Government of Malawi

EPI Comprehensive Multi-Year Plan

2016-2020

Malawi

September 2015

FOREWORD

The comprehensive multi year plan (cMYP) is designed to guide the Expanded Programme on Immunization in its efforts to mobilise adequate resources and improve the quality of the immunization services over a period of time. The 2016-2020 cMYP covers a wide range of immunization components and is in line with the National Health Strategic Plan.

The immunization system components which form a fundamental driving force for the Expanded Programme on Immunization are:

- Service delivery,
- Accelerated disease control,
- Programme management,
- Human resource,
- Vaccine supply, quality and logistics,
- costing and financing

Various programmatic reviews and assessments provide were used to guide the development of the EPI Multi year plan.

Over the next five years, activities have been planned and costed based on the findings of the assessments that were conducted and also new issues that have emerged such as introduction of new vaccines. The activities have been planned to address the weaknesses and challenges that have been observed over the past years and also strengthening and sustaining gains already achieved.

The total budget for the 2016-2020 cMYP has significantly increased as a result of introduction of new vaccines such as HPV, IPV and Measles rubella. During the same period, the country has planned to replace most of the aging refrigerators with new cold chain equipment. Refrigerators that are currently operating on kerosene and gas will be replaced with solar direct drive and the capital investment is high. All non-PQS refrigerators which were reported to be donated by local partners in some health facilities and are not recommended for storing vaccines will also be replaced. The five year cold chain expansion and rehabilitation plan has outlined how the replacements will be carried out during the five year period.

The financing of the programme largely depends on donors especially for the introduction of new vaccines. However, the government of Malawi is committed to ensuring that adequate resources are provided for the Expanded Programme on Immunzation. The government will continue to co-finance for the new vaccines. In the next five years, HPV will be rolled out to all districts and as a requirement, government has committed to co-financing in additional to co-financing DPT-HepB-Hib, PCV13 and rota. In 2016, the Ministry of Health through the Expanded Programme on

Immunization will introduce measles rubella (MR) vaccine into the routine immunization schedule. The government will pay the cost of the first dose of MR. The rubella component in the second dose will also be funded by the government while Gavi fund the measles component.

The Expanded Programme on Immunization wishes to emphasise the need for adequate resource mobilization in order to achieve the its goal of providing quality immunization services. This can be achieved through collaborative efforts by the government, partners and civil society organizations that support the programme.

Partners will find this document very useful in their endeavor for continuous support for the immunization programme in the country.

ACKNOWLDGEMENTS

The development of the 2016-2020 comprehensive Multi Year Plan (cMYP) involved several inputs from different individuals and institutions. The Expanded Programme on Immunization would like to thank the WHO IST/ESA, ESARO and GAVI for the technical and financial support provided to the Malawi team that participated in the revision of the cMYP workshop that took place in Kampala, Uganda in July, 2015.

The revision of the cMYP requires the involvement of several stakeholders. The Expanded Programme on Immunization applaudsthe contributions provided by the WHO Malawi, UNICEF Malawi, Civil Society Platform on Immunization, Maternal and Child Survival Programme, Save the Children, PHC Unit of the Ministry of Health, CHAM, EPI team and many other individuals. Their tireless efforts to finalize this document deserve much appreciation.

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ABBREVIATIONS AND ACRONYMS

AFP : Acute Flaccid Paralysis
AD :Auto-disable
AIDS :
AEFI :Adverse Events Following Immunization
AEHO :Assistant Environmental Health Officer
ARCC :African Region Certification Commission
BCG :Bacillus CalmetteGuerine
bOPV :Bivalent Oral Polio Vaccine
tOPV :Trivalent Oral Polio Vaccine
CBOs :Community Based Organizations
CC :Cold Chain
CCT :Cold Chain Technician
CDC :Centre for Disease Control
cVDPV :Circulating Vaccine Derived Polio Virus
CHAI :Clinton Health Access and Initiative
CHAM :Christian Health Association of Malawi
CHP :Child Health Passport
CIF :Case Investigation Form
CRF :Congenital Rubella Syndrome
CSO :Civil Society Organization
DFID :Department For International Development
DHMT :District Health Management Team
DH0 :District Health Officer
DHS :Demographic Health Survey
DIP :District Implementation Plan
DPT-HepB-Hib:
DQS :Data Quality Self-assessment
DVS :District Vaccine Store
EHP :Essential Health Care Package
EPI :Expanded Programme on Immunization
EVMA :Effective Vaccine Management Assessment
FICA :Flemish International Coordinating Agency
FT2 :Fridge Tag2

GoM : Government of Malawi
GVAP ;Global Vaccine Action Plan
GVH :Group Village Headman
HDG :Health Donor Group
HDPs : Heath Donor Partners
HEU :Health Education Unit
Hib :Haemophilus Influenza TypeB
HPV :Human Papilloma Virus vaccine
HSA :Health Surveillance Assistance

HMIS :Health Information Management System
HSS :Health Systems Strengthening
HSSP :Health Sector Strategic Plan
HSWG :Health Sector Working Group
ICC :Inter-agency Coordinating Committee
IEC :Information, Education and Communication
IIP :Immunization In Practice
IPV :Inactivated Polio Vaccine
ISS :Immunization Service Support
KAP :Knowledge, Attitudes and Practices
KE :Kerosine Electricity
LQA :Lot Quality Assurance
MCHIP :Maternal and Child Health Integrated Programme
MCHS :Malawi Child Health Strategy
MCSP :Maternal and Child Survival Programme
MGDS :Malawi Growth and Development Strategy
MDG :Millennium Development Goal
MDVP :Multi-dose Vial Policy
MHEN :Malawi Health Equity Network
M&E :Monitoring and Evaluation
MICS :Multiple Indicator Survey
MLM :Mid-level Management
MoH :Ministry of Health
MSD :Measles Second Dose
NCC :National Certification Committee
NCDs :Non Communicable Diseases
NHA :National Health Accounts
NITAG :National Immunization Technical Advisory Group
NNT :Neonatal Tetanus
NCC :National Certification Committee
NSC :National Switch Committee
NSO : National Statistics Office
NTDs : Neglected Tropical Diseases
NTF :National Task Force
NPEC :National Polio Expert Committee
NRA :National Regulatory Authority
OPV :Oral Polio Vaccine
PAB :Protected At Birth
PAM :Physical Assets Management
PBM :Paediatric Bacterial Meningitis
PCV :Pneumococcal Conjugate Vaccine
PIRI :Periodic Intensified Routine Immunization
PIE :Post Introduction Evaluation
PMPB :Pharmacies, Medicines and Poisons Board
QECH :Queen Elizabeth Central Hospital

REC :Reaching Every Child
RED :Reaching Every District
RVS :Regional Vaccine Store
SDD :Solar Direct Drive
SIAs :Supplemental Immunization Activities
SLAs : Service Level Agreements
SMC :Suspected Measles Case
SMT :Stock Management Tool
SOPs :Standard Operating Procedures
SPA :Service Provision Assessment
MSPA :Malawi Service Provision Assessment
SWAp : Sector Wide Approach
Td :Tetanus-dephtheria
TFD :Theatre for Development
TNA :Training Needs Assessment
ToRs :Terms of Reference
tOPV :Trivalent Oral Polio Vaccine
ToT :Training of Trainers
TV :Television
TWG :Technical Working Group
TT :Tetanus Toxoid
U/5 :Under five
UK :United Kingdom
UNICEF: United Nations Children's' Fund
USAID : United States Agency for International Development
VAR : Vaccine Arrival Report
VDP : Vaccine Preventable Diseases
VHC :Village Health Committee
VHR :Village Health Register
VIG :Vaccine Introduction Grant
VVM :Vaccine Vial Monitor
WHO : World Health Organization
WICRs : Walk-in Cold rooms
WIFRs : Walk-in Freezer rooms
ZIP :Zonal Implementation Plan

1.0 BACKGROUND INFORMATION

1.1 Geography

Malawi is a land locked country in Southern Africa sharing borders with Tanzania to the north, Zambia to the west and Mozambique to the east, south and southeast. It has a land coverage area of about 118,500 square kilometres, and a quarter of the surface area is covered by Lake Malawi. The country is divided into three regions (north, centre and south), with a total of 28 administrative districts.

1.2 Demography

The projected population for Malawi for 2016 to 2020 is tabulated below.

Table 1: Projected Population for Malawi, 2016-2020

	2016	2017	2018	2019	2020
Total population	16,832,910	17,373,185	17,931,637	18,508,613	19,104,275
Live births (4.5%)	706,982	729,674	753,129	777,362	802,275
Surviving infants (4.2%)	671,720	687,630	704,101	721,051	738,288
Under five children (18%)	3,029,924	3,127,173	3,227,695	3,331,550	3,438,770
Under 15 years of age (46%)	7,743,139	7,991,665	8,248,553	8,513,962	8,787,967
Pregnant women (5%)	841,646	868,659	896,582	925,431	955,214
Women of childbearing age (21.6%)	3,635,909	3,752,608	3,873,234	3,997,860	4,126,523

Source: National Population Census 2008 (NSO Revised Population Figures, 2010)

For vital health statistics of Malawi see Table 2:

Table 2: Vital Statistics for Malawi

Indicator	Value	Year	Source
Annual Growth Rate	3.1%	2010	DHS
Projected Total population (2016)	16,823,910	2010	DHS
Percentage of under 15 Population	46	2010	DHS
Total Fertility Rate	5.0 children per woman	2010	Malawi MDG End line survey
Infant Mortality Rate	53 /1000 live births	2014	Malawi MDG End line survey
Under-five Mortality Rate	85 /1000 live births	2014	Malawi MDG End line survey
Maternal Mortality Ratio	574 /100, 000 births	2014	Malawi MDG End line survey
Male Life Expectancy at birth	51years	2010	DHS
Female Life Expectancy at birth	54 years	2010	DHS

1.3 Social Economic Status

Malawi is one of the least developed countries in the world with GNI per capita of US $330 (World Bank 2010). However, there has been a reduction in the proportion of Malawians living below the poverty line from 52% in 2004 to 39% (NSO Welfare monitoring survey 2009). The country is currently undergoing economic transformation, following a period of huge fiscal deficit, large current account imbalance, rapid inflation, and a fluctuating GNI. Agriculture remains the backbone of the country's economy, employing about 80% of the population (Malawi Growth and Development Strategy, MGDS 2011-2016).

2.0 HEALTH CARE DELIVERY SYSTEMS

2.1 Health Services

In Malawi health care services are delivered by both the public and the private sectors. The public sector includes all facilities under the MoH, Ministry of Local Government and Rural Development, the Ministry of Forestry, the Police, the Prisons and the Army. The private sector consists of private for profit and private not for profit providers (mainly CHAM). The public sector provides services free of charge while the private sector charges user fees for its services.

There are currently 977healthfacilities in Malawi comprising 113 hospitals, 466health centres, 48 dispensaries, 327 clinics, and 23 health posts. These health facilities are managed by the government (472), CHAM (163), Private (214) and NGOs (58) and company (69) {Malawi SPA- 2013-14}.

CHAM is a not for profit health services provider and is the biggest partner for the MoH. It provides services and trains health workers through its health training institutions. CHAM facilities charge user fees for other medical services. However, the Government of Malawi has established Service Level Agreements (SLAs) with CHAM facilities regarding the government-funded provision of free maternal and child health services (Health Sector Strategic Plan 2011-2016).

During the implementation of the Health Sector Strategic Plan (HSSP 2011-2016) the health services will be delivered at different levels: namely: primary, secondary and tertiary. These different levels are linked to each other through an elaborate referral system that has been established within the health system. At the primary level, services are delivered through community initiatives, health posts, dispensaries, maternities, health centres and community and rural hospitals. At community level, health services are provided by community-based cadres such as HSAs. District hospitals constitute the secondary level of health care. They are referral facilities for both health centres and rural hospitals. They also service the local town population offering both in-patient and out-patient services. CHAM hospitals also provide secondary level health care. The provision and management of health services has since been devolved to Local governments following the Decentralization Act (1997). The tertiary level comprises of central hospitals: these provide specialist referral health services for their respective regions. Specialist hospitals offer very specific services such as obstetrics and gynecology. There are currently 4 central hospitals.

2.2 Integration of EPI activities with Other Key Child Health survival activities

With support from partners, the Ministry of Health is implementing various key child health interventions as part of the essential Health package (EHP) including immunisation. The country is implementing the comprehensive strategies for reduction of diarrhoea and pneumonia in children according to the Global Action plan for Pneumonia and diarrhoea (GAPPD). Zinc and Low Osmorality ORS are part of the treatment of diarrhoea; exclusive breastfeeding is being promoted for all babies until weaning age and cotrimoxozale is being given to all HIV exposed babies as prophylaxis. The Ministry of Health has also gone extra gear to use the EPI platform to provide other key child survival and development interventions. Vitamin A supplementation is provided to all under-five children on routine basis in under-five clinics across the country. Vitamin A and deworming tablets have also been provided during child Health Days and during periodic immunisation campaigns.

2.3 Policy of the Ministry of Health

The Malawi Health Sector Strategic Plan (HSSP) (2011-2016) is the successor to the Program of Work (PoW) which covered the period 2004-2010 and guided the implementation of interventions aimed at improving the health status of the people of Malawi. The HSSP has also been informed by the draft National Health Policy (NHP) whose overall goal is to improve the health status of all the people of Malawi by reducing the risk of ill health and occurrence of premature deaths.

According to the HSSP:

- The vision of the Health Sector is: To achieve a state of health for all the people of Malawi that would enable them to lead a quality and productive life.
- The mission of the Health Sector is: To provide strategic leadership by the MoH for the delivery of a comprehensive range of quality, equitable and efficient health services to all people in Malawi by creating an enabling environment for health promoting activities.
- The goal of the HSSP is: to improve the quality of life of all the people of Malawi by reducing the risk of ill health and occurrence of premature deaths thereby contributing to the social and economic development of the country.

The implementation of the HSSP will be the responsibility of all the partners in the health sector. The Sector Wide Approach (SWAp) Memorandum of Understanding lays down the coordination mechanisms for the health sector. The SWAp provides a mechanism through which funding from Government of Malawi and from some funding agencies is pooled together.

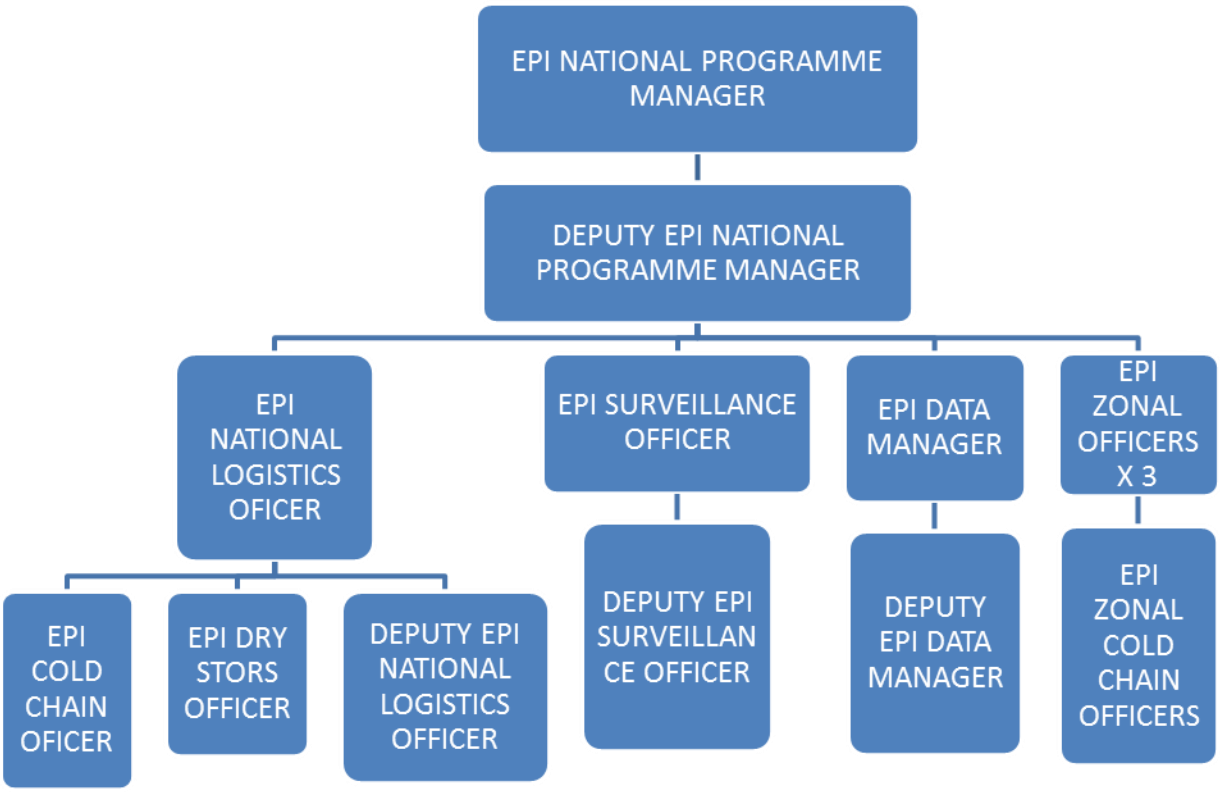
2.4 Governance

The GoM has put in place sector technical working groups in all Ministries in recognition that better coordination of aid and alignment to government systems enhances efficiency and effectiveness, reduces duplication and ultimately improves health outcomes. The EPI sub Technical Working Group (formally ICC) is within the EHP TWG.

2.5 EPI Programme Structure

The EPI programme falls under the Directorate of Preventive Health Services of MoH. At the central level, the programme is managed by the EPI Manager, Deputy Manager and officers dealing with Logistics, Cold Chain, Disease Surveillance, Data Management and Vaccine and Dry Store Management. The Zonal EPI Officers in the North, South East and South West are responsible for coordinating EPI activities in their respective zones and are assisted by the Zonal Cold Chain Officers. Two zones, Central East and Central West do not have designated EPI Officers. However, plans are underway for deployment of the officers to these zones.

Figure 1: Organogram of Expanded Programme on Immunization



In each district there are two EPI Coordinators assisted by Cold Chain Technicians. There is a high turnover of staff at district level and this is affecting the operations of the EPI services.

At health centre level, the majority of immunization services are provided by Health Surveillance Assistants (HSAs), supported by other health workers.

2.6 Health Sector Working Group (HSWG)

The HSWG is mandated by GoM as a Sector Working Group and is the overall coordinating body for the sector. Its membership comprises various constituent groups: MoH and other GoM ministries and departments, training institutions, local government, regulatory bodies, research institutions, CSOs, the private sector (including CHAM) and Heath Donor Partners (HDPs) (Health Sector Strategic Plan 2011-2016).

2.7 Senior Management

This committee comprises of all the Directors and Heads of Departments in the MoH and is chaired by the Secretary for Health. It meets fortnightly, taking responsibility for final approval of policies and plans and for giving technical advice to the HSWG (Health Sector Strategic Plan 2011-2016).

2.8 Essential Health Care Package (EHP) Technical Working Group (TWG)

The Essential Health Package (EHP) was established to streamline the delivery of basic health interventions which are cost effective. These interventions comprise diseases and conditions that affect the majority of the population especially the poor. This package aims to deliver services free of charge to Malawians. The conditions in this package are: vaccine preventable diseases; Acute Respiratory Infections (ARIs); malaria; tuberculosis; sexually transmitted infections (STIs) including HIV/AIDS; diarrhoeal diseases; schistosomiasis; malnutrition; ear, nose and skin infections; perinatal conditions; and common injuries.

The Technical Working Groups (TWGs) were given the responsibility of contributing towards the development of the situation analysis for their thematic area, identifying objectives, strategies and key interventions and key indicators and also looking at implementation arrangements.

2.9 EPI Sub-Technical Working Group (TWG)

During the past years, the EPI programme had been functioning with the support of the Interagency Coordination Committee (ICC). The core function of the ICC was to ensure collaboration of all partners with a view to fostering a strong partnership and facilitate resource mobilization for the programme.

With the introduction of the SWAp mechanism in the Ministry of Health, the need for an independent ICC is no longer necessary because the Essential Health Package (EHP) Technical Working Group under the SWAp addresses issues of the various programmes including EPI. However, the ministry and its partners support the idea of having sub Technical Working Group for selected programmes including EPI.

The EPI Sub-TWG meets quarterly and ad-hoc meetings whenever necessary, especially during SIAs. The ToRs include the following:

2.9.1 Technical Support

- Mobilizes support for EPI from various partners to ensure efficient and effective functioning of the EPI programme.
- Supports and participates in the implementation, monitoring and evaluation of short, medium and long term EPI Plans.
- Advises the EPI programme on implementation of the EPI Plan of action for both routine services and SIAs.
- Participates in SIAs National Task Force meetings as necessary.

2.9.2 Advocacy

- The committee advocates for EPI at higher level eg. EHP and internationally for effective and efficient implementation of the planned activities.
- Revises and recommends membership for EPI Sub TWG as need arises.

2.9.3 Social mobilization

- Supports programme with social mobilization to ensure wide publicity of the programme for both routine and supplemental immunization activities.

3.0 SITUATIONAL ANALYSIS

3.1 EPI Indicators by system components from 2012 to 2014

Table 3 shows EPI indicators by systems component the past three years.

Table 3: EPI Indicators by system components from 2012 to 2014

System Components	Suggested indicators	National status		
		2012	2013	2014
1. Accelerated Disease Control Initiative				
Polio	% national coverage of OPV3	95%	89%	87%
	Non polio AFP rate per 100,000 children under 15 years of age	2.4	2.3	1.5
	Number of polio SIAs conducted	0	1	0
	Coverage of Polio	NA	>95%	0
	Stool Adequacy Rate	79%	80%	75%
	Number of NPEC meetings conducted	4	2	4
	Number of NCC meetings conducted	0	2	4
	Number of NTF visits conducted	0	1	1
Measles & Rubella	% national coverage of Measles	90%	88%	91%
	Number of lab confirmed measles outbreaks	1	0	0
	Number of lab confirmed Rubella outbreaks	0	0	17
	Is measles elimination strategic plan in place	No	No	No
	Number of outbreak response conducted	1	0	0
	Number of Measles SIAs conducted	1	1	0
	Coverage of Measles SIA (9-59months)	NA	>95%	0
	Non-measles febrile rash reporting	1.7	6.2	6.9
	% of districts reporting SMC to lab			98%
	Total lab confirmed Measles Cases	11	1	3
	Total lab confirmed Rubella Cases	56	23	433
System Components	**Suggested indicators**	**National status**		
		2012	**2013**	**2014**
2. Service Delivery				
Immunization	% national coverage of Pentavalent3	96%	92%	91%

Coverage	% national coverage of PCV3	108%	92%	91%
	% national coverage of Rota2	Na	84%	83%
	% national coverage of OPV3	95%	92%	87%
	% national coverage of Measles	90%	91%	91%
	Survey Coverage % Pentavalent3 (Mix report 2014)	Na	97%	91%
	% of Fully Immunized Child (Mix report 2014)	85%	94%	72%
	Percentage of caretakers of children < 1yr understanding the importance of routine immunization.	No data	No data	No data
Immunization Access	% national coverage of Pentavalent1	99%	99%	97%
Immunization Demand	% national Drop Out Penta1 – Penta3	3%	7%	6%
Immunization Equity	% gap in national Pentavalent3 between highest and lowest socio economic quintiles	No data	No data	No data
	% gap in all basic Vaccination between highest and lowest socio economic quintiles	No data	No data	No data
	Number of districts with Pentavalent3 coverage above 80%	26	22	25
	Number of districts with measles coverage above 80%	23	21	21
Integration	Number of services provided at fixed facilities	6	6	6
	Are guidelines on Outreach health service package developed	Y	Y	Y
New Vaccines Introduction	Is HPV introduced in immunization system	N	Y	Y
	Is measles second dose introduced in immunization system	N	N	N
	Is measles-rubella introduced in immunization system	N	N	N
	Is IPV introduced into the immunization system?	N	N	N
	Is TT shifted to Td in the immunization system	N	N	N
Infrastructure	Under five cinic shelters constructed	N	N	N
	Health Posts constructed	N	N	N
	Solar installed in health health facilities including staff houses in hard to reach areas	N	N	N
	Electrification done in selected health facilities with no electricity including staff houses done	N	N	N
	EPI Office block completed and furnished	N	N	N
System	**Suggested indicators**	**National status**		

Components		2012	2013	2014
3. Programme Management				
Regulation	Number of functions conducted by PMPB (NRA)	1	1	0
	Is the National AEFI committee in place?	No	No	No
Policy	Is the National Immunisation Technical Advisory Group in place?	No	No	No
	Is the national immunization policy in place?	Yes	Yes	Yes
Planning	Number of districts with EPI plans incorporated in DIP	28	28	28
	Number of districts with 80% of EPI activities budgeted in DIPs that were implemented	No data	No data	No data
	Percentage of health facilities with micro plans.	No data	No data	No data
	Is an annual work plan for immunization in place?	Yes	Yes	Yes
	Proportion of immunization budget in the plan funded by Malawi Government	4.3%	3.4%	16.0%
Coordination	Number of meetings held by EPI sub-TWG	4	3	5
	Is membership of EPI sub-TWG adequate	N	N	Yes
	Are programme meetings conducted	N	N	N
	Is the joint Appraisal conducted	N	N	N
Supervision	Number of supervisory visits to each District level Per year	1	1	2
	Number of supervisory visits to each health facility level Per year	No data	No data	No data
	Number of supervisory visits conducted by district cluster areas per year	No data	No data	No data
	Are supervisory reports available in health facilities	No data	No data	No data
	Peer-peer exchange visits done	N	N	N
Monitoring and Evaluation	Number of monthly meetings conducted with programme officers	0	0	0
	Number of quarterly meetings conducted with district level EPI officers	0	0	0
	Number of National review meetings held	0	0	1
	Number of Zonal review meetings held	3	3	3
	Number of EPI comprehensive reviews conducted	1	0	0
	Is national EPI M&E framework in place	Yes	N	Yes
	Number of coverage surveys conducted	0	1	0
	Number of DQS conducted	1	0	0

	Number of EPI surveillance reviews	1	0	0
	Number of EVMA conducted	1	0	0
	Number of cold chain inventory assessments	0	0	1
	Number of updates for cold chain inventory	0	1	0
	Any stock outs of u/1 registers	Y	Y	Y
	Any stock outs of TT registers	Y	Y	Y
	Any stock outs of child health passports	Y	Y	Y
	Are stock books available at district level	Y	Y	Y
	Are stock books available at health facility level	N	Y	Y
	Are Village Health Registers (VHRs) revised	N	N	N
	Are HSAs oriented in the use of VHRs	N	N	N
	Is the use of the VHR monitored	N	N	N
	Availability of computers in all District EPI officers	N	N	N
System Components	**Suggested indicators**	**National status**		
		2012	**2013**	**2014**
4. Human Resources Management				
	Population per Health Surveillance Assistant (target is 1 per 1000 population)	1,200	1,200	1,200
	Adequacy of EPI staff at National and Zonal levels (Y/N)	no	no	Y
Capacity Building	Number of HSAs trained in IIP	0	2000	0
	Number of EPI coordinators trained in MLM	0	0	0
	Number of health workers trained in EPI disease surveillance	56	0	29
	Number of health workers trained in RED	no data	no data	no data
	Number of health facility workers trained on simple maintenance of refrigerators	0	0	0
	Is the prototype education curriculum	N	Y	N
System Components	**Suggested indicators**	**National status**		
		2012	**2013**	**2014**
5. Costing and Financing				
Financial	Percentage of government spending on traditional vaccines		30%	

sustainability	Percentage of government spending on new vaccine co-financing			100%
	Percentage of total routine vaccine spending financed using Government funds		5%	7%
	Percentage of total expenditure on routine immunization including vaccine financed by government funds	0.20%		10%
	Percentage of MoH budget on routine immunization	4%	4%	8%
	Percentage of District budget spent on routine immunization	No data	No data	No data
	Are sub-national immunization budgets and expenditures monitored and reported at national level?	N	N	Y
	Timeliness of disbursement of funds for procurement of vaccines	N	Y	Y
	Percentage of immunization expenditure funded through DIPs			55%
	Are sub-national immunization financing expenditures monitored and reported?			Y
	Are EPI Officers trained in reporting immunization financing expenditures?			N
System Components	**Suggested indicators**	**National status**		
		2012	**2013**	**2014**
6. Vaccine Supply, Quality & Logistics				
Transport / Mobility	Percentage of HSAs with a working bicycle	50%		
	Percentage of health facilities with functioning motorcycles	No data	No data	
	Number of districts with a sufficient number of supervisory/EPI field activity vehicles	No data	No data	
	Number of trucks for transportation of vaccines, injection materials & cold chain equipment	5	5	5
	Number of boats available	0	0	0
Vaccine supply	Number of District Vaccine Stores experiencing stock outs of vaccines in the previous 12 months	0	0	22
	% of health facilities experiencing stock outs of vaccines in the previous 12 months	0	no data	no data
	Number of District Vaccine Stores experiencing AD syringes stock outs in the previous 12 months	0	0	0
	% of Health Facilities experiencing AD syringes stock outs in the previous 12 months	No data	No data	No data
	Was there a stock out of vaccines at national level?	N	N	Y
	Vaccine wastage monitoring at national level for all vaccines?	Y	Y	Y
Cold chain/Logistics,	Percentage of districts vaccine stores with adequate volume of equipment	80%	85%	85%
	Percentage of health facilities with functional refrigerators	No data	No data	No data

Dry Stores and Office space	Percentage of refrigerators that are functioning			89%
	% Districts with cold chain inventory			
	Number of trained Logisticians at zonal level	0	0	0
	Number of EPI officers trained cold room repairs	0	0	0
	Availability of manual forklift in the national dry store	N	N	N
	Availability of adequate space for EPI national level	N	N	N
Adverse Events	Is the National AEFI System Active with a designated national committee	N	N	N
	Number of serious AEFI cases reported and investigated	1	5	0
	Is AEFI Case Management Protocol in place	N	N	N
	Are AEFI guidelines in place	Y	Y	Y
	Health workers not reporting cases of AEFI to the higher level	N	N	N
	Caregivers have inadequate knowledge on AEFI	No data	No data	No data
Waste disposal	Availability of a waste management plan at national level	Y	Y	Y
	Percentage of facilities with functional incinerators	No data	No data	53%
	Percentage of facilities using burn and bury method	No data	No data	35%
	Availability of a waste management policy	Y	Y	Y
System Components	**Suggested indicators**	**National status**		
		2012	**2013**	**2014**
7. Surveillance & Reporting				
Polio	% of surveillance reports received at national level from districts compared to number of reports expected	100%	100%	100%
	Is trivalent OPV (t-OPV) replaced by bivalent (b-OPV) in the immunization system	N	N	N
Measles	Proportion of districts reporting at least one measles case with blood collected for lab analysis	75%	96%	98%
	% suspected measles cases for which a laboratory test was conducted	100%	100%	100%
	Is there an emergency response plan	N	N	N
Neonatal Tetanus	Number of Neonatal deaths reported and investigated	No data	No data	No data
	Number of districts reporting <1case per 1,000 live births	28	28	28
Hib& PCV	Sentinel Surveillance for PBM established	Y	Y	Y
	Sentinel Surveillance for PBM functional	Y	N	N

	Number of Quarterly Surveillance reports submitted by PBM/Rotavirus site	2	0	no data
	% of suspected meningitis cases tested for Hib/pneumococcal disease according to standard protocol	no data	no data	no data
Rotavirus	Sentinel Surveillance for Rotavirus established	Y	Y	Y
System Components	**Suggested indicators**	**National status**		
		2012	**2013**	**2014**
8. Demand Generation and Communication				
Advocacy	Presentations on immunization performance, expenditures, were made to parliament?	N	N	N
	Presentations on immunization performance, expenditures, were made to EHP?	Y	Y	Y
	Implementation plan on immunization of Civil Society Organizations (CSOs) in place	N	N	N
	There is strong and direct link with Pediatrics Association of Malawi	N	N	N
Communication	Availability of a routine immunization communication plan	Y	Y	Y
	Inadequate knowledge on the importance of completing the immunization series on time by mothers	No data	No data	No data
	Fears and misconceptions on the number of vaccines	No data	No data	No data
	Vaccine hesitance is a problem in some population	Y	Y	Y
Demand	% of outreach clinics held as planned	No data	No data	No data
	% of outreach clinics cancelled and reschedule	No data	No data	No data
	A plan for interventions for hard to reach children in place	N	N	N
	Inadequate knowledge on the existing and new vaccines	No data	No data	No data
	Lack of knowledge of the new vaccines	No data	No data	No data
	Slow uptake of new vaccines	No data	No data	No data
Research	Year of last study on KAP	2012	NA	NA
	Year of last Missed Opportunity Study	NA	NA	NA
	Year of last Immunization Hesitancy Study	NA	NA	NA
	Year of Stock Availability Operational Study conducted	NA	2013	NA
	Year of REC/RED operational study conducted	NA	NA	NA

3.2 Strengths and Weaknesses of the EPI Programme

The EPI programme conducted a number of assessments and reviews over a period of five years from which the strengths and weaknesses including the EPI Problem Tree have been derived. These assessments include the following:

- Assessment of availability and usability of revised Child Health Passport and Under 1 & 5 Registers
- In-depth National Surveillance Review
- Knowledge, Attitudes and Perceptions Study on Immunizations and Diarrhea
- Comprehensive review on EPI programme
- Effective Vaccine Management Assessment (EVMA)
- EPI Pre-service and In-service Training Needs Assessment
- Post Introduction Evaluation (PIE) of Rotavirus Vaccine
- Stock Availability and REC Operational Research
- Data Quality Self-assessment (DQS)
- Cold chain Maintenance Assessment
- Cold Chain Assessment

Figure 2: EPI Problem Tree

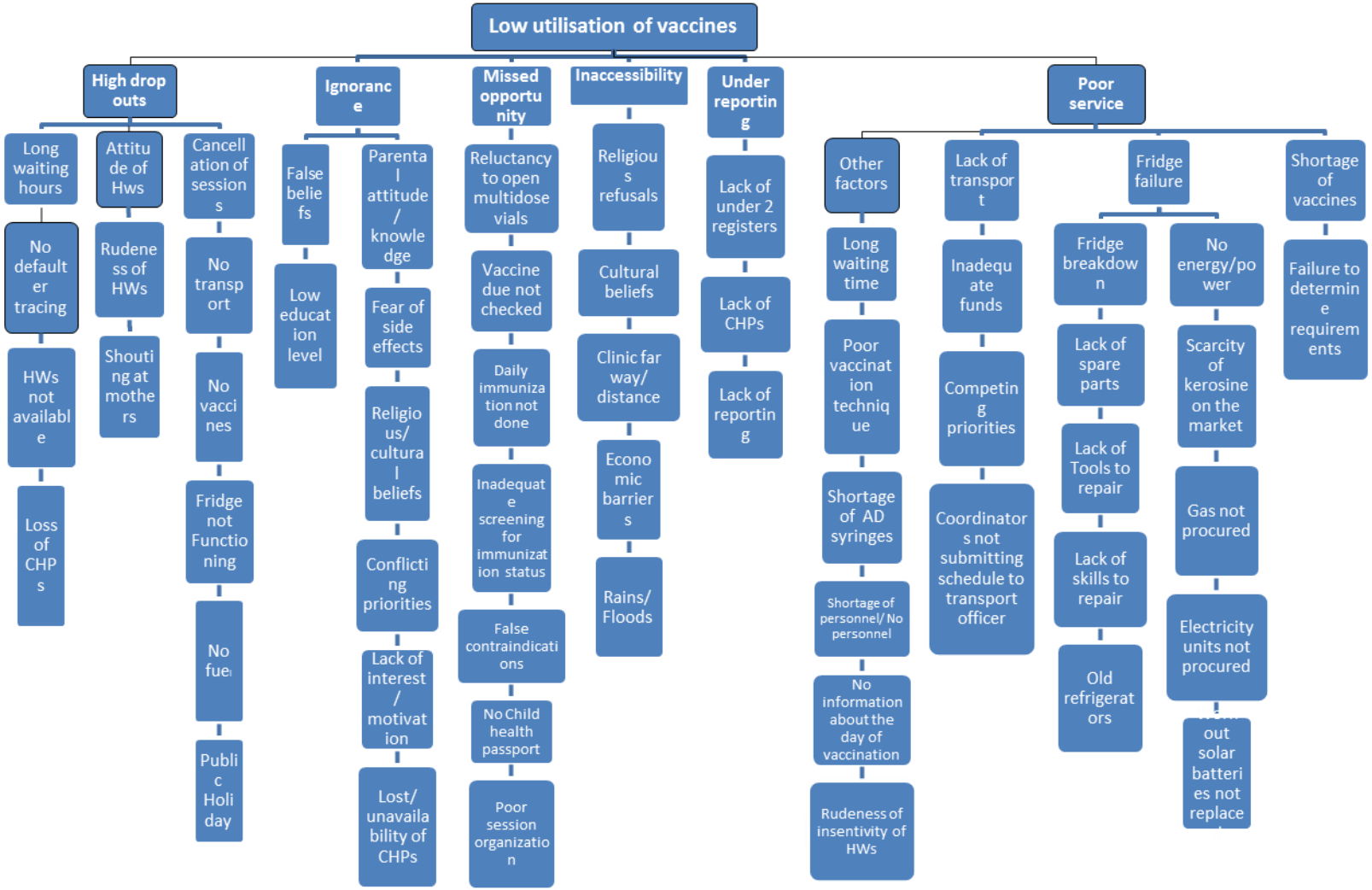


Table 4 shows the strengths. Opportunities, weaknesses and threats identified by the combine EPI Comprehensive and surveillance review.

Table 4: Strengths and Weaknesses, Derived from Periodic Assessments and Reviews

SITUATION ANALYSIS FOR EPI PROGRAMME			
	EXTERNAL ENVIRONMENT		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
1	Presence of a National Health Policy and a National Public Health Act, with a constitutional provision to guarantee all Malawians health care of the highest quality	1	Decline in funding for the health sector, resulting in significant reduction of available funds for the immunization program in the previous years.
2	Free provision of immunization and maternal health services across the country, and waiver of user-fees in CHAM facilities	2	The recourse to borrowing from the domestic market by government to close funding gaps has resulted in increases in the cost of health service delivery in the country
3	EPI is an integral part of the Essential Health Package (EHP) with budget line for vaccine and supply procurement, including the co-financing for new vaccines	3	There is inadequate alignment and coordination of HDPs financial systems with those of the government
4	Program receives significant technical and financial support from Health Development Partners (HDPs)	4	Inadequate capacity for financial management, including the tracking of fund flow from one level to another and within the districts
	PROGRAM MANAGEMENT		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
1	Existence of a National EPI staffed by officers with varying expertise - 10 staff including (program manager, logistics officer, surveillance officer, data manager and assistant data and logistics officers and three cold store managers)	1	HR for health, especially for immunization, faces challenges both in quantity and quality with high attrition rate especially at district level
2	Presence of a comprehensive multi-year plan (cMYP 2012 – 2016 aligned to HSSP 2011 - 2016) and a work plan for 2015	2	Inadequate program coordination at all levels, including between HDPs and the program
3	At the district level, immunization is coordinated and managed through the District Health Management Team	3	The inclusion of EPI activities in District work plans mostly limited to the

	(DHMT)		logistics needs
4	Actual delivery of immunization services conducted through network of Health Surveillance Assistants (HSAs) with linkage to the community.	4	Absence of Health Facilities micro plans in most of the districts visited
5	Program receives additional technical and financial support for management from HDPs.	5	Community engagement in immunization planning limited mostly to campaigns in most of the districts visited
6	Existence of HSRG supported by a technical working group, though NITAG is still under creation	6	Limited involvement of private for profit facilities in immunization service delivery in most districts visited
7	Coordination of HDP technical and financial inputs done through the technical working group (TWG)	7	Lack of reliable (or multiple) sources of demographic data for calculating target populations
		8	Complete reliance on HSAs to deliver the EHP, including immunization, with very minimal support from other cadres.
	SUSTAINABLE PROGRAM FINANCING		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
1	Presence of line item for immunization in the health budget	1	There is a significant shortfall of program financing in 2015/2016 at national level, with only 3% of total EPI budget for operations is available.
2	Procurement of traditional vaccines by government with support from HDP.	2	Over-dependence on external donors/partners funds for cold chain equipment and other program operations including, supportive supervision, outreach sessions, active surveillance
3	Government has never defaulted in its co-financing commitment	3	Funds available for immunization at district level mostly for logistics, with limited funds for outreach services, supportive supervision

4	Gavi HSS (HSS 1) funds used to address health systems barriers to immunization		
5	HDPs mobilize resources to close gaps in govt funding for the program		
6	At district level, budget for EPI included in the overall district EHP budget		
	SERVICE DELIVERY, COLD CHAIN AND VACCINE MANAGEMENT		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
	Service Delivery		
1	There is a draft immunization policy (2012)	1	The immunization policy drafted 3 years back has not been finalized
2	There are immunization manuals and guidelines for surveillance, routine immunization, new vaccines and campaigns	2	Five districts have less than 80% penta3 coverage in 2014
3	Under two register developed and distributed to include measles 2nd dose and other new vaccines	3	With the introduction of the under two register reporting of vaccinated children will be difficult and incomplete without tally sheets.
4	The EPI program has identified the hard to reach areas	4	Many clinics cancel planned outreach sessions as a result of logistics challenges (transport –push bikes, fuel)
5	Vitamin A, health education, and growth monitoring are integrated with immunization in all HFs and some HFs integrate post exposure prophylaxis and family planning	5	There is no RED/REC field guide to reach the unreached
6	A well designed and functional incinerator was observed in Choma and some other districts and HFs	6	Few HFs provide daily immunization service (Dowa 14%, Dedza 6% and Mchinji 71%) and defaulter tracing is not done in many HFs
		7	In many districts immunization services seem to be left for HSAs and EHOs; with limited involvement of nurses and

			clinicians.
		8	The female MCH coordinators are not fully involved in EPI activities
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
	Cold Chain and Vaccine Management		
1	Adequate cold storage space at national level and CCI conducted in 2014	1	OPV stock out for 2 months in 2014 at national level and frequent stock outs in many HFs
2	The cold rooms have temperature monitoring devices and SMT for stock management	2	Vaccine wastage not regularly monitored at all levels
3	Fridge tags distributed to all HFs	3	Lack of facility for waste management at national cold store (next slide)
4	Government pays for the traditional vaccines with support from partners	4	Shortage of operational cost to buy Kerosene and gas in some districts
5	470 new refs will be procured with KFW support (CCI)	5	Lack of standby generator in many districts for vaccine stores and expensive vaccines are at risk of damage
6	There is a functional regulatory authority (PMPB)	6	In many districts there is no cold chain maintenance plan for replacement needs, or budget line for cold chain equipment maintenance and repair
7	All HFs visited have functioning cold chain equipment except in one HC (Mdunga)	**7**	Incomplete work on the north Regional Cold Room, the provided zonal stores is housed in Central Equipment room, where there is no access during weekend (Temp not monitored on weekends)
8	Many HFs in visited districts have temperature charts but some of them not updated	8	In Mzimba south and Rumphi most HFs (4/5 = 80%) have had stock-outs of vaccines in the last 6 months (measles, penta) and few HFs (2/5= 40%) had expired vaccines

		9	The cold room in the southern region is not functional
		10	There are malfunctioning refrigerators (Kalinde, Holy Family and Mwanga)
		11	S/E Zone has no cold room for vaccines and disease surveillance (specimen)
	SURVEILLANCE		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
	National level		
1	Surveillance structure with trained focal person in place	1	The non polio AFP rate was not achieved in 2014 and in 2015 it is 1.5/100,000, which is lower than the 2/100,000 target.
	–The country is doing case based surveillance for AFP, measles and NNT and all information is up to date	2	The stool adequacy of 80% was not achieved in 2013, 2014 and it is 77% in 2015
	–Surveillance data used to identify priority areas and provide feedback	3	No AEFI expert committee at national level
	–Priority areas for surveillance have been identified	4	Weak coordination between IDSR and EPI units
	–Private Health facilities are part of the surveillance system	5	The AFP surveillance training did not bring the expected performance improvement
	–The surveillance officer has excellent knowledge of the steps and procedures of AFP surveillance	6	Shortage of transport for surveillance supportive supervision visits
	–Clinicians in the south and North were trained in the last 12 months including the private sector		
2	WHO supports the VPDs surveillance (technical and financial)		
3	AEFI:		

	•A draft AEFI protocol exists		
	•AEFI tools distributed to all levels		
	•A national TOT conducted and subnational level staff trained during the NVI training		
	District level		
1	Surveillance focal persons in place and trained in 2015 along with training for new vaccines introduction	1	AFP surveillance is on the decline over the years and it is porous….cases are being missed by the system
2	Staff were conversant with AFP, NNT and measles surveillance in some Health centers		• Inadequate retention of knowledge after training
3	Case definition posters were available and displayed		• Inadequate knowledge on AFP, measles and NNT core indicators to some health workers.
4	Case investigation forms (AFP, NNT &Measles) were available in some HF visited		• Guidelines for EPI and Surveillance and case investigation forms were not available in many health facilities
5	Findings of the AFP case verification were in agreement with those of contained in the original CIF.		• No case definitions seen in some facilities
		3	Lack of feedback from district supervisors
		4	AFP stool specimen containers were not available resulting in the use of sputum specimen bottles in some districts
		5	AEFI protocols for reporting were not adequately understood/followed. Reporting forms were not available at the district and facility level
		6	There is no communication between traditional healer and HFs or

			community health worker (HSAs)
		7	Traditional healers are not included in the AFP surveillance network
	MONITORING AND EVALUATION, SUPERVISION		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
1	DVDMT was available and is widely used in the country for data capturing, processing and use for action.	1	Two different systems (DHIS and DVDMT) reporting different information, lack of data sharing, harmonization and access to DHIS.
	• The system is able to classify district and health facilities performance in line with RED/REC prioritization and classification	2	Absence of immunization charts in the majority of health facilities, where available some are wrongly drawn and not displayed.
2	The immunization monitoring tools captured and reported data by service strategy i.e. static and outreach	3	At district level the monitoring charts are contained in the computers and they are not displayed
3	The immunization data monitoring tools were available and up to date with new vaccines.	4	Monthly reports were missing in some health facilities and the reports were not properly filled.
4	Quarterly feedback report is generated and shared with zones and districts for information and use.	5	Health facilities were not summarizing the annual data for all antigens and there was no analysis by service area, resulting in not knowing the low performing areas and no appropriate action taken
5	DHIS is in existence and is capturing EPI data elements	6	Immunization performance and disease trends are not being monitored
		7	There were no mechanisms to track defaulters
		8	HF EPI focal persons do not attend district-level reviews or HFMC
		9	Feedback not received from higher level (to Health facilities)

		10	Most of supervision to HFs do not offer comprehensive support
		11	All supervisors do not give written instructions/action points
	ADVOCACY, COMMUNICATION AND SOCIAL MOBILIZATION		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
1	High demand for immunization services, community has trust in health care system	1	ACSM activities for EPI focusses on Campaign and New Vaccine introduction and not on RI and community based disease surveillance
2	Political will and structures are in place	2	Isolated groups of vaccine hesitant parents and caregivers in some districts
3	KAP studies for immunization conducted July 2012	3	Communication plan has taken long to be approved
4	Draft communication plan for EPI developed awaiting approval		
5	Health education sessions were some of the services provided by HSAs at community level		
6	Electronic and print media used mainly for campaigns		
7	Most districts and HFs have a social mobilization and communication focal persons		
	CAPACITY BUILDING		
No.	**Strengths and Opportunities**	**No.**	**Weaknesses and Threats**
1	Training Needs assessment for EPI staff conducted at all levels	1	
2	EPI pre-service training curriculum recently updated in line with AFRO EPI prototype (awaiting approval and distribution)	2	Newly recruited EPI staff have not received training
3	MLM training conducted for DHMT staff		EPI pre-service training curriculum updated in line with regional EPI

	and NVI training for all levels		prototype not yet approved and distributed
4	Most National EPI staff received training in respective areas through regional workshops		
5	Best practices on RI identified and shared (defaulter tracing cards)		

Source: Combined EPI Comprehensive and Surveillance Reviews, September 2015

4.0 IMMUNIZATION SYSTEMS COMPONENTS

4.1 Service Delivery for Routine Immunization

The programme currently provides BCG, OPV, DPT-HepB-Hib (Penta), Pneumococcal Conjugate Vaccine (PCV), Rotavirus and TT vaccines. Immunization activities are carried out along with growth monitoring, nutrition, vitamin A supplementation, antenatal and postnatal care throughout the country.

4.1.1 Routine Immunization Schedule

Measles, DPT-HepB-Hib, OPV, PCV, Rotavirus and BCG vaccines are given to children under one year of age. Tetanus toxoid vaccine is provided to pregnant women and women of child bearing age. Table 5 shows the routine vaccination schedule which has been revised to included HPV and Measles rubella vaccination and Td which is replacing TT.

Table 5: Malawi Immunization and Vitamin A Supplementation Schedule

Age	Vaccine
At birth or first contact	BCG
At birth up to 2 weeks	OPV 0
At 6 weeks	OPV 1 and DPT-HepB-Hib 1, PCV 1, Rota 1
At 10 weeks	OPV 2 and DPT-HepB-Hib 2, PCV 2, Rota 2
At 14 weeks	OPV 3 and DPT-HepB-Hib 3,PCV 3 and IPV
At 9-11 months	MR 1

At 15-23 months	MR 2
First contact (15-45 yrs and Pregnant women)	Td 1
At 4 weeks after Td1	Td 2
At 6 months after Td2	Td 3
At 1 yr after Td3	Td 4
At 1 yr after Td 4	Td 5
First contact (10 yrs)	HPV1
6 months after HPV1	HPV2
At 6 months and every 6 months up to 59 months	Vitamin A (children)
Within two weeks of delivery	Vitamin A (post natal mothers)

4.1.2 Routine Immunization Strategies

Immunization services are presently delivered through static and outreach clinics in health facilities across the country. There are 781 static clinics throughoutthe country. Daily immunization is conducted in most of the static clinics. The Malawi SPA (2013-14) found out that child vaccination services are offered at 83% of hospitals; 97% of health centres; 83% of dispensaries; 24% of clinics, and 100% of health posts.

According to the administrative data available, of the total 4,894 outreach clinics, 41% of outreach clinics are conducted under a tree. Conducting immunizations under a tree has some challenges more especially when it is raining and during windy days. Table 6 shows number of outreach clinics are conducted under a tree.

Table 6: Number of Outreach Clinics Conducted Under a Tree

Name of Health Facility	Total no. of Outreach clinic	No. conducted under a tree	Percentage
Chitipa	116	2	**2**
Karonga	155	57	**37**
Likoma	4	4	**100**
Mzimba North	189	41	**22**
Mzimba South	315	108	**34**
Nkhatabay	157	56	**36**
Rumphi	161	37	**23**
Northern Zone	**1097**	**305**	**28**
Dowa	243	28	**12**
Kasungu	342	59	**17**
Nkhotakota	132	55	**42**
Ntchisi	124	21	**17**

Salima	124	108	**87**
Central East Zone	**965**	**287**	**30**
Dedza	199	92	**46**
Lilongwe	333	71	**21**
Mchinji	158	33	**21**
Ntcheu	218	98	**45**
Central West Zone	**908**	**294**	**32**
Balaka	178	133	**75**
Machinga	275	195	**71**
Mangochi	323	223	**69**
Mulanje	156	55	**35**
Phalombe	98	37	**38**
Zomba	204	136	**67**
South East Zone	**1234**	**779**	**63**
Blantyre	115	64	**56**
Chikwawa	145	84	**58**
Chiradzulu	90	50	**56**
Mwanza	29	4	**14**
Neno	62	12	**19**
Nsanje	78	66	**85**
Thyolo	171	75	**44**
South West Zone	**690**	**355**	**51**
Malawi	**4894**	**2020**	**41**

Source: Administrative data

4.1.3 Routine Immunisation Coverage

The immunization coverage for all antigens has been above 80% for the past 5 years except for TT in all the years. The number of districts with >80% DPT-HepB-Hib3 coverage has been steadily going up for the past five years towards the 90/80 goal. Refer to table 7 for immunization performance for 2010 to 2014.

Table 7: Annual Immunization Coverage for Malawi, 2010 to 2014

Antigen	2010	2011	2012	2013	2014
BCG	110%	99%	99%	97%	97%
OPV3	102%	97%	95%	92%	87%
DPT-HepB+Hib3	102%	98%	96%	92%	91%

Measles	99%	96%	96%	91%	91%
PCV 3	NA	NA	108	92%	91%
Rotavirus	NA	NA	7%	84%	83%
TT2+ (Pregnant)	75%	79%	71%	66%	71%

Source: MOH EPI Program

Note: Figures for 2010 are based on the revised population figures provided by the National Statistics Office in 2010.

As shown in table 7, immunization coverage dropped in 2013 as compared to the three previous years. Due to the decline of the immunization coverage in 2013, the EPI programme came up with a road map for the improvement of the coverage shown in table 9.

Immunization coverage by district from 2010-2014 is shown in table 8.

Table 8: Immunization Coverage (Penta 3, Polio 3, PCV 3& Measles) by District 2010-2014

District	Penta 3					Polio 3					PCV 3					Measles				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Chitipa	89.7	95.0	88.7	84.8	80.9	87.6	92.3	87.5	82.7	81.0			99.0	84.0	80.0	78.9	86.9	83.3	81.3	78.3
Karonga	88.1	89.1	85.1	84.2	88.8	87.7	91.4	91.7	83.2	89.1			100	83.0	88.0	78.7	90.5	74.6	77.8	88.3
Likoma	91.3	84.9	86.3	85.4	87.0	92.1	80.8	84.9	86.0	87.3			100	81.0	88.0	91.3	73.7	86.0	81.0	85.9
Mzimba	90.8	87.9	78.1	71.2	80.2	87.7	87.3	80.4	73.8	77.2			100	72.0	78.0	82.7	87.6	75.7	72.1	74.8
NkhataBay	97.8	100	87.7	75.5	86.5	96.8	100	86.3	74.6	83.6			95.0	71.0	85.0	95.6	97.5	82.4	75.5	78.5
Rumphi	100	100	95.4	90.3	87.7	100	100	95.2	90.7	84.6			100	90.0	88.0	100	100	91.8	82.5	100
Dedza	98.6	100	95.3	95.8	90.3	100	100	98.8	91.4	89.7			89.0	83.0	88.0	100	96.7	90.3	95.2	91.2
Dowa	91.1	92.0	80.8	76.7	74.1	91.1	91.9	80.6	75.5	70.9			84.0	73.0	75.0	93.5	92.8	82.0	76.2	74.6
Kasungu	87.1	89.9	88.4	71.2	77.7	87.0	89.0	85.1	70.8	72.0			97.0	69.0	75.0	88.2	88.8	82.3	70.7	81.6
Lilongwe	93.7	88.6	94.2	89.8	86.8	94.4	89.6	91.4	85.2	83.7			99.0	83.0	86.0	98.7	88.2	87.2	85.3	86.6
Mchinji	86.4	82.6	93.8	83.9	81.6	85.6	83.6	91.5	82.6	82.0			100	88.0	82.0	82.7	80.3	85.4	81.1	75.9
Nkhotakota	98.6	93.9	92.1	87.9	91.6	100	94.7	92.9	88.0	91.4			100	87.0	90.0	98.1	93.7	91.4	88.3	91.4
Ntcheu	91.5	98.0	100	95.2	88.9	91.2	100	100	91.9	85.8			100	99.0	89.0	86.9	92.6	94.0	95.2	85.0
Ntchisi	80.8	83.6	79.2	76.5	79.0	80.7	84.3	79.2	75.5	68.1			89.0	77.0	77.0	77.2	80.4	79.2	79.7	75.1
Salima	94.5	100	95.8	88.0	90.7	94.4	100	96.4	85.5	89.9			100	84.0	90.0	96.3	100.0	94.7	83.0	86.8
Balaka	98.9	100	100.0	96.0	89.4	100	100	97.4	95.1	83.2			100	100.0	90.0	96.4	98.2	99.3	93.9	91.5
Blantyre	100	100	80.0	82.5	100	100	100	87.1	89.4	93.3			91.0	92	100	100	100	78.3	89.1	100
Chikwawa	100	100	100	100	100	100	100	100	100	88.0			100	100.0	100	100	100	98.5	100	99.3
Chiradzulu	100	100	100	92.5	98.5	100	100	100	93.6	96.8			100	92.0	97.0	100	100	100	93.3	100
Machinga	100	100	100	91.3	100	100	100	100	98.9	97.4			96.0	89.0	100	100	100	100	98.7	100
Mangochi	94.6	100	100	100	100	99.3	100	100	95.1	100			100	100	100	80.8	84.8	100	98.0	100
Mulanje	100	100	100	100	100	100	100	100	100	100			100	100	100	100	100	100	100	100
Mwanza	100	100	100	88.3	100	100	100	100	92.2	92.7			100	91.0	100	93.7	100	100	90.2	100
Neno	96.3	95.0	84.4	74.2	80.5	95.7	92.5	82.8	76.4	79.8			100	78.0	81.0	89.1	89.0	77.6	77.1	79.3
Nsanje	100	100	100	79.5	89.0	100	100	100	89.4	85.4			100	81.0	84.0	100	100	96.2	78.0	80.6
Phalombe	100	100	100	100	100	100	100	100	100	100			100	100	100	100	100	100	100	100

Thyolo	100	100	97.0	95.6	97.0	100	100	98.1	100	93.5			100	100	99.0	100	100	92.0	100	94.5
Zomba	100	100	100	95.5	87.1	100	100	98.1	99.2	83.0			100	96.0	87.0	100	100	94.8	93.6	88.3
Malawi																				

4.1.4 Hard To Reach Areas and Populations

At the community level, there are 4,000 identified hard to reach areas which lack infrastructure to serve as a village clinic(MCHS 2014-2020).

The hard to reach areas can be categorized in terms of the following:

- Distance
- Mountainous
- Reserved area such forest reserved and game reserves
- Water bodies such as rivers, swamps, marsh or lake

The majority of the hard to reach areas are due to distance followed by mountainous and water bodies. Few communities live in the restricted reserved areas such as the forests and game reserves.

4.1.5 Socially Never Reached Children

These may need special interventions to reach to because of issues of accessibility and social cultural barriers:

- Children living in remote areas (long distance from health facility)
- Religious families who do not believe in vaccination
- Elite population in urban areas
- Families with low level of education
- Migrant population
- Mobile population, e.g. seasonal workers in tobacco and tea estate
- Refugees
- Prison
- Orphanage

Table 9 shows the number of locations and villages where the socially never reached children are found.

Table 9: Number of locations and Villages Where Socially Never reached population are found.

No.	District	Socially Never Reached Population					
		Apostolic Faith		Zion		Other	
		No. of locations	No. of Villages	No. of locations	No. of Villages	No. of locations	No. of Villages
1	Chitipa	1	1	0	0	0	0
2	Karonga	2	2	0	0	2	4
3	Mzimba North	4	34	0	0	0	0
4	Mzimba South	8	13	1	1	0	1

5	Nkhatabay	2	3	1	1	1	3
	Northern Zone	**17**	**53**	**2**	**2**	**3**	**8**
6	Dowa	0	0	1	2	0	0
7	Nkhotakota	0	0	3	22	0	0
8	Ntchisi	0	0	1	1	1	16
9	Salima	0	1	5	12	0	0
	Central East Zone	**0**	**1**	**10**	**37**	**1**	**16**
10	Dedza	0	0	9	9	1	1
11	Lilongwe	4	10	41	80	2	3
12	Mchinji	0	0	0	1	1	1
13	Ntcheu	7	11	9	16	3	3
	Central West Zone	**11**	**21**	**59**	**106**	**7**	**8**
14	Balaka	5	5	1	2	0	2
15	Machinga	17	19	3	6	0	4
16	Mangochi	0	0	3	8	1	7
17	Mulanje	11	13	0	0	0	0
18	Phalombe	5	10	2	2	2	2
19	Zomba	10	11	9	10	0	0
	South East Zone	**48**	**58**	**18**	**28**	**3**	**15**
20	Blantyre	3	4	11	16	2	3
21	Chiradzulu	4	7	0	0	0	0
22	Mwanza	0	0	1	1	0	0
23	Neno	2	2	0	0	0	0
24	Nsanje	5	8	0	0	0	0
	South West Zone	**14**	**21**	**12**	**17**	**2**	**3**
	Malawi	**90**	**154**	**101**	**190**	**16**	**50**

Source: Hard to Reach Areas and Socially Never Reached Population Map up exercise

According to Table – Zions are found in most locations and villages followed by the Apostolic Faith. Other groups include refugees, Michael Faith, Holy fire church, Church of God just to mention a few.

4.1.6 Interventions for Hard to Areas and Populations

4.1.6.1 Hard to Reach Areas

The interventions include the following:

- Provision of solar to the health facility and staff houses in hard to reach area
- Provision of appropriate infrastructure such as health posts and under five clinic shelters
- Provision of appropriate transport such as boats
- Motivation of staff working in hard to reach areas

4.1.6.2 Socially Never Reached Children

These may need special interventions to reach to because of issues of accessibility and social cultural barriers such as:

- Using REC/RED approach
- Implementing Periodic Intensification of Routine Immunization (PIRI)
- Strengthening outreach services
- Advocacy with the community
- CSOs involvement

4.2 New Vaccine Introduction

Between 2002 and 2012 Malawi has introduced three new vaccines in the routine EPI schedule. Malawi introduced DPT-HepB+Hib in January 2002, Pneumococcal Conjugate vaccine (PCV13) in November 2011 and Rotavirus vaccine in October 2012. The three vaccines were introduced with support from the Global Alliance of Vaccines and Immunization (GAVI). Since 2007, GAVI has continued to provide support, alongside the Government of Malawi that has been co-financing the procurement of DPT-HepB-Hib, PCV and Rotavirus. The Ministry of Health has also benefited from GAVI grants on Immunisation Services Support (ISS) and Health Systems Strengthening (HSS). In addition, GAVI approved the Malawi Health Systems Funding Platform (HSFP) for 2014 to 2016.

Malawi applied to GAVI for support to introduce the Measles Second Dose (MSD) and Inactivated Polio Vaccine (IPV) scheduled to be launched in July 2015. MSD was launched on the 31st July 2015 by the Honourable Minister of Health. The Launch of IPV is postponed to January 2016 due to global shortage of the vaccine.

4.2.1 Future New Vaccines for Introduction

4.2.2 Measles-rubella Vaccine

The Government of Malawi will introduce the measles rubella containing vaccine into the national immunization programme in September 2016. The governement of Malawi will fund the first dose of the measles rubella vaccine and rubella compoment in the second dose while Gavi will fund the measles component of the second dose. The introduction of the MR follows the successful introduction of PCV 13 and Rotavirus vaccines in 2011 and 2012 respectively, as well as implementation of the HPV Demonstration Project in 2013 – 2014.

4.2.3 HPV Roll Out

In September 2013 with financial support from GAVI and technical assistance from different partners, the GoM successfully completed the demonstration project for the Human Papilloma virus (HPV) vaccine in two districts, Rumphi and Zomba targeting school going standard four girls and

10 years out of school girls. A multi-sectoral Task Force was in place to oversee the planning and implementation of the HPV demonstrations project. Apart from the Ministry of Health, Ministry of Education was also involved in the HPV demonstration project activities at national and district levels.

The Government of Malawi will roll out the administration of HPV vaccine after the successful two year demonstration programme in Zomba and Rumphi districts. The national roll out is expected to begin in 2016 targeting five districts. Additional 3 districts for the first year 2016 are Salima in Central East Zone, Mchinji in Central West Zone and Chikwawa in South West Zone. The vaccine will be administered using existing immunization delivery points and targeting girls aged 10 years. The HPV vaccine will be funded by GAVI and the Government of Malawi will co-finance US$0.20 per dose per target age group.

4.3 Shift from Trivalent OPV (tOPV) to Bivalent OPV (bOPV)

Malawi just as all countries will switch from using tOPV to bOPV in April 2016. A switch plan has been developed and comprised some of the following:

4.3.1 Management

A National Switch Committee (NSC) for the switch will be instituted including its subcommittees namely Protocol and Transport, Social Mobilisation and publicity, training, and logistics.

4.3.2 Coordination

At national level, the switch will primarily be implemented by the National EPI programme. The exercise will be coordinated through the National Switch Committee

4.3.3 Command Centre

At National level a command centre will be established to manage data and logistical issues. Districts will be expected to send data from all the health facilities to National Command Centre for consolidation.

4.3.4 Validation mechanisms

The proposed switch day for Malawi is Monday 11 April 2016. The National Switch Validation Committee will be responsible for certifying tOPV removal and disposal. The validation will involve evaluating data collected by the Malawi Switch Support team from the districts.

4.3.5 Reserve Logistics System to Collect Trivalent OPV

Recall for tOPV from all service delivery points will be done prior to switch date. Facilities that do not have the incinerators an arrangement will be made to collect the tOPV from different sites at one central point and felled to national level incineration point.

bOPV will be delivered to the peripheral through the current existing delivery system, whereby the zones collect the vaccines from national cold stores and from the zones districts collect them and later deliver to respective facilities. The delivery system for bOPV will neither change the frequency of deliveries nor change the type of vehicles or cold boxes or vaccine carriers.

4.3.6 Trivalent OPV (tOPV) Disposal

For trivalent OPV that will be recalled from HFs will be temporality stored at one designated place at the DVS and will be coordinated by the Zone Switch Coordinator. Later on a designated day the trivalent will be destroyed by incineration.

All excess tOPV will be moved from HFs to DVS and then subsequently to Zone Vaccine stores in Zomba for South East zone, Blantyre for South West Zone, Mzuzu for Northern Zone and Lilongwe for Central East and Central West Zone.

4.3.7 Shift from TT to Td

Malawi is planning to switch from using Tetanus Toxoid (TT) vaccine to using Tetanus-diphtheria (Td) vaccine in 2016.

4.3.8 Malaria vaccine

Once the window for application for Malaria vaccine will be opened, Malawi will be among the countries to apply for this depending on the availability of resources.

4.4 Accelerated Disease Control and Surveillance

The Expanded Programme on Immunization is currently focusing on three main diseases that are of global concern for eradication and elimination: polio, measles and neonatal tetanus (NNT).

Surveillance at community level is strengthened by Health Surveillance Assistants (HSAs) who are based in the communities. Case detection and reporting is done at community, health centre, district hospital and central hospital levels.

Transport is arranged at either district or regional level to collect specimens and deliver them to the EPI Unit that in turn sends:

- Acute Flaccid Paralysis (AFP) stool specimens to WHO accredited laboratory in Harare, Zimbabwe.
- Measles blood specimens to Kamuzu Central Hospital Measles laboratory.

The EPI programme has adopted the integrated approach to surveillance activities regarding the three priority conditions: AFP, measles and NNT. The integration for the three diseases is done through supervisory visits, active search, training, and review meetings.

In addition, there is a surveillance site for Paediatric Bacterial Meningitis - *Haemophilusinfluenzae* (PBM-Hib) at Queen Elizabeth Central Hospital (QECH) in Blantyre. At the moment the services of this site have halted since 2013. The programme is striving to resume the services at this site.

Rotavirus and intussusception surveillance is also conducted through support from Welcome Trust.

4.4.1 AFP Surveillance

Malawi has maintained certification surveillance by detecting at least one case of AFP per 100,000 population of children under fifteen but stool adequacy rate has been suboptimal in the past 5 years (2010 -2014). However, operational indicators of AFP surveillance over the past 5 years have been suboptimal. To strengthen surveillance activities in the country, health worker briefings on detection, investigation, and reporting of AFP cases are on-going. Each admitting health facility has a surveillance focal person. Table 10 shows surveillance indicators' performance.

Table 10: AFP surveillance performance in Malawi from 2010 to 2014

Year	Expected Number of non-polio AFP cases	Total AFP cases reported	No of confirmed polio cases	Total non-polio cases reported	Non-polio AFP rate*	AFP cases with adequate stool samples %
2010	65	119	0	119	1.8	79%
2011	65	145	0	145	2.2	67%
2012	65	156	0	156	2.4	79%
2013	68	163	0	163	2.3	77%
2014	68	163	0	163	1.5	77%

**Based on 1 case per 100,000 population aged less than 15 years*
Source: EPI Surveillance Data.

African Region Certification Commission (ARCC) accepted Malawi's Polio documentation on polio free status in October 2005 and each year, an updated AFP annual report is submitted to ARCC.

4.4.2 Measles, Rubella outbreaks and Congenital Rubella Syndrome (CRS) surveillance

Malawi introduced measles case based surveillance in 1999 after a successful national measles catch up campaign in 1998. During the 2010 measles outbreak in the country a total of 118,712 measles cases and 249 deaths were reported representing a case fatality rate (CFR) of 0.21%. Out of 28

districts, Lilongwe reported the highest number of cases (24,455) and deaths (43). The table 11 shows the measles surveillance performance

Table 11: Measles and Rubella surveillance

Indicator	2010	2011	2012	2013	2014
Reported suspected measles cases	118,712	766	342	299	1307
Lab confirmed measles cases	464	26	12	1	3
Lab confirmed rubella cases	28	267	56	23	433
Reported CRS cases	No data	No data	No data	No data	No data
Proportion of suspected measles cases with serum investigation	80%	100%	100%	100%	100%
Proportion of districts that have investigated at least 1 measles case	100%	100%	67%	100%	100%
Number of confirmed measles outbreaks	28	1	1	0	0
SIA coverage attained	107%	NA	NA	105%	NA

Source: EPI Surveillance Data.

In 2011 an outbreak of measles on small scale was reported in at Likoma Island. After investigations it was determined that the cases were from Mozambique mainland and none were inhabitants of Likoma. The victims only went to Likomaisland to seek for medical care at the islands district hospital. As a preventive measure a vaccination campaign was carried out targeting children less than 5 years, inhabitants of Likoma and nearby Chizumulu Islands.

Other suspected measles outbreak took place in 2011, 2012, 2013 and 2014 from different districts in Malawi. These suspected outbreaks were all investigated and blood samples analysed at Kamuzu Central Hospital National measles laboratory. The blood samples testing Rubella IgM positive. However no vaccination campaigns were conducted due to lack of resources especially MR containing vaccines.

Congenital Rubella Syndrome (CRS) surveillance is not yet established in Malawi. Local data on CRS incidence is not available. Consultations are underway to establish sentinel surveillance sites at Queen Elizabeth Central Hospital, Kamuzu Central Hospital and Mzuzu Central Hospital.

4.4.3 Neonatal Tetanus Surveillance

Malawi achieved neonatal tetanus (NNT) elimination status in 2002 through Lot Quality Assurance assessment (LQA). In 2012, there were 5 cases of neonatal tetanus in 3 districts as shown in table 9, which represents an incidence rate of about 0.09/1,000 live births. All neonatal deaths with unknown cause were investigated within 48 hours of notification to establish the cause of the death. Table 12 outlines number of NNT cases reported by districts from 2010 to 2014.

Table 12: Neonatal Tetanus Cases by district, 2010 to 2014

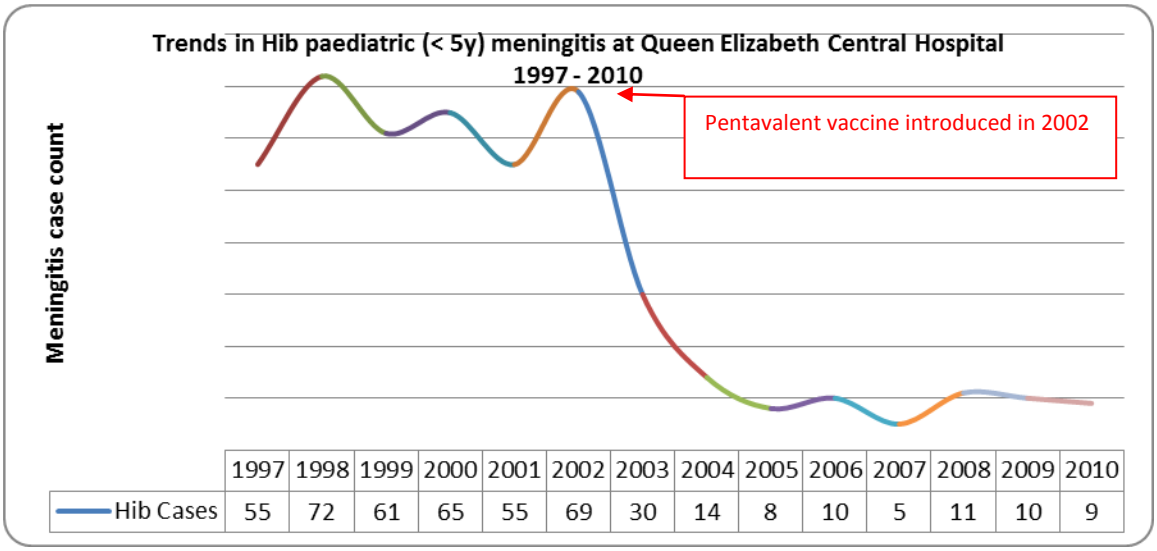
2010		2011		2012		2013		2014	
District	**Cases**	**District**	**Cases**	**District**	**Cases**	**District**	**Cases**	**District**	**Cases**
Dowa	1	Nsanje	1	Ntchisi	1	Zomba	2	Mulanje	1
Phalombe	1	Lilongwe	1	Nsanje	3	Chikwawa	4		
Karonga	1	Mangochi	1	Zomba	1	Nsanje	1		
Blantyre	1	Chiradzulu	1						
		Nkhotakota	1						
		Dedza	1						
		Chitipa	1						
		Rumphi	1						
Total	**4**		**8**		**5**		**7**		**1**

Training of health workers in detection, investigation and reporting of NNT cases using investigation form is ongoing as part of the integrated vaccine-preventable disease surveillance.

4.4.4 Paediatric Bacterial Meningitis/Hib Surveillance

The Paediatric Bacterial Meningitis - *Haemophilusinfluenzae* (PBM-Hib) surveillance site has been operational at Queen Elizabeth Central Hospital (QECH) in Blantyre since November 2001 before the introduction of DPT-HepB+Hib vaccine in 2002. The sentinel site monitors incidence trends in Hib meningitis among under five children presenting with meningitis in order to assess the impact of the pentavalent vaccine.

Figure 3: Paediatric Bacterial Meningitis Trend at QECH, 1997-2010



Surveillance data have shown that Hib meningitis cases have decreased significantly since the introduction of the pentavalent vaccine in 2002. Efforts are underway to revive the sentinel site.

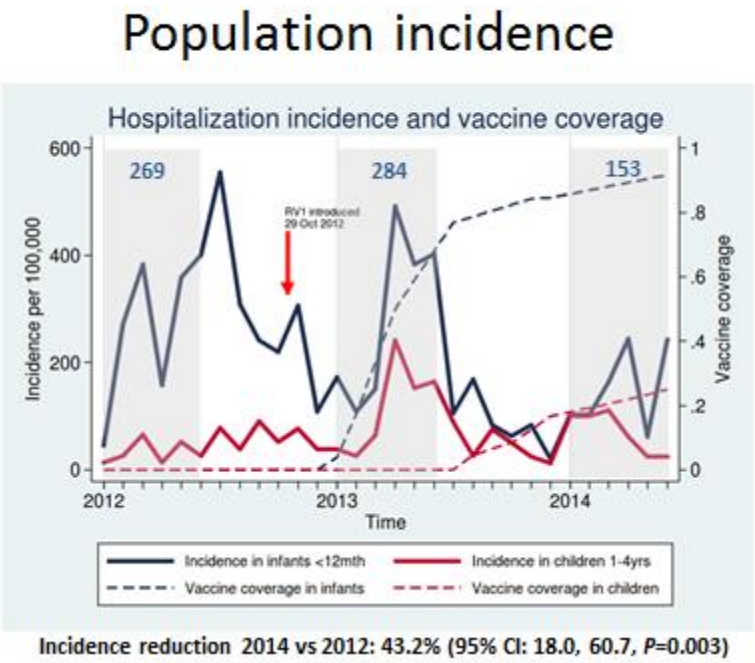
4.4.5 Rotavirus and Intussusception Surveillance

Research is being done by Wellcome Trust on intussusception associated with rotavirus vaccine in all the four central hospitals in Malawi.

4.4.5.1 Research on effectiveness of rotavirus vaccine

Research is being done by Wellcome Trust at Queen Elizabeth Central Hospital on the effectiveness of rotavirus vaccine. Early indications of population impact have shown reducing hospitalization incidence rate and shifting age distribution.

Figure 4: Hospitalization Incidence and Vaccine Coverage



4.5 Programme Management

4.5.1 National Regulatory Authority(NRA)

The National Regulatory Authority is the Pharmacies, Medicines and Poisons Board (PMPB). One officers from PMPB is a member of the EPI-Sub TWG.

4.5.2 AEFI Review Committee

The National AEFI Committee is not yet in place. Discussions were done with PMPB to form this committee.

4.5.3 EPI Policy

The EPI policy is still in draft form. Efforts are being made for it to be concluded.

4.5.4 National Immunization Advisory Committee (NITAG)

The overall aim of Malawi NITAG is to bring together experts from different fields which impact on the area of immunization to guide the Malawi National EPI programme to run an efficient immunization programme in keeping with current international standards and developments. It is in

line with the guiding principles of the Global Vaccine Action Plan (GVAP) 2011-2020 which calls on all member states of the WHO to set up National Immunization Technical Advisory Groups (NITAG). Malawi does not have an existing NITAG committee", however, the process of establishment is at advanced stage. Appointment letters have been written for signature of higher authority.

4.5.5 Micro-Planning

Health workers will use the REC approach to develop micro-plans for their respective areas. To develop micro-plans, health workers will use problem-solving approach that focuses attention on past achievements, current barriers to increase coverage and quality of services, and available resources such as time, human and material resources. Health workers will also learn how to prioritize activities, set realistic targets, address sustainability issues and include regular reviews of implementation and achievements to facilitate timely revision.

For micro-plans to meetgoals and objectives set they should be based upon a detailed knowledge of the local situation, including, among other issues, a map showing health facilities, population distribution, and the types of session needed to reach them. At district level, they should take into consideration situation in the entire district including past performances, current staffing levels and the characteristics of the catchment areas of the health facilities. The most effective micro-plans are developed by health facility staff with the input from community representatives. During the REC Approach training, health workers at health facility will be required to develop their own micro-plans, which are then going to be aggregated into district's plans. Likewise, district micro-plans will be adequately budgeted and then incorporated into the national health sector plan and budget.

4.5.6 Coordination

Quarterly EPI meetings with programme officers at National, Zonal and district level have not been conducted over the past 5 years. These meetings are important for programme officers to reflect on the weaknesses and strengths of the programme for the previous quarter and mapping out action points for the next quarter.

The EPI programme will have coordination meetings with its programme officers at national, zonal, and district levels. Coordination meetings e with the national and zonal officers will be done monthly, and with the district officers will be done quarterly for the next 5 years. In all the meetings relevant partners will also participate.

4.6 Human Resource Management

4.6.1 Human Resource Availability

The coverage and quality of health services has been adversely affected by shortages of staff at all levels. To address this problem, from 2004 to 2009 Malawi implemented a 6-year Human Resource Emergency Plan. Available evidence indicates that the country has increased the health workforce from 33,470 in 2008 to 33,766 in 2010 (HRH Malawi Country Profile 2010).

Immunization is part of the EHP and mostly delivered by Health Surveillance Assistants (HSAs). To standardize services, and move them closer to the client, the EHP is undergoing an expansion of the community level of health delivery with a target of one HSA per 1,000 of the population. Currently the ratio of HSAs to 1000 in the population is 1:1,200.

4.6.2 Capacity Building

Over the next 5 years, the programme will strengthen the capacity of health workers at all levels in the following areas:

- In-serve training for Health Surveillance Assistance
- In-service training for Assistant Environmental Health Officer by upgrading HSAs
- Professional training for health workers involved in immunization
- Immunization In Practice (IIP)
- REC/RED Approach
- Mid Level Management (MLM)
- Disease surveillance
- Vaccinology course
- Health Facility Based Data management
- District Vaccine Data Management Tool (DVD-MT)
- Stock Management Tool (SMT)

4.7 Vaccine Supply Quality and Logistics

4.7.1 Transportation

The most common means of working transportation was push bicycles (5,103 across Malawi), followed by motorcycles (591), vehicles (395) and trucks (14). On average, districts had 176 bicycles (range: 0 to 634), 20 motorcycles (range: 1 to 54), 13 vehicles (range: 1 to 33), and 1 trucks (range: 0 to 4). Only 1 district, Likoma had a boat (CC1-2011).

Across the country, there is a large number of transportation equipment that needed to be repaired: namely 34% of bicycles, 24% of motorcycles, 26% of trucks and 17% of vehicles. The most common reasons for why push bicycles were not working were that they were awaiting spare parts

or finances. 8% of motorcycles, 6% of vehicles and 0.2% of bicycles needed to be boarded off (CCI-2011).

During the next 5 years, the programme will improve the transport system through procurement of 10 tonne trucks, 3 tonne trucks, utility vehicle, boats, motorcycles and bicycles,

4.7.2 Vaccine Supply

Malawi did not experience vaccine stock outs at national level over the past 5 years except in 2014 where there was stock out of OPV for 2 months, February and March. Health facilities do experience stock outs of one or more antigens at different periods due to erratic distribution of supplies from the District Vaccine Store (DVS). Transport has been a major contributing factor to erratic distribution of supplies.

The programme monitors the use of vaccines and injection materials through the Stock Management Tool (SMT) at national, regional and district levels. However, there are some challenges in the use of the SMT. At health facility levels, health workers use stock books to monitor the vaccines and injection materials. During the past 5 years, the programme experienced shortage of vaccine and injection stock books in some point of the period. Maternal and Child Survival Project (MCSP) assisted the programme in printing the stock books.

4.7.3 Cold Chain Capacity and Expansion

The current cold chain capacity at national level for the positive storage is 66,668 litres which is adequate for storing traditional and new vaccines with 4 deliveries per year which will have an excess of 33788 litres10,256 litres and with four deliveries here will be an excess of 5,454 litres. The capacity at national level increased from 59,243 litres in 2015 to 65,759 litres due the introduction of IPV in 2016 which will be stored in freezer rooms. The country has increased storage capacity of cold rooms in the southern region with the installation of 2 walk in cold rooms of 40 cubic meters and 2 walk in freezer rooms of 20 cubic meters. The preliminary work for construction work for the regional cold room in the north has been stalled due to challenges in funds disbursement. Through funding from KfW, procurement of additional two 40 cubic meter cold rooms and one 20 cubic meter freezer room for the central regional has been done and they are expected to be installed before the end of 2015.

470 various types of refrigerators including solar direct drive (SDD) have already been procured by UNICEF through funding from KfW and these will be distributed to health facilities based on the findings of the 2014 cold chain assessment. These cold chain equipment are expected to be delivery by November, 2015. The distribution of 470 refrigerators will increase the storage capacities for routine and new vaccines including HPV in all health facilities.

4.7.4 Cold Chain Management

In terms of training, there were 3,711 trained cold chain users (average of 5 per immunizing health facility), 115 cold chain technicians (average of 4 per district), and 8,293 staff trained in vaccine management. There were an adequate number of cold chain users; however, refresher training will be needed in the future. The distribution of cold chain technician and vaccine management was uneven across the districts. There were a number of districts falling short of training requirements for cold chain technicians and vaccine management staff (CCI 2011).

In order to improve cold chain management in the next 5 years, the programme will conduct the following trainings:

- Cold Chain Technicians' training
- PAM Engineers training
- PAM Artisans' training
- Cold chain user training
- Cold room repair training
- Motor cycle repair training

4.7.5 Cold Chain Assessments

The programme will conduct the following cold chain assessment in the next 5 years:

- Cold chain inventory assessment
- Effective Vaccine Management Assessment

4.7.6 Waste Disposal

There were three methods of waste disposal in health facilities visited. Some health facilities could indicate more than one method of waste disposal. Overall, the most popular methods of waste disposal were incineration (430 facilities or 52.8%) and the 'burn and bury' method (284 facilities or 34.9%). The rest of the facilities use other method of waste disposal (CCI 2014).

During SIAs, safety boxes are used for the storage of all injection waste materials generated during the campaign. Bin-liners are used for non-sharps wastes. Used safety boxes are back-hauled to static health facilities for incineration or burning and the residual ashes is buried on site in designated pits. This exercise takes place during the immunization campaigns to ensure that the injection materials do not become a public health hazard. Inspection of the incinerators is conducted to ensure that they are functional in places where they are reported to be available. In health facilities with no functional incinerators, campaign preparedness ensures availability of a protected waste disposal pit.

4.8 EPI Curricula Prototype

Human resources are central to managing and delivering of health services including immunization services to the communities in our countries. Policy-makers, managers and pre-service training institutions are essential to ensure that a health workforce, sufficient in numbers, well-educated and trained, adequately deployed and motivated, is available to provide immunization services of good quality. The key issue is to ensure that health personnel trainings are relevant to national needs including immunization services.

The ministry with support from MCHIP conducted a TNA (Training Needs Assessment) in 2013 in selected colleges in the country. The findings of the assessment showed that all health training institutions have included EPI in their training curricula, which is integrated with other services. However, all the institutions reported that the time allocated for EPI related training is not adequate, there are no updated reference materials, harmony between pre-service and in-service training was missing and most Principals reported that their graduates benefit from in-service training before their assignment to provide service. This is an indication that the pre service training is not optimal. However, several concerns have been expressed regarding the coverage, costs, long-term impact and sustainability of in-service training activities. Providing and sustaining in-service training for all health workers require technical and financial inputs that are usually beyond the capabilities of our sector.

The incorporation of EPI into undergraduate Medical, Nursing/Midwives and Environmental health professional training is, therefore, a logical step towards improving and strengthening immunization service delivery, logistics, surveillance, communication and management practice. All health workers are expected to have practical management skills to balance current collaborative efforts to achieve the goals of the immunization programme, which include maintaining high coverage level and quality of routine immunizations as well as implementing special immunization campaigns. The rapid development of innovations and new technologies in immunization programmes requires that staff members be updated regularly if they are to cope with strategic changes and technical advancements.

4.8.1 Prototype Adaptation

WHO developed the EPI prototype curricula for health training institutions to facilitate systematic revision of EPI curricula. Malawi adapted these prototypes at a workshop in February 2014 financed by MCHIP to be used in the colleges. WHO provided technical Assistance through Professor Mutabaruka. The Medical prototype curriculum for doctors, Medical Assistants and Clinical Officers, and a prototype for Nurses and Environmental health officers were adapted.

It is expected that these EPI prototype curricula will be used for guiding the systematic development of EPI curricula in colleges and eventually have graduates who will competently implement immunization services in the health facilities.

4.8.2 Future Plans

Future plans for the EPI curricula prototype include the following:

- Orientation of tutors in training institutions
- Development of the curricula
- Notify the Malawi Medical Council of the new module
- Implementation of the curricula
- Conducting regular meetings
- Supervision on implementation of the curricula
- Revision of the prototype as need arise
- Training needs assessment

4.9 Operational Research

The programme will conduct research in the following in the next 5 years:

- KAP study
- Missed Opportunity Study
- Stock availability operational study
- Vaccine hesitancy study

4.10 Adverse Events Following Immunization (AEFI) Surveillance

Adverse reactions following immunization can undermine an immunization programme by causing parents and the community to lose confidence in the benefits of immunization. It is therefore imperative for a health worker to monitor serious adverse events following immunization and take appropriate action.
There is an established system for surveillance of Adverse Events Following Immunisation (AEFI). This system is integrated and covers both the traditional vaccines and new vaccines. At service level, health workers are trained on how to detect report and investigate any AEFIs to the National EPI programme. Monitoring and reporting tools are available for use at health facility levels. Each district is requested to update their emergency kits for the management of any AEFI that may occur.

In addition, a rapid response team will be re-activated, trained and equipped in every district to provide technical support in investigation, management and community assurance on any reported serious adverse event following immunization. The members of the district AEFI rapid response team will be supported by the District Health Officers.

Malawi has no data base in place for Adverse Events Following Immunization. AEFIs are reported using the monthly vaccination reports. Malawi reported 4 serious AEFIs in 2013 involving BCG, penta, measles and OPV. One case was reviewed by the National Expert Committee on Polio (NPEC).The programme faces some challenges in AEFIs reporting since most of the minor AEFIs are not reported.

Malawi has introduced 3 new vaccines in the routine immunization since 2001. With the introduction of new vaccines, it is imperative to strengthen the identification, notification, reporting and investigation of AEFIs. Over the years, Malawi has struggled to report AEFI cases.For every new vaccine that Malawi has introduced in the recent years, (PCV 13 in 2011, Rotavirus vaccine in 2012 and HPV in 2013) health workers have been trained on AEFIs and how to manage them. Field guide documents have been developed and distributed to health workers for each new vaccine as reference documents. In addition, vaccine and immunization safety have been included in mid-level management (MLM) courses and Immunization In Practice (IIP) training. A national AEFI training workshop was also held in December 2014 supported by World Health Organization.

A national AEFI training was conducted in December 2014 targeting—officers. The training was financed by WHO and also Technical Assistance was provided by WHO. Reporting of AEFIs still remains a challenge for the programme.

AEFIs identification and reporting has been a challenge over the years as reported by a number of assessments and reviews conducted over a period of 5 years.

5.0 EPI COMMUNICATION STRATEGY

5.1 Communication structure and policies

The success of the EPI programme has been partly facilitated by the efforts insocial mobilization and communication spearheaded by Health Education Unit (HEU). Health education services are provided at national and district levels. At health centre and community levels, such services are coordinated by Health Education Coordinators selected by District Management and community based committees.

The Health Education Unit's mandate is to plan, coordinate and monitor national health communication activities in Malawi. To achieve its mandate, the HEU works with all Ministry of Health programme units to develop behaviour change interventions. In EPI, these interventions aim to:

- raise community demand for immunization services,
- encourage comprehensive use of immunization services,
- create a supportive community environment for healthy behaviours and practices generally,

- promote health services that are more friendly to the client,
- create a streamlined approach to community mobilisation for immunization.

It also coordinates between the MOH, other line ministries, NGOs and the private sector to achieve a harmonized approach to the development and dissemination of national messages.

5.2 Communication channels

There are about 7 television stations and over 20radio stations (including community radio stations) in the country. The number of TV stations and community radio stations in the country is increasing. There are2national daily newspapers. According to the MDHS 2010, 11.8% households own a TV (urban 38.4%, rural 6.8%) and 55.7% own a radio (urban 73.3%, rural 52.4%). In 2010 mobile phones were owned in 41.4% households (75.6% urban, and 35% rural) and SMS is widely used. Social media are becoming increasingly popular, especially among the younger urban age groups.

Among the interpersonal communication channels, HSAs,extension workers andVillage Health Committees (VHCs) are effective in disseminating key messages on health. Religious leaders and village headmen are powerful influential voices in the communities. Community drama is a popular channel for social behaviour change communication in Malawi. Traditional healers are reportedly widely consulted, and so wherever possible they need to be fully informed about immunization issues.

The HEU assists the EPI programme in developing communication messages and materials for these various communication channels, which include:

- Mobile van shows, band shows
- Theatre for Development drama shows
- TV and radio slots, videos
- Messages on social media and SMS
- Jingles for national and community radio
- Press releases and letters to communities
- Leaflets, posters, stickers and billboards
- Leaders' meetings, community meetings
- Launch ceremonies
- Orientation of traditional healers and community volunteers
- Health talks and counselling

Communication channels to reach all health staff include:

- Training, orientation and briefing sessions

- Supportive supervision and mentorship
- Circulars, leaflets
- Orientation sessions for extension workers

5.3 Participant Audience

5.3.1 Primary audience

This is the core group of people around whom the strategic communication objectives are focused and within whom the primary behaviour change is to take place. Mothers, fathers and caretakers make up this group.

5.3.2 Secondary audience

This group is made up of the people who directly relate to the primary audience through frequent contact and who may support or inhibit behaviour changes in the primary audience through their influence. In Malawi, these include:

- Health workers
- Community volunteers
- Grandparents of children under 1 year of age

5.3.3 Tertiary audience

These are individuals, community groups and institutions who may support or inhibit behaviour and social change in a community by allowing or disallowing an intervention to take place. These people control the local social environment, communication channels and decision making processes and have a great influence on local social norms. In Malawi, these include:

- Traditional leaders
- Religious leaders and FBOs.
- Other line ministries
- Media
- Political/policy leaders
- Private sector
- NGOs/CBOs

5.4 Guiding Principles

5.4.1 Goals

The goal of EPI communication activities is to empower individuals and communities to adopt positive and sustainable health-seeking behaviours that will help the country achieve complete immunization coverage, thereby improving child survival in Malawi.

5.4.2 Objectives

Specific objectives are as follows:

- Assess existing communication gaps
- Engage community members, NGOs and interest groups in immunization
- Define approaches to motivate community volunteers
- Create awareness of the benefits of immunization through different media
- Develop key messages to promote immunization
- Develop information, education and communication (IEC) materials to ensure good understanding of the benefits of existing and new vaccines
- Monitor community satisfaction.

5.4.3 Equity

To reach the socially excluded and disadvantaged communities, efforts will be made to produce and disseminate messages and materials in local languages and for different socio-cultural contexts. To ensure that people have equal access to information, interpersonal communication in local language will be given high importance. The concept of rights to health information will be promoted.

5.4.4 Mix of communication channels and localization of materials

Mass media, community based media and interpersonal communication will be used to disseminate and reinforce messages. Consistency of messages will be maintained through all channels used, so that people are able to understand messages within their own context and act on the information received. Priority will be given to produce and disseminate messages and materials in local languages. Communication interventions will go hand in hand with service availability.

5.4.5 Capacity building on health education and communication

Focus will be given to strengthen institutional as well as technical capacity of health promotion officers and health workers so that they can provide appropriate health education and communication programmes at all levels.

5.4.6 Public Private Partnership

Public private partnership will be encouraged to leverage resources for EPI communication programmes. Multi-sectoral collaboration will be sought to implement communication programmes. Programmes will be implemented in collaboration with NGOs, CBOs, media and civil society.

5.4.7 Evidence based programming

As there is a need to establish an evidence base to find out the effectiveness of communication interventions, a strong mechanism for research and monitoring and evaluation will be applied. Efforts will be made to ensure that the impact of communication intervention gets captured through HMIS and additional resources will be explored to do periodic surveys.

5.4.8 Community participation for vaccination

Involving communities from the situation analysis stage itself for EPI will be a key guiding principle. Communities will be involved and mobilized in planning, pretesting, implementing and monitoring the communication interventions on EPI.

5.4.9 National advocacy for additional resources for EPI

The EPI programme will advocate for the deployment of more human resources to EPI, as one of its top priorities.

5.4.10 Strategic Framework for Communication

5.4.10.1 Routine immunization: Communication objectives

The main challenge to the routine immunization programme is declining coverage. Its communication objectives are therefore to reduce dropout and to avoid missing opportunities to vaccinate.

- Contribute to the reduction in the dropout rate to less than 10% beyond 2016
- Missed opportunities: Vaccinate all eligible children that present to a health facility for any reason.

5.4.10.2 Disease surveillance: Communication objectives

The main challenges to the disease surveillance programme are delays to seeking health care, and the late reporting of priority diseases, or failure to report them. There is a special concern about Adverse Events Following Immunization (AEFI), because of a general lack of knowledge on AEFI, and a subsequent failure to report cases. New vaccines have been introduced, bringing changes to the vaccination schedule, and caregivers' fears of multiple injections need to be allayed.

The communication objectives are therefore as follows:

- Increase the proportion of caregivers who are aware of the signs and symptoms of polio (AFP), measles and neo-natal tetanus, which require immediate reporting to health facilities.
- Increase the proportion of health workers who report suspected cases of these priority diseases within 24 hours of notification by 2016.
- All caregivers to bring a child with AEFI to the health facility soon after onset.

5.4.11 Promotion of new vaccines: Communication objective

Communities, caregivers and health workers need to be knowledgeable about the new vaccines and the changes these have brought to the immunization schedule.

6.0 PARTNERSHIPS FOR IMMUNIZATION

6.1 Role of Key Stakeholders

The EPI program is inclusive of a wide range of stakeholders including government, donors, local NGOs and the private sector. These stakeholders have varied roles to ensure the implementation of this strategy by contributing resources for its undertaking, advocating for prioritization of immunisation communication and social mobilization activities and participate in implementing activities identified in this strategy.

6.2 Relevant Ministries and EPI Program

The Ministry of Health provides both policy and strategic direction in implementing the strategy including the roll out to its decentralized government systems at district and lower levels. Other ministries and departments that provide health services like the Department of Forestry, the Army, Police and Prisons will use the strategy to guide the development and implementation of immunisation communication, social mobilization and advocacy activities and messages.

6.3 Donors, Development Agencies and Implementing Partners

Bilateral, multi-lateral and other donor organizations will play a significant role in the implementation of the strategic plan. It is expected that donors and development agencies will put financial resources and oversight to ensure implementation of the identified immunisation strategies and activities. There are several stakeholders involved in immunisation strategies and activities in Malawi.

Other bilateral donors include the USG through USAID and CDC, the UK through DFID, Norwegian Government, Flemish International Coordination Agency (FICA) and German Government through KfW.

The United Nations Agencies World Health Organization and UNICEF provide technical and financial support the EPI programme.

Other implementing partners include Maternal and Child Survival Project (MCSP), and Save the Children Federation.

Gavi Alliance supports Malawi through procurement of vaccines and related injection materials, introduction of new vaccines, Introduction Grants (VIGs), Immunization Services Support (ISS), and Health Systems Support (HSS).

Implementing partners include many international and some local NGOs working throughout the health sector.

6.4 Local Non-Government Organizations

The implementation of this strategic plan will be successful using existing local structures at the community level such as local leaders, Village Development Committees and Village Health Committees. The Ministry of Health will work with these local structures and other Community Based Organizations (CBO) that work directly with individuals, families and the community.

6.5 Private Sector

Private partners will be involved to mobilizing resources and providing platforms to disseminate messages to target groups. Partners like Lions International have supported the programme during Supplemental Immunization Activities (SIA).

7.0 CIVIL SOCIETY ORGANIZATION (CSO) PLATFROM IN IMMUNIZATION

7.1 Introduction

Beginning in the year 2012, both the Malawi Government and the GAVI Alliance made provision for strengthened CSO involvement in immunization and health systems strengthening work. As a

way of institutionalizing the CSO involvement, the GAVI Alliance recognized the role of CSOs under objective 2 of the Alliance's 2011-2016 Strategic Plan, which is stated as follows: "Contributing to strengthening the capacity of integrated health systems to deliver immunization."

The development saw the formulation of a CSO Platform in Malawiwhose primary intention is to contribute to strengthening the capacity of integrated health systems to deliver immunization by resolving health systems constraints, increasing the level of equity in access to services and strengthening civil society engagement in the health sector.The CSO Platform is being coordinated by the Malawi Health Equity Network (MHEN), with CRS as the grant manager. The Malawi Health Equity Network (MHEN) is an independent, non-profit making alliance of civil society organizations in the health sector interested to promote equitable access to quality, affordable and responsive health care services in Malawi. MHEN achieves this through influencing policy formulation, review, and practice. The Network was registered in 2004 and uses strategies which include lobby and advocacy, research, civic education and information sharing. MHEN's reason for existence resonates well with both the CSO Platform's intention and Malawi's Health Sector Strategic Plan (2011–2016) whose theme is "Moving towards Equity and Quality."

7.2 Structure of CSO Platform

Currently, the CSO Platform has 41 member institutions and has been incorporated into the EPI sub-Technical Working Group (TWG) and the Health Sector Working Group (HSWG). At the national level, the CSO Platform is led by a ten (10) member core team. Below the (10) member national level core team are three regional committees which comprise of district focal institutions.

7.3 Roles of the CSO Platform

7.3.1 Programmatic Objectives

Overall, the objective of the CSO Platform is to contribute to strengthening the capacity of integrated health systems to deliver immunization by resolving health systems constraints, increasing the level of equity in access to services and strengthening civil society engagement in the health sector. Specifically, the CSO Platform exists to support the delivery of the EPI objectives which, in turn, are drawn from the Health Sector Strategic Plan (HSSP).

7.3.2 Strategies and Activities

Through the Christian Health Association of Malawi (CHAM), the CSO Platform will conduct child health days in given CHAM managed health facilities. In addition, the CSO Platform will support district health offices with fuel for them to undertake child health days in at least one prioritized hard to reach area per district.

7.3.3 Demand Creation

Building on previous experience, the CSO Platform will seek to collaborate with the EPI program in demanding creation through the following:

- Establish mother care groups in under-served hard to reach areas
- Support mother care groups to undertake community dialogue meetings
- Support mother care groups to (in collaboration with HSAs) undertake child registration / community mapping exercise
- Support mother care groups to undertake defaulter tracing
- Produce (standard) radio programs for broadcast in various media houses (including community radios)
- Produce special print media features

7.3.4 Policy

In order to effectively contribute to the finalization of the EPI policy, the CSO Platform will convene a policy review meeting of the Platform membership to assess how the policy's efficacy in responding to the issues and needs on the ground.

7.3.5 Planning

The CSO platform (and the EPI) will jointly engage DHMTs on resource planning towards increased allocation towards the EPI.

7.3.6 Capacity Building

Realizing that vaccine and immunization work is a highly technical area and that not many CSOs have had prior experience in this work the CSO Platform will work towards enhancing her capacity as follows:

- Undertake capacity needs assessment among health-focused CSOs
- Participate in EPI facilitated Mid-level Management (MLM) trainings/trainings in vaccinology and immunology
- Participate in RED/REC approach trainings
- Facilitate trainings of Platform members in vaccinology/immunology and in RED/REC

7.3.7 Lobbying Towards Increased Funding and Timely Disbursement of Funds to the EPI

In collaboration with the EPI, the CSO Platform will conduct a series of lobby meetings targeting the senior management of the MoH, Members of Parliament (MPs), the Ministry of Finance and other agencies and structures of government. Also targeted will be Malawi's development partners. Of particular interest will be funding towards implementation of child health days, whose funding has proved problematic in the years of 2014 and 2015. The CSO Platform will also seek to participate in the health financing summits.

7.3.8 Communication and Advocacy

The CSO Platform will undertake a number of communication and advocacy activities. In undertaking the activities, the CSO Platform will collaborate with the EPI to facilitate community awareness in hard to reach areas in the country and to mobilize the community towards demand creation as well as redress of supply side constraints. The CSO Platform will build on her previous experience of undertaking similar work in selected hard to reach areas in Neno, Zomba, Dowa and Ntchisi districts. The activities will focus on enhancing community acceptability and confidence in vaccines and immunization and will seek to generate community support for immunization activities through communication on benefits of existing and new vaccines. Specifically, the CSO Platform will do the following:

- Conduct quarterly meetings with the EPI and other stakeholders
- Develop a media guide on vaccines and immunization work locally, regionally and globally.
- Publish Platform newsletter bi-annually
- Publish Platform policy brief bi-annually
- Engage media houses to review editorial policies for reporting on health
- Lobby with and support media houses on the establishment of health desks/champions to advocate for vaccines and immunization within key media houses

7.3.9 Platform Sustainability

The CSO Platform will seek to integrate into self-sustaining district level structures such as the district CSO networks so that the immunization agenda becomes a key/standing agenda item for such forums.

8.0 VISION, MISSION, VALUES, GOAL, OBJECTIVES AND NATIONAL PRIORITIES

8.1 Vision

The vision of the Malawi Expanded Programme on Immunization is to keep Malawian children free from vaccine preventable diseases.

8.2 Mission

The Expanded Programme on Immunization's mission is to provide quality and safe vaccines to all children of Malawi without discrimination based on gender, geographic access, sect or geographic regions.

8.3 Values

The values of the programme include no discrimination based on gender, geographic access, sect or geographic regions.

8.4 Strategic Goal

The Expanded Programme on Immunization's goal is to reduce infant morbidity and mortality rates due to vaccine preventable diseases.

8.5 Strategic Issues

- Availability of vaccines and injection materials
- Adequacy of cold chain capacity and management
- Adequacy of capacity of health workers in immunization
- Adequacy of awareness on immunization
- Optimal performance on surveillance indicators

8.6 Strategic Objectives

- To improve routine immunization services through mobilization of adequate resources, building human capacity for immunization, cold chain capacity expansion and management, transport system improvement and introduction of new vaccines and innovations beyond 2016.
- To sustain effective surveillance activities for diseases of elimination and eradication beyond 2016.

- To sustain high community awareness on the importance of completing the immunization schedule beyond 2016.

9.0 NATIONAL PRIORITIES

The main priorities of the programme from 2016 to 2020 are:

- Sustaining high routine immunisation coverage for all antigens;
- Sustaining high quality surveillance on AFP, Measles and Rubella, and NNT;
- Advocacy for more funding for immunization
- Conducting programmatic evaluations, including a cold chain inventory, comprehensive EPI review, DQS, , EVM, Immunisation coverage survey, disease surveillance review, cold chain temperature monitoring study;
- Building capacity for health care workers at all levels in IIP, MLM, REC approach, volcanology, disease surveillance;
- Improving documentation, archiving, data management and sharing;
- Improving monitoring, supervision and feedback on EPI performance to lower health facility levels;
- Cold chain expansion, rehabilitation and management;
- Strengthening advocacy and social mobilization activities;
- Replacing and maintaining transport equipment (vehicles, trucks, motorcycles, boats and bicycles);
- Strengthening safe injection and waste management practices;
- Introducing new vaccines (HPV, Measles second dose and Rubella). Inactivated Polio Vaccine (IPV) and new technologies.
- Switch from using TT to Td and tOPV to using bOPV
- Improve vaccine preventable disease and AEFI surveillance indicators
- Establish NITAG and AEFI expert review committee
- Finalization of EPI Policy
- Reviewing, printing and distribution operational guidelines
- EPI curricula prototype

9.1 National Objectives, Targets and Milestones

The programme has determined a number of objectives and targets between 2016 and 2020 in order to accomplish the national priorities. These are shown in Table 14.

Table 13: National objectives, milestones and AFRO regional goals

Immunization Services	Current Performance	Objectives	Milestones
Service Delivery -Routine Immunization			
ACCERELATED DISEASE CONTROL INITIATIVE			
Polio	Non-AFP rate in 2014 was 1.5 and stool adequacy 77%	To improve the operations of the polio lab and committees beyond 2016	2016-2020: Non-polio AFP rate of 4.0 annually attained
			2016-2020: 80% stool adequacy annually attained
	4 NPEC conducted meeting conducted		2016-2020: 4 NPEC meetings conducted annually
	4 NCC meetings conducted		2016-2020: 4 NCC meetings conducted annually
			2016-2020: 4 NTF meetings annually conducted
			2016-2020: 1 NTF visits annually conducted
Measles and rubella	Non-measles febrile rash was 6.9 and 98% of the districts reported at least one case of SMC	Increase and sustain high quality measles and rubella surveillance beyond 2016	2016-2020: Non-measles febrile rash of 2.0/100000 population annua attained
			2016-2020: 100% of districts report at least 1 measles suspected cas annually
MNT	Protect at birth (PAB) not fully monitored	To institutionalize the reporting system for protected at birth beyond 2016	2016-2020: PAB fully monitored
			2016: % PAB coverage
			2017: % PAB coverage
			2018: % PAB coverage
			2019: % PAB coverage
			2020: % PAB coverage
SERVICE DELIVERY-ROUTINE IMMUNIZATION			
Immunization Coverage	Coverage dropped from 92% to 91% at national level for penta 3 from 2013 to 2014	To improve and sustain immunization coverage of >90% for all antigens at national and 80% at district from 2016 to 2020	2016: 91% national cov for penta 3
			2017: 92% national cov for penta 3
			2018: 93% national cov for penta 3
			2019: 94% national cov for penta 3
			2020: 95% national cov for penta 3
			2016-2020: 28 districts with ≥80% cov for penta 3
			2016-2020: 28 districts with ≥80% cov for measles1
Immunization Demand	% drop out Penta 1-Penta 3 was 6% in 2014, is still within the recommended range of less than 10%	To sustain a drop out rate of <10% for Penta 1-Penta3 by 2020	2016: 4% national drop out rate for penta 1-Penta3
			2017: 4% national drop out rate for penta 1-Penta3
			2018: 3% national drop out rate for penta 1-Penta3
			2019: 3% national drop out rate for penta 1-Penta3
			2020: 2% national drop out rate for penta 1-Penta3

Immunization Equity	Districts with penta3 coverage >80% increased from 22 in 2013 to 25 in 2015		2016-2020: 28 districts with ≥80% cov for penta 3; PIRI conducted; F follow up conducted
New Vaccine Introduction	Measles-Rubella (MR)vaccine is not introduced in routine immunization	To eliminate measles and rubella in Malawi by 2020	2016: MR introduced by August
			2016:91% national cov for MR
			2017:92% national cov for MR
			2018: 93% national cov for MR
			2019: 94% national cov for MR
			2020: 95% national cov for MR
	HPV being implemented as a demonstration project in 2 districts	To increase number of districts introducing HPV using routine immunization strategy from 2 to 28 by 2020	2016: HPV introduced in 5 districts
			2017: 1. HPV introduced in 11 districts 2. HPV coverage survey done year1
			2018: HPV introduced in 17 districts
			2019: HPV introduced in 23 districts
			2020: HPV introduced in 28 districts
	TT not switched to Td	To switch from TT to Td in pregnant women and women of childbearing age in the routine schedule beyond 2016	2016: 1. Monitoring tools reviewed 2. TT switched to Td by March
			2016: 75% national cov for Td2+ pregnant
			2017: 78% national cov for Td2+ pregnant
			2018: 81% national cov for Td2+ pregnant
			2019: 83% national cov for Td2+ pregnant
			2019: 85% national cov for Td2+ pregnant
Infrastructure	Under five cinic shelters not constructed	Improve infrastructure in hard to reach areas beyond 2016	2016-2020: 560 Under five clinic shelters constructed
	Health Posts not constructed		2016-2020: 100 Health posts constructed
	Solor not installed in health health facilities including staff houses in hard to reach areas		2016-2020: 150 health facilities including staff houses in hard to reach areas installed with solar
	Electrification not done in selected health facilities with no electricity including staff houses done		2016-2020: 120 selected health facilities including staff houses with installation of electricity
	EPI Office block not completed		2016-2020: EPI Office block completed and furnished
PROGRAME MANAGEMENT			
Regulation	No AEFI committee in place including manuals and protocols	To improve post market surveillance for AEFIs beyond 2016	2016: 1. National AEFI committee members appointed; 2. AEFI mem trained; 3. training manual on AEFI management & monitoring develo 4. AEFI protocols developed
			2016-2020: 1. AEFIs cases monitored annually; 2. Serious AEFI case investigated and reported annually
	Inadequate functions done by PMPB (NRA)		2016-2020: 3 PMPB functions conducted annually

Policy	NITAG not in place	To improve formulation of evidence based policy on immunization from 2016 to 2020	2016-2020: 2 NITAG meetings done every year
Planning	55% of immunization expenditure in DIPs was funded by government resources	To increase the allocation of resources oF district EPI budget from 55% to 80% beyond 2016	2016: 60% budgeted EPI activities in DIPs funded by government resources
			2017: 65% budgeted EPI activities in DIPs funded by government resources
			2018: 70% budgeted EPI activities in DIPs funded by government resources
			2019: 75% budgeted EPI activities in DIPs funded by government resources
			2020: 80% budgeted EPI activities in DIPs funded by government resources
	Most health facilities do not have documented annual micro plans and monthly plan of action.	To monitor availability and implementation of micro plans in health facilities from 2016 to 2020	2016-2020: All health facilities with micro plans
Coordination	Inadequate meetings conducted	To improve the operations of the EPI sub TWG beyond 2016	2016-2020 4 EPI Sub-TWG meetings conducted yearly
	Inadequate membership for the EPI sub TWG		
	Programme metings are not conducted		2016-2020: 2 EPI National meetings conducted annually ; 2016-2020 Joint Appraisal meeting conducted annual
Supportive Supervision	Supervisory reports are not available in health facilities	To improve performance and quality of immunization services beyond 2016	2016-2020: All DHMTs and national level document supervisory visits
	Supportive supervisory visits are irregularly conducted at all levels		2016-2020: 12 supervisory visits by district level to health facilities conducted annually
			2016-2020: 4 supervisory visits by national and zonal levels conducte annually
			2016-2020: 12 supervisory visits by district cluster areas conducted annually
			2016-2020: 1 peer-peer visit conducted annually
Monitoring and Evaluation	External Surveillance Review, KAP, PIE, DQS, Comprehensive review were conducted, and 1 annual review meeting was done	To improve programme efficiency beyond 2016	2016: 1. MSD PIE conducted; 2. IPV PIE Conducted; 3. DQS conduc 4. 2 feedback bulletins produced and printed yearly; 5. 4 meetings conducted annually with programme officer at district level; 6. 12 mee conducted annually with programmeofficers at national and zonal leve 1 national review meetings conducted annually; 8. 4 zonal review mee conducted annually; 9. 4 zonal review meetings conducted annually
			2017: 1. 2 feedback bulletins produced and printed yearly; 2. 4 meetin conducted annually with programme officer at district level; 3. 12 mee conducted annually with programmeofficers at national and zonal leve 1 national review meetings conducted annually; 5. 4 zonal review mee conducted annually; 6. Red/ assessment conducted

			2018: 1. DQS conducted; 2. EPI comprehensive review conducted; 3 cluster survey conducted; 4. Surveillance review conducted; 5. 2 feedback bulletins produced and printed yearly; 6. 4 meetings conduc annually with programme officer at district level; 7. 12 meetings condu annually with programmeofficers at national and zonal levels; 8. 1 nat review meetings conducted annually; 9. 4 zonal review meetings conducted annually
			2019: 1. 2 feedback bulletins produced and printed yearly; 2. 4 meetir conducted annually with programme officer at district level; 3. 12 mee conducted annually with programmeofficers at national and zonal leve 1 national review meetings conducted annually; 4. 4 zonal review mee conducted annually
			2020: 1. DQS conducted; 2. 2 feedback bulletins produced and printe yearly; 3. 4 meetings conducted annually with programme officer at di level; 4. 12 meetings conducted annually with programmeofficers at national and zonal levels;5. 1 national review meetings conducted anr 6. 4 zonal review meetings conducted annually; 7. RED/REC assessn conducted in 2020
	Shortages of under one registers, child health passports & TT registers		2016-2020: U/2 registers, TT registers & child health profiles printed
	Limited use of temperature monitoring charts, reporting books/forms, stock/injection material stock books, SMT & DVD-MT		2016-2020: Refresher training in the use of temperature monitoring ch reporting books/forms, stock/injection material stock books; Village He Register (VHR) revised; Village Health Register printed; HSAs oriente the use of VHR ; Monitor use of VHRs
			2016-2020: Refresher training in the use SMT & DVD-MT
	Computers are not adequate for data capturing and analysis		2016-2020: IT equipment procured
HUMAN RESOURCE MANAGEMENT			
Human Resource availability	Not all key positions at national and zonal level are filled	To fill vacant positions for EPI staff at national and zonal level beyond 2016	2016-2020: 50% vacant positions filled; 100% vacant positions filled
	Inadequate numbers of AHEOs and HSAs trained in the pre-service training institutions	To increase output of pre-service training institution beyond 2016	2016-2020:In-service training for AEHOs conducted
			2016-2020:In-service training for HSAs conducted
			2016-2020:Officers trained at masters level
Capacity Building	Not all health workers have up to date knowledge and skills in EPI, and lack knowledge in basic	To improve capacity of health workers in immunization beyond 2016	2016-2017: 1. 240 HWs trained in MLM IN 2016; 2. 240 HWs trained 2017.
			2018/2019: 30 HWs trained in Vaccinology each year
			2016/2018: 120 HWs refreshed in DVD-MT/SMT each year

	maintenance of refrigerators		2016-2020: 1. 4000 HWs trained in IIP annually, 2. 3000 HWs trained RED/REC annually, 3. 1000 HWs trained in basic maintenance of refrigerators annually, 4. 1500 HF workers trained in data manageme annually
	Not all training institutions have EPI curriculum incorporated	To increase number of trainings institutions incorporating EPI activities in the curriculum from 0 to 18 by 2016	2016-2020 Tutors trained; Prototype curriculum finalized and harmoni Number of trainings in health institutions increased from 0 to 18; EPI activities in the curriculum increased; 2 meetings conducted annually; supervision conducted annually; Training needs assessment conducte
COSTING AND FINANCING			
Financial Sustainability	Inadequate allocation of funding for vaccine procurement and operational activities	To mobilize financial resources in a timely manner for procurement of traditional vaccines, co-financing of new vaccines and operational costs.	2016-2020: 100% of traditional vaccines procured annually by Goverr of Malawi
			2016-2020: EPI coordinators trained in immunization financing expenditure report and monitoring
			2016-2020: Co-financing sustained annually by Government of Malaw
			2016-2020: Operational costs adequately funded by Government of M and partners.
VACCINE SUPPLY, QUALITY & LOGISTICS			
Transport / Mobility	Only 50% of HSAs have a working bicycle	To improve transport system for the efficient provision of immunisation services beyond 2016	2016-2020: Bicycles procured
	Inadequate motor cycles & few available not maintained		2016-2018: 60 motorcycles procured annually
	Inadequate vehicles for supervision/EPI field activity vehicles		2016: Utility motor vehicles procured
	Unavailability of boats in hard to reach areas		2016: boats procured
	The trucks which are available are near end of their life span		2016: 3 ton trucks procured
			2016: 10 ton trucks procured
Vaccine Supply	No District Vaccine Stores experienced stock outs of vaccines & A-D syringes in the previous 12 months	Sustain availability of adequate vaccines and injection materials in all districts and health facilities beyond 2016.	2016-2020: 100% of district vaccine stores with no stock outs of vacci and injection materials.
	% of health facilities experienced stock outs of vaccines & A-D syringes in the previous 12 months		
Cold chain/Logistics, Dry Stores	Inadequate office space for EPI national level	To complete and furnish the new EPI office block	2016-2020: EPI Office block completed and furnished

&Office space	100% of districts vaccine stores have adequate volume of equipment	To improve cold chain capacity at all levels beyond 2016	2016-2020: 1. Spare parts for cold chain equipment procured 2. Too for cold chain Technicians procured 2016-2020: 65 cold chain technicians equipped with tool kits & 1 man forklift procured, 2016 Completion of cold store in the north. 2016: Procurement of 223 refrigerators, 23 freezers, 500 cold boxes, 3000 vaccine carriers. 2016-2020: South East Zone (Zomba) and Lilongwe DHO with new co rooms
	% of health facilities have functional refrigerators		2016-2020: 1. Refrigerators, freezers, cold boxes, and vaccine carrie procured 2. Walk-in cold rooms and walk-in freezer rooms procured
	% of health facilities have adequate volume of cold chain equipment		2017-2018: Cold rooms constructed for Mzimba South, Lilongwe distr Mangochi district, Zomba for South East Zone, and Central East Zone
		To improve cold chain management at all levels beyond 2016	2016: 1. Training PAM Engineers 2. Train PAM Artisans
			2016-2018: Train 6 Technicians in cold room repairs
			2016-2020 1000 HSAs trained in basic cold chain maintenance and re
			2019-2020: 75 Cold chain Technicians refreshed in cold chain maintenance and repair
	% Districts have a cold chain replacement plan	Improve cold chain monitoring beyond 2016	2016-2020: 1. Fridge tags for all refrigerators procured 2. Freeze t procured 3. Temperature monitoring tools updated 4. Cold chain inventory updated in all districts
			2016: 1. EVM conducted 2016 2. Study on use of FT2 conducted; 3. C chain equipment assessment performance (SDD) conducted.
			2019: 1. EVM conducted; CCI conducted;
Waste disposal	53% of health facilities have functional incinerators and 35% of health facilities use burn and bury method	Increase the percent of health facilities with functional incinerators from 53% to 83% by 2016	2016: 59% of health facilities with function incinerators
			2017: 65% of health facilities with functional incinerators
			2018: 71% of health facilities with functional incinerators
			2019: 77% of health facilities with functional incinerators
			2020: 83% of health facilities with functional incinerators
SURVEILLANCE & REPORTING			
AFP	The Non polio AFP rate per 100,000 children under 15 yrs of age was 1.5 in 2014	To increase and sustain high quality AFP surveillance beyond 2016	2016-2020: 2,000 health workers briefed on disease surveillance per
	Stool Adequacy was 75% in 2014		2016-2020: Non polio AFP rate of at least 4/100,000 <15 population

	100% of surveillance reports were received at national level from districts		2016-2020: Stool adequacy sustained at ≥80%
	The quality of surveillance data is sufficient		2016-2020: Polio documentation updated annually. 2016-2020: In depth internal surveillance review to districts conducted annually
	tOPV not switched to bOPV	To mitigate the risk of circulating Vaccine Derived Polio virus (cVDPV) Type 2	2016-2020 IPV introduced, tOPV switched to bOPV, Monitoring tools revised, health workers trained, PIE conducted
Measles	Measles elimination strategic plan not in place	Increase and sustain high quality measles and rubella surveillance beyond 2016	2016: Measles elimination strategic plan developed. 2016-2020: Non-measles febrile rash rate of at least 2/100000 popula reported by each district
	The rate for Non-measles febrile rash reporting was 6.9 in 2014		
	98% of Districts reported at least one measles case with blood collected for lab analysis in 2014		
	3 lab confirmed measles cases were reported in 2014		
	433 lab confirmed Rubella Cases were reported in 2014		
	There is emergency response plan	Provide support in regarding any emergency situation beyond 2016	2016-2020: Response assessment done; Situational analysis receive regularly; Response to emergency conducted
Neonatal Tetanus	…. Neonatal deaths were reported and investigated in 2014	Sustain detection of less than one NNT case per 1,000 live births in each district from 2016 to 2020	2016-2020: <1 case of NNT per 1,000 live births each district each ye
	28 districts reported <1case per 1,000 live births in 2014		
Hib	Sentinel Surveillance for meningitis Hib has not been functional	Sustain high quality PBM surveillance beyond 2016	2016-2020: PBM operations revived and functional
	No Quarterly Surveillance reports were submitted by PBM site in 2013 and 2014		2016-2020: At least two reports generated from sentinel sites annually
PCV and Rotavirus	Sentinel Surveillance for Pneumococcal has been	Sustain high quality PCV and Rotavirus	2016-2020: At least two reports generated from sentinel sites annually

	established	surveillance beyond 2016	
	Sentinel Surveillance for Rotavirus established		2016-2020: At least two reports generated from sentinel sites annuall
DEMAND AND COMMUNICATION			
Advocacy	No presentation on immunization performance, and expenditures was made to parliament	Engage community members, NGOs, associations and interest groups in immunization beyond 2016	2016-2020: I meeting conducted annually on immunization with parliamentarians
	Communities are inadequately involved		2016-2020 Community health promotion strategy and implementation in use
	There is no strong and direct link with Pediatrics Association of Malawi		1. 2016 Link with Pediatrics Association of Malawi established 2016- 2. 2 meetings conducted annually with Pediatric Association of Mala
	Implementation plan of CSOs on immunization is not in place	Support local civil society organizations to contribute to existing and new vaccines.	2016-2020 Implementation Plan on immunization of Civil Societues developed and in use
Communication	A routine immunization communication plan is available but not updated	Create awareness of the benefits of existing and new vaccines through different media beyond 2016	2016-2020: Communication plan in use and updated
	Inadequate knowledge on the importance of completing the immunization series on time by mothers		1. 2016-2020: Radio and TV slots produced and aired 2. 2016-202 Promotional materials on existing and new vaccines produced, pre-te and disseminated
Demand	High risk plan for disadvantaged communities is not available		2016: High risk plan in place
	% of outreach services were held as planned		1. 2016-2020: under five shelters constructed 2. 2016 2020: <90% outreach clinics held as planed
	No plan for interventions for hard to reach children in place		2016: plan for hard to reach children developed and in place
	Inadequate knowledge on existing and new vaccines		2016-2020: Theater for Develompment conducted; Community leader meetings conducted; Mobile van shows conducted; Band shows conducted; Advance publicity conducted
Research	A KAP study was conducted in 2014	Improve the EPI programme through operational research beyond 2016	1. 2017: KAP study conducted 2. Stock Availability Operational St 3. Vaccine Hesitancy study conducted
			2018: Missed Opportunity study conducted
			2019: REC/RED operational study conducted
			1. 2020: Vaccine Hesitancy study conducted; KAP study conducted

9.2 Strategies and Activities

The programme has planned a set of strategies and activities to be conducted between 2016 and 2020 in order to achieve the national objectives. The strategies and activities are outlined in Table 15.

Table 14: Strategies and Activities

Immunization Services	Objectives	Strategies	Main Activities
SERVICE DELIVERY-ROUTINE IMMUNIZTION			
Immunization Coverage	To improve and sustain immunization coverage of >90% for all antigens at national and 80% at district from 2016 to 2020	Reaching Every Child in every community	1. Open new outreach clinics in hard to reach areas
			2. Construct under five clinic shelters
			3. Conduct static and outreach clinics
			4. Conduct PIRI
			5. Conduct follow up visits on PIRI
			6. Conduct Community mobilization meetings in hard to reach areas
			7. Establish Mother Care Groups in hard to reach areas
Immunization Demand	To sustain a drop out rate of <10% for Penta 1-Penta3 by 2020	Reaching Every Child in every community	1. Develop a defaulter tracing system
			2. Implement defaulter tracing mechanisms in collaboration with CSOs
			3. Monitor implementation of defaulter tracing
New Vaccines Introduction	To eliminate measles and rubella in Malawi by 2020	Advocate for MR introduction in the routine immunization system	1. Review monitoring tools
			2. Launch the introduction of MR
			3.Conduct MR SIA
	To increase number of district in HPV demo using routine immunization in 2016 and 2017	Introduction of HPV vaccine through outline immunization	1.develop a detailed proposal for step wise introduction of HPV
			2. Review monitoring tools
			3. Launch the introduction of HPV
	To switch from TT to Td in pregnant women and women of childbearing age in the routine schedule beyond 2016	Advocacy for a switch	1.Train health workers

Infrastructure	Improve infrastructure in hard to reach areas beyond 2016	Infrastructure	Construct under five clinic shelters
			Construct health posts
			Install solar in health facilities including staff houses in hard to reach areas
			Install electricity in selected health facilities including staff houses
	To complete and furnish the new EPI office block		1. Finalize building and furnish for the office complex
PROGRAME MANAGEMENT			
Regulation	To improve post market surveillance for AEFIs beyond 2016	Strengthen post market surveillance	1. Institute AEFI Review Committee
			2. Conduct training for AEFIs members
			3. Develop training manual on AEFI management and monitoring
			4. Develop AEFI protocols
			5. Monitor AEFIs regularly
			6. Conduct meetings with PMPB
Policy	To improve formulation of evidence based policy on immunization from 2016 to 2020	Strengthen national capacity to formulate evidence capacity	1. Finalize the draft EPI Policy
			2. Disseminate the EPI Policy
			3. Conduct biannual NITAG meetings
Planning	To increase the allocation of resources OF district EPI budget from 55% to 80% beyond 2016	Lobby with DHMTs for more resources	1. Engage in dialogue with the with DHMT
			2. Circulate updated cMYP and EPI Annual Plan of Action to districts
			3. Report implementation status of district activities funded by DHOs and other partners
	To monitor availability and implementation of micro plans in health facilities from 2016 to 2020	Ensure the availability of micro plans in health facilities	1. Training health workers on micro plans development
			2. Develop and print micro planning tools
			3. Follow up implementation of monitoring tools
			4. Conduct exchange visit by districts on micro plans
Coordination	To improve the operations of the EPI sub TWG beyond 2016	Strengthen the operations of the EPI sub-TWG	1. Conduct quarterly EPI sub-TWG meetings
			1. Conduct monthly meeting with programme officers at national and zonal levels
			2. Conduct quarterly meeting with programme officers at district level
			3. Conduct EPI National biannual meetings

			4. Conduct Joint Appraisal
Supportive Supervision	To improve performance and quality of immunization services beyond 2016	Intensify supportive supervision	1. Conduct supportive supervision by national and zonal level
			2. Conduct supportive supervision by district level
			3. Conduct supportive supervision by district cluster areas
			4. Conduct peer-peer visits
Monitoring and Evaluation	To improve programme efficiency beyond 2016	Enhance periodic reviews, feedback & review meetings	1. Conduct Cluster survey
			2. Conduct DQS
			3. Conduct EPI comprehensive review
			4. Produce and print the feedback bulletins;
			5. Conduct zonal quarterly review meetings
			6. Conduct national annual review meeting
			7. Conduct RED/REC Assessment
		Ensure availability of monitoring tools & IT equipment	1. Review monitoring tools
			2. Print monitoring tools
			3. Village Health Registers (VHRS) revised
			4. HSAs oriented in the use of VHRs
			5. Monitor use of VHRs
			6. Procure IT equipment
HUMAN RESOURCE MANAGEMENT			
Human Resource availability	To fill vacant positions for EPI staff at national and zonal level beyond 2016	Lobby with department of Human Resource	1. Conduct functional review for HRH for EPI
			2. Deploy staff
	To increase output of pre-service training institution beyond 2016	Strengthen capacity building	1. Conduct in-service training for HSAs
			2. Conduct in-service training for AHEOs
			3. Train officers at masters level
Capacity Building	To improve capacity of health workers in immunization beyond 2016	Strengthen capacity building	1. Conduct trainings in MLM
			2. Conduct RED TOT
			3 RED approach trainings

			4. Conduct disease surveillance trainings
			5. Conduct Immunization In Practice trainings
			6. Conduct vaccinology courses
			7. Orient/refresh in DVD-MT/SMT
			8. Train HWs at health facility in data management
	To increase number of trainings institutions incorporating EPI activities in the curriculum from 0 to 18 by 2016	Strengthen EPI curricula in pre service training institutions	1. Conduct trainings needs assessment
			2. Conduct trainings for tutors in training institutions, provide materials
			3. Conduct supervision on implementation of the curricula
			4. Review the prototype to include HPV and MR
			5. Conduct meeting with tutors annually
ACCERELATED DISEASE CONTROL			
Polio	To improve the operations of the polio lab and committees beyond 2016	Strengthen lab and polio committees	1. Conduct NPEC meetings
			2. Conduct NCC meetings
			3. Conduct NTF meetings
			4. Conduct NTF lab visits
			5. Update the annual polio document
Measles and rubella	Increase and sustain high quality measles and rubella surveillance beyond 2016	Enhance quality measles and rubella surveillance	1. Develop measles elimination strategy
			2. Conduct trainings
Maternal and Neonatal Tetanus	To institutionalize the reporting system for protected at birth beyond 2016	Strengthen PAB reporting	1. Monitor and provide feedback on PAB reporting
COSTING AND FINANCING			
Financial Sustainability	To mobilize financial resources in a timely manner for procurement of traditional vaccines, co-financing of new vaccines and operational costs.	Lobbing with DHMTs for more resources	1. Track district EPI Expenditure
			2. Participate in DIP consultation meetings
		Advocate for adequate financial resources to support immunisation services	1. Develop and submit timely proposals to partners
			2. Conduct meetings with Parliamentary Committee on Health and EPI partners to lobby for more financial resources for EPI activities.

			3. Conduct regular meetings with Ministry of Finance to lobby for sufficient financial resources for the EPI activities
			4. Participate in Health Financing Summit
VACCINE SUPPLY, QUALITY & LOGISTICS			
Transport / Mobility	To improve transport system for the efficient provision of immunisation services beyond 2016	Strengthen transport system	1. Procure bicycles
			2. Procure motorcycles
			3. Procure utility motor vehicles
			4.Procure 10 ton trucks
			5. Procure 3 ton trucks
			6. Procure boats
			7. Conduct maintenance for motor cycles and vehicles
Vaccine Supply	Sustain availability of adequate vaccines and injection materials in all districts and health facilities beyond 2016.	Ensure availability of adequate vaccines, auto-disable syringes, and safety boxes	1. Procure and distribute adequate quantities of bundled vaccines.
			2. Collect adequate bundled vaccines from central vaccine store
			3. Distribute adequate bundled vaccines to health facilities
		Enhance stock tracking at all levels	1. Conduct in-depth stock availability assessment
			2. Revise injection materials stock ledger for use in health facilities
			3. Monitor the use of DVDMT in all districts.
	To improve cold chain capacity at all levels beyond 2016	Strengthen cold chain capacity	1. Procure office equipment
			2. Procure spare parts for cold chain equipment
			3. Procure refrigerators, freezers, cold boxes, and vaccine carriers
			4. Procure walk in cold rooms and walk in freezer rooms
			5. Construct cold room in Mzimba South
			6. Construct cold room Lilongwe
			7. Construct cold rooms for Zonal vaccine store in Zomba
			8. Construct cold room in Mangochi
			9. Construct cold room for Central East Zone
			10. Construct cold room for Central West Zone
	To improve cold chain	Strengthen cold chain management	1. Train cold chain technicians

	management at all levels beyond 2016		2. Train PAM Engineers
			3. Train PAM artisans
			4. Train HSAs in cold chain maintenance & management
			5.Train PAM Engineers in motor cycle maintenance
			6. Procure manual fork lift for dry stores
			7. Train EPI Technicians in cold room repairs
			8. Train Technicians in motor cycles
	Improve cold chain monitoring beyond 2016	Strengthen cold chain monitoring	1. Procure fridge tags for all refrigerators
			2. Procure freeze tags
			3. Update temperature monitoring tools
			4. Update cold chain inventory in all districts
			5. Conduct CCI
			6. Conduct EVMA
			7. Conduct cold chain equipment assessment performance (SDD)
			8. Conduct FT2 study
Waste disposal	Increase the percent of health facilities with functional incinerators from 53% to 83% by 2020	Ensure proper disposal of all injection materials	1. Construct new incinerators in health facilities
			2. Conduct maintenance of existing incinerators in health facilities
SURVEILLANCE & REPORTING			
AFP	To increase and sustain high quality AFP surveillance beyond 2016	Capacity building	1. Conducted facility based disease surveillance training
			2. Conduct active search
			3. Focal point reviews on disease surveillance
			4. Transport stool specimens
			5. Conduct annual in depth internal surveillance review to districts with suboptimal performance
			6. Conduct periodic polio validation exercise
			7. Update the annual polio documentation
			8. Orient Traditional and Faith Healers

	To mitigate the risk of circulating Vaccine Derived Polio virus (cVDPV) Type 2	Advocate for IPV introduction and bOPV switch	1. Implement tOPV-bOPV switch implementation plan
			2. Implement IPV Introduction activities
			3.Train health workers
			4. Conduct IPV PIE
			5. Develop bOPVcessation plan
			6. Implement bOPVcessation plan
Measles	Increase and sustain high quality measles and rubella surveillance beyond 2016	Reinforce the link between the measles lab and EPI	1. Provide sufficient reagents
			2. Transport measles samples from field to lab
			3. Train lab personnel
			4. Conduct data harmonization meeting
			5. Conduct congenital rubella syndrome (CRS) surveillance
			6. Provide tools for surveillance reporting
			7. Conduct MR SIA
	Provide support in regarding any emergency situation beyond 2016		1. Conduct a quick assessment
			2. Receive situation analysis
			3. Conduct emergency response
Neonatal Tetanus	Sustain detection of less than one NNT case per 1,000 live births in each district from 2016 to 2020	Capacity building	1. Train health workers in NNT surveillance activities
			2. Detect, investigate and report NNT cases
			3. Conduct NNT response activities
			4. Train Traditional healers
PBM and Rota virus	Sustain high quality PBM surveillance beyond 2016	Strengthen PBM surveillance	1. Revitalize the PBM Surveillance
			2. Train health workers in PBM and Rotavirus surveillance
			3. Provide logistical support in the management of PCV and Rotavirus surveillance
COMMUNICATION			
Advocacy	Engage community members, NGOs and interest groups in immunization beyond 2016	Enhance stakeholder advocacy for immunization	1. Conduct meetings with Parliamentary Committee on Health
			2. Disseminate information to civil societies and stakeholders
			3. Establish a link with Pediatrics Association of Malawi

			4. Conduct meetings with Pediatric Association of Malawi
			5. Engage media on their role in the acceleration of national immunization and vaccine targets
			6. Develop a media guidemanual on immunization and vaccines communication
	Support local civil society organizations to contribute to existing and new vaccines.	To enhance community awareness (acceptability/public confidence) on vaccines and immunization, and support for immunization activities	7. Develop a CSO Implementation plan on immunization
			8. Conduct regular meetings with CSOs and stakeholders
			9. Orient CSOs on relevant EPI modules
Communication	Create awareness of the benefits of existing and new vaccines through different media beyond 2016	Enhance national immunization communication	1. Develop EPI promotional materials (mass media including print)
			2. Conduct pre-testing sessions
			3. Produce print promotional materials
			4. Conduct health talks on immunization
			5. Conduct briefing sessions on EPI interpersonal communication.
			6. Formulate and disseminate press release and letter to community
			7. Develop New vaccine promotional materials (mass media, print media)
			8. Establish Health desks/champions to advocate for immunization and vaccines within key media houses
			9. Engage media houses to review editorial policies for health reporting
Demand			1. Produce electronic promotional materials
			2. Train media practitioners on reporting Vaccines and immunization
			3.Produce standard radio programmes/newspaper articles for broadcast in various media houses.
			4. Defaulter tracing through Mother Care Groups
			5. Dissemination of print materials
			6. Dissemination of electronic materials
			7. Conduct orientation session on Theatre for Development (TFD)
			8.Conduct local leaders' meetings
			9. Briefing of community and religious leaders

			10. Conduct community meetings
			11.Conduct drama shows
			12. Conduct mobile van shows
			13. Conduct band shows
			14. Conduct road shows
			15. Conduct advance publicity
			16. Formulate / support mother care groups/self-sustaining community structures in collaboration with CSOs
Research	Improve the EPI programme through operational research beyond 2016	Promote research for EPI programme	1. Conduct KAP study
			2. Conduct Missed Opportunity study
			3. Conduct Stock availability operational study
			4. Conduct REC/RED operational study
			5. Conduct Vaccine Hesitancy study

10.0 MONITORING AND EVALUATION (M&E)

10.1 Supportive Supervision

Periodic assessments and reviews have shown that supervision at all levels is conducted irregularly. Written feedback after supervision is also not done in most of the cases.

Supervisory visits are done at different levels. The national and regional/zonal levels visit the districts quarterly and the district level visits the health facilities monthly, At district level, the districts have been demarcated into district supervisory cluster areas which are responsible to some designated health facilities. The supervisors at this level visit their respective health facilities using a motor cycle. Table 15 shows the number of the district supervisory cluster areas, supervisors and the availability of motor cycles. Supervisory checklists for health facility and district level were revised and circulated.

Table 15: Number of District Supervisory Cluster Areas, Supervisors and Availability of Motor Cycles

NUMBER OF DISTRICT CLUSTER AREAS					
Name of District	**District Health Zone Area**				
	No. of District Cluster Areas	**No. of Supervisors**	**Availability of Motor Cycles**		
			Total #	**# Working**	**# Not working**
Chitipa	9	9	9	7	2
Karonga	5	5	4	4	0
Likoma	2	2	2	1	1
Mzimba North	10	14	8	4	4
Mzimba South	12	11	9	9	0
Nkhatabay	7	7	7	3	4
Rumphi	8	8	8	8	0
Northern Zone	**53**	**56**	**47**	**36**	**11**
Dowa	5	5	5	5	0
Kasungu	5	17	17	12	5
Nkhotakota	10	10	7	4	3
Ntchisi	7	7	4	4	0
Salima	3	3	3	0	0
Central East Zone	**30**	**42**	**36**	**25**	**8**
Dedza	13	13	7	7	0
Lilongwe	6	25	25	10	15
Mchinji	9	10	0	0	0

Ntcheu	12	10	9	7	2
Central West Zone	**40**	**58**	**41**	**24**	**17**
Balaka	3	3	2	1	1
Machinga					
Mangochi	15	15	12	3	2
Mulanje	23	20	16	4	0
Phalombe	8	8	6	2	4
Zomba	32	32	32	20	12
South East Zone	**81**	**78**	**68**	**30**	**19**
Blantyre					
Chikwawa	6	8	5	5	3
Chiradzulu	6	6	5	4	1
Mwanza					
Neno	7	8	8	1	7
Nsanje	5	5	5	2	3
Thyolo	13	13	11	11	0
South West Zone	**37**	**40**	**34**	**23**	**14**
Malawi	**241**	**274**	**226**	**138**	**69**

During the next 5 years, the programme will strengthen supervision at all levels by ensuring that appropriate transport is provided. The national and regional/zonal levels are expected to conduct 20 visits, the district level 60 visits and the district cluster 60 visits. The district supervisory cluster areas will also be strengthened by providing a motor cycle to each.

10.2 Peer Supervision

This is a type of supervision where health worker exchange their best practices. The officers from one district supervise another district and at the end of the exercise they share the experiences. The programme will conduct 2 visit per year and a total of 10 visits will be done in the 5 year period.

10.3 Review Meetings

Periodic assessments and reviews have shown that review meetings at all levels were conducted irregularly over the past 5 years due to inadequate funding. The number of review meetings for AFP Focal Point Persons have declined has the past 5 years due to inadequate funding.

10.4 District Level Review Meetings

Review meetings are conducted at district level quarterly where health facility staff gather together and review their performance. Local partners are also invited to this meeting. Over the next 5 years, it is expected that 20 review meetings will be conducted.

10.5 Zonal Level Review Meetings

Review meetings are conducted at zonal level for every quarter. Participants are drawn from all the districts in the zone and some programme managers at national level. Local partners also participate. Over the next 5 years, it is expected that 20 review meetings will be conducted.

10.6 EPI National Review Meeting

One EPI national review meeting was conducted over the past 5 years. This was conducted on 5th to 6th June 2014 at Crossroad Hotel in Lilongwe and was jointly financed by UNICEF and MCHIP. The broad objective of the review meeting was to improve the immunization service delivery in the country. Table 17 shows the implementation status of the annual review plan of action.

10.7 Ministry of Health Joint Annual Review (JAR) Meeting

The JAR is conducted annually and starts at zonal level in order to allow for wider participation and analysis of implementation bottlenecks. Participation at national level include representatives of HSWGs, MoH, Ministry of Local Government and Rural Development, other Government Ministries and Departments with interests in health (such as Ministry of Education, Ministry of Agriculture, Irrigation and Water Development, Office of the President and Cabinet, National AIDSCommission), the private-for-profit and private not-for-profit service providers, HDPs, civil society, training institutions, and communities (represented by Traditional Authorities). Immunization is also one of the agenda of the JAR.

Table16: Annual Review Meeting: Implementation Status of Plan of Action

COMPONENT	ISSUE	ACTIVITIES	IMPLEMENTATION STATUS
Routine immunization Coverage	Low immunization coverage	Conduct refresher course in RED approach in health facilities	Ongoing
		Follow up RED implementation in health facilities	Ongoing
	Data inaccuracy	Printing of under one/ two registers, reporting forms, stock books, child health passports	In progress
		Revising reporting forms to include stock levels	Done, ongoing with introduction of new vaccines
	Inadequate use of DVDMT/ SMT	Conduct district based DQS in health facilities	Not done
		Conduct monthly data verification in health facilities	Ongoing
		Refresher training on DVDMT/SMT	Partially done
		Conduct mentorship on use of DVDMT/SMT	Partially done
		Procure data backup accessories	In progress
		Share data where there are more than one computer	In progress
Cold chain	Frequent breakdown of refrigerators	Replace old refrigerators	In progress, ongoing
		Procure spare parts for repairing broken down refrigerators	In progress, ongoing
		Procure portal pack sets for fridge maintenance	In progress, ongoing
		Procure tool kits for fridge maintenance	In progress, ongoing
		Provide transport for CCT for maintenance of refrigerators in health facilities.	In progress, ongoing
	Inadequate number of refrigerators	Procure new refrigerators	In progress, ongoing
	Misuse of Solar fridge batteries	Procure SDD refrigerators	In progress, ongoing
	Kerosene refrigerators not working	Procure gas, compression and SDD refrigerators	In progress, ongoing
	Repair of faulty solar fridges	Training of CCTs and PAM technicians	In progress for CCTs
	Inadequate gas cylinders and kerosene	Procure adequate number of gas cylinders and kerosine timely	In progress, ongoing
	No specific room for keeping all refrigerators for vaccines	Construct/ create specific rooms for keeping refrigerators	Not done
Stock management	Stock-outs of vaccines and injection materials	Updating stock books	In progress, ongoing
		Implement zero stock out strategy	In progress, ongoing

	Inadequate stocks at national level	Lobby for provision of adequate resources for vaccines with parliament, donors and partners	In progress, ongoing
Operation of under five clinics	Inadequate staff in hard to reach areas	Deploy adequate H.S.A.s in hard to reach facilities	In progress, ongoing
	Lack of immunisation partners in some districts.	Lobby for support in immunization activities	In progress, ongoing
	Clinics cancellation	Reschedule cancelled clinics	In progress, ongoing
Disease surveillance	Districts not detecting and reporting the minimum number of annual AFP cases.	Conduct trainings in disease surveillance at health facility level	In progress, ongoing
		Conduct active search in health facilities	In progress, ongoing
		Conduct record reviews	In progress, ongoing
		Conduct mentorship on recording of case investigation forms.	In progress, ongoing
		Provide feedback to districts	In progress, ongoing
	AFP cases due for follow-up at 60 days are not followed up	Conduct 60 day follow up of AFP cases	In progress, ongoing
		Tracking of 60 day follow up cases	In progress, ongoing
		Mapping of 60 day follow up	In progress, ongoing
	Cases of polio compatible are on the increase	Conduct proper filling of case investigation forms and provide adequate case notes	In progress, ongoing
		Inform the unit about cross border cases within 60 days	In progress, ongoing
Supportive supervision	Use of outdated checklist	Revise the supervision checklist	Done
		Circulate the checklist to the districts	Done
	Irregular supervision	Conduct regular supervisory visits	In progress, ongoing
		Conduct training of supervisors	Not done
EPI budget in DIP	Insufficient funding of EPI activities in DIP	Include EPI activities in DIP	In progress, ongoing
		Provide funding for EPI activities in the DIP	In progress, ongoing
Transport management	Breakdown of vehicles, motorcycles and bicycles.	Procure new vehicles, motorcycles and bicycles	In progress, ongoing
		Conduct frequent maintenance of vehicles, motorcycles and bicycles	In progress, ongoing
	Untimely provision of vehicle for EPI activities	Develop and share EPI transport plan	In progress, ongoing
		Provide reminders to transport officers prior to the trip	In progress, ongoing
	Unavailability of fuel	Allocate adequate fuel for EPI activities	In progress, ongoing

10.8 Monthly Programme Meetings

Over the period of the past 5 years, the programmed has struggled to conduct its monthly programme meetings. These meetings involve national and Zonal EPI Officers including its partners.

10.9 Health Sector Annual Review Meeting

The Health Sector Annual review meeting is done annually.

10.10 Review Meetings AFP Focal Point Persons

The review meetings with AFP Focal Point Persons on AFP, Measles and NNT are expected to be done quarterly, hence 20 meetings will be done over the next 5 year period.

10.11 Monitoring Tools

Recommendations from a number of periodic assessments and reviews were made for the review of monitoring tools. The tools reviewed included the following:

- Child Health Passport (CHP)
- Under 2 registers
- TT registers
- Vaccine stock books
- Injection material stock books
- Monthly report books
- Temperature monitoring charts
- Immunization monitoring charts

The EPI programme will continue reviewing monitoring tools depending on future vaccine introduction and new innovations.

10.12 Village Health Registers (VHRs)

Village Health Register is a monitoring tool that summarizes health data of community based health services including immunization at village level in the community. It can also be used as a defaulter tracing tool for immunization. The problems encountered with VHR according to HSAs include the following:

- Lack of refresher training on VHR
- Finding difficulties in filling VHR
- Sharing of VHR between two HSAs who are serving one Group Village Headman (GVH) poses a big challenge in utilization of VHR

- The VHR does not have other components for example in immunization, there is columns for other vaccines
- Inadequate support from VHCs in updating VHR
- Inadequate supervision from supervisors
- It is difficult to utilise the VHR in peri-urban areas.

10.13 Review of EPI National Operational Guidelines

Operational guidelines have also been reviewed to include new vaccine introduction and new innovations. These operational guidelines include the following:

- EPI field manual
- Immunization in Practice (IIP) modules
- Reaching Every Child (REC) module
- Disease surveillance guide

The process of reviewing will continue depending on future vaccine introduction and new innovations. Some operational guidelines which are still in draft form will be finalized.

10.14 Programmatic Reviews

The following programmatic assessments and reviews were conducted between 2011 and 2014:

- Assessment of availability and useability of revised Child Health Passport and Under 1 & 5 Registers, August 2011 financed by UNICEF
- In-depth National Surveillance Review, May 2012, Financed by WHO
- Knowledge, Attitudes and Perceptions Study on Immunizations and Diarrhea, July 2012, financed by
- Data Quality Self-assessment (DQS), August 2012
- Post Introduction Evaluation (PIE) of Pneumococcal Vaccine, July/August 2012, financed by GAVI
- Comprehensive review on EPI programme, November/December 2012, financed by
- Effective Vaccine Management Assessment (EVMA), November/December 2012 financed by UNICEF, CHAI and MCHIP
- EPI Pre-service and In-service Training Needs Assessment, May 2013, financed by MCHIP
- Post Introduction Evaluation (PIE) of Rotavirus Vaccine, July 2013, financed by GAVI
- Stock Availability and REC Operational Research, July/August 2013, financed by CHAI
- Coverage survey in 2013, financed by WHO
- Data Quality Self-assessment (DQS), March 2014, financed by MCHIP
- Data Quality Self-assessment (DQS), March 2014, financed by MCHIP

- Cold chain Maintenance Assessment, July 2014, financed by CHAI
- Cold Chain Assessment, December 2014, financed by WHO

10.15 Monitoring of Immunization Coverage for New Vaccines

Monitoring of immunization coverage for new vaccines will be done on a monthly basis as part of ongoing monitoring of routine immunization, using updated monitoring tools such as monthly vaccination reports. Data from all health facilities is submitted to districts where aggregation and preliminary analysis is done and later submitted to the EPI Unit. At the national level, data is consolidated, analyzed and feedback is given to all health facilities. The EPI Programme intends to resume producing a bulletin every six months. This will cover issues on immunizations, logistics, disease surveillance and social mobilization. Recently, there has been lack of funding to produce the bulletin, but the EPI Unit plans to re-establish the bulletin once resources are mobilised.

10.16 National Immunization Monitoring and Evaluation Framework

The national immunization M&E indicators shown in Table 18 have been categorized as follows:

- Impact indicators
- Outcome indicators
- Input indicators

10.16.1 Impact Indicators

Immunization services contribute to the goal of reduction of child and infant mortality deaths. Therefore, the programme will monitor the progress in achieving this goal through two impact indicators which include the following:

- Infant mortality rate
- Under five mortality rate

The means of verification for the impact indicators are the Malawi Demographic Health Survey (MDHS) and Multiple Indicator Cluster Survey (MICS). MDHS is done after every four years, and the last MDHS took place in 2010. MICS is done after every two years and the last was done in 2014.

10.16.2 Outcome Indicators

The programme will monitor the following outcome indicators:

- % of survviing infants receiving third dose of Penta 3
- Number of districts with Penta 3 coverage of >80%
- % of surviving infants receiving first dose of measles-rubella

- % of fully immunized children
- % of surving infants Protected at Birth
- Drop out rate of Penta 1- Penta 3

The means of verification for the outcome indicators include the MDHS, MICS and coverage survey.

10.16.3 Input indicators

There are many input indicates to monitor the implementation of this strategic plan.

Table 17 National Immunization Monitoring and Evaluation (M&E) Framework -2016-2020

GOAL	IMPACT INDICATORS	BASELINE							
		Result	Year	Source	2016	2017	2018	2019	2020
Immunization Component - Immunization Services									
To contribute towards the reduction in under-five child mortality from 112 per 1000 live births in 2010 to 78 per 1000 live births by 2016	Under 5 Mortality Rate	85/1,000	2014	Malawi MDG End line Survey			78/1,000		
To contribute towards the reduction in infant mortality from 66 per 1000 live births in 2010 to 45 per 1000 live births by 2016	Infant Mortality Rate	53/ 1,000	2010	Malawi MDG Endline Survey			45/1,000		
OBJECTIVE	**OUTCOME INDICATORS**	**BASELINE**							
		Result	**Year**	**Source**	**2016**	**2017**	**2018**	**2019**	**202**
To improve and sustain immunization coverage of >90% for all antigens at national and 80% at district from 2016 to 2020	DPT-HepB-Hib3 coverage - % of surviving infants receiving three doses of DPT-HepB-Hib3	91%	2014	Malawi MDG End line Survey	93%	94%	95%	96%	97%
	Geographic equity of DPT-HepB-Hib 3 coverage - % of districts that have at or above 80% DTP3 coverage	100%	2010	DHS	100%	100%	100%	100%	100%

	MR1 coverage - % of surviving infants receiving first dose of measles containing vaccine	85%	2014	Malawi MDG End line Survey	91%	92%	93%	94%	95%
	Proportion of children fully immunized - % of children aged 12-23 months who receive all basic vaccinations in a country's routine immunisation program	72%	2014	Malawi MDG End line Survey	80%	83%	86%	89%	93%
	% of surving infants Protected at Birth	89%	2015	WHO/Unicef Estimates	91%	92%	93%	94%	95%
	Socio-economic equity in immunisation coverage - DPT-HepB-Hib3 coverage in the lowest wealth quintile is +/- X % points of the coverage in the highest wealth quintile	3	2010	DHS	2	2	2	1	1
To sustain a drop out rate of <10% for Penta 1-Penta3 by 2020	Drop out rate of Penta 1- Penta 3	6%	2014	JRF	5%	5%	4%	4%	3%
INPUTS & ACTIVITIES	**INPUT INDICATORS**	**BASELINE**							
		Result	**Year**	**Source**	**2016**	**2017**	**2018**	**2019**	**2020**
Implementing Reaching Every Child	% of health facilities having conducted at least 80% of the planned outreach sessions per year	29	2015	Program Records	100%	100%	100%	100%	100%
	% of outreach services held as planned	No data	2015	Program Records	95%	96%	97%	98%	99%
Conduct EPI disease surveillance	Non-polio AFP rate	1.5	2014	Administrative	4.0	4.0	4.0	4.0	4.0

	% stool adequacy	77%	2014	Administrative	80%	80%	80%	80%	80%
	Non-measles febrile rash of 2.0/100000	6.9	2014	Administrative	2.0	2.0	2.0	2.0	2.0
	# of districts reporting at least 1 measles suspected case	28	2014	Administrative	28	28	28	28	28
	Number of districts reporting <1 case of NNT per 1,000 live births.	28	2014	Administrative	28	28	28	28	28
	Number of NPEC meetings	4	2014	Administrative	4	4	4	4	4
	Number of NCC meetings	4	2014	Administrative	4	4	4	4	4
	Number of NTF meetings	0	2014	Administrative	4	4	4	4	4
	Number of NTF visit	1	2014	Administrative	1	1	1	1	1
Regulation and Policy	Number of NRA functions	0	2014	Administrative	3	3	3	3	3

	Number of NITAG functions	Not yet established	2015	Administrative	2	2	2	2	2
Coordination	Number of EPI Sub-TWG meetings	5	2014	Administrative	4	4	4	4	4
Monitor the implementation of EPI activities	# of supportive supervisory visits by national and zonal levels	2	2014	Administrative	4	4	4	4	4
	# of supportive supervisory visits by district level	No data	2014	Administrative	12	12	12	12	12
	# of supportive supervisory visits by district cluster areas	No data	2014	Administrative	12	12	12	12	12
	# of peer supportive supervisory visits	0	2014	Administrative	2	2	2	2	2
	# of district review meetings conducted	No data	2014	Administrative	116	116	116	116	116
	# of meetings conducted with programme officers at national and zonal levels	0	2014	Administrative	12	12	12	12	12
	# of meetings conducted with programme officers at district level	0	2014	Administrative	4	4	4	4	4

	# of EPI national review meetings conducted	1	2014	Administrative	2	2	2	2	2
	# of Joint Appraisal meetings conducted	1	2015	Administrative	1	1	1	1	1
	# of EPI zonal review meetings conducted	0	2014	Administrative	4	4	4	4	4
Monitoring tools and national guidelines	# of Child Health Passports (CHPs) for boys printed	950000	2015	Administrative	0	370000	390000	415000	440000
	# of Child Health Passports (CHPs) for girls printed	1100000	2015	Administrative	0	430000	460000	485000	510000
	# of under 2 registers printed	16800	2015	Administrative	16800	16800	16800	16800	16800
	# of TT registers printed	5000	2015	Administrative	5000	0	0	5000	0
	# of monthly report books printed	4000	2015	Administrative	4000	4000	4000	4000	4000
	# of vaccine stock books printed	4000	2015	Administrative	4000	4000	4000	4000	4000
	# of injection stock books printed	4000	2015	Administrative	4000	4000	4000	4000	4000

	# of temperature monitoring charts	4000	2015	Administrative	4000	4000	4000	4000	4000
	# of immunization monitoring charts printed	44000	2015	Administrative	44000	44000	44000	44000	44000
	# of VVM stickers printed	6000	2015	Administrative	0	6000	0	6000	0
	# of shake test stickers printed	4000	2015	Administrative	0	4000	0	4000	0
	# of MDVP stickers printed	4000	2015	Administrative	0	4000	0	4000	0
	# of Village Health Registers (VHR) printed	0	2015	Administrative	12000	0	0	12000	0
	# of HSAs trained in the use of VHRs	No data	2015	Administrative	9500	0	0	9500	0
IT Equipment	# of desktop computers procured	0	2015	Administrative	50	0	0	0	0
	# of printers procured	0	2015	Administrative	50	0	0	0	0

	# of heavy duty photocopiers procured	0	2015	Administrative	4	0	0	0	0
	# of light duty photocopiers procured	0	2015	Administrative	7	0	0	0	0
	# of LCD projectors procured	0	2015	Administrative	8	0	0	0	0
	# of colour printers procured	0	2015	Administrative	2	0	0	0	0
	# of Laptops procured	0	2015	Administrative	12	0	0	0	0
	# of scanners procured	0	2015	Administrative	8	0	0	0	0
	# of cameras procured	0	2015	Administrative	4	0	0	0	0

National EPI Guidelines	# of workshops for review of national guidelines conducted	0	2015	Administrative	1	0	1	0	1
	# of RED training guides printed	0	2015	Administrative	3000	3000	3000	3000	3000
	# of IIP modules printed	0	2015	Administrative	3000	3000	3000	3000	3000
	# of EPI manual printed	0	2015	Administrative	0	20000	0	0	20000
	# of MLM modules printed	0	2015	Administrative	5000	0	0	0	0
	# of copies for EPI disease surveillance guide printed	0	2015	Administrative	10000	0	0	0	10000

	# of copies for EPI policy printed	0	2015	Administrative	3000	0	0	0	0
Financial sustainability	Percentage of government spending on traditional vaccines	100%	2014	Administrative	100%	100%	100%	100%	100%
	Percentage of government spending on new vaccine co-financing	100%	2014	Administrative	100%	100%	100%	100%	100%
	Percentage of total routine vaccine spending financed using Government funds	7%	2014	Administrative	8%	10%	12%	14%	15%
	Percentage of total expenditure on routine immunization including vaccine financed by government funds	10%	2014	Administrative	11%	12%	13%	14%	15%
	Percentage of immunization expenditure funded through DIPs	55%	2014	Administrative	60%	65%	70%	75%	80%
Vaccine Supply	# of BCG doses procured	2,476,000	2014	SMT 2014	1,818,000	1,872,600	1,928,800	1,986,700	2,046,400
	# of polio doses procured	4,298,000	2014	SMT 2014	2,970,500	3,059,800	3,151,600	3,246,200	3,343,600
	# of measles rubella doses procured	1,051,100	2014	SMT 2014	1,309,300	1,348,600	1,389,100	1,430,800	1,473,800

# of Td doses procured	2,850,000	2014	SMT 2014	430,000	1,768,600	1,821,700	1,876,400	1,932,700
# of DPT-Hib-HepB doses procured (Gavi)	1,679,500	2014	SMT 2014	2,693,300	2,779,800	2,863,600	2,948,200	3,043,600
# of DPT-Hib-HepB doses procured (co-financing)	126,400	2014	SMT 2014	272,300	280,000	288,000	298,000	300,000
# of PCV 13 doses procured (Gavi)	1,498,000	2014	SMT 2014	2,535,600	2,612,800	2,691,000	2,772,600	2,856,800
# of PCV 13 doses procured (co-financing)	113,000	2014	SMT 2014	122,400	125,000	129,000	132,000	135,000
# of Rota doses procured (Gavi)	1,251,500	2014	SMT 2014	1,664,000	1,715,200	1,761,500	1,815,400	1,871,000
# of Rota doses procured (co-financing)	94,000	2014	SMT 2014	108,000	110,000	118,500	121,000	123,500
# of IPV doses procured	0	2014	SMT 2014	990,000	1,020,000	1,082,200	1,114,700	1,148,200
# of HPV doses procured	34,080	2014	SMT 2014	61,100	188,000	248,000	620,000	700,000
# of 0.05 AD Syringes procured	940,200	2014	SMT 2014	999,900	1,022,600	1,058,500	1,090,200	1,124,000
# of 0.5 AD Syringes procured	10,107,000	2014	SMT 2014	11,281,100	13,137,900	13,562,900	13,969,800	14,402,90
# of 2 ml mixing syringes procured	94,000	2014	SMT 2014	100,000	146,900	151,400	155,900	160,700

	# of 5ml mixing syringes procured	205,500	2014	SMT 2014	257,100	327,800	337,600	347,800	358,500
	# of safety boxes procured	135,800	2014	SMT 2014	229,700	23,900	252,900	257,500	265,500
	Number of District Vaccine Stores experiencing stock outs of vaccines	10	2014	SMT 2014	0	0	0	0	0
	% of health facilities experiencing stock outs of vaccines in the previous	25%	2014	SMT 2014	0	0	0	0	0
Cold chain capacity	Percentage of districts vaccine stores with adequate volume of equipment	54%	2011	CCI Assessment	100%	100%	100%	100%	100%
	Percentage of health facilities with adequate volume of functional cold chain equipment	88%	2011	CCI Assessment	100%	100%	100%	100%	100%
	% of health facilities offering immunization services that have staff trained in cold chain management	5%	2011	CCI Assessment	90%	95%	96%	98%	100%
	% of health facilities offering immunization services with functional refrigerators	65%	2011	CCI Assessment	100%	100%	100%	100%	100%
	# of refrigerators procured	470	2015	Administrative	170	150	150	70	50
	# of freezers procured	0	2015	Administrative	30	0	0	30	100
	# of SDDs procured	120	2015	Administrative	250	100	50	50	50

	# of walk-in cold rooms producred	0	2015	Administrative	0	5	0	0	0
	Number of walk-in freezer rooms producred	0	2015	Administrative	0	5	0	0	0
	# of jack pallet procured	0	2015	Administrative	6	0	0	0	0
	# of forklifts procured	0	2015	Administrative	1	0	0	0	0
Infrastructure	Number of cold rooms constructed at national, zonal and district levels	3	2012	Administrative	0	5	0	0	0
	# of under five clinic shelters for immunization constructed in hard to reach areas	0	2012	Administrative	112	112	112	112	112
	# of Health Posts constructed	0	2015	Administrative	20	20	20	20	20
	% of health facilities with working incinerators	53%	2014	CCI	59%	65%	71%	77%	83%
	EPI office block complted	1	2015	Administrative	1	1	1	1	1
	# of health facilities including staff houses in hard to reach areas installed with solar	No data	2015	Administrative	30	30	30	30	30
	# of selected health facilities including staff houses with installation of electricity	No data	2015	Administrative	24	24	24	24	24
Cold chain management	# of HSAs trained in basic cold chain maintenance and repair	0	2015	Administrative	2000	2000	2000	2000	2000
	# of Cold Chain Technicians trained	75	2015	Administrative	0	95	0	95	0

	# of officers trained in cold room maintenance and repair	0	2015	Administrative	0	7	0	0	0
	# of PAM engineers trained in advanced cold chain repair	0	2015	Administrative	0	0	12	0	0
	# of PAM Artisans trained in general cold chain maintenance and repair	0	2015	Administrative	0	60	0	0	0
	# of PAM engeers/Cold Chain Technicians trained in mortor cycle repair	0	2015	Administrative	34	35	0	0	0
Submit timely and complete reports	% of timely district reports	88%	2014	Program Records	100%	100%	100%	100%	100%
	% completeness of district reports	100%	2014	Program Records	100%	100%	100%	100%	100%
	% timelines of health facility reports	89%	2014	Program Records	100%	100%	100%	100%	100%
Planning	# of micro-plans developed and implemented in 100% of identified high risk communities	No data	2015	Program Records	29	29	29	29	29
	% of plans implemented to reach 100% of all communities at least 4 times per year	No data		Program Records	70%	90%	100%	100%	100
Implement stepwise roll out of HPV using routine immunization strategy	# of districts implementing HPV using routine immunization strategy	2	2014	Program Records	5	11	17	23	2
Conduct outreach clinics regularly	% of outreach services held as planned	No data	2015	Program Records	95%	96%	97%	98%	99%

Conduct pre-service training for AEHOs and HSAs	% of health facilities with at least 2 trained HSAs offering immunization services	70%	2011	CCI	100%	100%	100%	100%	100%
	% of health facilities with at least 2 trained HSAs offering immunization services in hard to reach areas	No data	2015	Program Records	100%	100%	100%	100%	100%
	# of HSA upgraded to Assistant Environmental Health Officers in relation to the needs	0	2012	Administrative	50	60	60	60	60
	% of HSAs who have not received pre-service training reduced	46%	2012	Administrative	21%	0%	0%	0%	0%
Update the transport inventory regulary	# of districts cluster areas having a working motor vehicles	134	2015	Administrative	164	194	224	254	284
	% of HSAs with a working bicycle	50%	2011	Administrative	75%	100%	100%	100%	100%
	# of boats procured	0	2015	Program Records	8	0	3	0	0
	# of 10 ton trucks for transportation of vaccines, injection materials & cold chain equipment	5	2009	Program Records	7	0	0	0	0
	# of 3 ton trucks for transportation of vaccines, injection materials & cold chain equipment	3	2002	Program Records	8	0	0	0	0

	# of utility vehicles procured	0	2015	Administrative	40	0	0	0	0
	# of motor cycles procured	0	2015	Administrative	60	60	60	0	0
	# of 16 seater minibuses procured	0	2015	Administrative	5	0	0	0	0
	# of 32 seater minibuses procured	0	2015	Administrative	2	0	0	0	0
	# of bicycles	0	2015	Administrative	5000	0	5000	0	5000
Update the cold chain inventory regularly	% of health facilities with at least 1 staff trained in cold chain management	5%	2012	Administrative	100%	100%	100%	100%	100%
	# of functioning refrigerators at health facilities increased	89%	2014	CCI	100%	100%	100%	100%	100%
	# of national and regional/zonal stores with on site incinerators constructed	0	2012	Administrative	0	4	8	0	0
Conduct capacity building in immunization for health workers	# of health workers trained in IIP	2000	2013	Administrative	4500	4500	4500	4500	4500
	# of health workers trained in REC approach	40	2013	Administrative	4500	4500	4500	4500	4500
	# of health workers trained in disease surveillance	No data	2015	Administrative	4500	4500	4500	4500	4500

	% of health workers reporting training in disease surveillance during surveillance reviews increased	30%	2012	Administrative	45%	50%	60%	70%	80%
	# of health facility workers trained in data management	No data	2015	Administrative	2700	2700	2700	2700	2700
	# of HWs oriented in DVD-MT/SMT	81	2013	Administrative	60	60	60	60	60
	# of health workers trained in MLM	0	2012	Administrative	90	90	90	90	90
	# of health workers trained in vaccinology	0	2013	Administrative	60	60	60	60	60
EPI Curricula Prototype	# of lectures inducted	0	2015	Administrative	50	0	50	0	50
	# of meetings	0	2015	Administrative	3	3	3	3	3
	# number of field visits	0	2015	Administrative	4	4	4	4	4
Health Promotion	# of review workshops for promotional materials	0	2015	Administrative	1	1	1	1	1

# of drama shows in each district conducted	0	2015	Administrative	290	290	290	290	290
# of radio jingles aired annually in 3 radio stations	0	2015	Administrative	2190	2190	2190	2190	2190
# of radio programme slots aired annually in 14 radio stations	0	2015	Administrative	78	78	78	78	78
# of TV slots aired annually in 2 TV stations	0	2015	Administrative	1460	1460	1460	1460	1460
# of band shows conducted	0	2015	Administrative	2	2	2	2	2
# of orientation session conducted on Theatre for Development (TFD)	0	2015	Administrative	5	5	5	5	5
# of TFD sessions conducted	0	2015	Administrative	290	290	290	290	290
# of sessions for briefing of community and leaders conducted	0	2015	Administrative	112	112	112	112	112
# of immunization schedule posters printed	0	2015	Administrative	10000	10000	10000	10000	10000
# of immunization chart posters printed	0	2015	Administrative	10000	10000	10000	10000	10000
# of AFP surveillance posters printed	0	2015	Administrative	10000	10000	10000	10000	10000
# of measles surveillance posters printed	0	2015	Administrative	10000	10000	10000	10000	10000

	# of NNT surveillance posters printed	0	2015	Administrative	10000	10000	10000	10000	10000
Programmatic reviews	# of Comprehensive reviews conducted	1	2015	Administrative	0	0	1	0	0
	# of Indepth surveillance review conducted	1	2015	Administrative	0	0	1	0	0
	# of Cold Chain Inventory assessment conducted	1	2014	Administrative	0	1	0	0	1
	# of Data Quality Self-assessment conducted	1	2014	Administrative	1	0	1	0	1
	# of EPI coverage survey conducted	1	2013	Administrative	0	1	0	0	1
	# of Effective Vaccine Management assessment conducted	1	2012	Administrative	1	0	0	1	0

Operational Research	# of KAP study conducted	1	2012	Administrative	0	1	0	0	1
	# of RED/REC operational research conducted	0	2015	Administrative	0	0	0	1	0
	# of Stock Availability Operational study conducted	1	2013	Administrative	0	0	0	1	0
	# of Missed Opportunity Studies conducted	1	2015	Administrative	0	0	1	0	0
	# of Vaccine hesitancy study	0	2015	Administrative	0	0	0	0	1

11.0 HEALTH INFORMATION SYSTEM (HMIS)

The Ministry would like to strengthen the implementation of a national M&E where all vertical reporting through programs is rationalized through the national M&E system. In the case of EPI, this is necessary to help address problems of data sharing where national consolidated database is managed through a standalone database which other stakeholders cannot readily access.

Additionally, EPI data collected through the program and that collected through the national M&E is consistently different. Harmonizing the M&E system will help to ensure quality of the data. As a process of harmonizing data systems, the Ministry is implementing the District Health Information Software (DHIS 2). There is need to integrate EPI reporting in this national system.

Furthermore, to increase on the quality of data there is need to build capacity in data management and use at facility, district, zonal and national levels through provision of training and mentorship in data management and use tools such data recording, aggregation and preparation of reports. Capacity building is also required in data collection tools, progressively migrating from paper based systems to electronic systems.

12.0 COSTING, BUDGETING AND FINANCING

Over the past 5 years, the Government of Malawi had challenges to meet the cost of the traditional vaccines, co-financing and routine activities due to the introduction of PCV13 and Rotavirus. The introduction of PCV13 increased the vaccine budget by 82% and with Rotavirus it increased by 65% with an overall increase of 175%. During this period, some international partners supported the Malawi Government with a one time support for procurement of traditional vaccines. FICA supported with €4,751,824 for vaccines. injection materials, M&E, PIRI and supervision in 2012/2013 Financial year; NORAD supported with US$2,750,585 for vaccines and cold chain equipment in 2013/2014 Financial year, and KFw, supported with US$6,328,954 for vaccines, injection materials, cold chain equipment, cold chain training, M&E. PIRI, data management, supervision, social mobilization and temperature monitoring study in 2014/2015 Financial year.

Reporting on immunization financing at sub-national levels is a challenge in Malawi. The Government of Malawi including local partners provides a substantial amount of funding for immunization to sub-national levels in every financial year. This funding is not reported hence not reflected in the reports.

The programme introduced a simple electronic excel sheet for reporting on immunization financing at district level from 2014. There are challenges in filling this form since it was introduced without orientation of the users.

During the last phase of the 2012-2014 cMYP, theprogramme came up with the action points on immunization financing which are presented in Table18

Table 18: Immunization Financing Action Plan: Implementation Status

	Recommendation/Activity	Implementation Status
Recommendation	**Support the National Immunisation programme with adequate resources**	
Activity	Mobilize Financial Resources for Immunisation	Done and Ongoing
Sub-activity	Develop a Resource Mobilization concept note	Not done
Sub-activity	Attend the National Health Financing Summit	Done and Ongoing
Sub-activity	Raise awareness and profile of immunisation programme	Done and Ongoing
Sub-activity	Develop a two pager briefing note on Immunisation performance and financing for HDG	Done and Ongoing
Sub-activity	Briefing to HDG on immunization performance and financing	Done and Ongoing
Recommendation	**Increase allocation of funding for vaccines procurement and immunisation operations**	
Activity	Finalize CMYP	Inprogress
Sub-activity	Pre-budgeting meeting with Director of Planning and MOF Health desk Officer	Done and Ongoing
Sub-activity	Advocacy with Political and policy makers	Done and Ongoing
Sub-activity	Develop a two pager briefing note on Immunisation performance and financing for PCH	Not done
Sub-activity	Schedule a PreBudget review meeting with PCH Members	Not done
Recommendation	**External advocacy by GAVI RWG to Parliamentary Committee on Health and Senior MOH Management**	
Activity	Schedule a meeting Between GAVI RWG and PCH Members	RWG met in Lilongwe, Malawi but no arrangements made to meet PCH members

12.1 Gavi Alliance Funding Portifolio

Figure 5 shows the Gavi Alliance funding Portfolio.

12.2 Health Systems Strengthening

Malawi has benefited from the Health Systems Strengthening (HSS) grant. HSS 1 grant initially covered a period from 2008 to 2010 and later extended to 2013. HSS1 grant faced a number of challenges which included following:

- A foreign denominated account was not opened resulting in funds being kept in local currency. Due to the instability of the local currency, most activities were affected.
- Generation of financial reports from the pool system was difficult
- Prolonged procurement process also affected some activities
- There was prolonged implementation of some activities
- Delayed implementation of HSS1 audit recommendations affected the implementation of HSS2 grant.

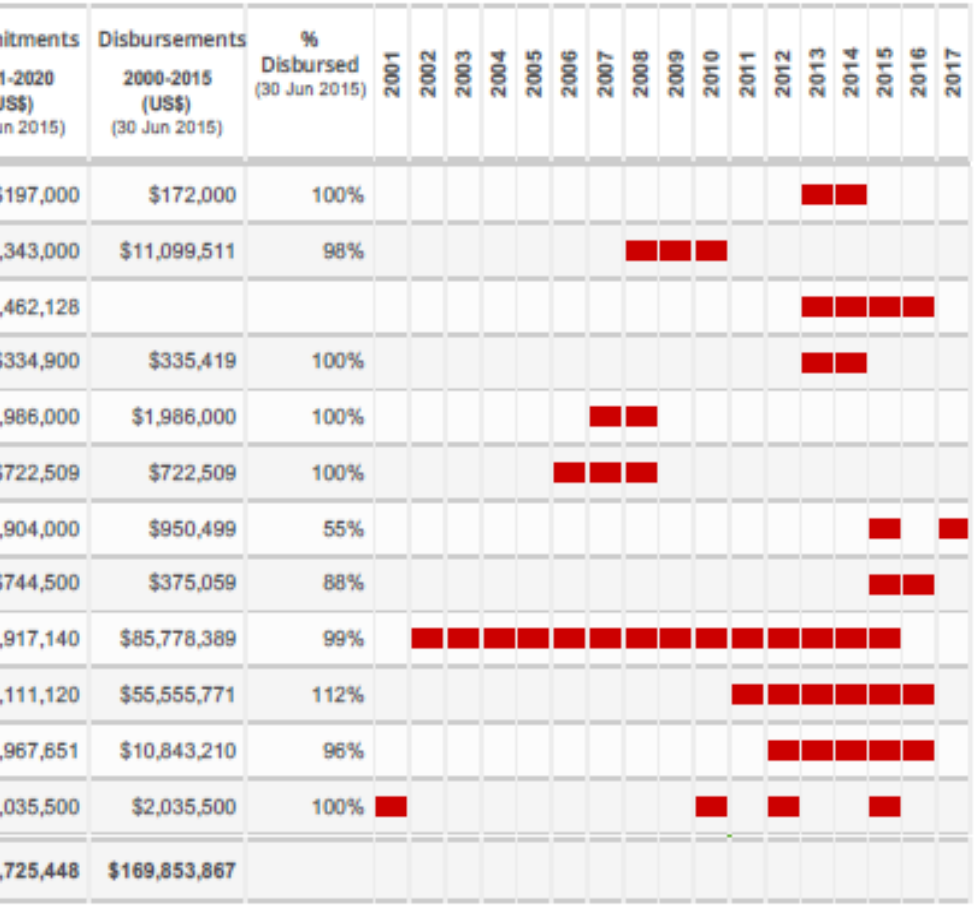
The activities which were not implemented under HSS1 included the following:

- Upgrading of Financing Officers
- Construction of health posts
- Electricity installation in selected health facilities
- Solar installation in hard to reach health facilities
- Construction of cold rooms in selected districts
- Procurement of boats
- Procurement of folk lift
- The EPI/Malaria office block was partially implement

The HSS2 approved grant has been considerably delayed due to ongoing audit issues. Given the substantial delay, Gavi recommends that Malawi submit a new HSS application since the budget ceiling available to Malawi for a new HSS application is from US$23M to US$41M over 5 years. Malawi will seek Technical Assistance for the new application. The activities in the HSS2 will be considered in the new proposal.

Figure 5: Gavi Alliance Funding Profile

Type of support	Approvals 2001-2020 (US$) (30 Jun 2015)	Commitments 2001-2020 (US$) (30 Jun 2015)	Disbursements 2000-2015 (US$) (30 Jun 2015)	% Disbursed (30 Jun 2015)
Cash Support (CASHSUPP)	$172,000	$197,000	$172,000	100%
Health system strengthening (HSS 1)	$11,343,000	$11,343,000	$11,099,511	98%
Health system strengthening (HSS 2)	$7,912,189	$14,462,128		
HPV Demo (NVS)	$334,900	$334,900	$335,419	100%
Immunisation services support (ISS)	$1,986,000	$1,986,000	$1,986,000	100%
Injection safety support (INS)	$722,509	$722,509	$722,509	100%
IPV (NVS)	$1,713,500	$1,904,000	$950,499	55%
Measles (NVS)	$425,000	$744,500	$375,059	88%
Penta (NVS)	$86,917,140	$86,917,140	$85,778,389	99%
Pneumo (NVS)	$49,626,120	$57,111,120	$55,555,771	112%
Rotavirus (NVS)	$11,331,651	$14,967,651	$10,843,210	96%
Vaccine Introduction Grant (VIG)	$2,035,500	$2,035,500	$2,035,500	100%
Total	**$174,519,509**	**$192,725,448**	**$169,853,867**	



Red line on table indicates duration of support based on commitments.
Commitments: Multi-year programme budgets endorsed in principle by the Gavi Board. These become financial commitments upon approval each year for the following calendar year.
Approvals: Total Approved for funding

Source: Gavi Alliance

12.3 Cost, Budget and Financing

The success of the programme largely depends on adequate financing for all proposed activities to be undertaken during implementation. It will be the responsibility of the EPI program through the Ministry of Health to ensure that the programme has adequate financial and material support from the Government of Malawi and its development partners.

The government of Malawi is committed to supporting the procurement of traditional vaccines and co-financing the new vaccines. The cost for cold chain equipment, transport equipment, operational costs, surveillance, social mobilization and monitoring and evaluation requires donor support.

Malawi started co financing for DPT-HepB-Hib vaccine and injection materials in 2006. In recognition of this effort, the country received awards from GAVI for successful co-financing. The Ministry of Health allocates funding for all traditional vaccines and injection materials, including funds for co-financing. Although the Government will strive to ensure the availability of vaccines and injection materials, competing priorities within the health sector may not guarantee adequate funding for EPI activities. Therefore there is a need to explore other potential funding sources for EPI.

12.4 Methodology for costing the cMYP

The costing of this comprehensive Multi Year plan was based on the national objectives and priorities of the programme. The national objectives have been linked with those of the overall health sector strategic plan (HSSP). The costing for the plan was carried out using the standard WHO cMYP costing tool v3.8.1 and EPI Log Forecasting Tool.

12.5 Program activities, other recurrent costs and surveillance

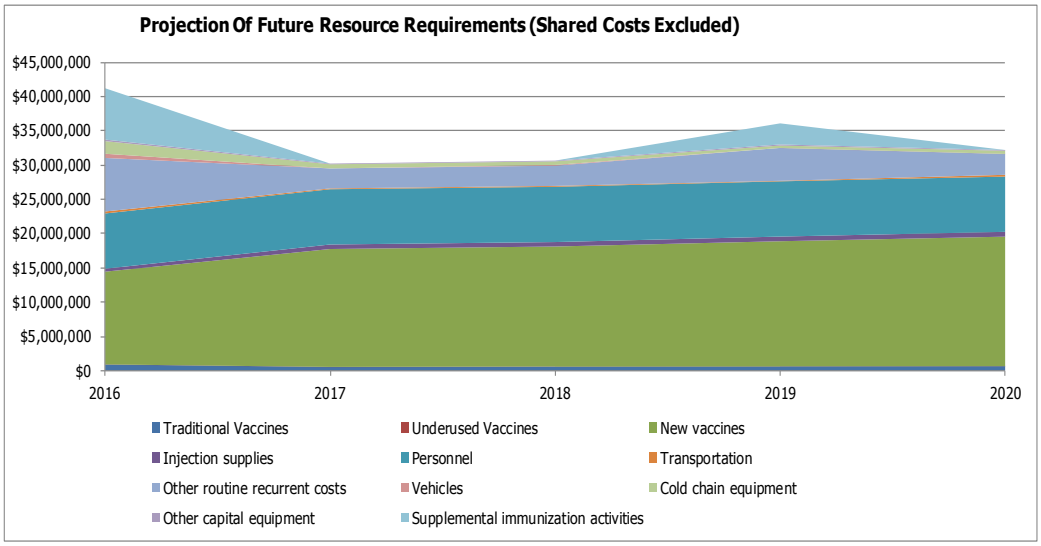
The total budget for the period 2016-2020 is US$ 207,955,175, of which US$97,862,548 is for the purchase of vaccines, injection supplies and other logistics for routine immunization services. Costs are illustrated in table19:

Table 19: Projected Resource Needs, by Category

	2014	2016	2017	2018	2019	2020	TOTAL 2016 - 2020
Vaccine supply and logistics (routine only)	16,682,486	17,708,992	19,243,183	19,646,920	20,245,235	21,018,218	97,862,548
Service delivery	7,727,123	8,509,095	7,802,652	7,812,498	7,755,366	7,941,364	39,820,975
Advocacy and Communication	300,000	408,000	416,160	424,483	432,973	441,632	2,123,248
Monitoring and disease surveillance	724,832	836,856	846,036	908,460	919,072	929,896	4,440,320
Program management	1,052,000	6,781,520	1,897,690	1,847,563	3,643,467	1,857,064	16,027,303
Supplemental immunization activities (SIAs)	0	7,486,021	0	0	3,079,247	0	10,565,269
Total direct costs	26,486,441	41,730,484	30,205,721	30,639,924	36,075,359	32,188,175	170,839,663
Shared Health Systems Costs (EPI Portion)	6,763,742	7,684,903	8,691,358	6,799,872	6,812,640	7,126,739	37,115,512
Grand Total	**33,250,183**	**49,415,387**	**38,897,078**	**37,439,796**	**42,887,999**	**39,314,914**	**207,955,175**

Table figure illustrates the future requirements for a period of five years. In 2016 and 2020, there will be measles rubella campaigns. The national roll out will begin in 2016 with only five districts. In 2017, five more districts will be added hence the increase in vaccine costs and this will continue up to 2020 when all the districts will be covered with HPV vaccination. The programme has a cold chain rehabilitation and expansion plan starting in 2016-2020. All aging, non-PQS, kerosene and gas refrigerators will be replaced in the next five years through GAVI cold chain window of support which will be available by 2016.

Figure 6: Projection of Future Resource Requirements



12.6 Vaccines and injection equipment

The cost of vaccines and injection materials only excluding other logistics for a period of five years is estimated at US$ 91,843,734 as shown in Table 20. About US$ 3,338,479 (4%) of the vaccine costs are for traditional vaccine and will be taken by the Government of Malawi. The New and underutilised vaccines will require US$ 85,376,575 (93%). Injection materials will cost US$3,128,680.00 (3%) for the next 5 years. This funding will be provided by Gavi and Government of Malawi under the existing co-financing mechanism.

According to Gavi alliance guidelines and conditions for measles rubella support, there are no co-financing requirements and government will meet full cost of the vaccine. However for the first 5 year period of introduction Gavi will support only the cost of measles component of the second MR dose. This has been incorporated this five cMYP.

Table 20 Vaccine and Injection Equipment Cost-2016-2020

Autogenerated						
Government financing indicators	2014	2016	2018	2019	2020	2016 - 2020
$ Total resource requirements	26,486,441	41,730,484	30,639,924	36,075,359	32,188,175	170,839,663
Traditional Vaccines	$820,313	$904,423	$603,491	$629,234	$655,958	3,338,479
New vaccines	$15,187,571	$13,534,172	$17,504,423	$18,249,957	$18,890,314	85,376,576
Injection supplies	$245,454	$433,492	$650,975	$679,348	$703,836	3,128,680
Systems Costs	$10,233,103	$19,372,376	$11,881,035	$13,437,573	$11,938,067	68,430,660
SIAS (campaigns include both operational and vaccine costs)		$7,486,021		$3,079,247		10,565,269
	2014	2016	2018	2019	2020	2016 - 2020
$ Government financing (secured)		10,390,800	231,120	231,120	231,120	11,315,280
Traditional Vaccines		904,423				904,423
Injection supplies		30,344				30,344
Systems Costs		9,456,033	231,120	231,120	231,120	10,380,513
	2014	2016	2018	2019	2020	2016 - 2020
% Government Financing (Secured)		25%	1%	1%	1%	7%
Traditional Vaccines		100%	0%	0%	0%	27%
Injection supplies		7%	0%	0%	0%	1%
Systems Costs		49%	2%	2%	2%	15%
	2014	2016	2018	2019	2020	2016 - 2020
$ Government financing (probable)		235,000	8,575,579	8,594,393	8,625,330	34,635,718
Traditional Vaccines			603,491	629,234	655,958	2,434,056
Injection supplies			45,568	47,554	49,269	188,663
Systems Costs		235,000	7,926,520	7,917,605	7,920,103	32,012,999
	2014	2016	2018	2019	2020	2016 - 2020
% Government Financing (Secure And Probable)		25%	29%	24%	28%	27%
Traditional Vaccines		100%	100%	100%	100%	100%
Injection supplies		7%	7%	7%	7%	7%
Systems Costs		50%	69%	61%	68%	62%

12.7 Personnel costs (EPI specific and shared)

Cost estimates are based on unit expenditure on different personnel cadres working in EPI at different levels of the system, and numbers of personnel, adjusted for by time spent on EPI-related activities. In addition, personnel costs for supervision visits and outreach activities were included for each cadre at the different levels of the system. Unit expenditures are based on Government gross wages and per diems. Cost estimates for a period of five years are outlined in Table 21.

Table 21: Projection Of Future Resource Requirements (Shared Costs Excluded)

Projection Of Future Resource Requirements (Shared Costs Excluded)

Cost category	2016	2017	2018	2019	2020
Routine recurrent costs	US$	US$	US$	US$	US$
Traditional Vaccines	$904,423	$545,373	$603,491	$629,234	$655,958
Underused Vaccines	$0	$0	$0	$0	$0
New vaccines	$13,534,172	$17,197,709	$17,504,423	$18,249,957	$18,890,314
Injection supplies	$433,492	$661,029	$650,975	$679,348	$703,836
Personnel	$8,058,240	$8,058,240	$8,058,240	$8,058,240	$8,058,240
Transportation	$293,211	$122,268	$132,114	$74,982	$260,980
Other routine recurrent co	$7,804,938	$2,914,140	$2,950,532	$4,799,629	$3,046,525
Vehicles	$612,000	$0	$113,549	$0	$0
Cold chain equipment	$1,843,169	$602,922	$520,479	$345,712	$461,914
Other capital equipment	$225,318	$104,040	$106,121	$159,009	$110,408
Supplemental immunizati	$7,486,021	$0	$0	$3,079,247	$0

12.8 Vehicles, and transport costs

An inventory of transportation equipment was carried out as part of the 2014 cold chain assessment and forms the basis of the 2014 figures provided in the Costing Tool. The unit costs for transport were provided by the procurement unit of the Ministry of Health. The introduction of new vaccines will require additional transport for conducting outreach services and transportation of vaccines and injection materials. The cost estimates for the period of five years is $ 1,607,104. as provided in table 21

12.9 Cold Chain Capacity

The current cold chain capacity at national level for positive storage is 66,668 litres and with four deliveries of vaccine per year, there is excess of 33,788 litres. This analysis has included HPV vaccine which will be be rolled out to districts. The capacity at national level for negative storage is 10,256 litres and with four deliveries per year, there is excess of 5,454 litres.

The storage capacity for walk in cold rooms increased from 59,243 litres in 2015 to 65,759 litres due the introduction of IPV in 2016. The country has increased storage capacity of cold rooms in the southern region with the installation of 2 walk in cold rooms of 40 cubic meters and 2 walk in

freezer rooms of 20 cubic meters. The construction of the cold rooms for theNorth has stalled due to challenges due to disbursement of funds. Through funding from KfW, procurement of additional two 40 cubic meter cold rooms and one 20 cubic meter freezer room for the central regional has been done and they are expected to be installed before the end of 2015.

About 470 various types of refrigerators including solar direct drive (SDD) have already been procured by UNICEF through funding from KfW and these will be distributed to health facilities based on the findings of the 2014 cold chain assessment. These cold chain equipment are expected to be delivery by October 2015. The distribution of 470 refrigerators will increase the storage capacities for routine and new vaccines including HPV, IPV and MR in all health facilities.

12.9.1 Cold Chain Rehabilitation and Expansion Plan for 2016-2020

The five year cold chain rehabilitation and expansion plan has taken into account to replace all refrigerators that are over 15 years and those that are non PQS. Health facilities that do not have functioning refrigerators have also been included. Thus new fridges will need to be acquired and allocated to replace this aged equipment, as well as to increase capacity to meet the needs of new vaccine introductions, as well as a growing population. About 197 refrigerators running on kerosene and 312 refrigerators running on gas will need to be replaced in the next five years. The budget for the 5-year plan has excluded cold chain equipment that will be procured with financial assistance from KFW through UNICEF.

Proposed walk in cold rooms in the five districts and one zonal office have also been included in the five year rehabilitation and expansion plan. This is in anticipation of an increase in storage capacity as result of national roll out of HPV and Inactivated Polio vaccine and high population in these five districts.

The plan therefore takes into account to replace 509 gas/kerosene refrigerators; 182 non PQS refrigerators; 295 over ten years refrigerators and 114 refrigerators that were found not working and irreparable. This will be a gradual process as more funds are required to be mobilized and at the same time priority will be given to most critical category.

Passive containers such as cold boxes and vaccine carriers have also been included in the five year rehabilitation and expansion plan s well as in the cMPY costing tool.

Table 22: Five Year Rehabilitation and Expansion Plan

Tyep of CCE	Specs	Yr 1 US$	Yr 2 US$	Yr 3 US$	Yr 4 US$	Yr 5 US$
SDD	VLS 054	1,089,375	435,750	217,875	217,875	217,875
Icelined	VLS200	80,000	80,000	40,000	40,000	40,000
Icelined	VLS340	51,000	51,000	51,000	51,000	51,000
Icelined	VLS400	55,875	-	55,875	-	55,875
WICR	40cm	137,206	-	-	-	-
WICR	30cm	121,250	-	-	-	-
WIFR	20cm	114,763	-	-	-	-
Cold box	20 litres	119,250	-	119,250	-	59,625
Giostyle	2.6ltrs	62,500	31,250	31,250	31,250	31,250
Total (US$)		**1,831,219**	**598,000**	**515,250**	**340,125**	**455,625**

The total cost for the rehabilitation and expansion plan for five years is **US$3,740,219**. Much of the cost will be on replacement of kerosene and gas refrigerators with solar direct drive (SDD).

The costs of the rehabilitation and expansion plan are heavy in the first year, as the cost of replacing the expired equipment as well as the costs of meeting capacity shortfalls based on the current vaccine schedule) are incurred in the first year. Details of the expansion plan are in annex 4.

The Ministry of Health will strive to mobilize adequate resources from donors and partners to support this huge task to ensure the safety of vaccines, whose total cost substantially outweighs the budget for the cold chain expansion plan

12.10 Operational costs for Supplemental Immunization Activities (SIAs) and overhead costs

In 2016 Malawi will introduce a Measles Rubella (MR) combined vaccine. Prior to MR introduction, measles campaign targeting children aged 9 months to 14 years will be conducted country wide.. The 2016 MR SIA will require US$ 7,486,021 and in 2019 another MR SIA will be conducted at a cost of

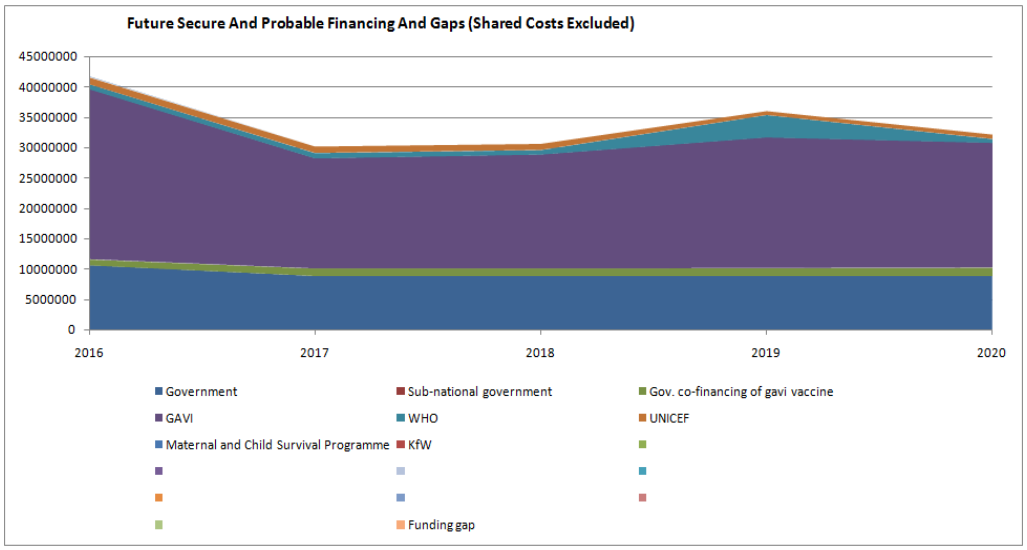
US$3,079,247 targeting under five children. In total for the period 2016-2020, US$ 10,565,269 will be required for SIAs. Operational costs were based on information from past campaigns. Estimates for a period of five years are shown in table 21.

12.11 Financing for the Programme

The trends in program financing are presented in this section. Based on the program cost categories, past, and future financing available for the respective cost areas was derived from partners. Support for the program comes from the following:

- Government
- Gavi Alliance
- UNICEF
- WHO
- MCSP/ USAID

Figure 7: Future Secure and Probable Financing and Gaps



The major source of funding for the EPI programme is Gavi. This trend is expected to continue in the next five years. In2016, there be will be a MR campaign that will target children aged 9 months to 14 years and this is expected to be funded by Gavi. In 2019 a follow up MR campaign will be conducted targeting children aged 9-59 months and the campaign is expected to be funded by WHO.

There is a substantial increase in the total resource requirements for the EPI program in the next five years, due to the introduction of MR, IPV and HPV in 2016. While GAVI funds are expected to cover over 90 percent of the cost of the new vaccines and their injection supplies, the Government of Malawi will co-finance for the new vaccines that will be introduced.

12.12 Interventions to improve the financial viability of the program

The funding gap for the program could be reduced if the probable resources are secured through advocacy with various collaborating partners and donors. Projected funding from Government, WHO, UNICEF, and USAID/MCSP is assumed to continue.

The Ministry of Health, through the EPI program, as part of its regular monitoring process,will monitor the trends in financing, to ensure improved financial sustainability by reducing financing gaps, and converting more probable financing to secure financing.

Annex 1

Five Year Timelines of Activities

Immunization Services	Objectives	Strategies	Activities	Timeline			
				2016	2017	2018	
SERVICE DELIVERY-ROUTINE IMMUNIZTION							
Immunization Coverage	To improve and sustain immunization coverage of >90% for all antigens at national and 80% at district from 2016 to 2020	Reaching Every Child in every community	1. Open new outreach clinics in hard to reach areas	x	x	x	
			2. Construct underfive clinic shelters	x	x	x	
			3. Conduct static and outreach clinics	x	x	x	
			4. Conduct PIRI	x	x	x	
			5. Conduct follow up visits on PIRI	x	x	x	
			6. Conduct Community mobilization meetings in hard to reach areas	x	x	x	
			7. Establish Mother Care Groups in hard to reach areas	x			
Immunization Demand	To sustain a drop out rate of <10% for Penta 1-Penta3 by 2020	Reaching Every Child in every community	1. Develop a defaulter tracing system	x	x	x	
			2. Implement defaulter tracing mechanisms in collaboration with CSOs	x	x	x	
			3. Monitor implementation of defaulter tracing	x	x	x	
New Vaccines Introduction	To eliminate measles and rubella in Malawi by 2020	Advocate for MR intorduction in the routine immunization system	1. Review monitoring tools	x			
			2. Launch the introduction of MR	x			
			3. Conduct MR PIE		x		
	To increase number of district in HPV demo using routine immunization in 2016 and 2017	Introduction of HPV vaccine through outine immunization	1. Review monitoring tools	x			
			2. Launch the introduction of HPV	x			
			3. Conduct HPV coverage survey for year1		x		
	To shift from TT to Td in pregnant women and women of childbearing age in the routine schedule beyond 2016	Advocacy for a shift	1.Train health workers	x			
Infrastructure	Improve infrastructure in hard to reach areas	Infrastructure	Construct under five clinic shelters	x	x	x	
			Construct health posts	x	x	x	

	beyond 2016		Instal solar in health facilities including staff houses in hard to reach areas	x	x	x
			Install electricity in selected health facilities including staff houses	x	x	x
	To complete and furnish the new EPI office block		1. Finalize building and furnish for the office complex	x	x	x
PROGRAME MANAGEMENT						
Regulation	To improve post market surveillance for AEFIs beyond 2016	Strengthen post market surveillance	1. Institute AEFI Review Committee	x		
			2. Conduct training for AEFIs members	x		x
			3. Develop training manual on AEFI management and monitoring	x		
			4. Develop AEFI protocols	x		
			5. Monitor AEFIs regularly	x	x	x
			6. Conduct meetings with PMPB	x	x	x
Policy	To improve formulation of evidence based policy on immunization from 2016 to 2020	Strenthen national capacity to formulate evidence capacity	1. Finalize the draft EPI Policy	x		
			2. Disseminate the EPI Policy	x		
			3. Conduct biannual NITAG meetings	x	x	x
Planning	To increase the allocation of resources OF district EPI budget from 2016 to 2020	Lobby with DHMTs for more resources	1. Engage in dialogue with the with DHMT	x	x	x
			2. Circulate updated cMYP and EPI Annual Plan of Action to districts	x		
			3. Report implementation status of district activities funded by DHOs and other partners	x	x	x
	To monitor availability and implementation of micro plans in health facilities from 2016 to 2020	Ensure the availability of micro plans in health facilities	1. Training health workers on microplans development	x	x	x
			2. Develop and print microplanning tools	x		x
			3. Follow up implementation of monitoring tools	x	x	x
			4. Conduct exchange visit by districts on microplans	x	x	x
Coordination	To improve the operations of the EPI sub TWG beyond 2016	Strengthen the operations of the EPI sub-TWG	Conduct quarterly EPI sub-TWG meetings	x	x	x
			1. Conduct monthly meeting with programme officers at national and zonal levels	x	x	x
			2. Conduct quarterly meeting with programme officers at district level	x	x	x

			3. Conduct EPI National biannual meetings	x	x	x
			4. Conduct Joint Appraisal	x	x	x
Supportive Supervision	To improve performance and quality of immunization services beyond 2016	Intensify supportive supervision	1. Conduct supportive supervision by national and zonal level	x	x	x
			2. Conduct supportive supervision by district level	x	x	x
			3. Conduct supportive supervision by district cluster area	x	x	x
			4. Conduct peer-peer visits	x	x	x
Monitoring and Evaluation	To improve programme efficiency beyond 2016	Enhance periodic reviews, feedback & review meetings	1. Conduct Cluster survey			x
			2. Conduct DQS	x		x
			3. Conduct EPI comprehensive review	x	x	x
			4. Produce and print the feedback bulletins;	x	x	x
			5. Conduct zonal quarterly review meetings	x	x	x
			6. Conduct national annual review meeting	x	x	x
			7. Conduct RED/REC Assessment		x	
		Ensure availability of monitoring tools & IT equipment	1. Review monitoring tools	x		x
			2. Print monitoring tools	x		x
			3. Vilage Health Registers (VHRS) revised	x		
			4. HSAs oriented in the use of VHRs	x		
			5. Monitor use of VHRs	x	x	x
			6. Procure IT equipment	x		
HUMAN RESOURCE MANAGEMENT						
Human Resource availability	To fill vacant positions for EPI staff at national and zonal level beyond 2016	Lobby with department of Human Resource	1. Conduct functional review for HRH for EPI	x		
			2. Deploy staff	x		
	To increase output of pre-service training institution beyond 2016	Strengthen capacity building	1. Conduct in-service training for HSAs	x	x	x
			2. Conduct in-service training for AHEOs	x	x	x
			3. Train officers at masters level	x	x	x
Capacity Building	To improve capacity of health workers in immunization beyond 2016	Strengthen capacity building	1. Conduct trainings in MLM	x	x	
			2. Conduct RED TOT	x	x	x
			3 RED approach trainings	x	x	x
			4. Conduct disease surveillance trainings	x	x	x

			5. Conduct Immunization In Practice trainings	x	x	x
			6. Conduct vaccinology courses			x
			7. Oriente/refresh in DVD-MT/SMT	x		x
			8. Train HWs at health facility in data management	x	x	x
	To increase number of trainings institutions incorporating EPI activities in the curriculum from 0 to 18 by 2016	Strengthen EPI curricula in pre service training institutions	1. Conduct trainings needs assessment		x	
			2. Conduct trainings for tutors in training institutions, provide materials	x		
			3. Conduct supervision on implementation of the curricula	x	x	x
			4. Review the prototype to include HP and MR	x		
			5. Conduct meeting with tutors annually	x	x	x
ACCERELATED DISEASE CONTROL						
Polio	To improve the operations of the polio lab and committes beyond 2016	Strengthen lab and polio committes	1. Conduct NPEC meetings	x	x	x
			2. Conduct NCC meetings	x	x	x
			3. Conduct NTF meetings	x	x	x
			4. Conduct NTF lab visits	x	x	x
			5. Update the annual polio document	x	x	x
Measles and rubella	Increase and sustain high quality measles and rubella surveillance beyond 2016	Enhance quality measles and rubella surveillance	1. Develop measles elimination strategy	x		
			2. Conduct trainings	x	x	x
	Provide support in regarding any emergency situation beyond 2016		1. Conduct a quick assessment	x	x	x
			2. Receive situation analysis	x	x	x
			3. Conduct emergency response	x	x	x
Maternal and Neonatal Tetanus	To institutionalise the reporting system for protected at birth beyond 2016	Strengthen PAB reporting	1. Monitor and provide feedback on PAB reporting	x	x	x
COSTING AND FINANCING						
Financial Sustainability	To mobilise financial resources in a timely manner for procurement of traditional vaccines, co-financing of new vaccines and operational costs.	Lobbing with DHMTs for more resources	1. Track district EPI Expenditure	x	x	x
			2. Participate in DIP consultation meetings	x	x	x
		Advocate for adequate financial resources to support immunisation services	1. Develop and submit timely proposals to partners	x	x	x
			2. Conduct meetings with Parliamentary Committee on Health and EPI partners to lobby for more financial resources for EPI	x	x	x

			activities.			
			3. Conduct regular meetings with Ministry of Finance to lobby for sufficient financial resources for the EPI activities	x	x	x
			4. Participate in Health Financing Summit	x	x	x
VACCINE SUPPLY, QUALITY & LOGISTICS						
Transport / Mobility	To improve transport system for the efficient provision of immunisation services beyond 2016	Strengthen transport system	1. Procure bicycles	x		
			2. Procure motorcycles	x		
			3. Procure utility motor vehicles	x		
			4.Procure 10 tonne trucks	x		
			5. Procure 3 tonne trucks	x		
			6. Procure boats	x		x
			7. Conduct maintenance for motor cycles and vehicles	x	x	x
Vaccine Supply	Sustain availability of adequate vaccines and injection materials in all districts and health facilities beyond 2016.	Ensure availability of adequate vaccines, auto-disable syringes, and safety boxes	1. Procure and distribute adequate quantities of bundled vaccines.	x	x	x
			2. Collect adequate bundled vaccines from central vaccine store	x	x	x
			3. Distribute adequate bundled vaccines to health facilities	x	x	x
		Enhance stock tracking at all levels	1. Conduct in-depth stock availability assessment			x
			2. Revise injection materials stock ledger for use in health facilities		x	
			3. Monitor the use of DVDMT in all districts.	x	x	x
Cold chain/Logistics & Dry Stores	To improve cold chain capacity and management at all levels beyond 2016	Strengthen cold chain capacity	1. Equip cold chain technicians with tool kits	x		
			2. Procure spare parts for cold chain equipment	x		
			3. Procure refrigerators, freezers, cold boxes, and vaccine carriers	x		
			4. Procure walk in cold rooms and walk in freezer rooms	x	x	
			5. Construct cold room in Mzimba South		x	
			6. Construct cold room Lilongwe		x	
			7. Construct cold rooms for Zonal vaccine store in Zomba		x	

			8. Construct cold room in Mangochi			x
			9. Construct cold room for Central East Zone			x
			10. Construct cold room for Central West Zone		x	x
			11. Construct cold rooms for Karonga, Nkhotakota, Ntcheu, Nsanje and Mulanje districts			
	To improve cold chain management at all levels beyond 2016	Strengthen cold chain management	1. Train cold chain technicians			
			2. Train PAM Engineers	x		
			3. Train PAM artisans	x		
			4. Train HSAs in cold chain maintenance & management	x	x	x
			5.Train PAM Engineers in motor cycle maintenance	x		
			6. Procure manual fork lift for dry stores	x		
			7. Train EPI Technicians in cold room repairs		x	
			8. Train Technicians in motor cycles		x	
	Improve cold chain monitoring beyond 2016	Strengthen cold chain monitoring	1. Procure fridge tags for all refrigerators	x		
			2. Procure freeze tags	x		
			3. Update temperature monitoring tools	x		
			4. Develop a cold chain replacement plan in all districts	x		
			5. Conduct CCI			
			6. Conduct EVMA	x		
			7. Conduct cold chain equipment assessment performance (SDD)	x		
			8. Conduct FT2 study	x		
Waste disposal	Increase the percent of health facilities with functional incinerators from 49% to 80% by 2016	Ensure proper disposal of all injection materials	1. Construct new incinerators in health facilities		x	x
			2. Conduct maintenance of existing incinerators in health facilities	x	x	x
SURVEILLANCE & REPORTING						
AFP	To increase and sustain high quality AFP surveillance beyond 2016	Capacity building	1. Conducted facility based disease surveillance training	x	x	x
			2. Conduct active search	x	x	x
			3. Focal point reviews on disease surveillance	x	x	x
			4. Transport stool specimens	x	x	x

			5. Conduct annual in depth internal surveillance review to districts with suboptimal performance			x
			6. Conduct periodic polio validation exercise			x
			7. Update the annual polio documentation	x	x	x
			8. Orient Traditional and Faith Healers		x	
	To mitigate the risk of circulating Vaccine Derived Polio virus (cVDPV) Type 2	Advocate for IPV intorduction and bOPV switch	1. Implement tOPV-bOPV switch implementation plan	x		
			2. Implement IPV Introduction activities	x		
			3.Train health workers	x		
			4. Conduct IPV PIE	x		
			5. Develop bOPVcesation plan			x
			6. Implement bOPVcesation plan			x
Measles	Increase and sustain high quality measles and rubella surveillance beyond 2016	Reinforce the link between the measles lab and EPI	1. Provide sufficient reagents	x	x	x
			2. Transport measles samples from field to lab	x	x	x
			3. Train lab personnel	x		
			4. Conduct data harmonization meeting	x	x	x
			5. Conduct congenital rubella syndrome (CRS) surveillance	x	x	x
			6. Provide tools for surveillance reporting	x	x	x
			7. Conduct MR SIA	x		
Neonatal Tetanus	To improve NNT case surveillance including response beyond 2016	Capacity building	1. Train health workers in NNT surveillance activities	x	x	x
			2. Detect, investigate and report NNT cases	x	x	x
			3. Conduct NNT response activities	x	x	x
			4. Train Traditional healers		x	
PBM	Sustain high quality PBM surveillance beyond 2016	Strengthen PBM surveillance	1. Revitalize the PBM Surveillance	x		
			2. Train health workers in PCV and Rotavirus surveillance	x		x
			3. Provide logistical support in the management of PCV and Rotavirus surveillance	x	x	x
ADVOCACY AND COMMUNICATION						
Advocacy	Engage community members, NGOs and	Enhance national immunization communication	1. Conduct meetings with Parliamentary Committee on Health	x	x	x

	interest groups in immunization beyond 2016		2. Disseminate information to civil societies and stakeholders	x	x	x	
			3. Establish a link with Pediatrics Association of Malawi	x			
			4. Conduct meetings with Pediatric Association of Malawi	x	x	x	
			Engage media on their role in the acceleration of national immunization and vaccine targets	x	x	x	
			Develop a media guidemanual on immunization and vaccines communication	x			
	Support local civil society organizations to contribute to existing and new vaccines.	To enhance community awareness (acceptability/public confidence) on vaccines and immunization, and support for immunization activities	5. Develop a CSO Implementation plan on immunization	x			
			6. Conduct regular regualr meetings with CSOs and stakeholders	x	x	x	
			Orient CSOs on relevant EPI modules	x		x	
Communication	Create awareness of the benefits of existing and new vaccines through different media beyond 2016	Enhance national immunization communication	1. Develop EPI promotional materials (mass media including print)	x		x	
			2. Conduct pre-testing sessions	x		x	
			3. Produce print promotional materials	x		x	
			4. Conduct health talks on immunization	x	x	x	
			5. Conduct briefing sessions on EPI interpersonal communication.	x	x	x	
			6. Formulate and disseminate press release and letter to community	x		x	
			7. Develop New vaccine promotional materials (mass media, print media)	x		x	
			8. Establish Health desks/champions to advocate for immunization and vaccines within key media houses		x		
			9. Engage media houses to review editorial policies for health reporting	x	x	x	
Demand			1. Produce electronic promotional materials	x		x	
			2. Train media practitioners on reporting Vaccines and immunization	x			

			3.Produce standard radio programmes/newspaper articles for broadcast in various media houses.	x			
			4. Defaulter tracing through Mother Care Groups	x	x	x	
			5. Dissemination of print materials	x		x	
			6. Dissemination of electronic materials	x	x	x	
			7. Conduct orientation session on Theatre for Development (TFD)	x	x	x	
			8.Conduct local leaders' meetings	x	x	x	
			9. Briefing of community and religious leaders	x	x	x	
			10. Conduct community meetings	x	x	x	
			11.Conduct drama shows	x	x	x	
			12. Conduct mobile van shows	x	x	x	
			13. Conduct band shows	x	x	x	
			14. Conduct road shows	x	x	x	
			15. Conduct advance publicity	x	x	x	
			16. Formulate / support mother care groups/self-sustaining community structures in collaboration with CSOs	x	x	x	
Research	Improve the EPI programme through operational research beyond 2016	Promote research for EPI programme	1. Conduct KAP study		x		
			2. Missed Opportunity study			x	
			3. Conduct Stock availability operational study		x		
			4. Conduct REC/RED operational study				
			3. Conduct Vaccine Hesitancy study				