.

i. Health Facility level form (REW-HF-1)

- Filled at the health facility by the end of every reporting month. To be completed by routine immunization focal person using ink. Submitted to LGA immunization officer (LIO) together with monthly health facility summary, VM1 and should include reports (minutes) of meetings with the community (VDC).
- Column 1: HFs micro-plan containing list of communities in the HF catchment area and their respective target population; catchment area map with indication of strategy to reach each community and session plans (fixed & outreach) together with plan for other activities e.g. VDC meetings etc.
- Column 2: Vaccine stock-out; record yes if anytime during the month any antigen was not available during an immunization session.
- Column 3: AD syringe stock-out; record yes if anytime during the month any AD syringe was not available during an immunization session.
- Column 4: Indicate if there is at least one trained health worker.
- Column 5: Answer yes if HF received money for vaccine collection, outreach transportation and community link activities for the month.
- Column 6: Meetings with VDCs together with minutes of meeting.
- Column 7 Number of outreach sessions conducted as against number of outreaches planned.

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- Column 8: Number of fixed sessions conducted as against number planned.
- Column 9: Indicate number ‘yes’ if the facility was visited for supportive visits for RI in the reporting month.
- Column 10: Monitoring charts for Penta1/Penta3; OPV1/OPV3; TT2 are displayed and has been updated for the reporting month.
- Column 11: Data table showing target population by settlement and number immunized for Penta1 and Penta3; drop-out rate; number of children vaccinated with measles vaccine, OPV1/3 and coverages.
- Column 12: Children that received Penta1 for the month/monthly target.
- Columns 13: Calculate drop-out rates for Penta1/3.

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HEALTH FACILITY LEVEL PERFORMANCE MONITORING TOOL

REW-HF-1

NAME OF HEALTH FACILITY:_____LGA_____State_____ MONTHLY TARGET OF CHILDREN UNDER 1YR:_____

MONTH	PLANNING AND MANAGEMENT OF RESOURCES						LINKING SERVICES WITH THE COMMUNITY	REACHING THE TARGET POPULATIONS				Supportive visits	MONITORING FOR ACTION		PERFORMANCE			
	PLANNING	VACCINE MANAGEMENT	Injection Safety & Waste management	PERSONNEL	FINANCING	Cold Chain									ACCESS		UTILIZATION	
	Micro Plans up-to-date	Any vaccine stock out? Insert Code for appropriate antigen if "Yes"	Any stockouts of AD syringe (if "Yes" insert code for type - BCG, 0.5ml, 2ml, 5ml) & safety boxes?	At least one personnel trained in immunization	Disbursement of funds for outreach	Are your Refrigerators working?	Community meetings conducted	Number of Fixed sessions conducted by HFs / Total number of sessions planned by HFs		Number of outreach sessions conducted by HFs / Total number of sessions planned by HFs			Monitoring chart updated	Data Analysis Table updated	Penta1- coverage rate		Penta1- to Penta3- drop-out rate	Penta1- to Measles-containing drop-out rate
	YES/NO	YES (Insert antigen)/NO	YES/NO	YES/NO	YES/NO	YES/NO/NA	YES/NO	NUM/DENOM	%	NUM/DENOM	%	#	YES/NO	YES/NO	NUM/DENOM	%	%	%
	1	2	3	4	5		6	7		8		9	10	11	12		13	14
JANUARY																		
FEBRUARY																		
MARCH																		
APRIL																		
MAY																		
JUNE																		
JULY																		
AUGUST																		
SEPTEMBER																		
OCTOBER																		
NOVEMBER																		
DECEMBER																		

*VACCINE MANAGEMENT (if "Yes" Insert 1 = BCG, 2= OPV, 3= HBV, 4= Penta, 5=PCV, 6=IPV, 7= Measles, 8= Yellow Fever, 9= Others)

**Injection Safety & Waste management (if "Yes" Insert 1 = BCG Syringe, 2= 0.5mls, 3= 2mls, 4= 5mls, 5=Safety Boxes, 6= Others)

Figure 6.14: Health Facility Performance Form.

ii. LGA level reporting Form (REW-LG-1/2)

a. REW-LG-1

- This is filled at the LGA level and is a collation of the REW-HF-1 submitted to the LGA by the Health facilities.

b. REW-LG-2

– This is the LGA report to the State at the end of each month.

– It contains summary analysis of HF performance and the report of the monthly activity of the LGA.s

– It is to be submitted together with the REW-LG-1 form.

– Column 1: this has two sub-columns

- HF sub-column: this is filled by adding together all HFs with updated micro-plans (see REW-HF-1) ***Note: In addition to reports from HFs, LGA teams must during regular monthly supportive supervisory visits cross check the information from HF and not rely solely on data submitted in the REW-HF-1.***
- LGA Sub-column: this indicates the availability of LGA updated RI Plans. (Summary of HF micro-plans and LGA plans to support REW).

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LGA HEALTH FACILITY LEVEL SUMMARY FORM

REW-LG-1

NAME OF LGA:_____State_____ Date_____ MONTHLY TARGET OF CHILDREN UNDER 1YR:_____

Name of Health Facility	Name of Ward	PLANNING AND MANAGEMENT OF RESOURCES					LINKING SERVICES WITH THE COMMUNITY	Cold Chain Management	REACHING THE TARGET POPULATIONS				MONITORING FOR ACTION		PERFORMANCE		
		PLANNING	*VACCINE MANAGEMENT	**Injection Safety & Waste management	PERSONNEL	FINANCING									ACCESS		UTILIZATION
		Micro Plans up-to-date	Any vaccine stock out? Insert Code for appropriate antigen if "Yes"	Any stock outs of AD syringe ,if "Yes" insert code for type - BCG, 0.5ml, 2ml, 5ml) & safety boxes?	At least one personnel trained in Immunization	Disbursement of funds for outreach	Community meetings conducted	Are your Refrigerators working?	Number of Fixed sessions conducted by HFs / Total number of sessions planned by HFs		Number of outreach sessions conducted by HFs / Total number of sessions planned by HFs		Monitoring chart updated	Data Analysis Table updated	Penta1-coverage rate		Penta1- to Penta3- drop-out rate
		YES/NO	YES (Insert code for antigen)/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO/NA	NUM/DENOM	%	NUM/DENOM	%	YES/NO	YES/NO	NUM/DENOM	%	%
		1	2	3	4	5	6		7		8		9	10	11		12

*VACCINE MANAGEMENT (if "Yes" Insert 1 = BCG , 2= OPV, 3= HBV0, 4= Penta, 5=PCV, 6=IPV, 7= Measles, 8= Yellow Fever, 9= Others)
**Injection Safety & Waste management(if "Yes" Insert 1 = BCG Syringe, 2= 0.5mls, 3 = 2mls, 4= 5 mls, 5=Safety Boxes, 6= Others)

Figure 6.15: LGA Health Facility Summary Forms: REW LGA 1.

LGA LEVEL PERFORMANCE MONITORING TOOL + SUMMARY OF HEALTH FACILITIES IN LGA REW-LG-2

NAME OF LGA:_____State_____ No. of HFs in LGA_____ No. of HF reporting_____

MONTH	PLANNING AND MANAGEMENT OF RESOURCES														LINKING SERVICES WITH THE COMMUNITY		REACHING THE TARGET POPULATIONS				SUPPORTIVE SUPERVISION		MONITORING FOR ACTION								SUMMARY PERFORMANCE OF ALL HFs IN LGA		
	PLANNING		VACCINE MANAGEMENT		Injection Safety & Waste Management		PERSONNEL		FINANCING		Cold Chain Management																				ACCESS		UTILIZATION
	Micro Plans up-to-date		Stock-out of any antigen		AD syringe (BCG, O.5ml, 2ml & 5ml) & Safety Box stock-outs		Personnel trained in immunization		Disbursement of funds for routine immunization		Cold Chain				community meetings conducted		Number of Fixed sessions conducted by HFs / Total number of sessions planned by HFs		Number of outreach sessions conducted by HFs / Total number of sessions planned by HFs		Supportive supervision conducted		Timely reporting		Review meetings conducted		Monitoring chart updated		Data Analysis Table updated		Penta1-coverage rate		Penta1- to Penta3-drop-out rate
	1		2		3		4		5						6				7		8		9		10		11		12		13		14
	HF	LGA	HF	LGA	HF	LGA	HF	LGA	HF	LGA	HF		LGA		HF	LGA	LGA		LGA		HF	# conducted vs number planned by LGA	HF	LGA	HF	LGA	HF	LGA	HF	LGA	LGA SUMMARY		LGA SUMMARY
	#	Y/N	#	Y (Indicate antigen)/N	#	Y (Indicate Syringe type)/N	#	Y/N	#	Y/N	# Working	# Not Working	# Working	# Not Working	#	Y/N	NUM/DENOM	%	NUM/DENOM	%	#	%	#	Y/N	#	Y/N	#	Y/N	#	Y/N	NUM/DENOM	% (cumulative)	% (cumulative)
JANUARY																																	
FEBRUARY																																	
MARCH																																	
APRIL																																	
MAY																																	
JUNE																																	
JULY																																	
AUGUST																																	
SEPTEMBER																																	
OCTOBER																																	
NOVEMBER																																	
DECEMBER																																	

Figure 6.16: LGA level Performance Monitoring Tool and Summary of Health Facilities in LGA REW-LG-2

- Columns 2-6: These columns are filled in the same way column 1 is filled for the respective parameters.
- Column 7: this looks at the total Fixed/outreach sessions conducted in the LGA by the HFs divided by the total planned in the LGA (total from HF)
- Column 8: The sub-column for HF is filled by adding together all HFs with supervisory visit (see REW-HF-1). The sub-column on LGA reports the percentage of planned visit conducted by the LGA team. (This should be accompanied by reports of supportive visits to the State).
- Column 9: the HF sub-column is filled from the LGA timeliness and completeness chart and the LGA sub-column indicates whether LGA reports to State were submitted timely.
- Column 10: indicate if the LGA has conducted monthly review meeting with heads of HFs/WFPs.
- Columns 11& 12: This is filled like column 1-6 for the respective parameters.
- Column 13 &14: look for the reported cumulative Penta1 and Penta1/Penta3 dropout rates.

Trainers Note on Exercise 3:

- **Facilitator stops at this point to guide the participants on hands-on:**
  7. **REW Monitoring Tool**
- **This should last for 30 minutes.**

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6.3 Timeliness & Completeness Reporting Form

Timeliness is submission from one level to the next within the stipulated time described below. Completeness is the submission of all the appropriate documentation required for the reporting month.

At the end of each month the Health Facility should send monthly summary reports to the LGA by the 3rd day of the new month.

The LGA receives data and reports from the health facilities and collates such reports for onward reporting to the State level by the 5th day of the new month.

The LGA collates the following: (Note: Collation can be done electronically)

- HEALTH FACILITY summary reporting form ▼ LGA RI summary reporting form
- HEALTH FACILITY Vaccine Management Tool (VM1 A&B) ▼ LGA Vaccine Management Tool (VM2 and VM3)
- The sessions (outreach/fixed) conducted by Health Facilities
- The community linked activities.
- Disease reports from Health Facilities (IDSR).
- The AEFI cases reported from Health Facilities.
- The inventory of cold chain and other logistic equipment.
- Other problems as reported by Health Facilities.

Ensure LGA Summary Books are signed, stamped and dated by head of Department.

Submit originals of Summary booklets to the State Immunization Officer. (Use dispatch books to submit reports.)

The State receives data and reports from the LGAs and collates such reports for onward reporting to the zonal level by the 10th day of the new month

The Zones receive data and reports from the States and collate such reports for onward transmission to the National level by the 15th day of the new month

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6.4 The Defaulter Tracking List

The term “defaulter” refers to eligible individuals who miss scheduled immunizations for any reason, such as cancelled sessions or vaccine stock outs. Defaulters should be followed up and mobilized to attend the earliest available session so as to complete any missed dose.

A tracking list, such as the one shown below, should be filled from the reminder/tickler cards after each immunization session or at least monthly. It should be given to the person(s) tasked with finding defaulters.

6.4.1 What information is commonly included on a defaulter list?

A defaulter-tracking list usually includes the following information:

- Child’s name and sex;
- caregiver’s name;
- caregiver’s contact information, including phone/mobile number(s);
- Child’s age in months;
- Immunizations (antigen) missed;
- Date immunization was missed.

6.4.2 How to use the defaulter tracking list

Listing defaulters with the aid of the reminder cards regularly every month makes it easier to find and follow them up for completing the missed doses. Caregivers should be contacted directly by phone, text messaging or with the help of other community members.

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Defaulter Tracking Form

Date: Health Centre name: Community name:

S/N	Child's name	Child's age in months	Immunization(s) Missed	Date of Missed Immunization	Caregiver's name	Caregiver's contact information	Phone No.
1							
2							
3							
4							
5							
6							
7							
8							

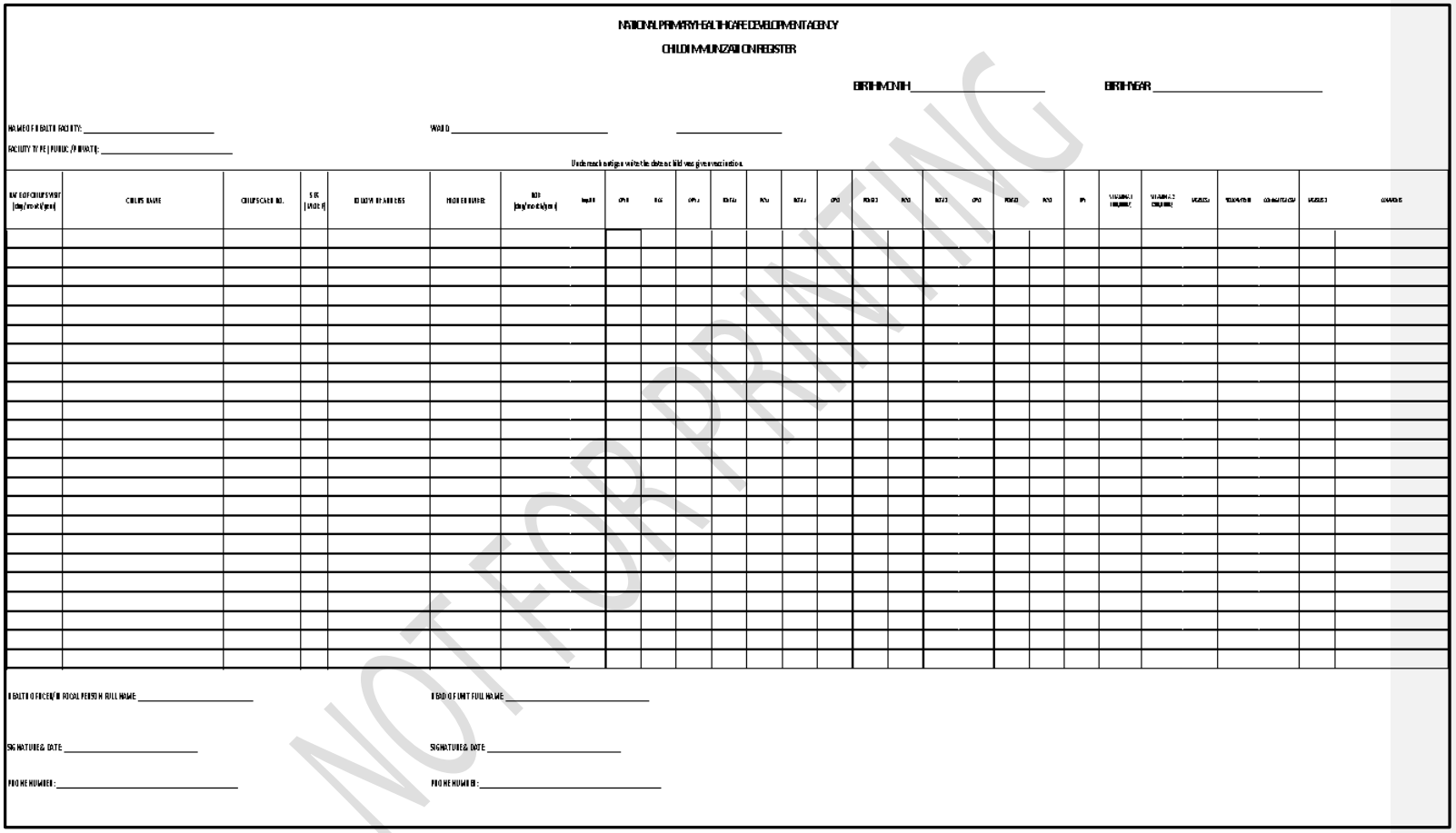
Figure 6.17: Defaulters tracking form.

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6.4.3 Listing defaulters using the immunization register

At the end of each month, review the immunization register to identify children who failed to receive immunizations when due. For example, in March check to see that any infant who received Pentavalent1 dose in February returned for pentavalent 2 (in March) when it was due. Add the names of any child who missed immunizations to the defaulter-tracking list for follow up as soon as possible.

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NATIONAL PRIMARY HEALTHCARE DEVELOPMENT AGENCY

CHILDIMMUNIZATION REGISTER

BIRTH MONTH _____ BIRTH YEAR _____

NAME OF HEALTH FACILITY: _____ WARD _____ _____

FACILITY TYPE (PUBLIC / PRIVATE): _____

Date each antigen was/is to be given to child as per vaccination schedule

DATE OF CHILD'S VISIT (day/month/year)	CHILD'S NAME	CHILD'S CASE NO.	SEX (MALE/F)	ADDRESS OF CARETAKER	PHONE NUMBER	DOB (day/month/year)	Age in	OPV 0	BCG	OPV 1	DPT1+Hep	PCV1	DPT2+Hep	OPV2	ROTA1	PCV2	ROTA2	OPV3	PENTA3	PCV3	IPV	YELLOW FEVER	MEASLES 1	YELLOW FEVER	MEASLES 2	VITAMIN A	DEWORMING	MEASLES 3	COMMENTS

HEALTH OFFICER/IN CHARGE PERSON FULL NAME _____ HEAD OF UNIT FULL NAME _____

SIGNATURE & DATE _____ SIGNATURE & DATE _____

PHONE NUMBER: _____ PHONE NUMBER: _____

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Figure 6.18: Register for defaulter tracking.

6.4.4 Suggested steps in filling the revised register for purpose of defaulter tracking

STEP 1: Numbering the pages in the register

- Use the same Immunization register currently being used for the revised system:
  - If the Immunization register has only a few blank pages remaining, then request for a new register.
- Number the remaining blank pages on the top right hand corner starting from 1 to the end page (e.g.: 1, 2, 3...n) with a pen.
- There is no need to mark both sides of the page – use only right hand top corner to mark pages.

STEP 2: Creating an Index

- Enlist all the settlements under the catchment area of the health facility
- Sort the settlements based on the size of the settlements – largest to the smallest.
- Allocate appropriate number of pages to individual settlements based on the size of the settlement.
- Make an index of the settlements with page numbers for easy reference (figure 6.20).

Table 6.4: Preparing an Index of Settlements with page numbers

Settlement	Target Population	Page Numbers
Settlement A	3500	1-20
Settlement B	2000	21-30
Settlement C	1740	31-40
Settlement D	1120	41-47
Settlement E	790	48-54
Settlement F	200	55-60
Settlement G	100	61-65
Settlement H	60	66-70
Settlement I	50	71-75
Others	NIL	75-80

STEP 3: Inserting the tabs (figure 6.21)

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- Paste /staple tabs appropriately on predetermined pages as per the index prepared to ensure easy identification (top/side of the register).
- Clearly indicate the name of the settlement on the tab.
- Ensure that tabs do not overlap obscuring each other causing difficulty to navigate to the page.
- Record the beneficiary under the appropriate settlement when they come for the initial immunization.
- Continue to record subsequent visits as usual against the same entry.
- If the beneficiary is not from one of the settlement in the catchment area of the HF, provide immunization and record the beneficiary in the page “Others” and provide all the information as usual.



Figure 6.19: Immunization Register after insertion of tabs.

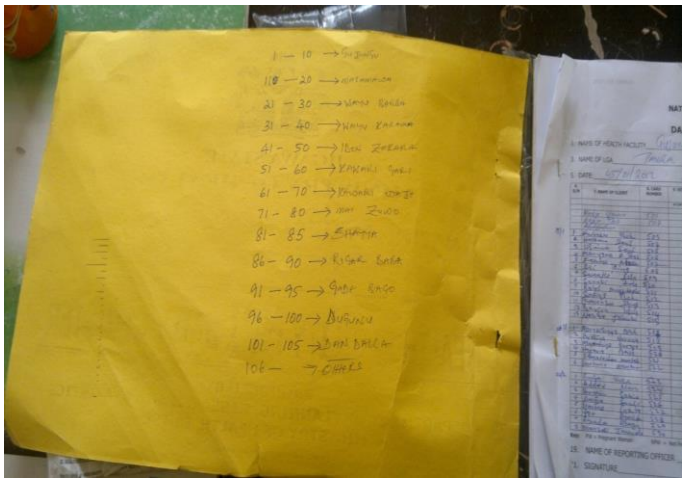


Figure 6.20: Indexing of Settlements in RI Register.

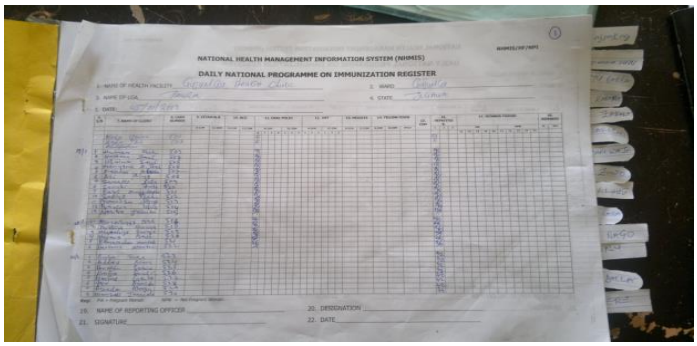


Figure 6.21: Tabs to guide the entry into appropriate settlements.

Notes

For any immunization register that does not have provision for name of settlement at the top of the form, the birth year or birth month indicated on the form should be stroked out to replace with name of settlement.

6.4.5 Advantages of the revised register

- Record each beneficiary receiving immunization under the relevant settlement in the catchment area
- Assists in easy tracking of the child for follow up to ensure dropouts are reduced.
- Enables the health worker to make a list of children supposed to attend the fixed and outreach session and share with community mobilizer / VCM / TL to ensure immunization and boost coverage.
- Provides information on children immunized in each settlement.
- Allows quick verification of facts during supportive supervision and monitoring of the sessions.
- Guides us to direct appropriate interventions to improve coverage (e.g. additional sessions, mobile teams, and plan Catch up, LIDs, position fixed posts during IPDs etc.
- Can be used as a guide to modify/revise the RI micro plan to ensure that all the settlements & communities are visited.
- Allows for better community mobilization and feedback to VDCs and TLs, in turn improving RI coverage.

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Table 6.5: Example of corrective actions taken by health workers using the register as defaulter tracker

Settlement	Target Population	Performance	Reason for Poor / Good coverage	Action Points
Settlement A	350	25%	Poor community mobilization	To discuss with VDC and TLs ; VCM to mobilize children
Settlement B	200	60%	Outreach session far from hamlet	To reposition Outreach session to more accessible venue
Settlement C	174	70%	Insufficient sessions	To add an additional session
Settlement D	112	10%	No Outreach session	Additional support needed for mobility
Settlement E	79	2%	No Outreach session	Additional support needed for mobility
Settlement F	20	50%		
Settlement G	10	30%	No Outreach session	Additional support needed for mobility
Settlement H	60	80%	Good Participation of the community	Appreciate the VDC and TL for their commitment
Settlement I	50	1%	Rejection of immunization by the community	LGA authorities to intervene to resolve issues
Others	NIL			

6.4.6 Listing defaulters using reminder cards

Another way to identify defaulters is to use “reminder” cards, which are copies of each infant’s immunization card.

- The current child immunization card in the country has been modified to have two portions.
    1. The portion that the caregiver will take home for the infant and,
    2. A portion which is to be kept at the health facility for the health worker to use to track children’ immunization schedule in his/her health facility.
- This tear away part has the same immunization details as in the card to children.

6.4.7 Reminder Box

Reminder cards are copies of child’s immunization cards that can be filed in a box by the month when the next vaccination is due (see Figure 6.22). For example, when an infant receives pentavalent1 in January, mark it on the reminder card and

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place it in February box, since this is when pentavalent 2 will be due. In February, if the child receives pentavalent2, update the reminder card and place it in the March box when pentavalent3 will be due and so on.

If the child does not come for pentavalent2 in February, or came but is not immunized due to any reason, the card will remain in February. At the end of each month, review all the reminder cards remaining and add the names of the children who have missed immunizations to the defaulter-tracking list.



Figure 6.22: A reminder/tickler box.

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6.4.8 Guide on How to use the "Reminder Box"

Step 1: When an infant comes for an immunization, the health worker enters the antigen/vaccine the child had received and the antigens and dates for the next appointment on two sides of the child's immunization card. This should be done for both OLD and NEW clients.

- For old client only copy the immunization history of the child from the old card onto a new *tear away portion*.

Step 2: The health worker will deposit the tear away portion of the card into the appropriate slot (month) in the tickler box or the bag when the child's next visit is due:

- For example; when an infant receives Penta1 in January, place the reminder card in the February section, i.e. the month when Penta2 will be due. In

February, if the infant attends when due for Penta2, update the reminder card and place it in the March section when Penta3 will be due.

Step 3: Ensure that the Td immunization status of pregnant women is included in the antenatal clinic tracking system. When Td immunizations is given to pregnant women outside of antenatal clinics, reminder cards can be used to ensure that each pregnant woman gets their second dose (assuming it is the first pregnancy) same as steps 1-3 above.

Step 4: Every month, review the tickler/reminder cards and follow up defaulters.

- This activity should be documented each month on a follow up book kept at the health facility.
- If you track defaulters regularly every month, it will make the task of follow-up easier.

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NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY

Monthly Compilation of the Defaulter Tracking Process in the Health Facility

LGA_____ Ward _____ _____ Name of the Health Facility_____ Month of Reporting_____

Instructions: 1. Summarize the number of children that are defaulting at the end of each month 2. Obtain the data from the back of the tear away portion of the card. 3. Total for each of the settlement and wite the numbers appropriately												Immunization Status of the Child at the end of the month		
Name of the Settlement	Total Number of Children Defaulted in the Month	Number of Children tracked by phone call	Number of children Feedback sent to VDCs for mobili	Number of Children Feedback sent to the community	Number of Children Feedback sent to VCM	Number of Children Health Worker visited the home	Number of children Polio Vaccination teams were ask	Number of children Feedback was sent to the tradition	Other Strategy_____	Other Strategy_____		Number of Child Traced and immunized	Number of Children still pending for follow up	Number of Children lost for Follow up, Specify Reaso
				1										

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Figure 6.23: Follow up book for defaulter tracking.

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6.5 Data and report storage

Data must be kept at each level for use when needed. Data can be stored in hard copy or electronically preferably both. At the health facility, tally sheets, registers and reports should be stored for a specific period (as long as possible) depending on national standard operating procedure. Where available, computers and back-ups (like CDs, external hard drives, hard copies etc.) must be kept to avoid data loss in the case of system failure. Stored records are useful for supervisory visits and immunization service reviews, research, references and updates.

Data to be stored at Health Facility Level

The following types of data should be stored at each health facility:

Child Immunization registers

Copies of child health card (if applicable e.g. reminder cards)

Tally sheets

Defaulter tracking lists

Monthly reports

Target population data files (information used in micro planning)

Immunization monitoring charts

Case/outbreak charts and reports

AEFI surveillance data

REW monitoring data

Disease surveillance data

Supervisory visit reports

Vaccine Management data

Cold chain maintenance records

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6.5.1 Analysis of data

Data must be collated and summarized from the data tools. Data are useful only when analyzed, interpreted and used to improve service delivery. This section describes the initial analysis of data that begins at health facility level.

6.5.2 Vaccination coverage data analysis

Table 6.6 suggests how to compile and analyse vaccination coverage data. The first part of the process is focuses on prioritizing areas by the number of unimmunized children during micro planning. The additional calculations given in Figures are included here to help define problems that cause children to remain unimmunized. Defining problems in detail helps identify potential solutions.

6.5.3 How to complete the compilation and analysis table 6.6

1. List each geographic area or community served in Column a.
2. List the target population numbers for children less than one year of age and pregnant women in Column b and c.
3. Enter the number of doses of each vaccine type administered to the target group during the preceding 12-month period in Columns d, e, f and g. The vaccines used for analysis will vary by programme.

4. Calculate immunization coverage as follows: Immunization coverage is the total number of children who have received all required doses of a selected vaccine in the preceding 12 months divided by the annual target population.

Immunization coverage (%) = (number of children with all required doses of the selected vaccine during the last 12 months) / (annual target population) x 100

Example, calculation for immunization coverage (%) = (children with all required doses of pentavalent in the last 12 months)/ (annual target population) x 100 = (100)/ (117) x 100 =85%

5. Calculate the number of unimmunized.

Unimmunized number = (annual target population) – (number of children immunized)

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Example, calculation for unimmunized pentavalent3 in Column L = annual target population in Column b – children immunized with pentavalent3 in Column e = (117) – (85) = 32

6. Calculate the dropout rate.

The dropout calculation for infants immunized with Penta or Measles vaccine

Example, calculation for dropout rate is pentavalent1- pentavalent3 = column L = (((number of children immunized with pentavalent1) – (number of children immunized with pentavalent3))/ (number of children immunized with pentavalent1)) x 100 = ((105) – (85)/105) x 100 = 19%

6.5.4 Identify and categorize problems for each area

In Column p, enter the quality of access (good= coverage 80% or better; poor = coverage less than 80%) based on pentavalent1coverage in Column d.

Note that the 80% cut-off is based on national policy.

In Column q, enter the quality of utilization (good= dropout rate < 10%; poor = dropout rate ≥ 10%) based on the pentavalent1–pentavalent 3 dropout rate given in Column n. ***Note that the 10% cut-off is based on national policy***.

In column r, categorization based on health facility performance:

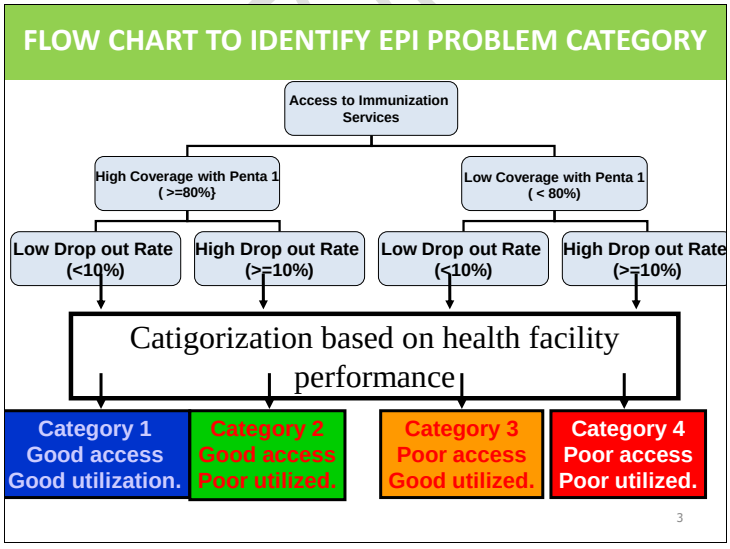


Figure 6.24: Flow chart showing categorization of EPI problems.

Category 1; Good Access, Good Utilization (Penta 1 ≥80%, DOR<10%)

Category 2; Good Access, Poor Utilization (Penta 1 ≥80%, DOR ≥10%)

Category 3; Poor Access, Good Utilization (Penta1<80%, DOR<10%)

Category 4; Poor Access, Poor Utilization (Penta 1 <80%, DOR ≥10%)

In Column s, use your data to prioritize communities for problem solving. Rank the community that has the most unimmunized children (not necessarily the lowest coverage) as the highest priority (#1).

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Table 6.6: Sample format for compilation and analysis of health facility data

Routine Immunization Data Analysis Table

State:..... LGA:..... Ward:..... Health Facility:..... Year Analysed:.....

Name	Compile population, immunization coverage data either previous month or 12 months												Analyse problem					Prioritize area
	Target pop.	Target pop.	Total number administered with vaccine				Immunization coverage (%)				Un-immunized		Drop-out rates (%)		Identify problems (Indicate Good or Poor)**		Categorize the problem	
	<1 year (4% of total population)	Pregnant Women (5% of Total Population)	Penta1	Penta3	Measles	IT2+	Penta1	Penta3	Measles	IT2+	Penta3	Measles	Penta1 to Penta3	Penta1 to Msl	Access	Utilisation	Category 1,2,3,4	priority 1,2,3,4,5.....
a	b	c	d	e	f	g	h	I	j	k	l	m	n	o	p	q	r	s

*Name: 1. Indicate the list of settlement if data is captured by settlement of enter total for catchment Area if no data by settlement when compiling for Health facility, 2. Indicate names of Health Facility when compiling for LGA; 3. Inidate names of LGAs when compiling for state; 4. Indicate States when compiling for national level

**Identify problems [Indicate Good or Poor]*: Penta 1 coverage > 80% Good Access, Penta 1 coverage < 80% Poor Access; Penta1-Penta3 Drop Out Rate of > 10% Poor Utilization, Penta 1-Penta 3 Drop Out Rate <10% is Good Utilization

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6.6 Surveillance

TRAINERS NOTES:

Ask participants what disease surveillance and AEFI surveillance means.

Ask participants to mention the three types of disease surveillance and the two types of AEFI surveillance.

Ask participants to mention the two types of AEFI.
Highlight the surveillance data flow chart and the AEFI reporting channel in Nigeria.

Describe the different categories of AEFI.
Discuss the different data tools used in surveillance at lower levels.

Session objectives:

1. To define disease surveillance and adverse events following immunization (AEFI) surveillance
2. To describe the three types of surveillance methods.
3. To highlight the surveillance data flow chart and the AEFI reporting channel in Nigeria.
4. To review the various data tools used in carrying out disease surveillance and AEFI surveillance at the lower levels.

Introduction

The goal of disease surveillance is to improve the ability of the lower levels to detect and respond to diseases and conditions that cause death, illness and disability in the communities. The goal of AEFI surveillance is early detection, appropriate and quick response to adverse events in order to lessen the negative impact on the health of the individuals on the immunization programme.

Every health facility needs a system of recording immunization data for monitoring; it also needs a system of recording surveillance data on vaccine-preventable diseases and adverse events following immunization (AEFI). In order to generate quality

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surveillance and AEFI data there is need for a good surveillance system to be in place at the lower levels.

6.6.1 What is surveillance?

Surveillance is defined as an ongoing systematic collection, analysis, and interpretation of health data for public health action. It is also essential for planning, implementation, and evaluation of public health practice. Data collected at health facility levels, compiled and sent to the next level for analysis. Regular feedback shared with the lower levels for action. A standard case definition used to identify such priority diseases or events and the laboratory recognized as an important component of public health surveillance.

6.6.2 What is Integrated Disease Surveillance and Response?

The integrated disease surveillance and response is a strategy and a tool for reporting the forty priority diseases. IDSR helps to promote the rational use of resources by integrating and streamlining common surveillance activities***. IDSR tools used are IDSR 001A, IDSR 001B, IDSR 001C, IDSR 002 and IDSR 003.***

6.6.3 Three types of disease surveillance used in national programs:

I. **Passive surveillance:**

This is a routine reporting system where surveillance data sent from health facilities to higher levels. Higher levels do not stimulate reporting by reminding health facilities to report routine data and provide feedback to the next level. Examples of passive surveillance are notifications (monthly IDSR reporting), AEFI reporting and AEFI line listing.

II. **Active surveillance:**

Active surveillance is a reporting system in which the higher level initiates reporting from lower levels through phone call/SMS reminders and direct surveillance visits. Examples of active surveillance are outbreak investigations, AFP active case search and active case search by community health workers to detect cases within the community.

III. Sentinel surveillance:

Sentinel surveillance is a health facility based surveillance that selects a small group of health facilities from whom to gather data. These health facilities

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receive greater attention from higher levels than will be possible with universal surveillance.

Examples of sentinel surveillance are new vaccine surveillance, HIV sentinel surveillance, influenza sentinel surveillance and environmental surveillance.

6.6.4 Descriptive Analysis for Basic Epidemiology Data

Every health facility should carry out basic analysis of disease surveillance data on a regular basis (weekly, monthly) in order to detect unusual occurrence in the number of cases over a given period within the health facility's catchment area. Surveillance data should be retrieved from the health facility line list/treatment register for analysis. However, in cases of unusual occurrence of epidemic prone diseases, reports should be sent to the next level using IDSR 001A.

The following analysis should be done at the health facilities weekly especially during outbreaks:

- ***Identify and count cases and indicate in a map of the HF catchment area showing settlements and other landmarks (dot map, where every new case is represented by a dot)***
- ***Draw a table to indicate the number of new cases and deaths of a specific VPD seen every week by sex and age group etc***
- ***Draw a line graph to indicate the number of new cases of a VPD seen each week (X axis to indicate no of cases, Y axis to indicate time in weeks)***

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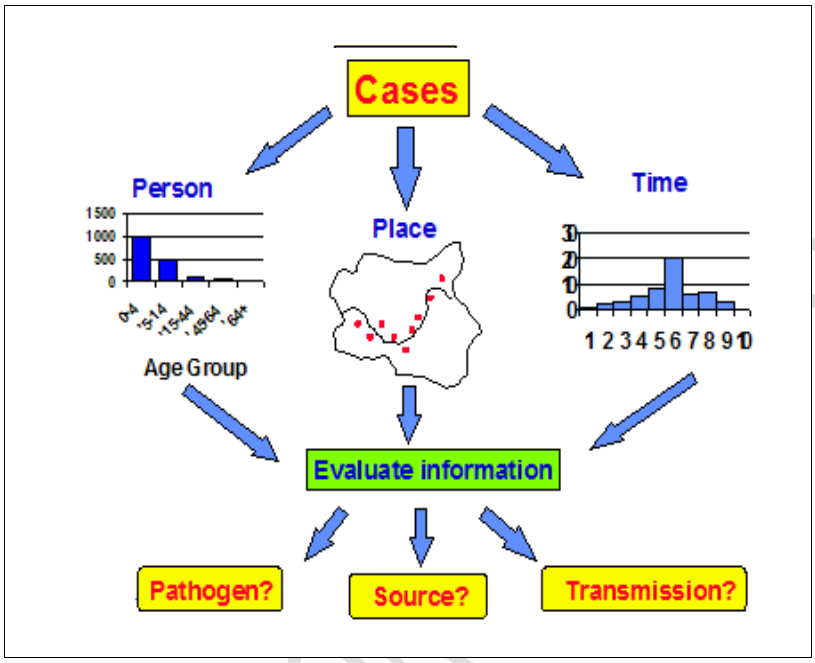


Figure 6.25: Diagram showing data analysis by Time, Person and Place.

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Table 6.7: Table showing data analysis by age and sex

Example: Cases of Measles by Age Group and Sex in HF X, April, 2015

Age group	Sex		Total
	Male	Female	
0-11 months	1	1	2
1-4 years	21	9	30
5-14 years	2	3	5
>14 years	2	1	3
	26	**14**	**40**

6.7 What is AEFI?

Adverse events following immunization is defined as any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine.

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6.7.1 Categorization of AEFI

Five categories of AEFI:

1. Vaccine product-related reaction: An AEFI caused or precipitated by a vaccine due to one or more of the properties of the vaccine product itself. **Example:** Extensive limb swelling following pentavalent vaccination.

2. Vaccine quality defect-related reaction: An AEFI 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 batch of IPV leads to cases of paralytic polio.

3. Immunization error-related reaction: An AEFI that is caused by inappropriate vaccine handling, prescription 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 (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 caused by malaria. Coincidental events reflect the natural occurrence of health problems in the community with common problems been frequently reported.

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Table 6.8: Types of Immunization Error

Immunization error	Possible Adverse Event
Non-sterile injections **1.** Reuse of disposable syringe or needles **2.** Contaminated vaccine **3.** Reuse of vaccines beyond discard point	Infections 1. Local suppuration at injection site 2. Abscesses 3. Cellulitis 4. Systemic infections 5. Septic shock syndrome 6. Blood-borne infection
Improper vaccine preparations **1.** Drugs substituted for vaccine	1. Local reaction or abscess 2. Effects of the drug e.g. Muscle relaxant , insulin
Vaccine injected at the wrong site **1.** Subcutaneous instead of intradermal BCG **2.** Too superficial toxoid vaccines (TT, Penta etc.) **3.** Buttocks	1. Local reactions 2. Sciatic nerve damage
Improper transport/storage	Local reaction from frozen and ineffective vaccines
Contraindications ignored	Avoidable severe vaccine reactions

6.7.2 How to avoid/minimize immunization error

- Maintain the vaccine cold chain at all levels.
- Reconstitute vaccines only with diluents supplied by the manufacturer.
- Use reconstituted vaccine within six hours after reconstitution or discard at the end of each immunization session whichever comes first.
- Other than vaccines, no other medicines or substances should be stored in the cold chain equipment of the immunization centre.

- Immunization workers must be adequately trained and closely supervised to ensure that proper procedures are followed.
- Careful epidemiological investigation of an AEFI is needed to pinpoint the cause and to correct immunization practices.
- Prior to immunization, adequate attention must be given to contraindications.
- Follow-up and corrective actions following immunization error-related reactions should be based on the findings of the investigation.
- Continued monitoring and supportive supervision can help to minimize these adverse events.

Table 6.9: Minor and serious reaction

MINOR REACTIONS	SERIOUS REACTIONS
Local reactions (redness at injection sites, pain, swelling)	Convulsions
Fever <38O C	Anaphylactic shock
Irritability	Severe allergic reactions (generalized urticaria, angioedema)
Malaise	Adenopathy
General apathy	Encephalopathy

6.7.3 AEFI Reporting Channel

- All AEFIs identified in the communities should be notified to the health facilities
- All AEFIs should be line listed at the health facilities (copies of the line lists should be sent to the LIO weekly - include zero reports)
- All serious AEFIs including those causing community concern should be reported to the LIO by the OIC via the quickest means (mobile phone) using AEFI reporting forms for onward reporting to the next level
- All clusters of AEFIs should be investigated by the OIC promptly

6.7.4 AEFI Surveillance Tools

- AEFI reporting form
- AEFI line listing form

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FEDERAL REPUBLIC OF NIGERIA
FEDERAL MINISTRY OF HEALTH

REPORTING FORM
ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI)
(FILL THIS FORM FOR SERIOUS AEFIs ONLY)

NB : THIS FORM SHOULD BE FILLED BY THE HEALTH FACILITY-IN-CHARGE OR VACCINATION POST SUPERVISOR

Identification number* /_____/_____/_____/_____/_____/_____/
Country code – State code – LGA code — Year – Case number

Date of report : ____/____/_____
Routine immunisation/SIA_____
(Circle as appropriate ; if SIA , specify which)

1. REPORTING SITE

1.1. State :	1.2. LGA	1.3 Ward	1.4. Health Facility/Vaccination Center
.....	.....	.....	.....

2. PATIENT's IDENTIFICATION

2.1 First / Last name	2.2 Full Address (with landmarks)	2.3 Birth- date dd/mm/yyyy	2.4 Age	2.5 Sex (tick)
....	....	____/____/_____	.....years or .....months (if<1year)	M ☐ F ☐

3. NATURE OF THE MOST RECENT VACCINE

*Name of Vaccines Received within last 30 days	*Date of vaccination	*Time of vaccination	Dose (e.g. 1st, 2nd, etc.)	*Batch/ Lot number	Expiry date
				Vaccine	Vaccine
				Diluent	Diluent
				Vaccine	Vaccine
				Diluent	Diluent
				Vaccine	Vaccine
				Diluent	Diluent

4. ADVERSE EVENTS

Adverse event (s):
☐ Anaphylatic shock BP :..... Pulse : .....
☐ Anaphylaxis
☐ Syncope (fainting) BP :..... Pulse : .....
☐ Seizures/Convulsion ☐ *with fever* ☐ *without fever*
☐ Angioedema
☐ Severe local reaction ☐ *>3 days* ☐ *beyond nearest joint*
☐ Abscess at injection site
☐ Generalized rash / Urticaria
☐ Fever≥38°C indicate Temperature : ..... °C
☐ Persistent cries (more than 3 hours)
☐ Sepsis
☐ Encephalopathy
☐ Encephalitis
☐ Meningitis-like syndrome
☐ Toxic shock syndrome
☐ Thrombocytopenia
☐ Facial paralysis
☐ Acute Flaccid Paralysis (AFP)
☐ Other (specify) .....

Date & Time AEFI started (DD/MM/YYYY):
☐☐ / ☐☐ / ☐☐☐☐ . ☐☐ Hr ☐☐ Min
Was the patient hospitalized? ☐Yes ☐No
Date patient notified event to health facility (DD/MM/YYYY):
☐☐ / ☐☐ / ☐☐☐☐

Describe AEFI (Signs and symptoms):

AEFI

Time interval from vaccination (mins/hrs/days/months)

P . T . O

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Past medical history (including history of similar reaction or other allergies), concomitant medication and other relevant information (e.g. other cases). *Use additional sheet if needed :*

Treatment(s) received	Indicate type of serious AEFI	Has the patient been moved to a Reference Center? (tick) Yes ☐ No ☐
…… …… …… …… …… . Investigation done ? Yes ☐ No ☐	- Hospitalised ☐ - Incapacitated☐ - Life Threatening☐ - Death ☐ - Congenital abnormality/birth defect ☐	**a.** Name/Address of the Reference Center: …… …… …… …… **b.** Date of the referral : _____/_____/_____

Outcome:
☐ Recovering ☐ Recovered Completely ☐ Recovered with sequelae ☐ Not Recovered ☐ Unknown
☐ Died If died, date of death (DD/MM/YYYY): ☐☐ / ☐☐ / ☐☐☐☐ Autopsy done: ☐Yes ☐No ☐Unknown

5. REPORTING

5.1 Date of reporting	5.2 Type of reporting (tick)	5.3 Full Names of the person reporting	5.4 Designation of person reporting	5.5 Telephone number/email	5.6 Signature of the person reporting
___/___/___	-Spontaneous reporting *(passive surveillance)* ☐ - Active case search ☐	…… ……		…… ……	

6. TRANSMISSION OF THE FORM
Please scan and email this form to The **AEFI Surveillance Secretariat** at NPHCDA <**diseasecontroldivision@gmail.com**> or send hard copies to the following address : Plot 681/682 Port Harcourt Crescent Off Gimbiya Street Area 11, PMB 367, Garki Abuja; Tel/Fax 09-314-3630)

NB:
If you have to refer a case of AEFI to the designated hospital:
1- Alert the focal person, the LGA Immunization Officer (LIO)
2- Complete and send along the reporting form with the patient (keep a copy for your record)

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Figure 6.26: AEFI Reporting Form.

FEDERAL REPUBLIC OF NIGERIA

FEDERAL MINISTRY OF HEALTH

LINELIST FORM FOR RECORDING *ALL* CASES OF ADVERSE EVENTS FOLLOWING IMMUNISATION (AEFIs) - Minor and Serious

This form is to be used at Health Facility (or Vaccination post) to line list ALL reported AEFIs and forwarded to LIO (throughWard Focal person during SIAs)

State: _____LGA:_____ Ward:_____ Health Facility/Vaccination Post:_____

Period of Reporting _____ Routine Immunization/SIA_____ (*circle as appropriate; if SIA, specify which*)

ID	PATIENT'S NAME	SEX	ADDRESS	Age		Date of Last immunisation (dd/mm/yy)	Reaction type (Codes -see 1 below)	Type of AEFI (Minor or Serious)	Outcome (Codes-see 2 below)	Suspect Vaccine(Name & Dose e.g Penta2)	Vaccine Batch/lot No	Diluent Batch No	Onset Time interval (hours, days, weeks)	Date of Reporting (dd/mm/yy)
				Years	Months									

1) REACTION TYPE : **1**=Anaphylaxis, **2**=Anaphylactic Shock, **3**=Dizziness, **4**= Headache, **5**= Fainting/Syncope, **6**=Seizures/convulsion,**7**=Loss of vision, **8**= Local reaction, **9** Site induration, **10**=Abscess at injection site, **11**=Rash/Urticaria, **12**= Lymph node enlargement, **13**= Abd cramps, **14**=Vomiting, **15**=Diarrhoea, **16**= Bleeding, **17**=muscle pain, **18**=Joint pain **19**=Fever (<38°C), **20**=Fever (>=38°C), **21**=Persistent cries (more than 3 hours), **22**=Acute Flaccid Paralysis (AFP), **23**=Unconsciousness, **24**=Sepsis, **25**=Encephalopathy, **26**=Neck Stiffness, **27**=Facial Paralysis, **28**=Others (specify) **(insert appropriate number in column)**

2) OUTCOME: **1**= Recovered, **2**=Hospitalized, **3**=Disability, **4**=Died ***(insert appropriate number in column)***

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Figure 6.27: AEFI Line list Form.

6.8 *Surveillance Data Tools*

The main tools used for surveillance in health facilities are:

I. Health facility treatment register
II. IDSR 001A (immediate case surveillance reporting form)
III. AFP-F001 (AFP surveillance system immediate case notification form)
IV. IDSR 001B (laboratory request form)
V. IDSR 001C (line listing form)
VI. IDSR 002 (weekly reporting form)
VII. IDSR 003 (monthly reporting form)

ii. Immediate Case Based Reporting Form (IDSR 001A)

IDSR 001: This is a generic case-based reporting form used to report written information about individual cases of priority diseases recommended for case-based surveillance. These include:

- Epidemic-prone diseases (cholera, diarrhoea with blood*, measles, meningitis, viral hemorrhagic fevers and yellow fever)
- Diseases targeted for eradication or elimination (Polio, Dracunculiasis, Lymphatic filariasis, Neonatal tetanus, and Leprosy).
- Other diseases that may be recommended by national policy for case-based surveillance.

In case any of the above diseases are suspected, HF staff should contact the LGA immediately by telephone, SMS, e-mail etc. Fill and send the form as a follow-up to the verbal report.

Instructions for completing the Immediate/Case Based Reporting Form (IDSR 001A)

Trainer's Note

Reference should be made to the IDSR001A when reading this section

For the HF:

- Enter the name of the HF submitting the case-based reporting form.
- Record the name of the LGA that is receiving the report.
- Tick the box at the top of the form to indicate which disease is been reported.

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- If the disease or condition is not stated, or its cause is unknown, write unknown in the blank marked “Others”.
- Record the name of the patient. For a neonatal tetanus case, record the name of the mother.
- Record the patient’s age (Date of Birth).
- Record in clear details the patient’s residence (include patient/mother’s telephone number).
- Record the sex “F” for Female and “M” for Male.
- Record the date of the patient’s visit to the HF and the date the HF reported the disease or condition to the LGA.
- Record the date of onset of the disease, if known.
- For vaccine preventable diseases/conditions, such as AFP, neonatal tetanus, measles and yellow fever:
  - Obtain an immunization history for the patient.
  - Record the date of the last immunization dose for the reported illness.
  - Decide if the dose was more than 15 days ago.
  - If the immunization was received within the last 15 days, there may not have been an immunization response, hence do not count.
- For meningitis, record history of vaccination during a mass campaign.
- For neonatal tetanus, record the number of lifetime doses of tetanus toxoid/tetanus diphtheria the mother received up to 15 days before delivery.
- Report whether the patient was an outpatient or in-patient at the time the case was reported.
- Record whether the patient was living or deceased at the time the report was made.
- When the investigation of the case is complete, record “confirmed” or “discarded” in the item “Final Classification”. When the case is first suspected, record “suspected” as the Final Classification.
- The health facility staff member who completes the form should sign his or her name and the date the form was sent to the LGA.

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NB: If there is no laboratory specimen collected, the form is complete. If a laboratory specimen is taken, send a copy of the form to the laboratory with each specimen.

- Record the date the specimen was collected in the box labelled “If lab specimen collected”. Also record the date the specimen was sent to the laboratory.
- Circle what type of specimen was collected (blood, CSF, stool).

Immediate/Case-based surveillance reporting form IDSR 001 A

REPORTING HEALTH FACILITY		REPORTING LGA	REPORTING STATE
IDENTIFICATION NUMBER			IDSR 001A

Immediate/ Case-based Reporting Form
From Health Facility/Health Worker to LGA health team

Cholera	Dracunculiasis	Neonatal Tetanus	Measles	Meningitis	**Influenza A/H5N1**	Viral Hemorrhagic Fever e.g. Lassa fever	Yellow Fever	Diahrroea with Blood /shigella(Under5)	Others/specify* e.g. Dengue, SARS etc

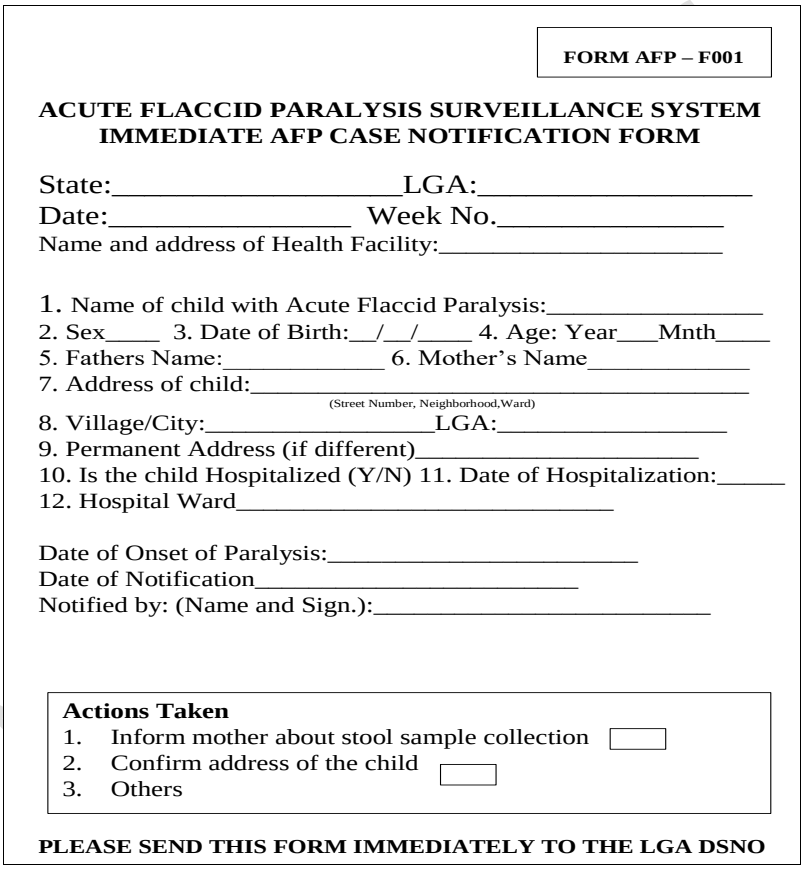
Date form received at SMOH or the national level: / / (Date/Month/Year)										
Name of Patient:										
Date of Birth (DOB): / / (Day/Month/Year)				**Age (If DOB unknown):**			Year	Month (if <12)	Day (NNT only)	
Sex:		M=Male F=Female								
Patient's Address:		**Urban**		**Rural**						
Settlement/Village										
Ward		**LGA**		**State:**						
Exact residential address:										
If applicable or If the patient is neonate or child, please write full name of mother and father of the patient										
Date Seen at Health Facility: / /		**Date Health Facility notified LGA:** / /		**Date of Onset:** / /						
Number of vaccine doses received:	9=unknown For cases of Measles, NT (TT in mother), Yellow Fever, and Meningitis (For Measles, TT, YF- by card & for Meningitis, by history)									
Date of last vaccination:	/ / (Measles, Neonatal Tetanus (TT in mother), Yellow Fever, and Meningitis only)									
Close contact with infected poultry	1=Yes 2=No									
Close contact with suspected or confirmed case of Avian influenza	1=Yes 2=No									
Associated with an outbreak?	1=Yes 2=No									
In/Out Patient	1=Inpatient	2=Outpatient								
Outcome	1=Alive	2=Dead	9=Unknown							
Final Classification of case	1=Confirmed	2=Probable	3=Discarded	4=Suspect						
Final Classification for Measles	1= Laboratory Confirmed	2= Confirmed by Epidemiological linkage	3=Clinical Compatible	4=Discard	5=Suspect with lab pending					
Person completing form **Name:** **Title:** **Address:**			**Signature:**							
Date form sent to LGA/: / / (Date/Month/Year) Date Form Received at LGA: / / / Signature										

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Figure 6.28: Immediate Case based reporting form IDRS 001A

iii. Immediate AFP Case Notification Form (F001)

F001: This is a disease specific case-based reporting form used to report any case of acute flaccid paralysis from the health facility and community to the LGA.
When any case of AFP is seen, HF staff should contact the LGA immediately by telephone, SMS, e-mail etc. Fill and send the form as a follow-up to the verbal report.



FORM AFP – F001

ACUTE FLACCID PARALYSIS SURVEILLANCE SYSTEM
IMMEDIATE AFP CASE NOTIFICATION FORM

State:_____LGA:_____
Date:_____ Week No._____
Name and address of Health Facility:_____

1. Name of child with Acute Flaccid Paralysis:_____
2. Sex____ 3. Date of Birth:__/__/____ 4. Age: Year___Mnth____
5. Fathers Name:_____ 6. Mother's Name_____
7. Address of child:_____
(Street Number, Neighborhood,Ward)
8. Village/City:_____LGA:_____
9. Permanent Address (if different)_____
10. Is the child Hospitalized (Y/N) 11. Date of Hospitalization:_____
12. Hospital Ward_____

Date of Onset of Paralysis:_____
Date of Notification_____
Notified by: (Name and Sign.):_____

Actions Taken
1. Inform mother about stool sample collection ☐
2. Confirm address of the child ☐
3. Others

PLEASE SEND THIS FORM IMMEDIATELY TO THE LGA DSNO

Figure 6.29: Immediate AFP Case Notification Form F001.

iv. The Laboratory Specimen Collection Form - IDSR 001 B:

HF to inform LGA DSNO to collect specimen depending on the specimen to be collected e.g. stool, blood, CSF

- HF should await feedback from next level.
- HF should send feedback to the community on arrival of result.

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IDSR 001B

If Lab Specimen Collected

For Health Facility: If lab specimen is collected, complete the following information and send a copy of this form to the lab with the specimen									
Date of specimen collection: ___/___/___									
Type of specimen:		Stool		Blood		CSF		Other/specify	
Date specimen sent to lab: ___/___/___									
ID Number:									
For the Lab: Complete this section and return the form to LGA/ health facility or clinician									
Date lab received specimen: ___/___/___									
Specimen Condition:			Adequate			Not adequate			
Disease/Condition:									
Type of Test:									
Result:			+ = Positive		- = Negative		P = pending		
Malaria	P. Faliciparum								
	P. Vivax								
Cholera (culture)									
Cholera direct exam; specify the method used:									
Meningitis: N meningitides		Culture							
		Latex							
		Gram stain							
Meningitis: S. pneumonia		Culture							
		Latex							
		Gram stain							
Meningitis: H. influenza		Culture							
		Latex							
		Gram stain							
Shigella dysenteriae		Culture							
		Type	SD Type 1		Other Shigella types			No Shigella	
Result:			+ = Positive		- = Negative		I= Indeter.		P=Pending
Viral Detection	Yellow fever (IgM)								
	Measles (IgM)								
	Rubella (IgM)								
	RVF (IgM)								
	Ebola (IgM)								
	Lassa (Ig M)								
	Marburg (IgM)								
	A/H5N1 (RT-PCR)								
Other lab test (specify)	Results:								
Date lab sent results to LGA//health facility:					_____/_____/_____				
Name of lab sending results:									
Other pending results:									
Name of lab technician sending the results:						Signature:			
Date LGA/ receive lab results: ___/___/___					LGA/:				
Date lab results sent to health facility by LGA/: ___/___/___									
Date lab results received at the health facility: ___/___/___									

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Figure 6.30: Laboratory Collection Form IDSR 001B.

v. Line List - IDSR 001C

During specific disease outbreaks, suspected cases may need to be listed individually, with details of the history including immunization status and management of each patient. Instruction on how to fill the line list is shown below:

- Determine that a case meets the standard case definition (refer to the IDSR National Technical Guideline)
- Start with the case identification number, with each number linked to a case e.g. 001, 002, 003
- Fill in all required items across the line for a particular case. (Simulation Exercise required) as shown below:
  - Case identification no
  - patient's name, date of birth, sex, and patient's address (or her/his caregiver for children) and phone number
  - date of onset of symptoms
  - date of first presentation to the HF
  - patient vaccination status
  - relevant symptoms based on the standard case definition of the disease (IDSR Technical Guidelines)
  - date and results of any laboratory confirmation tests (also based on the standard case definition)
  - treatment given (may not be required for all diseases)
  - Final diagnosis and outcome.

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Table 6.10: Line List (IDSR 001C) – Report from HF to LGA and for use during outbreak

IDSR 001 C

Line list – Reporting from health facility to LGA and for use during outbreaks

Health Facility: _____ Ward _____LGA: _____ State: _____

Date Sent to LGA:_____ Date received at LGA:_____

Disease or condition:_____

CASE Id No	O=out-patient I=in-patient	Name	Village, Town and Neighborhood	Sex	Age[1]	Date seen at health facility	Date onset of disease	Number of doses of vaccine[2] received	Other variable	Other variable	Record date laboratory specimen collected	Record results of laboratory testing	Outcome A=alive D=dead	Comments

- If LGA sends specimens to the laboratory, use the same case ID number in the NIE/SSS/LLLYY-NNNN format to identify the specimen.
- If health facility sends the laboratory specimen to the laboratory without passing through the LGA, then use the patient's name to identify the specimen.
- NOTE: If more than 100 cases occur in a week at a health facility (e.g., for measles, cholera, and so on), do not line list them. Record the total number of cases only. If previously recorded cases die, update their status by completing a new row with "died" in the "Outcome" column and "update record" in the Comments column.

[1]Record age in months up through age 12 months. If patient is more than 12 months old, record age in years.
[2]Exclude doses given within 14 days of onset of the disease.
NIE – Country code, SSS – State Code, LLL – LGA code, YY – Year, NNNN – Patient number

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vi. IDRS Reporting Forms 002 and 003

Other IDSR reporting forms are IDSR 002 and 003. IDSR 002 is used to report epidemic prone diseases on a weekly basis while IDSR 003 is used to report all the 40 notifiable diseases on a monthly basis from the Health facility to LGA then State level.

WEEKLY REPORTING OF NEW CASES OF EPIDEMIC PRONE DISEASES AND OTHER PUBLIC HEALTH EMERGENCIES UNDER SURVEILLANCE IDSR 002

Year: Month Year

Week number: From: / / / To: / / /

Health facility: State

If sf.GAs/ States (with cases)	Cerebro-spinal Meningitis			Cholera			Viral hemorrhagic fever (e.g.Lassa fever)			Measles			Yellow fever			Other Epidemic Prone dses& Public Health Emergencies (specify)		
	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths
Total																		
Case fatality rate																		

Date of submission of this report: / / /

Officer in charge: Signature

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Figure 6.31: IDSR 002

TO BE COMPLETED IN TRIPLICATE

LGA LEVEL
ROUTINE MONTHLY NOTIFICATION FORM: IDSR 003

LGA:_____ State:_____

Month [ ] Year [ ] No. of health facilities in LGA [ ] No. of health facilities in LGA reporting [ ] No. of health facilities in LGA reporting timely [ ]

	Cases outpatients								Cases in-patients								Total cases in & out patient	DEATHS							
DISEASE	0-28 days	1-11 months	12-59 months	5-9 years	10-19 years	20-40 years	>40 years	Total	0-28 days	1-11 months	12-59 months	5-9 years	10-19 years	20-40 years	>40 years	Total		0-28 days	1-11 months	12-59 months	5-9 years	10-19 years	20-40 years	>40 years	Total
1. Anthrax																									
2. CSM																									
3. Cholera																									
4. Dengue																									
5. Diarrhoea (Watery without blood)																									
6. Diarrhoea (with blood)																									
7. Dracunculiasis (Guinea Worm Disease)																									
8. Hepatitis B																									
9a). Influenza-like illness (ILI)																									
9b). Influenza A/H5N1																									
9c). Influenza A/H1N1																									
10. Lassa fever (Viral hemorrhagic fever)																									
11. Leprocy																									
12. Lymphatic Filariasis																									
13a) Malaria																									
13b) Malaria (severe)																									
13c) Malaria (Pregnant Women)																									
14. Measles																									
15. Neonatal Tetanus																									
16. New AIDS cases																									
17. Onchocerciasis																									
18. Pertussis																									
19. Plague																									
20. Pneumonia																									
21. Poliomyelitis																									
22. Rabies (Human)																									
23. Severe Acute Respiratory Illness																									
24. Severe Acute Respiratory Syndrome (SARS)																									
25. Schistosomiasis																									
26. Smallpox																									
27. Sexually Transmitted Infections																									
27a) Vaginal discharge																									
27b) Genital Ulcer																									
27c) Urethral discharge																									
27d) Others STIs																									
28. Trachoma																									
29. Trypanosomiasis																									
30. Typhoid Fever																									
31. Tuberculosis																									
32. Yellow Fever																									
NON-COMMUNICABLE DISEASES																									
33. Asthma																									
34. Buruli Ulcer																									
35. Diabetes Mellitus																									
36. Epilepsy																									
37. High Blood Pressure																									
38. Malnutrition																									
39. Noma																									
40. Sickle Cell Diseases																									

Name of Reporting Officer _____ Signature _____ Date _____

Figure 6.32 IDSR 003 Form.

Trainers Note on Exercise 4:

- *Facilitator stops at this point to guide the participants on hands-on:*
  8. *AEFI Surveillance Form.*

  This should last for 30 minutes.

6.9 Group Exercise on Monitoring and Surveillance

Trainer's notes: Ensure exercise is participatory

Exercise 1: Completion of EPI data tools during and after immunization session

You are the RI focal person in a Health Facility A which has an annual target population of 1,200 and you run RI sessions twice a week. In the morning of 22nd February 2016, as part of immunization session plans, you collected the following vaccines and devices; BCG = 5 vials, BCG Syringes = 110; 2mls AD syringe= 6 bOPV =5 vials; Penta. = 10 vials, PCV10 = 10 vials, IPV =10 vials, Hep.B = 10 vials; YF= 20 Vials; Td = 10 vials, 0.5 syringes = 50 pieces, and 5ml reconstitution syringes = 30 pieces.

NB: One BCG vial contains 20 doses, Yellow Fever = 10 doses, OPV = 20 doses, Penta. = 10 doses, Hep.B. = 10 doses, PCV10 = 2 doses, IPV = 5 doses; Td= 10 dose

On the clinic day, the following clients came to the clinic as shown on Table 6.10 below;

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Table 6.11: Scenario on immunization history of clients at a health facility A

	Name	Age	Previous Immunization History	List the vaccine dose each child is due to collect on 22nd February, 2016	Address
1	RachealAmadi	11 months	Penta 1 (22/01/16)		Karmo settlement
2	Bassey Dundun	9 months	Penta.1(22/12/15),Penta 2 (22/01/16)		Dutse Alhaji village
3	EzebiloMurtala	10 days	Nil		Kirikiri village
4	AbanidaAbiola	9 months	Nil		Tudunwada
5	Mahmud Mohammed	14 months	Nil		Obalende
6	JeevanBagana	14 weeks	BCG, OPV 0 (Dec. 12, 2015) Penta 1 (Jan. 22, 2016)		Kubwa FCT

NOT

Please complete all relevant data tools with the information given above by;

1. Using table 6.10 above complete the vaccines that each child is due to collect on the 22nd February, 2016 (Day of immunization session).
2. Completing the Vaccine management tool (VM 1a & 1b) with the vaccines collected.
3. Complete a Child Health card for JeevanBagana.
4. Complete the information for JeevanBagana and Bassey Dundun on the Immunization Register.
5. Complete the tally sheet with vaccination given to JeevanBagana, Bassey Dundun and Mahmud Mohammed on the 22nd February, 2016.
6. Summarize the tally sheet information for JeevanBagana, Bassey Dundun and Mahmud Mohammed on Health facility Summary.

After completing the data tool exchange completed forms with your immediate neighbour and provide feedback to each other (whether well completed or not and suggestion on how to go about it).

Exercise 2: Monitoring Chart

Assuming you were in the month of December 2015 and you had at the beginning of the year set to achieve a target 87% and you obtained the following data from previous immunization activities;

Table 6.12: Scenario of monthly vaccination performance in health facility A Jan-Dec 2015

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Penta. 1	80	70	60	30	40	80	120	70	60	100	80	90
Penta. 2	60	55	70	45	40	75	30	45	40	60	70	76
Penta. 3	40	60	20	40	60	20	70	30	80	50	45	53

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Please complete the monitoring chart given to you and interpret the trend of Access and Utilization in your facility. With current trend are you above or below the expected target for the year? If below the target, what measure will you take to improve coverage?

Exercise 3:REW Monitoring Tools

Dogowa LGA has a total of 6 health facilities. The LGA has the information/data for January, 2016 for the six health facilities and the LGA level as at 2nd February, 2016 as shown in tables 6.12a &6.12b. Using the data in table 6.12a & 6.12b:

1. Complete the REW_HF 1 with the data for Tudun Wada health facility assuming you are the Routine Immunization focal person at the health facility.
2. Complete the REW_LGA 1 with the data from Tudun Wada, Birnin Kudu and Rimawa health facilities, assuming you are the LIO.
3. Complete the REW_LGA 2 with the data from the 6 health facilities and the LGA, assuming you are the LIO.

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Table 6.13a: Case Scenario on routine immunization data in January 2016 for all the health facilities in Dogowa LGA

Case Scenario on REW Monitoring of Dogowa LGA																			
S/no	Health Facilities	Updated micro-plan	Vaccine stock out	AD Syringes stock out	No. Personnel trained in Immunization in the last 2	Funds received in January for RI session	Functional Refrigerator	No of community meetings on RI conducted	No of fixed sessions planned in January	No of fixed sessions conducted in January	No of Outreach sessions planned in January	No of Outreach sessions conducted in January	No of supportive supervisory visits received	Availability of an updated monitoring chart	Availability of Data Analysis table	Annual Target Population	No. of children immunized with Penta1	No. of children immunized with Penta3	No. of children immunized with Measles
1	Tudun Wada	Yes	BCG	Nil	0	Yes	No Refrigerator	0	2	1	1	1	0	Yes	No	2200	100	40	36
2	Birnin Kudu	No	Yellow Fever	Nil	0	No	No Refrigerator	0	1	1	1	0	0	Yes	NO	1600	80	35	40
3	Rimawa	Yes	Nil	2.0 mls	1	No	No Refrigerator	1	4	3	1	0	0	Yes	Yes	1200	60	40	38
4	Malali	No	Nil	5.0 mls	1	No	No Refrigerator	0	1	1	1	0	1	No	NO	1000	80	60	53
5	Garki	Yes	Nil	Nil	2	No	No Refrigerator	0	2	2	1	0	1	No	NO	800	47	30	40
6	Paiko	Yes	Nil	Nil	1	Yes	Solar Refrigerator	0	1	1	1	0	1	No	NO	1800	110	90	70

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Table 6.13b: Case Scenario on routine immunization data at LGA level in January 2016 for Dogowa LGA

Case Scenario on REW Monitoring of Dogowa LGA												
S/no	Name of LGA	Updated micro-plan	Vaccine stock out	AD Syringes stock out	No. Personnel trained in Immunization in the last 2 years	Funds received in January for RI session	Functional Refrigerator	No of community meetings on RI conducted	No of supportive supervisory visits received in January	Availability of an updated monitoring chart	Availability of Data Analysis table	Annual Target Population
1	Dogowa	Yes	BCG, TT, PCV	Nil	2	Yes	3	2	0	Yes	No	8600

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Exercise 4: AEFI Surveillance Tools

CASE SCENARIO

Mrs. Ijeoma presented her son (NnamdiOkeke) to your health facility (Odidi PHC) on the 30/10/2016. The child was given 2nd dose of PCV10, OPV2, and Penta2. Previous vaccinations from the child health card are BCG, HBV0 (16/08/2016) and Penta1, OPV1, PCV1 (30/09/2016). The child was born on 16th August, 2016. Mrs. Ijeoma lives with her husband at No. 23, Namadi Street, Gwagwalada Area council, Abuja.

The child was reported to develop high fever, and was irritable with multiple convulsions three days after the visit to the health facility during which the child was vaccinated. The mother also reported seeing multiple swellings in his armpits. On examination the child was found to be febrile to touch, (temperature 39^0c) semi-conscious with enlarged axillary lymph nodes. No history of similar illness in the past. The child was given paracetamol at home and tepid sponged by the mother.

Instruction

Fill the above information in an AEFI reporting form and AEFI Line list.

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MODULE 7: ATTITUDE FOR EFFECTIVE HEALTH SERVICE DELIVERY, CONTINUOUS QUALITY IMPROVEMENT AND ENGAGING COMMUNITIES

Contents

List of Figures (7)2

List of Tables (7)3

7.1 Attitude for Effective Health Service Delivery (7)4

7.1.1 Introduction (7)4

7.1.2 Health service provision and clients' rights (7)6

7.1.3 What are the rights of clients seeking health services? (7)6

7.1.4 Basic needs of health service providers (7)7

7.1.5: Summary Health Service provision and clients' right (7)8

7.1.6: Improving HW Attitude for better Health Service Delivery (7)8

7.1.7 Fact to know (7)9

7.1.8 What is attitude? (7)10

7.1.9 Importance of Health Worker Attitude in Health Care Service Delivery (7)10

7.1.10 Applying Emotional Intelligence (EI) in the health sector (7)14

7.1.11 What is Emotional Intelligence? (7)14

7.1.12 Core EI skills (7)16

7. 2 Continuous Quality Improvement (CQI) for RI and PHC Management (7)16

7.2.1 What is Quality? (7)17

7.2.2 What is Continuous Quality Improvement (CQI)? (7)17

7.2.3 Principles of Quality Improvement (7)18

7.2.4 Tools for Quality Improvement (7)19

7.2.5 Five Why's Technique (7)20

7.2.6 Using the PDSA Cycle to Solve Identified Problems at the Health Facility (7)21

7.3 Engaging Communities (7)22

7.3.1 Benefits of partnering with communities (7)23

NOT FOR PRINTING

7.3.2 Understanding Communities (7)26
7.3.3 Choose methods for information gathering (7)27
7.3.4 Identify key informant (7)28
7.3.5 Plan services with communities (7)29
7.3.6 Engaging community members (7)29
7.3.7 Community meetings (7)32
7.3.8 Scheduling the meeting (7)33
7.3.9 Facilitating the meeting (7)34
7.3.10 After the meeting: (7)36
7.3.11 Define responsibilities amongst community members (7)36
7.3.12 Inform the community members about important information on immunization activity (7)37
7.3.14 Address resistant groups (7)38
7.3.15 Understanding reasons for resistance/non-compliance (7)38
7.3.16 Response to resistance (7)38
7.3.17 Community role in monitoring and surveillance (7)40
7.3.18 Establish systems for collecting feedback from the community (7)40
7.3.19 Health workers' feedback to communities. (7)41
7.3.20 Track children and their immunization status (7)42
7.3.21 Group Exercise on engaging community (7)42

List of Figures

Figure 7.1: The Betari box showing the cycle of attitude and behaviour 11
Figure 7.2: Impact of attitude on health outcome 12
Figure7.3 Description of the Plan Do Study Act Cycle for Quality Improvement 22
Fig 7.4: A group discussion session using a printed visual aid 34

NOT FOR PRINTING

Figure7.5: Community members engaged in a discussion before embarking on monitoring and surveillance 43

List of Tables

Table 7.1: Steps in conducting microplanning 26

NOT FOR PRINTING

Module 7: Attitude for Effective Health Service Delivery, Continuous Quality Improvement and Engaging Communities

About this module:

This last module is divided into three sections; Attitude for effective health service delivery, Continuous Quality Improvement (CQI) and Engaging communities. The sections are designed to guide health workers on how to improve their attitude towards clients, apply basic quality principles in their daily activities, and strengthen their community engagement skills respectively to create demand for immunization services and increase coverage.

7.1 Attitude for Effective Health Service Delivery

7.1.1 Introduction

This section highlights the role of health workers' attitude, and relationship with clients on demand creation and uptake of health services, especially routine immunization, at health facility levels. It builds on all the technical knowledge gained from previous modules of this guide. This section emphasizes how you, as a health worker, can use the knowledge gained from other trainings to better serve clients

The section provides information on:

- Rights of clients
- Impact of health worker attitude on health services and immunization outcomes
- Emotional intelligence for effective service provider-client relationship
- Continuous quality improvement for routine immunization and other PHC services

The application of the above information and skills in our day-to-day health service delivery is essential for attaining desired immunization coverage and continuous quality improvement.

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Objectives of the section

At the end of this section, participants will be able to

- Outline the basic rights of clients as it relates to health services, demand, and uptake
- Describe what clients/patients expect from health workers to gain optimum satisfaction
- Understand the effect of health worker attitude on health services, demand, and uptake
- Describe emotional intelligence and how it affects health service delivery
- Describe continuous quality improvement and apply its principles in their day-to-day health service delivery

Health workers exist because of the people they serve! This perception should be our driving force as we continuously strive to provide quality services, reach all the eligible populations, and meet our personal and collective work targets and RI indicators. As service providers, we need to maintain a high level of professionalism in the delivery of our services, with a client-centred focussed approach for effective and quality service provision.

7.1.2 Health service provision and clients' rights

Trainers Notes

Training should be participatory

Trainer should allow participants to:

List what they think are the rights of clients
Describe what they do in their facility to observe these rights

Subsequently, participants should take turns to read highlighted points in the modules

Think of your PHC as profit-making business organization (e.g. your family business). To generate revenue, make profit and survive, your PHC must provide quality and effectiveservices that satisfy its clients. Similarly, as health workers, we should provide quality health services that satisfy our client/patients and meet their needs while respecting their rights as clients. Remember, the customer (client) is the king (we are employed to serve them) and their rights should be respected and attended to always.

NOTE!!

"Your clients have a right to have certain expectations when they come to the health facility to receive services. So, just like in a business, the primary focus of every health/service provider should be to meet the client's expectation given available resources"

7.1.3 What are the rights of clients seeking health services?

People have basic rights and develop expectations based on those rights. Similarly, clients have basic rights that must be respected by health workers if, their expectations are to be met. These clients right include:

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- **Right to accurate information:** Clients have a right to accurate, appropriate, understandable, and clear information related to the health services they have come to seek e.g., routine immunization services or health conditions they have come to treat.
- **Right to informed choice/decision:** Clients have a right to make a voluntary, well-considered decision that is based on options, information, and clarity provided by the health worker.
- **Right to access quality health services:** Clients have a right to quality services that are affordable (and in some cases free of charge e.g., routine immunization services), available at convenient times and places, fully accessible with no physical barriers, and inappropriate eligibility requirements or social barriers such as tribe and religion etc.
- **Safe and effective care:** Clients have a right to safe services. As a health provider, ensure that the services you are providing does not cause any direct or indirect harm either physical, psychological, or emotional to your client. The principle of ''do no harm'' should be the watchword of the service provider. Clients also have the right to quality and effective preventive (health education, health promotion and immunization) and curative (treatment) healthcare services,
- **Dignity and respect:** All clients have the right to be treated with respect, dignity, and compassion. As a service provider, you need to ensure that clients are as comfortable as possible during procedures. Service providers are to be friendly to their clients and treat them with utmost respect.
- **Privacy, confidentiality, and expression of opinion:** Clients have a right to privacy and confidentiality during the delivery of services such as counseling, examinations.etc. As a service provider, you are expected to keep the health information of your client and not divulge their client's information without consent (most especially written consent for literate clients, and verbal with thumb print for clients that are not literate) from their clients.
- **Continuity of care:** All clients have a right to continuity of services, supplies, referrals, and follow-up necessary to maintaining their health.

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7.1.4 Basic needs of health service providers

To fully grant the rights of clients and ensure quality services, health workers' have basic needs which should be met ***under ideal circumstances***. These needs include:

- **Information, training, and personal development**: Health service providers need to continually update their knowledge and skills through reading e.g. this basic guide, trainings (like the one we are having) and by accessing other government, partners and private professional trainings/capacity building programs. Service providers also should leverage on peer-led learning program at the health facility level. Opportunities for capacity building also exist using RI app and immunization academy. The availability of information in local languages will help aid comprehension and better understanding of the various components of the routine immunization package.
- **Good management and supportive supervision:** This can come directly from higher level managers at the State, LGAs or from Ward Focal Persons and Health facility in-charges at ward and health facility levels respectively. **The opportunity of on-the-job training and mentorship of service providers are one of the ways of capacity building of service providers.**
- **Supplies, equipment, infrastructure, and security:** Service providers need reliable, sufficient inventories of supplies, instruments, and working equipment, as well as the infrastructure (conducive working environment) necessary to ensure uninterrupted delivery of high-quality services. In addition, Health workers should also be provided a secured environment to work.

7.1.5: Summary Health Service provision and clients' right

When these rights and needs are met, the result is high quality services that produce positive health outcomes.

Key Points to remember

- ***Health workers exist because of their clients. No clients, no health worker***
- ***Your*** client is the king (we are employed to serve them) and their rights should be respected and attended to always.
- As service providers, we need to maintain a high level of professionalism in the delivery of our services

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- A client-centred focussed approach is needed for effective and quality service provision.
-
- ***Satisfying clients expectation while respecting their rights should be the ultimate goal of every health worker***
- ***Clients' rights include right to accurate information and informed choice/decision***

7.1.6: Improving Healthworker Attitude for better Health Service Delivery

Buzz Session

Think about the best service you have ever received.

a. Where and when was this service provided?
b. Why do you think it was good?
c. How did it make you feel?

Now think about the worst service you have ever received and draw the contrast.

Then, ask yourself: If you are the recipient of the services, you currently provide, how would you rate it?

REMEMBER, YOUR PATIENT WANTS WHAT YOU WANT!

7.1.7 Fact to know

In 2004, Service Compact with All Nigerians (SERVICOM) conducted a survey[4] to determine what Nigerians want from health facilities and other service organizations. The people surveyed said that these health facilities and organizations were:

- Not serving the people
- Inaccessible.

4

- Providing poor quality services and
- Indifferent to clients' needs ("I don't care attitude").

The survey further highlighted what Nigerians would like to see in terms of service delivery to include:

- Good service delivery
- Timeliness (of service in terms of waiting time)
- Precise and accurate information
- Professionalism
- **Good Staff Attitude**

> ***Trainers' Note:***
> ***Facilitator should stress that these facts were based on actual scientific survey that was done following standard research methodology.***

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7.1.8 What is attitude?

- Attitude refers to ideas/thoughts we hold about ourselves, others, objects, and experiences
  OR
- A judgement a person makes about a person, group, event, or issue which can be associated with positive, negative or neutral feelings.
- Our attitude influences our behaviour and how we react to others, as shown by the Betari box below.

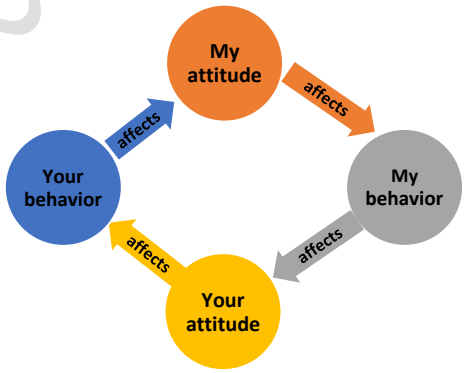


Figure 7.1: The Betari box showing the cycle of attitude and behaviour

Things to note from the Betari box above:

As a health worker:

1. Your attitude (positive or negative) affects or influences your behaviour and ultimately impacts your service provision
2. Your behaviour influences the behaviour of your client
3. Your attitude

7.1.9 Importance of Health Worker Attitude in Health Care Service Delivery

Our attitude as health workers impacts on our success in achieving required health outcomes and meeting national routine immunization indicators. From the diagram, a health worker who lacks the will, commitment, and personal motivation to do his work efficiently will be at the lowest level in immunization coverage and quality indicators whereas, his/her counterpart who has the will and the **can-do** attitude is more likely to meet required outcomes.



Figure 7.2: Impact of attitude on health outcome

Health workers provide essential services which should ordinarily meet their client's expectations. However, the attitude of health workers in many Nigerian health facilities

have resulted in several negative reports about health workers from clients who access care.

Aside from challenges with **absenteeism** or **unavailability** of health workers, these reports highlight the following negative behaviors of health workers:

- Lack of sympathy and empathy
- Neglect
- judgmental and verbally abusive behavior
- Lack of respect
- Lack of attention to privacy and confidentiality; and
- Extortion of money from clients (even when services are free)

These negative attitudes and behaviors of health workers is a direct violation of some of the rights of our clients which we mentioned earlier and could:

- Undermine the quality and effectiveness of care they deliver,
- Affect client/patient well-being, and
- Hinder potential patients from seeking health care services like immunization.

A study conducted in Akwa Ibom State in 2013 showed that some respondents preferred to deliver their babies with traditional birth attendants because of the harsh attitude of nurses. This was despite the fact that the women felt that the health facility is the best place to deliver babies.

Case study 1:(Play Halima Video)

Halima's Story – True life story

Halima Abubakar lives in a rural village in Northern Nigeria. The nearest health facility is 45 km away. On March 20, 2012, a pregnant Halima arrived at the hospital at around 9am but could not see a doctor because she arrived late. She

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was given an appointment for the following week. A week later Halima hurried to the hospital and got there at 6 am and submitted her card.

While sorting cards for the day's appointments, the records clerk saw that March 27 was not the appointment date for Patient File No 1975 (Halima). Without speaking to anyone, she flung the card away. A hungry Halima waited in the patients' waiting area till she was the only patient left. This was at about 3 pm in the afternoon. She had been waiting for over 8 hours. She approached the nurse on duty to make enquiries. The nurse was rude to her saying, 'Why are you disturbing me? Can't you see that I am doing my work?' Halima was so upset that she burst out crying. Another records' clerk present in the waiting area took pity on her and cross checked the records only to find out that the first clerk made a mistake. Unfortunately, this was of no use as Patient File No 1975 was one of the files that Dr. Isindu had taken home for his research.

Halima left the hospital vowing never to come back. She turned to the medicine dealer and traditional birth attendant next to her house. These were the only options available in her vicinity. On September 30, when Halima went into labor, she went to the traditional birth attendant. Unfortunately, Halima died during childbirth.

Who killed Halima?

Improving attitude involves showing empathy which means, putting yourself in your client's shoes and seeing things from their point of view. Remember that no one chooses to come to health facility. People only come because they have health needs. Remember to treat them like you would like to be treated if you were in their shoes.

A Nigerian proverb says, 'You should not throw a stone in the marketplace because it may hit your relative.' The effects of bad services are far reaching and sometimes fatal.

Key points to remember

- ✓ ***Your patient wants what you want. Show empathy***
- ✓ ***Your attitude and behaviour have an effect on other people's attitude and behaviour***
- ✓ ***You may not have control over things that happen to you, but you have control over your attitude***

7.1.10 Applying Emotional Intelligence in the health sector

Learning objectives:

At the end of the session, participants will be able to

- List the core skills of Emotional Intelligence
- State why emotional intelligence is important in health care service delivery
- Describe how to strengthen communication

7.1.11 What is Emotional Intelligence?

- Emotional intelligence (EI) is the ability to recognize, understand and manage our own emotions as well as recognize, understand, and influence the emotions of others. In practical terms, this means being aware that emotions can drive our behavior and impact people (positively and negatively) and learning how to manage those emotions – both our own and others – especially when we are under pressure for better relationships with our clients and colleagues.

Case Study - 5 mins

<u>Kola's bad day</u>

Kola works as the routine immunization (RI) officer in PHC Kado. While having breakfast this morning, his five-year-old daughter spilled her milo drink on his uniform. Kola was very angry and shouted at her which made her cry. His wife

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Ronke begged Kola to be patient saying, 'Be patient with her. She's just a child.' Kola shouted at Ronke, 'You are always making excuses for this child. That is why she is so spoilt.' This made his wife angry and an argument ensued. As a result, Kola left the house later than planned.

On his way to work, he was stopped by a Vehicle Inspection Officer (VIO). Kola was upset because he was already late for a meeting. Therefore, he responded rudely when the officer asked for his car papers. Annoyed, the officer held on to his paper saying that they were fake. Kola was outraged because he had obtained the papers from the VIO office himself. By the time he got to the PHC, the meeting was over. He took out his anger on his assistant right in front of patients who were waiting for services.

In order to show that she is not a push over, his assistant sent away five mothers who had come to vaccinate their children saying that they were late.

1. **In your opinion, which core skill does Kola lack?**
2. **What were the implications of his actions?**
3. **How could have Kola's assistant handled this situation differently?**
4. **At what point can the negative cycle in this story be broken?**

7.1.12 Core EI skills

Some core EI skills that you need, as a health worker, to succeed in serving others include:

- Knowing yourself
- Maintaining control
- Reading others
- Communicating with flexibility

Knowing yourself: This means recognizing your emotions, being able to differentiate between emotions and understanding the trigger for the emotions to evaluate a situation and make more objective decisions

Maintaining control: This means resisting or delaying an urge to act, controlling aggression, hostility, or irresponsive behaviour. This skill enables you to remain calm during chaos or confusion, especially when others are displaying their emotions in an aggressive way.

Reading others: This means being aware of the emotions of others and appreciating them, understanding how and why people feel and act as they do.

Communicating with flexibility: This means being trustworthy and being able to manage your emotions. Communicating with flexibility helps you manage your relationships more effectively with your clients.

7. 2 Continuous Quality Improvement for RI and PHC Management

Overall Objective of the session is:

- To Introduce the concept of Quality and Continuous Quality Improvement (CQI) to Health Workers at the PHC level
    - For HWs to become familiar with Quality and CQI concepts in health care & PHC management
    - For HW to understand how to identify quality problems, and use QI tools to resolve problems
    - For HW to understand how to plan and solve problems in the health facility

7.2.1 What is Quality?

Quality can be defined as…

- The standard of something as measured against other things of a similar kind.
- The degree of excellence of something.
- A distinctive attribute or characteristic possessed by someone or something.

What is quality of care?

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"Quality of care is the degree to which health services for **individuals and populations** increase the likelihood of **desired health outcomes** and are consistent with current professional knowledge."

What are the desired outcomes for providing quality health care and RI services?

- ✓ Improved health care quality
- ✓ Improved RI access and utilization
- ✓ Improved quality and safety of immunization and other PHC services
- ✓ Increase in client satisfaction and patronage
- ✓ Improved efficiency among RI providers and managers in the various PHC centres

7.2.2 What is Continuous Quality Improvement (CQI)?

It is an approach that constantly seeks to improve service delivery to meet the needs of the clients we serve.

- It's a process that help health facilities to increase efficiency
- It's an ongoing (**continuous**) process that evaluates how a health facilityworks and finds ways to improve its processes in order to improve the quality of health services.

Benefits of CQI in Primary Health Care are that it increases:

- Effectiveness
- PHC Performance
- Client satisfaction
- Expected outcomes
- Health worker morale
- Knowledge of health worker
- Demand for services

CQI in Primary Health Care decreases:

- Errors
- Waste
- Duplication

Take Away!

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- ✓ Quality in the PHC setting means meeting the needs and exceeding the expectations of those we serve (our clients)
- ✓ CQI simply means deliver results that are better today than they were yesterday!

7.2.3 Principles of Quality Improvement

Basic Principles of CQI:

- **Focus on the client**/patient: **The Client is King!** Our client should be the focus of all we do! Think about it, there won't be work for us to do if there are no patients/clients utilizing the PHCs - we will be out of jobs! As health workers, we should ask ourselves - How do we meet patient needs and expectations?
- **Focus on systems** understand the process (system of care) - most problems are found in processes, not in people
- **Learn from best practices. Do not re-invent the wheel.** - copy and share, ideas and methods that work, without hesitation, hence the CQI slogan "copy **shamelessly** and share **senselessly.**
- **Focus on teamwork** – Quality improvement involves all employees and requires teamwork. All quality improvement activities must involve a team process - its everyone's responsibility!
- **Focus on data:** - Decision making is based upon using evidence. Data is the bedrock of CQI! We need data to demonstrate that the change we implement has led to an improvement. The use of health facility service data for decision making is needed for continuous quality improvement.

Take Away!

- ✓ Be dedicated to quality improvement within the whole RI and PHC system.
- ✓ Remember your client is the king. Find out how you can satisfy them.
- ✓ Tackle the system instead of the health worker.
- ✓ Use team work to achieve your goals - success of one + failure of others = Failure of all!!!
- ✓ Think big but start small and be innovative.

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7.2.4 Tools for Quality Improvement

What are Quality Improvement Tools?

- Quality Improvement Tools are tools that support QI and help us analyze information to simplify the QI process
- They help us to carry out root cause analysis of the quality problems we want to solve

Quality Improvement Tools

- **'Five Why's**
- **PDSA (Plan Do Study Act) cycle**

7.2.5 Five Why's Technique

The Five Why's is a simple Root Cause Analysis (RCA) and brainstorming tool that can help health workers get to the root cause of a problem. For any problem that the health worker has identified ask "why" questions to drill down to the root cause. By repeatedly asking the question "Why" (five is a good rule of thumb), you can peel away the layers of symptoms which can lead to the root cause of a problem. Although this technique is called "5 Why's," you may need to ask the question fewer or more times before you identify the root cause.

Case scenario of "Five Why's" technique.

Problem statement: 'High immunization dropout rate in Makoko LGA PHC'

Why is there high dropout rate in the PHC?

Mothers did not bring their children for immunization after BCG vaccine.

Why didn't they bring their children?

They were not informed and given another appointment by the PHC staff that they have to come back for other immunizations.

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Why were they not informed by the PHC staff?

The health worker they met at the PHC did not tell them that they need five immunizations to complete their schedule.

Why didn't the health worker inform the mothers about the other schedules?

He just resumed at the PHC last week and has not read the EPI Standard Operating Procedures (SOP) or received any orientation on how to inform or give appointment for the next immunization schedule.

Why has he not gotten an orientation or read the SOP?

Because the senior PHC staff in charge of the orientation is on vacation and did not handover to anyone to carry out the orientation and handover the SOP to the new staff.

Group work-10mins

- Brainstorm and come up with a list of problems affecting **RI Program** Implementation in your PHC or other problems facing your PHC
- Use the 'Five Why' method to do a root cause analysis to get to the bottom of the problem.

7.2.6 Using the PDSA Cycle to Solve Identified Problems at the Health Facility

The PDSA cycle is a tool that can help us outline and solve some of the problems affecting our RI program.

There are four stages in the PDSA Cycle: Plan, Do, Study and Act. Refer to figure below

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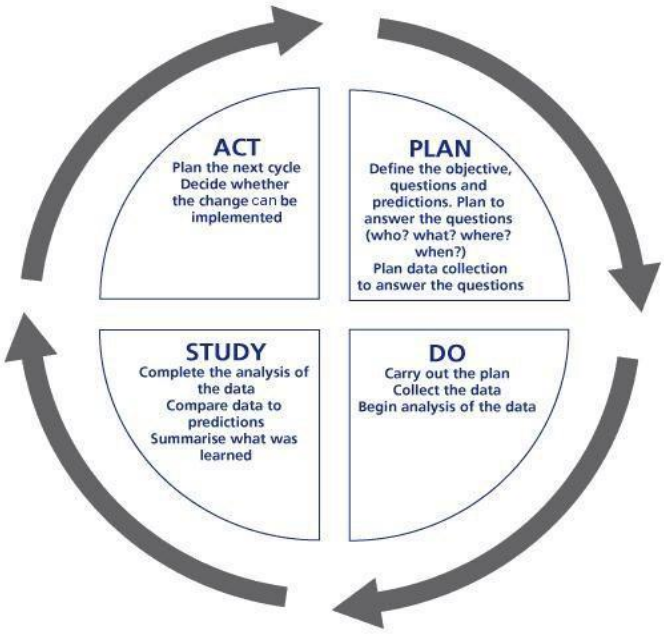


Figure7.3 Description of the Plan Do Study Act Cycle for Quality Improvement

Take Away!

- ✓ Use the PDSA cycle to plan and implement your CQI initiative.
- ✓ Find out best practice
- ✓ Celebrate success no matter how small!

7.3 Engaging Communities

Introduction

This section aims to motivate health workers to partner with communities and improve access to and utilization of immunization services. It builds on the previous modules to provide additional details to guide health staff and communities as they work together to plan, provide services, promote these services, improve service quality, track eligible children and address resistance to immunization. There is no single formula for establishing beneficial partnerships with communities. Partnering processes can differ depending on local needs, resources, and capabilities. This

module is based on general principles and should be used as a guide to immunization service activities at the normal level. Collaborating with communities for immunization involves supportive and coordinated actions that can be taken by health workers and community members towards achieving their shared goal of providing accessible, reliable, and friendly services that are used appropriately by all.

Objective of the section

The overall objective of this section is to understand how to effectively engage with communities for immunization service delivery.

The specific objectives are:

- To understand the benefits of engaging and collaborating with communities.
- To provide an opportunity for community members to be actively involved in the process of increasing access to immunization services.
- To provide an opportunity to reach the underserved, unreached, non-compliant and resistant populations, etc.
- To have a database of communities, key influential people / groups and partners for immunization.
- To build the capacity of specific stakeholders in the community.
- To understand how to engage the community in crises and rumours management about immunization.

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7.3.1 Benefits of partnering with communities

When communities are involved in planning, providing, and evaluating their services, they will develop increased trust and ownership of those services. Specific benefits of partnering with communities include:

1. Increased immunization coverage
   Several studies, including the 2007 multiagency evaluation of the Reaching Every Ward strategy in Africa, have shown that community involvement in their processes can help immunization programmes increase their coverage and reduce dropout rates.

2. Greater equity for underserved populations
   Immunization programmes need to provide more equitable access to services. Community partners play a big role through strong community links to improve access to immunization services for families who have limited or no formal

education, who are of minority groups, new immigrants, displaced and who are physically challenged. This involves reaching out to under- or unimmunized groups and addressing issues like:

- Limited understanding of the purpose and benefits of immunization and its schedules.
- Poor or disrespectful treatment of caregivers by health workers during immunization sessions.
- Inability of caregivers to pay minimal costs of services e.g. transportation to facilities, etc.
- Long wait by caregivers during immunization sessions.
- Inability of caregivers to take immunization as a priority often due to other obligations to support the family livelihood and traditions.

3. Cordial relationship between health workers and community members

   Partnering will improve the relationship between health workers and the community members. Positive feedback from the community is a personal benefit to staff. Any feedback, even complaints that may come up when communities are ask for their opinions can be used continuously to improve services to the benefit of all.

   Building a sense of joint responsibility for child health can provide many psychological and practical benefits to the community members involved. People change from being passive recipients of services to partners who have a role to play in health service achievements. Community members have the opportunity to gain the following:

   ✓ Knowledge and understanding of immunization, diseases, and public health
   ✓ Skills in collecting, analysing information, educating, and counselling fellow community members, and facilitating discussions and meetings.
   ✓ Confidence from seeing how they can effectively contribute to improving services and support programmes.

Micro planning activities and data analysis discussed in Modules 4 (Micro planning for reaching every community) and Module 6 (Monitoring and surveillance) are the starting steps for partnering with communities.

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Table 7.1: Steps in conducting microplanning

S/N	ACTION	STEPS
1	Review your programme's immunization coverage	Complete the exercise in Module 4, Section 4.2 (Table 4.3) to identify priority communities based on the number of unimmunized children.
2	Gather information on current service accessibility and current client orientation.	This will help to better define whether children remain under immunized or unimmunized due to poor access and/or utilization and gives a starting point for the community partnering discussions given in Step 4 below. Refer to Module 4, Sections 4.2 (Table 4.3) and 4.3, and Module 6, Section 6.11 (Table 6.6).
3	Prepare an inventory of your potential community partners	Identify community-based traditional health providers, religious leaders, teachers, parent–teacher groups, school health programmes, CSOs, NGOs, FBOs etc.
4	Share immunization programme information	Meet with the community partners who seem to be the strongest, most motivated, and best able to help with immunization activities and ask them to comment on the findings obtained in Steps 1 and 2 above.

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7.3.2 Understanding Communities

Understanding the community's health needs and its essentials. Module 4 contains household and community discussion questionnaires to start gathering information to feed into the micro planning process. This section is a guide to more in-depth community discussion to complement the information from those questionnaires.

Effective partnering depends on clear and open communication between health staff and communities. As part of the initial engagement, and at least twice in a year afterwards, health centre staff should consult with community leaders and members in open meetings. This will increase opportunities for:

- Gathering valuable community feedback on services
- Assessing current collaboration
- Exploring and planning new ways to partner
- Preventing misunderstandings and/or rumours
- Effectively addressing challenges to the programme.
- Identifying community capability and making use of such potentials.

When community partners feel respected and listened to, they develop a growing sense of trust and ownership, and are more likely to increase their appropriate utilization of services.

7.3.3 Choose methods for information gathering

Different information gathering methods will give different data that can be compared to form a more complete picture of the community. Start with any past studies and social data that may apply to the local context and then complete the steps given in Module 4 (Section 4.3). In addition, one or more of the following may be used:

1. Separate group discussions with men and women (if mixed groups limit participation)
2. Observation of vaccination sessions and interactions between health workers and caregivers and their children
3. Short exit interviews with caregivers for immediate feedback on their experience and their understanding of key information, such as the date of their next appointment.

Try to speak to people directly rather than having others speak on their behalf. For example, learn about mothers' current perceptions and experiences with immunization directly from mothers themselves rather than from community leaders. Try to limit group sizes to 12 people or less.

Probing further

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The following questions on community perceptions and experiences should add more information to the answers already obtained in the Module 4 questionnaires (Table 4.5 & 4.6).

- What is the purpose of immunization?
- When should immunization be done?
- Do you consider it important to get your children fully immunized?
- Do you have any beliefs or concerns about immunization that you would like to discuss?
- If you (and/or others you know in the community) reject immunization, what are the reasons and where/to whom do you look for guidance on your decision?
- Do you think immunization services are easy to get and access? If no, Why ?
- Do you think health workers explain immunization services and answer your questions well? (This should be an open-ended question).
- How often is immunization sessions cancelled?
- Where do unimmunized children/groups live?
- Do people move in and out of the community in ways that may make them miss immunization sessions? (Examples are seasonal workers, nomadic groups, returning refugees.)
- Have you ever taken your child for immunization but then had to go home without all the vaccination doses being given? What was the reason for vaccinations not being given?
- Do you take your children back for vaccinations after a cancelled session or a missed vaccination?

7.3.4 Identify key informant

In planning information gathering, first consider who to talk to. Be sure to include people from different areas or groups in the catchment areas (both remote and urban) including those that are in areas with:

- Persistently low coverage and/or high dropout rates and Non-compliance
- Particularly difficult to reach (for example, nomads, migrant families, homeless families, street children, urban slum dwellers)

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It is often useful to plan separate meetings or focused group meetings with e.g. caregivers whose children are fully immunized and those whose children are under immunized or unimmunized to try to understand the factors affecting each group.

7.3.5 Plan services with communities

Community participation in immunization service planning is important for promoting a sense of ownership and accountability. Involve community partners in regularly scheduled programme micro planning and evaluations. Hold quarterly update and feedback meetings in larger communities and annual meetings in smaller communities. These provide opportunities to learn about current community perceptions of services, to inform community leaders about the programme and to plan activities that build community engagement while addressing relevant needs and concerns.

7.3.6 Engaging community members

Well-oriented community members can play key roles in communicating and information sharing about immunization. For example, ***trained community volunteers are able to provide information on immunization and its benefits, immunization schedules, vaccine preventable diseases, etc. to caregivers.*** They can also reinforce key information about ***return dates for immunization***, and ***possible adverse events***, and ***respond to any questions or concerns***. Below are various steps to engaging community members:

1. **Health education of caregivers**

Caregivers can be engaged ***during health talking sessions*** at health facilities or in other community fora like outreaches and campaigns. ***Key messages on immunization, new vaccines, immunization schedules, importance of health seeking behaviours,*** and so on, can be delivered at such forums. It is important that caregivers have a basic understanding of the benefit of immunization, ***where and when to access services and what to do in cases of adverse events following immunizations (AEFIs). The immunization card itself can be used as a teaching aid to caregivers as well as a***

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vaccination due date reminder. Communication during immunization sessions is discussed in Module 5 (Managing an immunization session).

2. Engage community members through group discussions



Organized community groups (health volunteers, teachers, religious groups, youth groups) can play a particularly useful role in reminding others about immunization sessions and mobilizing families whose children are due or overdue for vaccinations.

Health facility staff should build the capacity of community educators on mobilizing communities and delivering key messages. The health facility staff can use ***teaching aids like question-and-answer booklets, demonstration flip charts, and IEC materials.*** The box below suggests key information that should be made available to community members so they can make an informed decision about vaccinating their children.

Key messages on immunization

Besides basic information on the purpose and benefits of immunization, the vaccines and diseases, and the days, times and places where vaccination is offered, communities should understand the following points.

1. Every child has a right to be immunized and it is the duty and responsibility of parents to take their children for immunization.
2. Immunization saves the lives of millions of children every year by preventing serious illnesses.
3. Immunization is free and available at health facilities and outreach centers (e.g. health posts, health centers, general hospitals, teaching hospitals, private clinics etc.
4. Immunization is an easier step than treatment of any vaccine-preventable disease.
5. Immunization helps caregivers since they do not have to take time off work to care for a child sick with a preventable disease.
6. Vaccines are safe and effective and have been tested and approved by regulatory authorities, ministries of health, WHO and the United Nations Children's Fund.
7. It is safe to vaccinate a child who has a mild illness, a disability or malnutrition.
8. Caregivers should take the immunization card every time they take their children to a health facility or outreach centre. A child's immunization status should be reviewed every time they visit health centre for any reason.

3. Engaging traditional and religious leaders

Traditional and religious community leaders can promote immunization and provide practical information, such as ***service locations and schedules. Provide written information on immunization and other health topics for these leaders to read during community announcements and after religious services.*** In places where there is resistance to vaccination based on traditional or religious beliefs, it is essential to engage these leaders since their cooperation is essential to help improve acceptance of services.

4. Engaging schools and other potential collaborators

The school system and teachers should be engaged to teach children about immunization for several reasons:

- ***Older, school-age children*** are the target for some vaccines (for example, ***HPV vaccine)*** and campaigns
- Students who are well-informed about immunization are more likely to have their own children immunized when they become parents
- Well-oriented, older students can check the immunization cards of younger children in their own houses and neighbouring families and urge the caregivers to take their children for any missing vaccinations.
- ***Parent Teacher Association (PTA)*** meetings or similar associations can provide ***opportunities for health staff and community educators to remind parents about the importance of immunization and to relay practical information to community members.*** Where active, PTAs may help track and follow up children who have missed vaccinations or those who have dropped out of school but may need follow-up.

In some countries, tetanus, diphtheria, HPV and some other vaccinations are given in schools. This requires good coordination between education and health officials for the delivery of both information and vaccination. Education officials and teachers may also serve as volunteers during national or subnational vaccination days or campaigns. Nigeria is planning to introduce HPV in a phased approach for girl child aged 9-14 years as single dose vaccination schedule from 2023-2025.

5. Engagement of town announcers

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Health workers (often from ward level) can actively engage ***trained town announcers,*** to inform the community members ***about the availability and impact of immunization services***. Health workers and community members can discuss immunization in the local settings; for example, community leaders can promote immunization services, while parents can share experiences on vaccine-preventable diseases in unimmunized children during radio interviews and TV shows.

It is important to note that the media is usually most effective as a secondary channel of information to build on information provided through inter-personal communication with trusted individuals, as described above. Ideally, mass media messages should be tested and validated using appropriate research methods (pre-testing / field testing of messages and materials) before being spread widely.

7.3.7 Community meetings

1. Identifying focal people

First, identify key focal people or gatekeepers that can lead the meetings. These could include ***community leaders, religious leaders,women leaders, and so on. Once gatekeepers or focal people are identified, it is important to give them a brief and guide them on the meetings, their responsibilities, and expected outcomes.*** The purpose of these meetings is to exchange information on the health needs of the community and proffer solutions. This includes providing ***updates on the immunization programme and the importance of using the services, ask for honest feedback and suggestions, and invite any questions or concerns about immunization***. Discuss ways to strengthen partnership for immunization. ***The gatekeepers or focal people can also help to identify resistant and non-compliant communities or groups that will require focused engagement in order to change their behaviour.***

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Fig 7.4: A group discussion session using a printed visual aid

2. Frequency of meetings

Discuss and agree on the frequency of holding meetings. For example, health facility staff can meet at ***least quarterly or twice a year*** with as many catchment areas or communities as possible.

7.3.8 Scheduling the meeting

- ***Propose a meeting and explain its purpose to different community leaders and groups. If they agree, ask them to suggest the best time, place and who should attend. Ensure that different community subgroups (for example, men, women, opinion groups or leaders, religious leaders or/and groups, social or/and ethnic groups) are represented, either in combined or separate focused group meetings, as necessary.***
- ***Discuss and reach agreements on the objectives of the meeting. For example, to get their feedback on health services; to inform people about immunization and what it takes to protect their children; and to discuss how they can assist with promoting, providing or evaluating immunization services.***
- ***Work with community leaders to invite key representation of all stakeholders like men, women, youths, religious, ethnic and minority***

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groups. Ensure community representatives inform stakeholders about the meeting early and let them know what you will be providing (for example, health education materials on immunization, refreshments like drinks or snacks, etc.).

7.3.9 Facilitating the meeting

- ***A health worker can facilitate the meeting, either alone or together with one or two community representatives.*** Facilitators should ensure they are ***appropriately dressed.***
- ***Have everyone sit in a circle or in a similar arrangement that allows participants to face each other*.** The group can sit on chairs, benches, the ground or whatever they find appropriate. The facilitators should also sit in ***similar*** sitting arrangements with community participants.
- ***If culturally acceptable, encourage women to sit within the group and participate actively and share their experience on immunization services. In some settings, separate meetings with men and women may be necessary.***
- At the beginning of the meeting, facilitators should ensure they thank the participants for attending the meeting.
- ***Explain the objectives clearly. The general objective is to access immunization services and understand the benefits of immunization against vaccine-preventable diseases. There should also be more specific objectives, such as gathering feedback on immunization services.*** Ask for comments and suggestions for additional objectives.
- ***Encourage adequate participation of every participant and free expression of opinions in order to achieve the set objectives.*** If appropriate, ask someone from the community and someone from the health services to take notes.
- After the meeting, they can sit together. Do your best to ***get everyone to participate, particularly groups or individuals who seem shy or possibly afraid to speak up.***
- Take official notes for future reference.

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- Speak loudly and clearly. Avoid medical or public health terms and speak in the language that the participants understand and are most comfortable using.
- Ask many questions and encourage wide participation to gather feedback on services.
- In informing the community about immunization or services, be sure to confirm people's understanding and encourage them to express their doubts and ask questions. Ask them questions too and then add to what the participants say without moving into a lecture.
- ***If exploring whether the community can assist with some aspect of immunization services, first encourage brainstorming on various ideas.*** Ask how many people agree or disagree with certain points or ideas. Ask if informal voting is needed to clarify the majority opinions or suggestions.
- ***Just before ending the meeting, ask volunteers to summarize what was said and agreed***.
- Review the specific commitments made by both the health workers and the community.
- Review how the commitments will be monitored.
- Agree on a timeline or tentative times for a follow-up meeting.
- Thank everyone for attending and participating.

7.3.10 After the meeting:

- If notes were taken, arrange for them to be finalized and disseminated.
- Be certain to monitor the commitments made at the meeting.

If particular problems either in health services or in community perceptions emerge from the discussions, try to address them as soon as possible in micro-plans and/or in actions for health staff and community partners. Make the district/central levels aware of any problems that they may need to help address or activities that they may need to support.

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7.3.11 Define responsibilities amongst community members

Work with each community to agree on its responsibilities for managing outreach sessions. Community responsibilities may include mobilizing those on the due list and setting up the immunization site before the session; and recording data, providing health education and assisting patients' flow during the session itself.

Community responsibilities should also be discussed during micro planning sessions and changes made as needed based on feedback.

Stakeholders such as ***NGOs, CBOs, FBOs and professional associations*** can provide essential support for ***mobilizing and informing communities, immunization sessions, monitoring and defaulter tracking***. Community associations often ***provide services to marginalized and hard-to-reach populations and so can help to ensure participation in immunization and other health care services***. They can also ***advocate for recognizing vaccination as a child right and for programme financing at different government levels.*** Annex 7.2 contains a checklist for the evaluation of stakeholder's activities by defining their roles and responsibilities in immunization services uptake. Involve communities in monitoring and surveillance

7.3.12 Inform the community members about important information on immunization activity

Health staff, community representatives and caregivers should plan how to inform community members about important information. These include the following:



- Upcoming outreach services. For example, one country developed an effective community awareness system using flags, putting up three flags three days before the immunization session, two flags two days before, one the day before, and finally a vaccination flag on the actual day.
- Changes in outreach or facility-based service schedules. For example, if ***outreach services must be postponed or rescheduled, SMS or mobile phone call to***

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community. Volunteers may be the fastest way to spread the message. A hand-written note sent with a mini-bus or taxi driver to a community leader may also be effective. Timely communication about cancelled or postponed sessions is essential using town announcers for maintaining public confidence and use of services.

To start a session, use methods that are appropriate and practical locally, including SMS alerts, whistles, horns, drums, megaphones and loudspeakers, to inform the community that the session is about to start.

In addition to micro planning and outreach session management, health workers should involve community members in monitoring and surveillance of services. This usually requires the following steps:

- Identify community volunteers.
- Define their responsibilities (in collaboration with them).
- Train and provide the required tracking or teaching materials.
- Provide supportive supervision and mentoring, as needed.
- Give feedback on the impact of their efforts.
- Provide incentives (for example, badges, caps, thank-you letters, appreciation get-together) and stipends for transport and refreshments where necessary.

7.3.14 Address resistant groups

In many places throughout the world, the most common reasons for children not being vaccinated are service-related. These include difficulty in to accessing services offered, inconvenient timing unreliable and/or unfriendly health workers/environment and lack of appropriate information to caregivers on when and where to take their children for vaccination. When vaccine resistance or non - compliance is the reason children remain unvaccinated, this needs to be addressed immediately by resolving the identified issue(s).

7.3.15 Understanding reasons for resistance/non-compliance

Resistance may be based on lack of awareness, religious beliefs, anti-vaccination information (disseminated via the Internet, in print and/or interpersonally), lack of understanding of the benefits of vaccination, rumours based on misinformation or false assumptions, or erroneous publicity on deaths or other serious events that are

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assumed to be related to vaccination. Anti-vaccination information may be disseminated by people with political or economic motives as well as by people who simply mistrust science or the government. Vaccine refusal or non - compliance may also result from a negative experience (personal, family or friend's).

7.3.16 Response to resistance

Accurate, positive information should be given in response to resistance. Avoid repeating misinformation since some people may misinterpret it again. Where there is widespread or growing fear or rejection of immunization, a prompt, strong, well-grounded response is necessary. The first step is learning about the issue(s) at hand:

- What people or types of people are rejecting immunization?
- For what reason?
- Who or what is influencing them?
- What is motivating those influencers?

Regardless of the cause, resistance to immunization is a situation that requires the health facility to seek assistance from the ward, LGA, State and National health authorities as appropriate. Under the direction of these authorities, health centre staff can:

- Meet with key opinion leaders (politicians, traditional leaders, religious leaders, community leaders' health workers and other community influential)
- Organize meetings at locations where the non – compliant individuals or groups are able to feel at ease to ask questions and air their views

Encourage community members to watch / listen and discuss any media response on immunization. Make vaccination services more friendly (e.g., interpersonal communication with caregivers by health workers), and more acceptable (e.g., through messages to caregivers on immunization benefits) and to increase the engagement of leaders from resistant groups.

Immunization programmes should have procedures and plans to address rumours from adverse events and crises that may arise following immunization, to restore public confidence in immunization and services. Any serious illness or deaths following vaccination should be thoroughly investigated and as quickly as possible in order to address the problem. In the event of a crisis, a high-level spokesperson within the

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health system (from national to community level) should make public statements to douse tension and fears from the public. This will further build trust in health services and reduce problem of resistance by communities.

7.3.17 Community role in monitoring and surveillance

Community members can also contribute by identifying and referring suspected cases of diseases to their local health authorities/facilities. Health care facilities should provide clear aids (i.e., IEC materials showing different diseases and case definitions, {in the appropriate language) to support this function.

7.3.18 Establish systems for collecting feedback from the community

Community feedback on services could be collected through the following:

- ***Exit interviews.***
- ***Quarterly and bi- annual meetings to discuss immunization and other health services or,***
- ***In some settings, a feedback box, website, or mobile phone number for comments and suggestions by text.***

Community feedback can reveal and help correct health worker practices that discourage caregivers. Examples of such problems include:

- ***Too many attendees at a session or too few children present to warrant opening a multi-dose vial***
- ***Vaccine stock outs***
- ***Restricted dates/times for offering vaccines***
- ***Health workers postponing vaccination of ill child, resisting or non- compliance to multiple injections at the same visit.***

Health staff can immediately address such problems when they are identified and discussed with community representatives in micro-planning sessions and provide feedback on planned and achieved interventions.

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The importance of interpersonal communication skills

Treatment of and communication with caregivers at the time of vaccination can significantly affect their willingness to return for subsequent doses. Some points on encouraging caregivers are mentioned in Module 5 (*Managing an immunization session*). Health workers can help improve immunization coverage by:

- Ensuring timeliness of vaccination sessions
- Reducing waiting times as much as possible (see if community volunteers can help)
- Attending to all children and caregivers who come during scheduled vaccination hours
- Showing respect and courtesy to children and caregivers; and not considering some caregivers to be ignorant
- Giving information or advice in a language that is easy for the caregiver to understand, listen to concerns with empathy.
- Careful to avoid criticism of the caregiver verbally and/or with body language. Treating people respectfully and kindly
- Gaining the trust of community members. It is important that the health worker is approachable and unbiased about the community members and their issues.

7.3.19 Health workers' feedback to communities.

- This should be through regularly meetings (Town halls, community dialogues etc), health talks, during immunization sessions, outreaches, during Surveillance activities and so on.
- It is essential to give feedback to communities to promote effective partnering and should include information on coverage, dropout rates as well as notifying cases of vaccine-preventable diseases in the community and /or wards.
- Feedback meetings provide opportunities for health workers to acknowledge and thank the community for their contributions, as well as for the community to acknowledge and thank the health workers.
- These meetings also provide opportunities to acknowledge caregivers whose children are fully immunized and are able to provide information on immunization and its benefits, immunization schedules, vaccine preventable diseases, etc. to caregivers.
- Communities can also reinforce key information about return dates for immunization, and possible adverse events, and respond to any questions or concerns.

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Figure7.5: Community members engaged in a discussion before embarking on monitoring and surveillance

7.3.20 Track children and their immunization status

Community members can play an extremely useful role in tracking children's immunization status, alert and motivate caregivers in collaboration with health workers to:

- ***List infants and mothers (including new-borns and pregnant women) who need to be added to immunization registers.***
- ***Make home visits to give dates and times of fixed, outreach sessions, and encourage attendance.***
- ***Explain the importance of immunization and help caregivers interpret immunization cards.***
- ***Collaborate with health workers to keep track of new and defaulter infants who need to complete immunization schedules***.

7.3.21 Group Exercise on engaging community

Exercise 1: Case Study on Communication skills of health workers on immunization services. (15 minutes)

1. A woman whose child was vaccinated in your HF was never educated on AEFI, not even after the child was vaccinated by the HW who displayed a very poor attitude while attending to her. Later at home her child was crying and running a high fever. The neighbour's rumours on the dangers of vaccination were not

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Task;

a) What went wrong and what can be done to correct the situation
b) Identify the problems with the HW and Mother
c) Provide advice on what the health worker should do to prevent future occurrence.

2. A mother came for PENTA2 and learnt that an additional vaccine (PCV) will be administered, she objected.
   Task;What will you do to convince her to take the PCV

Exercise 2: Ardo Julde settlement has a population of 2000 people but without any health facility. It is within Paiko catchment area which is 9km away from Paiko health facility; however, it is not capture in Paiko Micro plan. Recently there was a reported outbreak of measles in the community. (15 Minutes).

Task: Discuss the steps that Paiko HF will take to resolve this situation.

Solution

- Inform the Ward/LGA, to investigate and if confirm the team should respond appropriately to the outbreak
- Organize meeting with key stakeholders in the community to identify challenges & solutions
- Identify community volunteers/key informants
- Conduct community sensitization
- Plan outreach activities within the community and update the HF micro plan.

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MODULE 8: INTEGRATION OF PRIMARY HEALTH CARE SERVICES AND INTERVENTIONS

A One Country, One Team, One Plan, One Budget Approach To PHC

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Table of Contents

Module 8: Integration of Primary Health Care Services and Interventions 1

8.1 About this module 1

8.1.1 Goal of the Module 2

8.1.2 Specific Objectives 2

8.2 Introduction to Integration of PHC services 2

8.2.1 Benefits of Integrating PHC services and Interventions 3

8.2.2 Platforms for Integration of PHC Services and Interventions 4

8.2.3 What Services can be integrated at PHC Level? 4

8. 2.4 PHC Service Integration Process 6

8.3 The Integration Approach 7

8. 4 Thematic areas for integration 7

8.4.1 Leadership and Coordination 7

8.4.2 Advocacy, Communication and Social Mobilization 11

8.4.3 Logistics and Supplies 12

8.4.4 Training and Capacity Building 13

8.4.5 Service Delivery 14

8.4.6 Supportive supervision 17

8.4.7 Data Management 18

NOT FOR PRINTING

List of Tables

Table 1: Services Provided at PHC Levels Categorized by Thematic Areas of PHC focus 6

Table 2:Categorization of PHC services based on mode of delivery 7

List of Figures

Figure 1: Schematic outline of the PHC thematic areas for the integration approach. 8
Figure 2:Identified Areas of PHC service integration at health facilities 15

Trainers' note:

Facilitator should:

4. Elicit discussions from participants to know their baseline knowledge on integration.
5. Ask the participants about the benefits of integration and the challenges.
6. Ask participants to name specific steps that can be taken to ensure integration of PHC services and interventions.

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Module 8: Integration of Primary Health Care Services and Interventions

8.1 About this module

This module serves as a reference document and operational guideline for programme managers and service providers in the PHC space on how to integrate PHC services and interventions at operational levels. Specifically, it provides a step-by-step guide

and processes for the integration and delivery of routine and supplemental PHC services, including immunization and RMNCAEH+N across seven thematic areas of:

- Leadership and Coordination,
- Advocacy, Communication and Social Mobilization,
- Logistics and Supplies,
- Service delivery,
- Training,
- Supportive Supervision and
- Data management

8.1.1 Goal of the Module

The goal of this integration module is to build capacity and drive the implementation of integrated PHC services and interventions in all primary health care facilities in Nigeria.

8.1.2 Specific Objectives

This module will help you to:

- Better understand the concept of PHC integration and why it is important
- Understand how to integrate PHC coordination structures at all levels
- Identify potential PHC services and interventions for integration
- Explains the steps to operationalize the integration of identified activities and services at different levels of the PHC system
- Identify possible risks and mitigation measures to enhance the smooth implementation of proposed integration of PHC activities

8.2 Introduction to Integration of PHC services

Nigeria has succeeded in implementing several major innovations and strategies to strengthen immunization and other PHC services in the last two decades. However, many of these PHC activities have been done separately with each program requiring the same human resources at the operational levels. Conducting different PHC programs independently may result in:

Competing activities overwhelming the PHC system
Burn-out of available HRH with negative impact on productivity
Wastages of available financial resources and logistics due to duplication

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With our large population of over 200 million people, limited human and materials resources for health and the negative impact of the COVID-19 pandemic especially at lower levels, the PHC system might not effectively sustain the practice of implementing programs separately over time. ***This challenge provides an opportunity for healthcare workers to integrate PHC services and interventions to allow for synergy in the use of resources, alignment of timelines and coordination of programmes*****.** This will help to promote efficiency and effectiveness in the implementation of various PHC programmes and interventions. Additionally, integration will impact the PHC system positively; providing benefits such as ***cost savings for both the health system and service recipients, improved data management systems*** **and** ***enhanced leadership and coordination****.* This will help to reduce missed opportunities in PHC service delivery especially because many of the services target population in the same age range.

The mantra for integration is that "we must not miss any opportunity to enable all eligible persons access relevant PHC services during any visit to the health facility"

8.2.1 Benefits of Integrating PHC services and Interventions

Integrating PHC services and interventions at service delivery point will help to:

- Maximize efficiency in the use of limited resources (Human, material, time and finance)
- Provide additional opportunities to optimize service delivery
- Reduce duplication of functions by the same limited health workforce
- Provide opportunities to get multiple services to the last mile at the same time
- Promote equity in service delivery
- Improve coverage for targeted interventions

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Integrating PHC Services and interventions is part of the overall coverage improvement drive for all PHC services by NPHCDA

8.2.2 Platforms for Integration of PHC Services and Interventions

Different platforms exist to deliver PHC services and interventions at HF and community levels. These include: *1) Routine health facility services such as routine immunization and antenatal care services, etc. 2) Supplemental activities such as campaigns, outreaches (mobile and temporary fixed), etc.* Integration across all these platforms would involve providing multiple services at the same time which would enhance efficiency and broaden coverage across all PHC service areas.

8.2.3 What Services can be integrated at PHC Level?

Different services are provided in the PHC facilities nationwide with many facilities adopting different approaches in planning for these services. Lessons from studies on PHC service integration have shown that there are about 36 different services categorized into components that are provided at PHC levels as summarized in the table 8.1 below:

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Table 1: Services Provided at PHC Levels Categorized by Thematic Areas of PHC focus

Category	Services
Maternal, Newborn and Child Health	Labor and Delivery
	Ante natal Care
	Post natal Care
	PMTCT
	Malaria
	Immunization
	iMCI
	Circumcision
	Child Welfare Clinics
	Deworming
Reproductive Health	Family Planning Services
	Counseling
	Post abortion care
Other	Adolescent Health
	COVID 19 testing and vaccination

Category	Services
Nutrition	Growth Monitoring
	Counseling
	Vit. A supplementation
	Food supplementation
	Food demonstration
HIV/AIDS Control	HIV (Counseling, PMTCT, ARV drugs)
	DOTS
	Screening
Community-targeted	Home visits
	Outreaches
	Sensitization and Mobilization
	Community meetings

Category	Services
Non-Communicable Diseases	Hypertension
	Diabetes
General services	Health Education
	Outpatient Care
Other services	Environmental sanitation
	Laboratory services
	Minor surgeries
	Accident and Emergencies
	Surveillance
	Provision of essential drugs
	Referrals
	Dental services

A quick look on the ways these PHC services are delivered across different health facilities have shown that **mode of delivery differs** from one PHC to another in terms of location, frequency, and targeted beneficiaries. Most HFs have **unique ways of planning** for the services they render with RI having the most structured way of planning. Furthermore, the **planning cycle varies;** ranging from services that are being planned on weekly basis to those that are planned on annual basis. Also, **Scheduling of services** depends largely on number of staff, client turn-out, peculiarities of the community, Location of the facility and Seasonal changes. However, **Resources required** for planning across the services are the same or quite similar.

Trainers' Note:

Facilitator should engage participants on services rendered in their health facilities and what they think they can integrate

Looking at the findings above, it will be difficult for health care workers to integrate all the services enumerated above because not all PHCs offer all the compliment of services. Therefore, for ease of practice, it is recommended that healthcare workers PHC integrate services in their health facilities at any given time based on what is possible. Leveraging these recommendations, some PHC services have been

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identified for easy integration and have been categorized by target population into two buckets – Routine and intervention and are as listed below:

Table 2:Categorization of PHC services based on mode of delivery

PHC Services	Target Population
Routine PHC Services	
RI Services	0-23 Months
Vitamin A	6-59 Months
Birth Registration	6-59 Months
RMNCAEH + N	0-59 Months; 15-49 Years, 60 years and above
COVID-19	18 Years and above; 12-17 years with special waivers
PHC Interventions	
Polio SIA	0-59 months
NPSIAs	9-59 Months (Measles); 9 months to 44 Years (Yellow Fever); 8-9 Years, 10-11 Years and 1-29 years (Meningitis); 15 – 45 Years (Td)
MNCHW	0-59 Months; 15-49 Years, 60 years and above

8. 2.4 PHC Service Integration Process

The following steps are recommended for action in the integration process for each of the administrative levels.

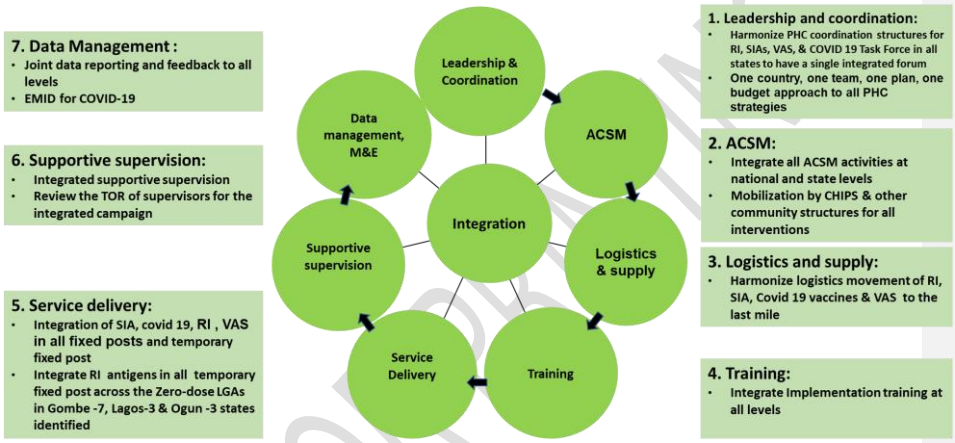
- Identify program areas and services for integration
- Identify and harmonize planned activities with timelines
- Develop integrated strategy with timelines and responsible persons
- Identify the cost implications at the relevant levels
- Conduct integrated orientation at various levels
- Implement the integrated activity
- Implement Monitoring, Evaluation and Learning (MEL)

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8.3 The Integration Approach

The integration approach is broken down across the seven thematic areas of PHC activities' implementation with a drive for increased subnational levels ownership and accountability. The schema in figure 8.1 highlights the thematic areas of PHC services where integration should happen. From the schema, it's obvious that ***everyone, including you as a healthcare service provider at the PHC, have a role to play***.

Figure 1: Schematic outline of the PHC thematic areas for the integration approach.



8. 4 Thematic areas for integration

8.4.1 Leadership and Coordination

The integration of Leadership and coordination structures at the National, State and LGA levels is realized through:

i. Reviewing and aligning leadership and coordination structures of various PHC programmes at the national, state, and LGA levels
ii. Development of one PHC operational plan that contains the activities of all the various programmes viz: Covid-19, RI, SIAs, RMNCAH+N, and Logistics
iii. Creation of a weekly review meeting of all PHC programme leads to be chaired by the ED, ES or PHCC at the various level.

8. 4.1.1 National Coordinating Structures

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Coordination of the integrated activities for all programmes would be overseen by the Strategy Group coordinating platform which provides oversight to various national structures tasked with ensuring the implementation of accountability measures across all levels. This structure will be expanded into the **National Integrated PHC Program coordination Group** to include representation from the Core Group, National Steering Committees, the NEOC, NPSIA, NERICC, NEMCHIC, NLWG, M&E working group, and the NSMWG. The various programmes are empowered to ensure an action-oriented approach, ensuring that key strategic and operational issues are well handled.

How to ensure integration

- Set up a weekly inter-programme meeting of the coordinating structures
- Meeting to be chaired by the ED/CEO – Virtual/Physical
- Discussions to center on progress in implementation of harmonized work plan
- Discuss national performance across key PHC indicators

8.4.1.2 Zonal Coordinating Structures

The zone will provide oversight for smooth domestication of integration while ensuring accountability measures emanating from the national is passed through the states to the LGAs, and Wards. The Zonal integrated program Coordinating Unit will be made up of Heads of the various zonal structures including NPHCDA, UNICEF, WHO etc and heads of PHC structures in the states within the zone i.e. TWG, Zonal Logistics working groups, etc.

How to ensure integration

- Set up a weekly zonal meeting
- Meeting to be chaired by the NPHCDA ZD
- Zonal Heads of all Partners to be part of the meeting
- Discussion on progress in implementation of harmonized workplan and address identified challenges with proposed mitigants
- Discuss zonal performance across key PHC indicators
- Coordinate all PHC activities in the States, LGAs and Wards within their Zones
- Provide updates to the national PHC strategy group every two weeks

8.4.1.3 State Coordinating Structures

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The coordination structures in the states differ slightly across the 36 states and FCT but should be harmonized to have the State Taskforce on immunization (STI) providing oversight for all integrated PHC services and interventions. State technical team should be expanded into state integrated PHC program coordination group, a one functional, optimized platform for inter-program leadership and coordination at state levels cutting across SPHCDA, EOCs, SERICC, SEMCHIC, NPSIA, RIWGs, LWG, ACSMWG, WMWG, AEFIWG, and M&E committees.

How to ensure integration

- Set up a weekly state meeting to review and discuss cross-cutting issues across programs, harmonize plans, generate and track action points and enforce accountability
- Group to meet daily during outbreak response and other planned interventions such as SIAs, MNCHW+N etc
- Meeting to be chaired by the HCH or SPHCDA/B ES
- Programme leads of all Working Groups or their representatives must be present
- State Heads of Partner Agencies to be part of the Meeting
- Discussion on progress in implementation of harmonized workplan and address identified challenges with proposed mitigants
- Discuss state performance across key PHC indicators
- Coordinate all PHC activities in the LGAs and Wards within their states
- Provide updates to the zonal PHC strategy group every two weeks

8.4.1.4 LGA Coordinating Structure

The LGA structure is a replica of the structures at the State level. Expand the LGA technical group into the **LGA integrated PHC program coordination group** cutting across all LGA coordination structures (LERICC, LEMCHIC, logistics and ACSM) to have one functional, optimized platform for inter-program leadership and coordination. Relevant persons with the required competence from appropriate MDAs and partners at the LGA level should be coopted into the group.

How to ensure integration at this level

- Set up weekly LGA meetings
- Meeting to be chaired by the Director PHC/Medical Officers of Health

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- LGA implementing partners and LGA health management teams to be part of the meeting
- Discussions on progress in implementation of harmonized workplan and address identified challenges with proposed mitigants
- Discuss LGA performance across key PHC indicators
- Coordinate all PHC activities in the wards and communities within their LGAs
- Provide updates to the state PHC strategy group every week

8.4.1.5 Ward Coordinating Structure

The WDC and traditional leaders will be critical in ensuring functions at the ward level are promoted and implemented. Other structures within the ward level include Health Facility Management Committee, Ward Development Committees (WDC), Village/settlement Development Committees (VDC), community leaders, community-based health volunteers, Civil Society Organizations (CSOs) etc. These structures form the Ward PHC coordination Group that meets regularly (monthly) to support demand generation and service delivery within the communities. The LGA team will provide oversight.

How to ensure integration at this level

- Set up weekly Ward Coordination meetings
- Meeting to be chaired by the Ward Focal Person
- All structures within the ward must be represented
- Discussion of the demand and supply issues of all the PHCs in the ward
- Discussion on performance of the ward PHCs across key indicators
- Discussion on quality of PHC services including client satisfaction

8. 4.1.6 Health Facility Coordinating Structure

The Officer-in-Charge (OIC) of the facility should ensure service delivery at the health facility are integrated. In large facilities where there is a service provider for each of the PHC services, the OIC will ensure that they meet regularly to pool available resources and broaden the reach of clients with the integrated service package. For the intervention of services, the OIC will review the microplan for the health facility's catchment area and ensure that there is an integration plan for the different interventions, where feasible. The OIC will also oversee the plans for optimizing the health facility during polio, non-polio, and maternal and neonatal child health, and ensure that the health facilities are fully functional in tandem with the interventions.

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How to ensure integration at this level

- Set up weekly coordination meetings with the service providers within the health facility
- Meeting to be chaired by the OIC
- Discussion of the demand and supply issues faced by the PHC during routine services and during the conduct of interventions
- Discussion on performance of the PHC across key indicators
- Discussion on quality of PHC services including client satisfaction
- Discussion of recommended solutions for the identified issues

8.4.2 Advocacy, Communication and Social Mobilization

Harmonization of ACSM messages across the PHC programmes at the different administrative levels of governance is a key strategy to create and sustain integration in the delivery of PHC services and interventions. Harmonization of ACSM work plans for Polio/NPSIA, CHIPS, RMNCAEH + N, RI and other PHC Services at the national, state, LGAs and ward level is necessary to ensure joint demand generation and advocacy efforts. Zones should be in the forefront of the harmonization process by working closely with the states, to ensure timeliness. Other key strategies to ensure integration of ACSM activities include:

- Harmonization of all SMC activities: Advocacies, Flag Off Rallies and Town hall meetings for all PHC services and interventions
- Jingles should be harmonized for airing and adoption
- Using existing coordination structures, State and LGA SMC activities should be managed by the State integrated PHC Coordinating Group and LGA teams through Health Educator
- State Flag off for PHC services and interventions to be supported by Wives of Governors while LGA level to be hosted by Wife of Chairmen
- ERM to be chaired by LGA Chairman
- Health Educator, WFP, RFP, TS, VWS, VCM to coordinate and report all ACSM at all levels
- National funds should be transmitted to the states with the zones providing supporting coordination while state counterpart funds for ACSM – RI, NPSIA /Polio, CHIPS, RMNCAH + N, and other PHC Services should be merged and applied at all subnational levels

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- All members of State SMC should serve as coordination and mobilization structure for all programmes
- LGA and Ward level Communication activities should be managed by Community engagement structure
- Provide feedback as to the impact of the communication targeting integrated activities

In addition to all the above, advocacies are often required at governance level to get political leadership and buy-in and ownership of programs to ensure sustainability. Also, advocacy is required to put effects to health financing functions. These include advocacy for increase in budgetary allocations for PHC, timely release of funds etc. Advocacies, information, education, and communication activities are required to promote social health insurance as part of improving financing for PHC services.

8.4.3 Logistics and Supplies

When integrating Programmes, all Cold and Dry store Protocols for Vaccine and other Health Commodities must be taken into consideration. Gaps must be identified and bridged to ensure adequate logistics and supply for integrated PHC service delivery.

8.4.3.1 National Levels

Delivery to Sub national levels (zonal cold and dry stores) should be planned jointly by all Programmes. The same Logistics should be used for distribution of Vaccines and other health commodities to avoid vertical supply chains and eliminate duplication. For example, if Vaccines for Routine Immunization have timelines for distribution, the health commodities for other Programmes should also be distributed alongside to save money and avoid wastage.

8.4.3.2 State Level

Ensure integrated delivery of commodities to the LGAs and Health facilities. Identify and bridge Cold Chain Equipment (CCE) gaps for integrated service delivery at State, LGA and HF levels working with the national. Joint Forecasting of all commodities should be the practice

8.4.3.3 LGA Levels

Ensure availability of integrated commodities at Health facilities and other last mile delivery points. All PHC wastes and sharps generated should be jointly transported and via reverse logistics and incinerated where applicable.

Note:

Health facility workers *must ensure that all integrated services have their needed commodities (where available) at service delivery points especially in outreach posts by developing and using checklist to ensure all items are picked before setting out. This will help to avoid missed opportunities at any session*

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8.4.4 Training and Capacity Building

Planning and implementation of trainings across programs at all levels should be integrated to harmonize knowledge transfer to health care workers, save cost and promote peer-led learning. The following level-specific integration steps can be adopted to promote integration during training.

8.4.4.1 National and State Level

- Reactivate and strengthen the Training Working Group (TWG) at national, state and LGA levels to coordinate the planning and implementation of integrated trainings across programs
- Membership of the TWG should be drawn from all program working groups at the various levels to adequately cover training needs of all programs, content development, training implementation and evaluations
- Conduct and track PHC training needs assessment and development of training plans
- Create a database of trained participants at national and subnational level to manage and track technical capacity dynamics and ensure targeted capacity building interventions

8.4.4.2 State and LGAs

- Integrate planning and implementation of training by all programs at State and LGA levels through the State and LGA training working groups
- State to develop and monitor training participants selection protocol at the LGA level to minimize bias in selection of training participants and ensure the right persons are trained
- Ward team selection committee for team selection for campaigns should be strengthened

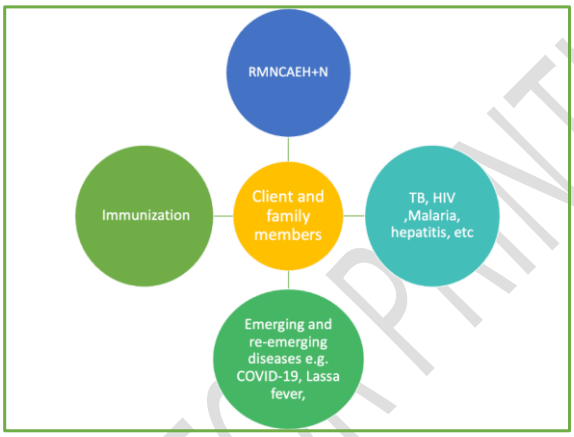
8.4.5 Service Delivery

Integrate all the different PHC services that exist at the health facility and community outreach levels to improve access and coverage, while reducing missed opportunities. Elements of one service or an entire service can be integrated into the regular

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functioning of another service. For example, Routine Immunization can be integrated into Antenatal Clinic sessions. This has proven very useful in birth dose uptake of HepB and other day at birth vaccines. A key prerequisite for successful integration is the strength of the primary service into which elements of another service are to be incorporated. The table below Identifies areas of integration at HF service delivery point.

Figure 2:Identified Areas of PHC service integration at health facilities



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Note:

The goal of integrated service delivery is to ensure that every client, alongside their accompanied family member that visits a service delivery point, receives all possible forms of care in a single visit. It promotes 'one stop shop all' for Primary Health care needs of an individual.

Service integration can occur at the different PHC service delivery platforms within the health facility and community. These include:

- Health Facility (Fixed and outreach sessions)
    - Immunization clinics
    - RMNCAEH+N clinics
        - Antenatal clinics
        - Labour and delivery
        - Family planning clinic

- Nutrition and growth monitoring clinics
- Outpatient clinics

- Community
  - Campaigns (OBR, Non-Polio SIAs, MNCHWs, COVID 19 MVC etc)
  - House to house services

8.4.5.1 Strategies for integrated service Delivery

At the service delivery level, all PHC services can be delivered across two (2) buckets viz; Routine PHC service delivery or targeted PHC interventions such as campaigns.

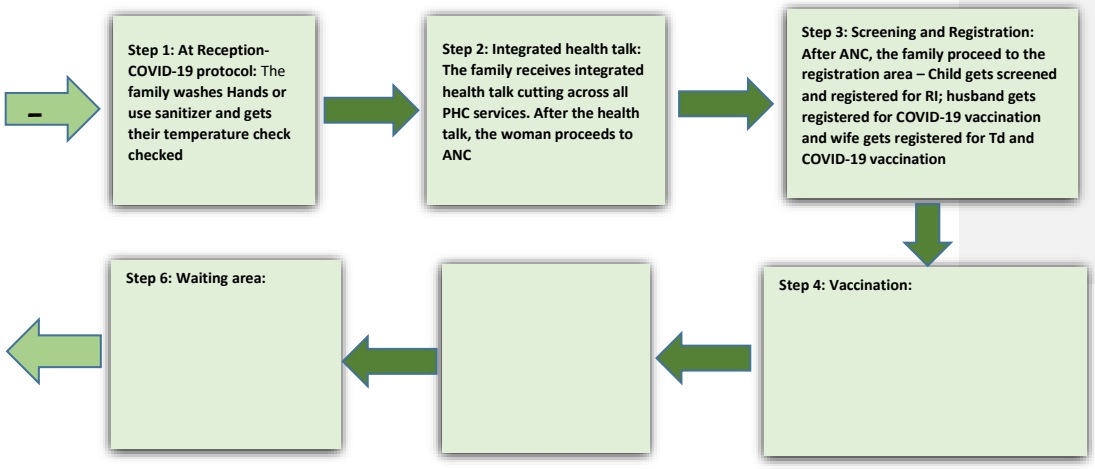
1. **Integration of routine PHC services:** Routine services are services provided at regularly scheduled times – daily, weekly, monthly, quarterly, annually etc and forms part of the day–to– day running of the health system at health facilities and/or outreach posts. ***Integrating routine services can be achieved through:***

- Development of an integrated Health facility RMNCAEH+N and RI fixed and outreach session micro planning template to capture data needed for estimation of the required resources, including human, material, and financial requirements for harmonized program needs

a. Domestication of an integrated micro planning process and provision of opportunity for updating microplans for routine PHC services quarterly
b. Development of integrated session plans of all identified services across health facilities for routine PHC services
c. Development of job aids on integrated routine service delivery and making them available to all teams across the various programs for implementation across all health facilities
d. Integration of all monthly review meetings at the PHC and/or LGA level into one single review meeting that looks at the inter-program data and outputs.

Steps for integration of routine PHC services

Let's take this scenario: A pregnant woman visiting a health facility for ANC accompanied by her husband and a 15month old child.



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2. **Integration of services during PHC interventions such as campaigns/SIAs:**
   This can be achieved through:

   a. Development of an integrated Polio SIA/NPSIA/REW/COVID-19/MNCHW MVC vaccination microplanning template to capture data needed for estimation of human, material, and financial requirements for harmonized program needs
   b. Development of an integrated daily implementation plans of COVID-19 MVC, polio and non-polio SIA teams to implement integrated services across board
   c. Development of an operational guide on integrated service delivery and making it available to all teams for implementation of integrated services at delivery points
   d. A consolidated Evening Review meeting that covers all the services provided during the integrated campaign

Types of campaigns and services that can be integrated at delivery points

Type of campaign	Strategy	Interventions
Polio/NPSIA/ COVID-19 MVC/ MNCHW	Fixed post / Temporary post	Fixed: bOPV/nOPV2 (0-59months), RI antigens (0-23months) + Measles vaccine (9-59 months), Men A vaccine + Yellow fever vaccine (9months - 44 years) Td (15-49years) + Vitamin A (6-59 months) + Covid-19 (18years and above) + nutrition
	H2H/DOPV	H2H or DOPV Team: bOPV and Vit. A
NPSIA	Fixed post / Temporary post	RI antigens (0-23months) + Measles vaccine (9-59 months), Men A vaccine + Yellow fever vaccine (9months - 44 years) Td (15-49years) + Vitamin A (6-59 months) + Covid-19 (18years and above) + nutrition

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Polio/MNCHW/ COVID-19 MVC	Fixed post (HF) / Temporary post	Fixed: bOPV/nOPV2 (0-59months), RI antigens (0-23months) + Td (15-49years) + Vitamin A (6-59 months) + Covid-19 (18years and above) + Deworming, MUAC, KHHP, VAS
	H2H/DOPV	H2H or DOPV Team: bOPV and Vit. A

8.4.6 Supportive supervision

Integrate supportive supervision for all PHC services and interventions to stimulate a holistic review of PHC services during each supervisory visit. Additionally, all supportive supervisory checklist will be updated and harmonized into the Integrated Supportive Supervisory checklist.

How to implement integrated supportive supervision

8.4.6.1 National level

- Revise the ToRs for supervisors at all levels to accommodate the integrated approach
- Harmonize and update all supportive supervisory checklist into the ISS checklist for uniform supervision at subnational levels
- Integrate and harmonize supportive supervisory plans across programs at all levels
- Train all PHC program implementers at national, state and LGA level on the harmonized ISS checklist to effectively conduct integrated supervision
- Strengthen accountability framework for SS by tracking submission and quality of harmonized ISS ODK checklist from national and subnational supervisors

8.4.6.2 State and LGA teams

- Apply accountability measures and monitor the conduct of integrated supportive supervision weekly
- Review filled integrated supportive supervisory checklist on monthly basis to track performance, identify gaps and plan subsequent supervisions based on findings from the review
- State to fund WFPs to supervise vaccination teams in their wards and ensure integrated delivery of PHC services and interventions

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8.4.7 Data Management

Integrating data management for PHC services and interventions will involve strengthen data quality across integrated programmes on DHIS2; expansion of EMID to include real time reporting of other PHC services and interventions and inclusion of AEFI reporting from all PHC services and intervention into the AEFI module on DHIS2 and EMID

How to implement Integration of PHC data management

8.4.7.1 National Level

- Existing pathways for reporting routine PHC service delivery data, which is the DHIS2, should be strengthened to ensure data quality across all the PHC service areas
- EMID team in collaboration with other program leads will develop a phased expansion plan for EMID to integrate all PHC services and interventions piloting with RI
    - Phased EMID expansion plan targeting Q4 2022 at the most
- Data reviews will accommodate all PHC services and interventions
- AEFI module expanded to integrate all PHC services related AEFI

8.4.7.2 State and LGA levels

- Hold integrated data review meetings that incorporates all program areas monthly
- Provide on the job training on data quality across integrated programs during ISS
- Strengthen data use for action
- Accountability for Supportive Supervision

8.5 Developing microplans for Integrated PHC Services

Proper planning at both macro and micro levels is critical to optimizing provision of health services and much more for. Macro planning entails identification of activities and interventions that reflect the seven listed thematic/system components. Microplanning is a detailed bottom-top planning process conducted at different levels of the health facility, ward, LGA, and state to ensure full coverage of all targeted populations across all communities. The process also guarantees that all the required resources, including human, financial, commodities and timeframe are adequately

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planned for and mapped out for effective service delivery. ***Microplanning is critical to effective integration.***

Harmonizing the development of microplans across the different programme areas results in effective planning and management of resources for primary health care programmes.

If properly coordinated, a harmonized microplan will result in:

- Timely access to data for estimation of human, material, and financial resources needed for programmes
- Reduction in duplication of activities and costs
- Increased reach of missed settlements and eligible persons
- Improved quality in delivery of health services and coverage

Refer to chapter 4 for the microplanning process but ensure the integration of services available in your health facility in your microplan noting the age category for the different PHC services.

Key Points to Remember

- Conducting PHC services separately affects our efficiency and effectiveness as we can duplicate effort, get exhausted, waste resources and miss opportunities
- Integrating services and interventions create synergy, stronger PHC team, cross ideas across program and builds capacity
- Each health facility can integrate based on the services it is