THE STATE OF ERITREA
Ministry of Health

Expanded Program on Immunization
Comprehensive Multi-Year Plan
(2017-2021)

23 November, 2016

Preface

The Eritrean Expanded Programme on Immunization (EPI) launched in 1980th by providing six traditional vaccines for Vaccine Preventable Diseases (VPDs). Right from the beginning of EPI, the government has been committed for continuous provision of vaccination services for children and Women in Child Bearing Age (WCBA) to protect them from VPDs which had been identified as public health problem in the country. The Ministry of Health in the state of Eritrea, is responsible for management of the resources of the program with the help of local and international partners and has made a lot of investments for the expansion of vaccination services even in less accessible geographic areas and nomadic population groups in the country. Moreover, The Government of the State of Eritrea, in collaboration with donor partners has also considered to increase the type and range of new vaccines by attaining accessible and equitable immunization services to reduce the unnecessary suffering of the most vulnerable population groups. As a result of this public health intervention and other related program inputs, morbidity and mortality of the children due to VPDs is decreasing from time to time and infant death decreased 83/1000LB (EPHS, 2005) to 35/1000LB (UNICEF, 2015)

Eritrea has started introduction of new vaccines in 2002 to expand more protection of children against the most common prevailing vaccine preventable diseases in the country. Initially, introduction of DTP-HepB vaccine was made successfully in 2002. The submission of Financial Sustainability Plan (FSP) in 2014 to Global Alliance for Vaccine & Immunization (GAVI) has produced further partnership to make more attention in enhancement of EPI to build on the existed immunization service and introduction of additional vaccines. As a result, the Government of Eritrea has made further effort to expands immunization service and has applied to GAVI for more additional support to introduce Pentavalent vaccine of liquid and lyophilized vaccine formulation of two doses vials (DPT-HepB+Hib) in 2008 which gradually changed into fully liquid formulation of one dose vial in 2012. The introduction of the new vaccines, changing vaccine formulations, introduction of new technologies such as Fridge-tag, Temp-Log and Temperature Mapping monitoring devices has continued up to 2016 to maintain the potency of vaccines to the end of users. In July 2012 the country has introduced second dose of measles (MCV2) for children at age of 18 months in order to scale up the country from measles control stage to measles elimination phase and build the herd immunity among the age groups. Rota vaccine and Pneumococcal Conjugated Vaccine (PCV-13) of one dose vial of fully liquid formulation have also introduced into routine immunization services in 2014 and 2015 respectively. Eritrea has a plan MR campaign which will be followed introduce MR vaccine in two vaccination schedules, MnA Conjugated vaccine wide age range campaign and Human Papilloma Vaccine (HPV) for school children age 9-13 years as pilot in a specific districts. The plan will also incorporate new interventions to ensure equitable and accessible immunization services for all children by developing various approaches to reach the unreached children. Overall the multi-year plan stated the actions needed for the improvement of EPI services in the country. The availability of the new cMYP (2017-2021) is critical for the program for implementation of the above stated activities by articulating the mission, objectives, strategies and annual action plans for

successful implementation of the a stated activities accordingly. Moreover it is necessary to have joint work with our local and international partners, introduction of new vaccines, changing vaccine formulations and introduction of new technologies for vaccine status monitoring, have GAVI HSS and VIG grant support. Generally the overall goal cMYP will be to attain further improvement and sustain the good work on immunization service, ensuring best practices are maintained, and to support implementation efforts that leads towards reaching the ultimate goal of financial sustainability of the country on immunization services.

The cMYP (2017- 2021) has also developed in light of the global and regional strategies and objectives of Global Vaccine Action Plan (GVAP) to address the EPI targets of the vaccine preventable diseases. Furthermore, the identified gaps and recommendations of the assessment and survey results provided in last four years on Effective Vaccine Management assessment (EVM), cold chain assessment and inventory, EPI coverage survey, comprehensive EPI review and PIE of new vaccines were considered to address them in this comprehensive multiyear plan based on their priority issues.

Executive Summary

This comprehensive Multi Year Plan (cMYP, 2017-2021) is prepared and completed to guide the priorities and focus of the EPI program for the next five years. This document is a requirement for extended support from GAVI and other local and external partners. The five years plan encompasses the introduction of new vaccines, introduction of new technologies and implementation of various strategies to strengthen immunization service in the country. As an introduction, this cMYP contains a brief review of country current economic situation and organization structure of the healthcare system in the country with more focus on EPI program right from the national to service level. Before developing the new cMYP, a comprehensive review of all the program component of EPI and Post Introduction Evaluation (PIE) of PCV was conducted in August 2016 and the recommendation provided by the external consultants have been considered. A thorough and critical analysis off program components, program management, service delivery, vaccine supply, logistics, social mobilization, surveillance activity and ability of the EPI to secure sustainable financing for the program was analyzed to identify the available strengths and weakness of the program. Moreover, the assessment results, recommendations provided by various experts on Effective Vaccine Management Assessment (EVM), Surveillance program review, Cold Chain Equipment (CCE) assessment and inventory has been considered and revised.

On completion of the situation analysis a Strengths, Weaknesses, Opportunities and Threats (SWOT) was conducted to determine how existing best practice could be maintained and where future management initiatives must be undertaken to improve the weakness and available gaps using the stated opportunities. Analysis of current and future financing and the sustainability of the current activities of the EPI were also assessed. Based on the assessment results and findings, general and specific objectives of the multiyear plan was formulated and strategies, activities and implementation time has been developed to address these objectives using a time frame.

In developing the comprehensive Multi-year-Plan, the cMYP costing tool and the WHO EPI logistic forecasting tool was also used in estimating and financing all aspects of the EPI components such as cost of vaccines, personnel, transport, cold chain, SIAs and other routine and supplementary operational activities of the program with view of ascertaining estimated total cost for of each year and collectively for the period of 2017-2021 in total.

The comprehensive Multi Year Plan has specified the objectives, strategies and activities that needs to be implemented for improved outcome of immunization services. In view of this, the cMYP 2017-2021 will be used as reference and working document with the overall goal of reducing maternal and child morbidity and mortality in the country using standard indicators. This document will be disseminated to sub national and district level and will also be shared with

local and international partners to use it as reference to give technical and financial support. In summary the cMYP 2017-2021 intends to sustain high immunization coverage with accessible and equitable immunization services by focusing on reaching the unreached children hence that strategies to track every child will be instituted. During these five years, the program has planned to introduce new vaccines such as IPV, MR, MnA, and Hepatitis B zero dose and HPV as pilot for adolescent girls.

The Ministry of Health, the donor partners and the ICC have reviewed and endorsed the document and pledged their support. It is envisioned that GAVI will view our plan favorably and support our plan of introduction of MR vaccine after conducting MR and Mn A conjugated vaccines of wide age range campaign 6 months – 14 years and 1year – 29 years respectively, in 2018. The Government of Eritrea extends his gratitude to the donor partners and stakeholders for their input and financial and technical support for Eritrea to improve the quality of immunization services and sustain high immunization coverage in the country. In Eritrea, investment in EPI is an investment in the greatest asset of Eritrea population that is its children, which are the future of the country.

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ACRONYMS

AEFI	Adverse Event Following Immunization
BCG	Bacille Calmette-Guérin (Tuberculosis vaccine)
cMYP	Compréhensive Multi Year Plan
CDC	Communicable Diseases Control
CSOs	Civil Society Organizations
DPT-HepB-Hib	Diphtheria, Pertussis, Tetanus Hepatitis B and Homophiles influenza type b
EPHS	Eritrean Population Health Survey
EPI	Expanded Program on Immunization
FSP	Financial Sustainability Plan
FIC	Fully Immunized Child
GAVI	Global Alliance for Vaccines and Immunization/Vaccine Funds
GVAP	Global Vaccine Action Plan
GDP	Gross Domestic Product
GMP	Growth Monitoring Program
GNP	Gross National Product
GoE	Government of Eritrea
NRA	National Regulatory Authority
NTLC	National Task Force for Laboratory Containment (of WPV)
OPV	Oral Polio Vaccine
PHC	Primary Health Care
PIRI	Periodic Intensified Routine Immunization
RED	Reach Every District
RH	Reproductive Health
SOS	Sustaining Outreach Services
SIAs	Supplementary Immunization Activities
SNIDs	Sub National Immunization Days
STDs	Sexually Transmitted Diseases
SWAP	Sector Wide Approach Program
Td	Tetanus diphtheria
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WB	World Bank
WHO	World Health Organization
WPV	Wild Polio Virus
WUENIC	WHO & UNICEF Joint Estimate

1. INTRODUCTION

1.1 Country Profile

Eritrea is located in the Horn of Africa, between latitudes 12 degrees 42'N and 18 degrees 2'N and longitudes 36 degrees 30'E to 43 degrees 20'E. It is bounded by the Sudan to the North and West, the Red Sea to the East, Ethiopia to the South and the Republic of Djibouti to the South East. The country has a surface area of about 124,000 square kilometers with four distinct topographic regions: central highlands (2000 meters above sea level), western lowlands (1000 meters above sea level), eastern lowlands (500 meters above sea level) and have 1100 Kms coastline facing the Red Sea.

Administratively the country is divided into six administrative regions named as Zobas: Gash Barka (GB), Anseba, Debub, Debubawi Keyh Bahri (DKB), Maekel and Semenawi Kehy Bahri (SKB) and overall there are 58 sub zobas/district and 715 administrative areas which includes about 2,564 villages in the country. Still population census has not done in Eritrea, but based on a population estimate provided by the National Statics Office of the state of Eritrea in 2015, the projected total population of Eritrea is approximately 3,798,700 for 2017. Almost one third of the population is in the age range of less than 15 years old. Women in reproductive age group (15 – 45 years) and children under 5 years old are 20% and 15% respectively, targeted for routine immunization service and SIAs to boost the herd immunity. This population size accounts for over one-third (35%) of the total population. The population in the country is not uniformly distributed and highly affects by terrain geographical situation of the country.

1.2 Macro Economic Situation

The Eritrean Government inherited poor socio-economic conditions at the time of liberation in 1991. In 1994, the Government of Eritrea issued a comprehensive Macro Policy indicating strategies for development, with high priority on food security; human resources development with education and healthcare as key component, of physical and social infrastructure of the country. Following the issuance of the Macro Policy, the Government introduced institutional and legal frameworks that would create enabling business environment to stimulate private investment. The Government also followed liberal trade and investment policies for economic development. As a result of these business–friendly policies, the economy gained momentum and showed significant improvements during the periods 1992 to 1997, registering an annual GDP growth rate of 7%. The high GDP growth was partly explained by the peace and stability of the country as well as the successful economic recovery program and liberal trade and other policies introduced by the Government of Eritrea.

However, in May 1998, the Ethiopian war of aggression on Eritrea, which began on the pretext of border conflict escalated into a devastating war. The war has caused heavy damages on the Eritrean economy overall but specifically on social services. Investment made in agriculture and social services especially in Zoba Debub and Gash-Barka bordering to Ethiopia was purposely destroyed by the enemies. The educational schools and healthcare providing infrastructures and other social services were also looted and fully damaged by the invading Ethiopian army. As a consequences, the country's economic growth declined to the period were heavy boarder fighting was on place during the 1999-2000 period. During the struggle for independence, the Government of Eritrea has realized that mobilization of Eritrea's main resources is, its people and it is critical for accelerating the reconstruction process of ruined infrastructures and laying of the basis for a sustainable economic growth and development on various structures and social services in the country have made tremendous improvement during the no peach and no war period.

The MOH of Eritrea, through its expanded program on immunization is committed to the provision of cost effective immunization services to the whole target population in all zobas. However, since the program was operating within a general macroeconomic environment of low per capita income, where a large portion of the country's social and physical infrastructures were badly damaged by war of aggression, need of large investment for reconstruction and other competing demands by many sectors for resources, the health sector budget in general and the EPI budget in particular has been low. This made the EPI program primarily dependent on external funding to carry out its immunization services successfully even though there is certain amount of government support by making fuel subsidy, transport support for routine immunization services in outreach areas.

1.3 National Health System

Since independence in 1991, the Ministry of Health (MOH) has made significant progress in ensuring access and equity to health care services in general and immunization services in particular, through restoration of health facilities damaged during the war and construction of additional health facilities and establishment of service points especially in less accessible geographical areas. Currently, (2017) the MOH is operating 347 health facilities and provides healthcare service in three-tier structure namely primary care level, secondary care level and tertiary care level. From the total health facilities giving healthcare service, there are 27 hospitals, 85 health centers/community hospital, and 235 health stations. The number of health facilities giving routine immunization services 6 days per week are 85% (295) of the total health facilities in the country. Immunization services is also providing in every catchment areas of these health facility. In areas with less accessible and villages 10km apart from the health facility and with no public transport support are visiting using and outreach plan. There are estimated number of 450 outreach sites in the country. Periodic Intensified Routine Immunization (PIRI) services is also arranged and implementing every quarter of the year for nomadic population and people living in hard to reach areas.

As a result of intensified work and investment, Eritrea has consistently reduced child mortality by four per cent annually in the last decade and achieved the MDG4 in 2015. The successes are mainly attributed to efforts of Ministry of Health and its partners Civil Society Organization (CSO) and international organizations in a couple of primary healthcare areas such as the successful control of malaria, vaccine preventable diseases including measles elimination, improvement in prevention and case management of main childhood killer diseases (ARI, diarrhea, and malnutrition). Eritrea was one of the three Sub Saharan African countries on track to reach MDG 4) according the plan.

As a result of joint effort, infant mortality rate (IMR) has dropped to 42 deaths per 1,000 live births (EPHS, 2010) from that of 72/1000 live births in (EDH,1995) and under-five mortality (U5MR) is 63 deaths per 1,000 live births (EPHS, 2010) a reduction from136/1000 live births in 1995 (EDHS, 1995). The neonatal mortality rate however has changed only marginally from 25/1000LB (EDHS, 1995) to 23/1000LB in (EPHS, 2010). Neonatal mortality in Eritrea accounts for half of the infant mortality rate and about a quarter (27 per cent) of U5MR. Seventy per cent (70%) of the neonatal deaths occur within one week after birth.

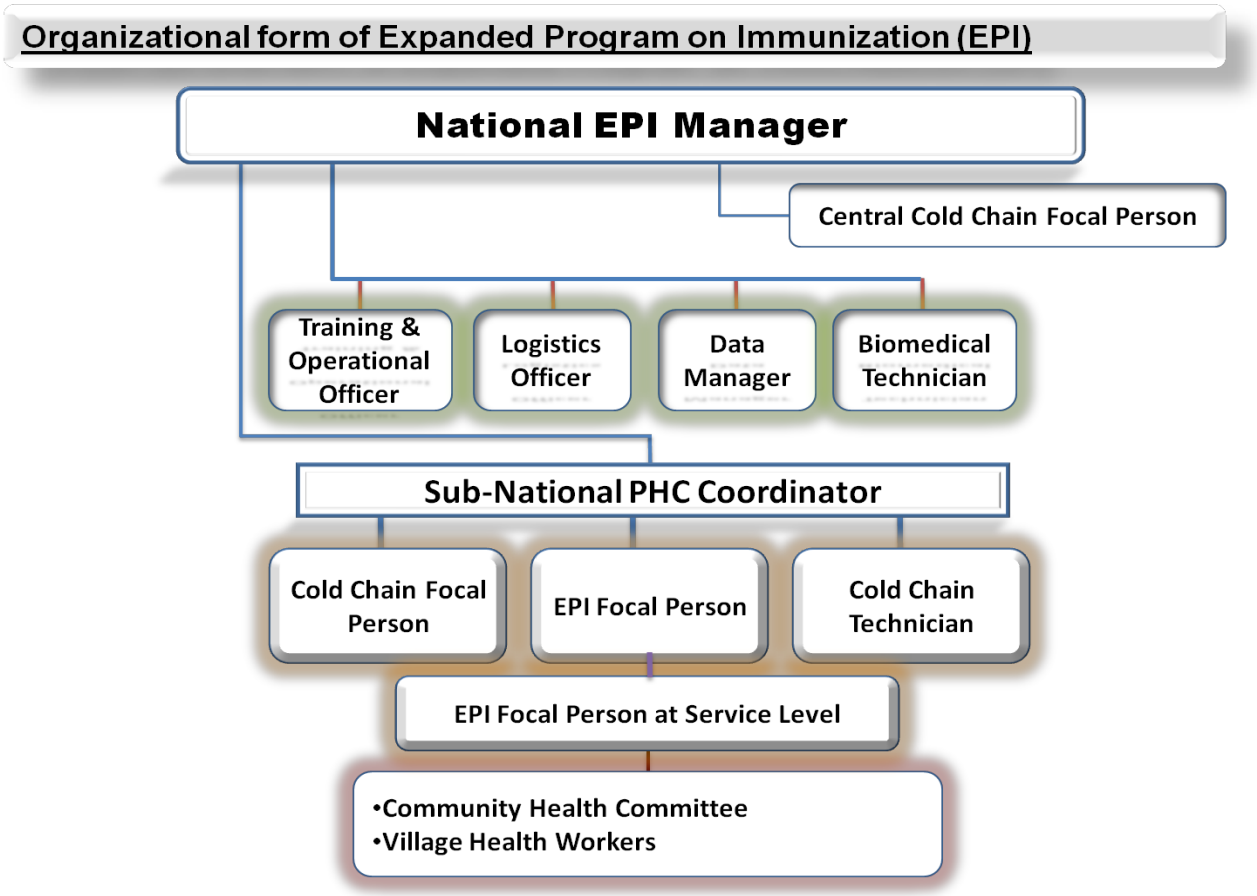
In order to move expeditiously in the desired direction, the Ministry of Health has formulated the National Health Policy (NHP) and the Health Sector Strategic Development Plan (HSSDP) and has revised its organizations structure to include additional units. The main aim of the HSSDP and the forthcoming operational, medium term and long term action plan of the BHCP intervention packages, the zones and sub zones is to set objectives and identify the most cost effective means or strategies and activities of achieving the desired objectives.

The Eritrean Health System/Sector comprises all institutions, structures and actors whose actions have the primary goal of achieving and sustaining good health. The role of government in health service provision and stewardship will continue to be vital for the foreseeable future. The second HSSDP (2017-2021) is already developed in 2016 and the new cMYP of EPI is aligned with same period of HSSDP of the country.

1.4 The Expanded Program on Immunization (EPI)

In Eritrea, EPI was launched in 1980**.** *But, n*oticeable progress on the program development and delivery of immunization services was only possible after independence in 1991. During the independence immunization service was provided in 125 health facilities at static and in 45 outreach sites, and immunization coverage for fully immunized <1yr children was 9.4%. Since independence, the National Programme on Immunization has made significant progress in developing and delivering of immunization services for children and women through routine immunization activities

EPI is a Unit in the organizational structure of the MOH. In the EPI context, the MOH is responsible for policy development, standards setting, priority setting, capacity building, preparing proposals for introduction of new vaccines and technologies by making close links with other stakeholders and known donor partners to make resource mobilization. In the organizational structure of MOH, the EPI it is directly responsible to Director of Family and Community Health Division within the Department of Public Health. At the Zoba level, the EPI falls under the Family and Community Health Division and Zonal EPI focal person, cold chain focal person and solar technician who works full time on the program management. The EPI service delivery integrated with other MCH services in package form at static and outreach sites routinely six days per week.



The program delivers immunization for children against eleven vaccine preventable diseases namely – Tuberculosis, Diphtheria, Whooping Cough, Tetanus, Polio, Measles traditional vaccines and underused and new vaccines, Hepatitis B & Homophiles influenza type b, Rota vaccine and Pneumococcal Conjugated Vaccine (PCV-13) which have been introduced in 2002, 2008, 2014 and 2015 respectively. Moreover, the country has introduced measles second dose in July 2012 to scale up measles control stage to elimination phase through boosting the herd immunity. Eritrea has also a plan to introduce Measles Rubella (MR) vaccine in 2018 and Human Papilloma Vaccine (HPV) for school children at the age of 9-13 years in pilot form in three districts in the central high highlands of the country. There is also a plan to conduct MnA preventive campaign for 1-29 year old population group in 2018.

1.5 EPI Target population for vaccination, 2017-2021

The estimated target population for immunization program for next 5 years is based on population estimate is outlined in the table below. The population projection has done based on the information provided in 2015 by the Eritrean National Statistics Office (NSO). On this base, birth cohort for less than one year population is 3% and surviving infants is 2.8% of the total population which are critical for routine immunization service.

Table 1: Eritrea, projected population 2017-2021 (Source NSO)

Target Population	Year				
	2017	2018	2019	2020	2021
Total population	3,798,702	3,905,066	4,012,708	4,125,063	4,240,565
Births 0-11 months (3%)	113,961	117,152	120,381	123,752	127,217
Surviving infants (2.8%)	106,364	117,,152	120,381	123,752	127,217
Under 5yrs (0-59 months) (15%)	569,805	585,760	601,906	618,760	636,085
Population 6-59 months (13%)	493,831	507,659	521,652	536,258	551,273
Pregnant women (4%)	151,948	156,203	160,906	165,003	169,623
Women of childbearing age 15-44yrs (20%)	759,740	781,013	802,542	618,760	848,113

1.6 Administrative coverage Vs coverage survey results of EPI

In Eritrea official population census has not yet not done. As a result the population distribution at sub national and district level does not show the actual population figure rather it is an estimated number of population provided by the national statistical office of The Government of the State of Eritrea. There is always population movement from zoba to zoba for agricultural purpose especially from the highlands of Eritrea to western low lands of Eritrea (Gash Barak) since it is very vast and fertile land that could accommodate many people. For example population residing in the high lands go to the western low lands of the country for trade and agricultural activities in which most of them remains there for subsistence farming and they are not yet included in the population figure as targets in routine immunization services. To this regards, in this region the administrative report always goes above 100% as compared to other regions of the county. But this does not mean that there is no unvaccinated child in the zobas. In fact the number of unvaccinated children in this zoba is higher as compared to other zobas. This difference is verified when we do EPI coverage survey. When we do EPI coverage survey results becomes the opposite. In order to execute the actual coverage achievement of each zoba we do EPI coverage survey 2-3 years.

The last national EPI coverage survey in Eritrea was conducted in 2013 and country has also planned to conduct EPI coverage survey in the first quarter of 2017. The survey aimed on validating the reported administrative immunization coverage so as to ascertain the actual coverage of each zoba in the country, identify reasons for not immunizing, reasons for late uptake of vaccine doses as well as estimating Vitamin A supplementation coverage.

The survey revealed that in Eritrea, access to immunization services is high; the crude DTP-HepB-Hib1 coverage is above 98% in all Zobas is an indication of the ability of the program to improve access and by reaching all the eligible children. The ability of the programme to deliver the scheduled antigens is depicted by high DTP-HepB-Hi 3 coverage rate of >95%. The utilization of immunization services was good, considering that the national DTP-HepB-Hib1 to DTP-HepB-Hib1 3 dropout rate was 0.9%, DTP-HepB-Hib1 to Measles was 2.1% and BCG to Measles was 2.0%, these rates were far below the cut-off point of less than 10% recommended by WHO. The country has planned to conduct EPI coverage survey in the 1st quarter of 2017 to validate the administrative reported EPI coverage administrative data from the regions.

1.7 Communication and social mobilization objective:

The overall objective of the communication is to develop key messages, identify primary/secondary target groups and develop communication tools and channels in relation to the immunization specific communication objectives. Communication is aimed to equip parents and caregivers with the knowledge about the benefits of immunizing their children to protect them from lifelong disability and death. To address these objectives mothers/caregivers should have good access to information, communication and education to increase their awareness. In Eritrea EPI communication strategies has developed at national level with cooperation of WHO, UNICEF and CSO in the country. But still the communication materials are not printed and distributed to service level to address the target group or caregivers for immunization.

Table 2: National Immunization Schedule, Eritrea

Vaccination for Infants			**Women of child bearing age (15-49 years)**		
Age	**Visit**	**Antigen**	**Visit**	**Interval**	**Antigen**
Birth	1	BCG, bOPV0	1	0 (as early as possible)	Td1
6 weeks	2	Penta1,bOPV1,Rota1, PCV1	2	4 weeks	Td2
10 weeks	3	Penta2,bOPV2,Rota2,PCV2	3	6 months	Td3
14 weeks	4	Penta3, bOPV3, PCV3	4	1 year or subsequent pregnancy	Td4
9 months	5	Measles (MCV1)	5	1 year or subsequent pregnancy	Td5
18 months	6	Measles (MCV2)			
6-59 months		Vitamin A Supplement			

2. GOAL AND OBJECTIVES:

2.1 VISION:

To make immunization services accessible, available and equitable to all children and women in reproductive age group in the country.

2.2 GOAL:

Reduce morbidity, disability and mortality of children due vaccine preventable diseases to a level that they will be no longer a health problem in the country.

2.3 GENERAL OBJECTIVE:

Increase immunization coverage of all antigens by improving access and utilization of immunization services by addressing problems affecting the various components of the EPI program.

2.4 SPECIFIC OBJECTIVES:

- To sustain Penta 3 Immunization coverage > 95% at National level by 2021
- To increase measles coverage from 85% to >95% by 2021.
- To sustain Pent 1 and Pent 3 dropout rate <10% and reduce dropout rate at high risk and less accessible areas from 15% to 5% by 2021
- To decrease the percentage of districts with <80% Penta 3 coverage from 22% to 10% by 2021
- Achieve 95% Vitamin "A" supplementation integrated with other services including routine EPI coverage.
- By 2017 all health facilities will have an updated guidelines and SOPs on vaccine and cold chain management.
- To determine socio economic disparity on immunization service through equity assessment/survey in 2017
- 90% of the health facilities will have at least two EPI trained health workers on vaccine and cold chain management and safe vaccine administration to improve quality of the EPI services

- Increase government coffining commitment on traditional and new vaccines on partner's contribution to EPI by 10 % annually.

- 85% of caretakers/mother of children aged < 1 year will understand the value and importance of vaccines & when to return back for next dose of vaccine.

- Develop & operationalize national child survival communication strategy to increase timely uptake of vaccines and community participation to reach less access areas.

- 97% of the health facilities will have adequate vaccine storage capacity with functional and standard cold chain equipment.

- Introduce MR and Mn A conjugated vaccine following wide age range preventive campaign

- Conduct yellow fever risk assessment and introduce the YF vaccine as per the assessment findings by 2018.

3. Situational analysis of the EPI program components

Eritrea conducted a comprehensive EPI program review in 2016 and identified the strengths weaknesses, opportunities and threats that needs to be taken into consideration during the development of the new cMYP. In summary, the conclusions and recommendations provided by the external consultants are highlighted as follows:-

Government is fully committed to providing immunization services. Management of the immunization services is effective and strong at Zoba and National levels. The country has been meeting its co-financing obligations and applying good financial accounting practices. However the financing and accountability processes are slow. There is limited flexibility for use of funds across different planned needs. The sub Zoba and health facilities lack own administrative and financial support which delays some services. In addition, lack of adequate transport particularly at the sub Zoba and lower levels restricts effective supportive supervision.

There is adequate staffing at Zoba and national levels but not in hard to reach Zobas. Sub Zobas do not have adequate trained cold chain assistants. There is good immunization service delivery though this is constrained by lack of reliable transport for the hard to reach populations. Through fixed and outreach delivery, immunization services are given for 6 days of a week. Mirco-planning is done with commendable efforts for safe immunization delivery. Reaching every district (RED) approach is employed and SIAs are planned to enhance quality. In some Zobas outreaches are inconsistently done. Lack of transport at sub Zoba and health facilities limits service delivery especially to the hard

to reach areas. Effective data analysis to track number of unvaccinated children is not adequately done.

Reliable vaccines supply and cold chain with the necessary tools and monitoring practices exist. Limitations for vaccine supply include; importation of vaccine by chartered planes, vaccine distribution by pull instead of the preferred push method that offers opportunities for direct onsite support, frequent power cuts, distribution of vaccines using public transport and insufficient dry storage space.

3.1 Vaccine and cold chain management

EPI unit has a central cold chain store with a number of cold rooms at the national level, and in five Zobas at Sub national level; Debubawi Keih Bahri (DKB) does not have a cold room. The Zobas collect vaccines from the central vaccine store quarterly, and the districts collect vaccines from Zoba vaccine stores monthly. Because of the proximity and access to the site, some health facilities collect vaccines from zoba vaccine store directly instead of the district store. Vaccines are delivered from national to service level in pull system. This may have some problem in monitoring the stock level at sub national level hence it is recommended to change it to push system distribution to Zoba and Sub-zoba level.

Procurement of inputs such as vaccines, injection safety materials, cold chain equipment and spare parts are entirely carried out by UNICEF supply division. WHO provides technical and financial support on training, surveillance activities, SIAs, surveys and other operational activities and both provide operational funds for routine and supplementary immunization activities. GAVI supports for new and under used vaccines and HSS grant funds to strengthen the overall health system to have equitable and accessible immunization service and provide Vaccine Introduction Grant (VIG) during introduction of new vaccines and changing vaccine formulation. Japan International Cooperation Agency (JICA) also support the program on procurement of CCE namely, cold rooms, solar and electrical refrigerators and freezers that goes for five years and to date the country has received two rounds out of the total five rounds. The third round procurement of CCE is on progress and expected to arrive in the first quarter of 2017.

In order to improve the quality of the country's cold chain vaccine management system and obtain adequate storage capacity for the introduction of new vaccines and introducing new technologies, a Comprehensive National Cold Chain Assessment was conducted in April 2016 and Effective Vaccine Management (EVM) in 2012. A five year cold chain replacement plan has been developed taking into account the required net storage capacity of vaccines. According to the assessment results and data analysis output, a total of 432 cold chain storage equipment are installed in all over the districts in which 364 (84%) of them were functional and 62(14%) were not functional. A total of 131 (30%) equipment have exceeded their useful life span and become obsolete at the time of the analysis which requires replacement.

The analysis of the cold chain assessment has shown that all Zobas except DKB will have adequate cold chain capacity for the next four years, hence DKB needs to expand its capacity by 2018 as shown in the table below.

Table 3: Status of cold chain vaccine Refrigerators & Freezers

(CCE inventory, 2016)

Condition	<5yrs	5-10yrs	.10years	Not specified	Total	%
Working	137	73	111	43	364	84.25
Not working	3	15	20	24	62	14.35
Not installed	6 (SDD)	0	0	0	6	1.40
Unknown	0	0	0	0	0	0
Total	146	88	131	67	432	100

Table 4: Cold chain storage capacity at sub national level and service Level and projected capacity requirement (CCE inventory, 2016)

Zonal Vaccine Sore Cold Chain Capacity Projected Requirements 2016-2020							
Zobas	Capacity Req. for 2016	Available Cap. 2016	Gap in 2016	2017	2018	2019	2020
				Projected capacity requirements			
Maekel	1823	7850	No	2693	2766	2841	2916
SKB	1196	77143	No	1767	1814	1864	1912
DKB	226	341	No	334	343	352	361
Anseba	1585	5250	No	2342	2405	2469	2535
Debub	2590	5690	No	3824	3926	4034	4142
G/Barka	2344	5644	No	3461	3554	3650	3749

3.2 Polio Elimination

Eritrea is committed to Global Eradication of Poliomyelitis and has been implementing the WHO recommended strategies for the past 10 years. Initially, National Immunization Days (NIDs) were launched in 1996. The country had conducted consecutive two rounds of successful NIDs annually for consecutive eight years till 2002 with an average of greater than 93% immunization coverage at national level. When Wild Polio Virus had been imported from Sudan in 2005, two rounds of high quality house to house polio NIDs were conducted at national level and two consecutive rounds of SNIDs were carried out in the district and other adjacent districts. Sub National Immunization days (SNIDs) have been ongoing activities twice a year to prevent further importation of the wild polio virus

in eight high risk districts (sub-zones) bordering to neighbouring countries until 2015. Initially, the SNIDs were conducted in synchronization with similar campaigns in Eastern Sudan.

To increase routine immunization coverage and to reach the unreached children in less accessible geographical areas, the country has carry out at least three rounds of integrated Sustainable Outreach Services (SOS) every year in 16 identified districts? Using this approach and gate way, Primary Health Care (PHC) Services have been strengthened in package form by making more emphases on the expanded program on immunization in the remote areas. As a result, routine OPV3 immunization coverage increased from <10% of that of 1991 to over 95% in 2015 at national level (NSO, EPHS, 2010, MOH EPI Coverage Survey, 2009 & 2012). As a result of achieving high immunization coverage, conducting consecutive rounds of polio NIDs and SNIDs in polio risk districts and establishment of a strong AFP surveillance activities in the country, no indigenous wild polio virus had been detected for the last 15 years. As a result of these achievements, the African Region Certification Committee (ARCC) certified Eritrea as Polio free country in 2008.

Putting this in place, as wild polio virus is circulating anywhere in the world, Eritrea is also considered at risk of importation of wild polio virus or circulating Vaccine Delivered Polio Virus (cVDPV). In light of this, in August 2016, Eritrea has developed polio outbreak preparedness and response plan for possible threat of importation of WPV and cVDPV in the country as a number of districts are bordering to Sudan, Djibouti and Ethiopia and their routine immunization coverage, NP-AFP rate and surveillance performances is low as compared to other districts.

The plan has been tested in a form of simulation exercise as if there is wild polio outbreaks has occurred in the country. After the simulation exercise the activity was observed and evaluated by external experts and gap was noticed in a capacity to translate the plan it in to actual practice. Based on the feed provided the document is revised and updated using the latest SOPs guidelines of 1and 2 and the final document will be shared by the end of 2016.

3.3 Maternal & Neonatal Tetanus Elimination

Tetanus toxoid coverage by card and history (Child protected from Neonatal Tetanus) at birth among women was significantly higher 96.8% for TT1 and 93.9 % for TT2. The TT1-TT2 dropout rates were less than 10% in all the Zorbas (EPI Coverage survey 2013)

Non-hospital delivery, low educational status, low parity and low prenatal care are major risk factors for neonatal tetanus. In Eritrea, 57% of the mothers having children aged 0-11 month had at least four antenatal care visits during the last pregnancy. About 60% of the deliveries are happening at home which poses a risk for neonatal tetanus, however due to high TT vaccination coverage among women of reproductive age, the risk is minimum.

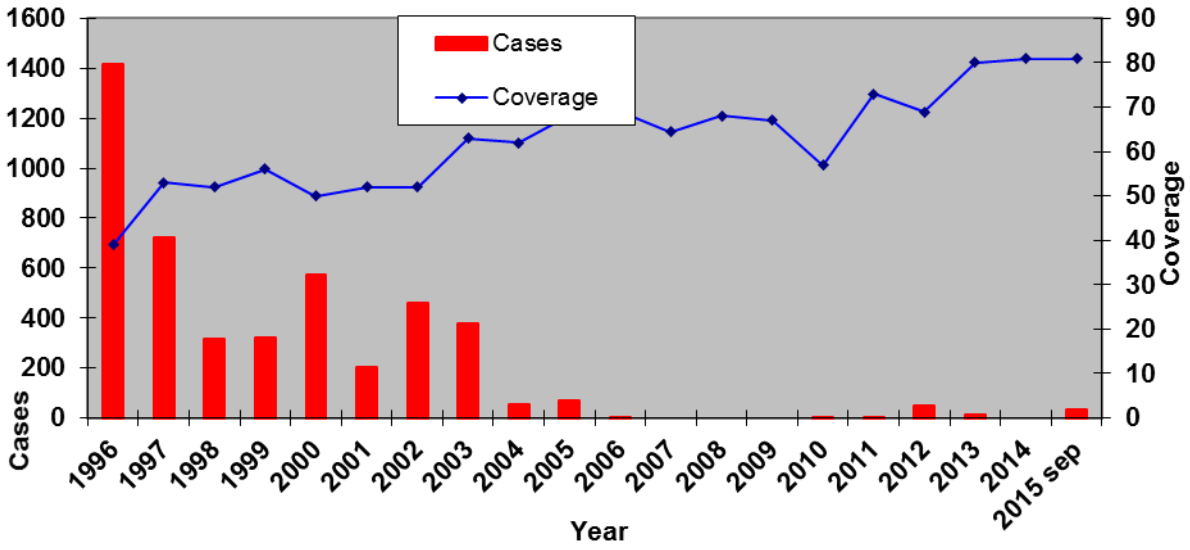
Eritrea achieved more than 95% of its infant protected at birth from neonatal tetanus consistently in the last five years. No district reported a case of neonatal tetanus in three consecutive years. In addition there has not been any reported or investigated neonatal death associated with neonatal tetanus. Hence the country has sustained the elimination of neonatal tetanus since 2002.

3.4 Measles Rubella

Measles immunization coverage has increased from 39% in 1996 to 81% 2015 (administrative coverage) as shown in the graph below. Measles surveillance also shows that there is a tremendous reduction of measles cases in the country. However, the number of reported measles cases/deaths could be under estimation as it is a common practice for parents and care takers not to bring their children with measles case to health facilities for treatment. Based on the administrative coverage result, almost about 19 % of targeted infants are not vaccinated with MCV1 and the vaccine efficacy rate (85%) makes a conducive situation for potential outbreak. To increase herd immunity and decrease susceptible individuals, the country has introduced second dose of measles (MCV2) in 2012. Moreover, there is still a need of conducting measles rubella campaign in 2018 before the introduction of MR vaccines into routine immunization and then will continue MR follow-up campaign every 2-3 years to boost the herd immunity for children age group 9 – 59 months.

Graph 1: Measles routine coverage and cases, 1996-2015

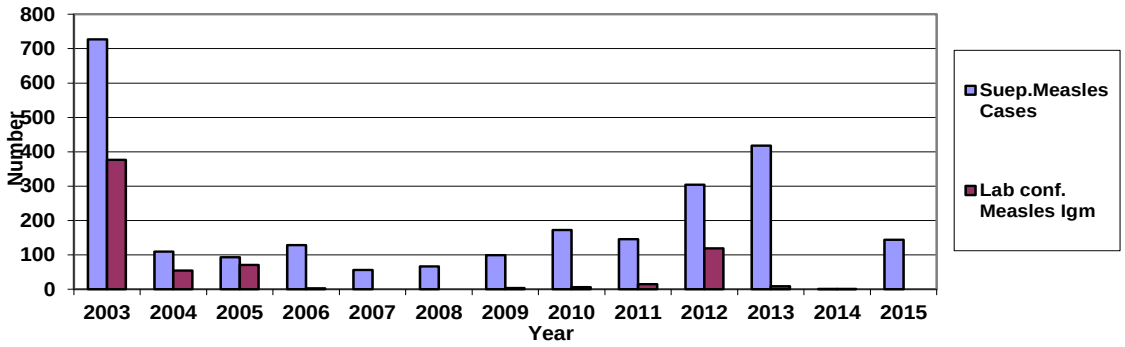
(Source: HMIS, 2015)



The measles rubella laboratory in Eritrea is well accredited by WHO in May, 2010. As part of the national accelerated measles control strategy, reliable case based lab supported measles surveillance exists in the country. Since the establishment of measles lab by support of WHO, the country is able to determine and understand the prevalence of the measles cases. Based on the surveillance results in the country, Eritrea has now reached measles elimination phase.

The surveillance system has demonstrated that the decline in confirmed measles cases to negligible level and increased trend of confirmed rubella cases, which is a sign of successful measles control activity and in the other way the result also indicated that the country should be consider make an intervention on the rubella disease which is becoming a public health concern in the population. Suspected measles cases detected and lab confirmed measles Igm are indicated in the Graph 2 below for more information.

Graph 2: Suspected and confirmed measles cases (Source IDSR)



In spite of the high measles vaccination coverage in all districts in the country (70-85%), there were few measles outbreaks which were laboratory confirmed cases in the age group above 5 years old. No measles cases and associated deaths were reported in all Zobas. There were 145 suspected measles cases reported in 2011; 304 in 2012, 418 in 2013, 1 in 2014 and 144 in 2015.

Table 6: Measles reported cases classified by age

(Source JRF 2012-2015)

Age group	2011	2012	2013	2014	2015
< 4 years	133	76	26	0	17
>5 years	12	228	392	1	127
Lab Confirm	14	119	8	1	0
Death	2	4	1	0	0
Total	145	304	418	1	144

In 2015, more than 80% of the zobas have sent blood specimens to the National Laboratory for confirmation. In that year 144 suspected measles cases were reported to the national Lab, out of which none was positive for measles Igm (confirmed cases. Most of the confirmed cases (88%) are in age group above 15 years, only 17 case was below 5 years old.

The majority of the positive cases were reported from Zoba Gash Barka sub-zobas Akordet and from Zoba NRS Afabet, kerkebet and Habero that report low coverage of measles vaccination. Of the total cases more than 82% of the measles cases are in the adult age groups who were likely not immunized when the programme was not well established and did not seroconvert after their vaccination.

Appropriate measures were put in place to control the outbreak. The community was sensitized, mass immunization of children less than 15 years old was undertaken. Overall, the shift is indicative of a good performance of the EPI programme. On the other hand the detection rate of rubella has increased while the measles case declined hence it is a paramount importance to improve the lab detection capacity.

In 2015, at national level, the annual measles investigation rate was sustained at 5.4/100,000 population and the detection rate was 4.3/100,000. Based on this results, the recommended minimum target 2-3 per 100,000 populations is achieved.

Suspected measles and rubella cases detected and lab confirmed measles Igm are indicated hereby in the table below

Table7: Suspected and confirmed rubella cases

Rubella	2010	2011	2012	2013	2014	2015
Suspected cases	163	120	304	139	78	222
Lab confirmed cases	25	18	15	19	33	16

A total 25 rubella cases in 2010; 18 in 2011; 16 in 2012; 15 in 2013, 33 cases in 2014 and 16 cases in 2015 were laboratory confirmed.

Table 8: Measles Rubella Case based surveillance as of June 2016

(Source IDSR)

Zoba	Total Population	Suspected measles reported	Annualized rate of Measles investigation	Lab Confirmed	Epidemiological Linkage	Discarded by Lab	Lab conf. Rubella
Debub	980,196	26	2.7	9	0	0	5
Anseba	599,770	39	6.5	1	0	0	9
G/Barka	887,184	20	2.3	9	0	0	4
Maekel	690,189	93	13.5	4	0	0	13
NRS	452,568	21	4.6	15	0	0	0
SRS	85,328	2	2.3	2	0	0	0
Total	3,695,235	201	5.4	40	0	0	31

3.5. Country objectives of Measles and Rubella elimination plan:

- To provide a first opportunity for measles rubella immunization before the first birth year through routine health service delivery.
- To provide second opportunity for measles rubella immunization at 18 months and above after birth through routine health service delivery.
- To provide supplementary measles rubella opportunity for measles rubella immunization through nationwide catch-up campaign in wide age range (9 months to 14 year).
- To provide supplementary measles rubella opportunity for measles rubella immunization through nationwide follow-up campaign in children age range 9-59 months every 2-3 years.

- To closely monitor measles occurrence and the effectiveness of the measles rubella control strategies by strengthening and maintaining the established nationwide case-based measles surveillance.

3.6 Meningitis A

- Eritrea has experienced outbreaks of meningococcal disease in the past, in particular in the southern part of the country bordering Ethiopia. Confirmation of the causal meningococcus serogroup was not always available. However, circulation of MenA was reported in the past ten years and outbreaks were documented in the following Zobas/regions and Sub-zones [districts].
- 2005 in Gash Barka [Tesseney, Barentu and Molki] and DebubZones [Adi-Quala and Mai-Mine]

- 2006-2007 in SKB Zone [Foro]
- 2009 in Gash Barka Zone [Tesseney]
- A large outbreak, that affected the entire territory in 1982, was reported by Habte-Gabr in 1984.

Although it was reported as due Neisseria Meningitides, the causal Sero-group is not mentioned in the report. A suspected outbreak in Northern Red Sea [Massawa] in 2009 was not also confirmed through group. The last meningitis epidemic documented in Eritrea was that reported in Gash Barka [Tesseney] in 2009, but the etiology was not confirmed. Moreover, an outbreak was reported in Northern Red Sea [Afabet] in 2010 but the total number of cases and the aetiology were not clarified.

Table 9. Description of meningitis outbreaks, Eritrea (1982) 2005-2016

Year	Subzone	Cases	Deaths	Pathogen	Source
1982	ERITREA	366	-	Unknown	Habte-Gabr 1984
2005	Tesseney	-	-	NmA	WHO ERITREA EHA Weekly bulletin
2005	Barentu	-	-	NmA	WHO ERITREA EHA Weekly bulletin
2005	Molki	-	-	NmA	WHO ERITREA EHA Weekly bulletin
2005	Adi-Quala	-	-	NmA	WHO ERITREA EHA Weekly bulletin
2005	Mai-Mine	-	-	NmA	WHO ERITREA EHA Weekly bulletin
2005	Adi-Quala	38	1	*Neisseria meningitidis*	MOH
2006-2007	Foro	22	4	*Neisseria meningitidis A*	MOH/WHO ERITREA EHA Weekly bulletin
2009	Tesseney	19	3	Culture not done	MOH
2010	Afebet	-	-	-	MOH

- The expert formal consultation resulted in proposing a preventive approach with the ambitious aim of protecting the entire population in Eritrea.

- Nineteen countries among the 26 in the meningitis belt have succeeded in eliminating the risk of meningitis A outbreaks, a tremendous regional public health effort and achievement to which Eritrea should contribute to lower the epidemic risk in all parts of the belt by further building geographic herd protection and maintaining the benefits of the mass campaigns in neighbouring countries. Based on the risk assessment results, geographic location of the country on meningitis belts, considering of 26 countries 23 have conducted preventive campaign of Mn A, and consultation meeting

with various internal and external expects the country has decided to carry out wide age MnA conjugated vaccine preventive campaign in 2018. Following wide age range campaign, MnA vaccine will be introduced into routine immunization program after 6 months of the campaign for children at the age of 18 months.

- The country will take this opportunity to strengthen the surveillance activities and sentinel sites for bacterial meningitis, as well the EPI program overall.
- The introduction is proposed to be conducted about 6 months after the preventive campaign to maximize population vaccine coverage and herd protection

3.7 Yellow fever

Yellow Yever (YF) vaccine is not providing as routine vaccine in immunization schedule in Eritrea. So far the YF vaccine is given for Eritrean at any age group who are travelling to YF risk countries. At this time YF diseases is becoming a public health concern in African countries and a number of countries trying to introduce it into routine immunization schedule to prevent the outbreak of the disease. Eritrea is also planning to conduct a yellow fever risk assessment in 2017 which will determine the status of the country and the need whether to introduce yellow fever vaccination into the routine EPI program will be in place for specific age groups or if there is a need of providing wide age range of the total population in the country there will be a need of higher government official decision.

4. Financial management of the EPI program at different levels

Based on a joint action plan elaborated and approved by the MOH and the partners, funds are put at the disposal of the MOH and partners release funds quarterly on advance basis. Generally, further disbursements for subsequent quarters are done if and only if justifications for prior disbursements are made. However there were situations where this rule is not respected for practical reasons. Unfortunately, there were at times great delays in the onset of the disbursement of finances, sometimes starting as late as in June.

4.1 At the central level

It was noticed that the signing of the common action plan between the MOH and partners which is a prelude to any disbursement, took too much time at times going as far as in June. The process whereby the joint action plan has to circulate from agency to agency for approval contributed immensely to this. Apparently there is a move towards bilateral negotiation between the MOH and the individual agencies on what to sponsor in the MOH work plan. This was ultimately leads to more work for the MOH, consequently leading to some more work in follow up and delays in execution.

Even when funds are available at the level of the MOH, there is a great delay in connecting with the program departments for utilization. The follow up of the documents is so slow and at times the program staff has to go to follow them up personally. All these lead to delays in the utilization of funds and subsequently on the related reporting, even when they are already available at the level of the MOH.

4.2 At the peripheral level

At times funds sent to Zoba accounts were not followed by timely information of the program staff involved in the utilization. There were situations of funds being consumed and justifications produced at a very slow pace, thus making further disbursements impossible at the level of done agencies for reasons stated above.

5. Costing and Financing of EPI cMYP (2017-2021)

The total expenditure on immunization service by the government and partners in the previous years were assessed to observe the proportion of budget expenditure on routine and supplementary immunization services from both sides. Most of the expenses was on the procurement of vaccines and was increasing from year to year due to introduction of new vaccines and changing vaccine formulations. As described in the table below 68% of the total expenses were covered by GAVI and 14.7% by the government. Starting from 2016 the government has also started co-financing 15% of the total costs on traditional vaccines and is expecting to increase in a yearly base and in 2017 is planned to be 20%.

Table 10:- Financial expenditure on EPI in the past three years

Organization	Total expenditure for immunization 2013 (USD)	%	Total expenditure for immunization 2014 (USD)	%	Total expenditure for immunization 2015 (USD)	%
Country	452,600	14.1	170,500	6.5	476,312	14.7
GAVI	590,635	18.5	843,225	32.3	2,199,500	68
UNICEF	737,233	23	424,405	16.2	345,000	10.6
WHO	969,324	30.3	385,000	14.7	210,000	6.4
JICA	392,068	12.5	330,965	13	0.00	----
	3,141,860		2,604,095		3,230,812	

On completion of the program planning component of the Strategic Multiyear Plan for 2017-2021, the latest costing tool version V3.9.3 was used to calculate the cost of the future activities and is completed with technical support of WHO/IST. The standard user guide line tool was used for costing of multiyear plan activities, costing of vaccines, CCE and transport support for the program.

Baseline data from the Financial Sustainability Plan (FSP) and situation analysis results of the previous three year (2014-2015) was used for coverage targets, personnel inputs, capital expenditure CCE availability, transport and other capital expenditure.

The EPI have relatively solid donor support and commitment of Government to ensure continued reliable support for the program for the period of 2017 to 2021. While the Government commitments is in place in which most of them are not secured. Hence, financial gap could occur which needs donor technical and financial support and commitment. However, change in donor support will have a severe impact in the event of a change in donor commitments. Such, gaps should be considered and estimated budget will be always included in generally recurrent budget of the Government for unseen futures. Generally, the assistance of UNICEF, WHO, GAVI, JICA and having the Government commitment on place the program can perform well with smaller constraints for the coming five years. The government will be also should consider for financial sustainability of the program gradually to come full co-financing obligation for all the expenses of the program.

Table 11: Total cost of supplies and logistic support for cMYP 2017-2021 (cMYP costing tool results)

Description	2016	2017	2018	2019	1920	2021	Total
Cost of vaccines	**2,036,797**	**2,145,394**	**2,727,962**	**2,992,827**	**3,027,320**	**3,125,729**	**14,019,231**
Traditional vaccines	260,395	276,736	198,430	205,675	213,262	220,050	1,114,152
Underutilized vaccines	884,033	920,514	1,218,484	1,496,631	1,484,600	1,540,206	6,660,436
New vaccines	892,369	948,144	1,311,048	1,290,521	1,329,458	1,365,473	6,244,644
Cost of safe injection	**62,076**	**65,817**	**80,609**	**97,845**	**97,615**	**101,513**	**443,399**
Traditional vaccines	34,951	37,485	24,424	26,436	27,766	28,976	145,087
Underutilized vaccines	20,342	21,230	39,826	56,306	54,233	56,553	228,148
New vaccines	6,783	7,103	16,359	15,103	15,616	15,984	70,165
Cost of vaccines & injection safety materials	**2,098,874**	**2,211,211**	**2,808,571**	**3,090,672**	**3,124,935**	**3,227,242**	**14,462,630**

This is the extent to which resources are mobilized and used for optimal attainment of the expected results. The financing of the EPI activities by partners are generally done through the approval of the MOH, and are released based on a memorandum of understanding and jointly developed Grant Management Requirement (GMR) duly signed by both parties, at the start of each year or developed for a number of years. These guiding documents are done based on annual plans multiyear plans which are elaborated taken into account in the National Health Sector Strategic Plan (HSSDP) developed by the MOH. The contributions of each organization in the past year and expected for the future years are as follows

Table 12: Total resources required for the EPI in USD, 2017-2021 (cMYP costing)

Total resource requirements in USD	2015	2017	2018	2019	2020	2021
	5,832,295	**5,022,916**	**13,069,803**	**6,185,588**	**6,643,496**	**6,191,726**
Traditional Vaccines	113,280	276,736	198,429	205,675	213,262	220,050
Underused Vaccines	646,494	920,514	1,218,484	1,496,631	1,484,600	1,540,206
New vaccines	1,036,170	948,144	1,311,048	1,290,521	1,329,458	1,365,473
Injection supplies	61,376	65,818	80,609	97,845	97,615	101,513
Systems Costs	3,014,652	2,413,617	2,632,960	2,643,498	2,553,401	2,533,582
Shared Health System Costs (EPI)	446,281	398,087	497,500	451,418	482,528	430,902
SIAS (campaigns & vaccine costs)	514,042	0	7,130,774	0	482,632	0

This table is result of the cMYP costing tool generated after populating of the various activities on the various component of the EPI program using unit cost for the item. It includes the resources required for the EPI program in each year.

Table 13. Underused and new vaccines dose for the coming five years

Vaccine type	2017	2018	2019	2020	2021
Penta	336,092	349,543	359,240	374,750	385,045
Rota	224,061	233,093	239,493	249,843	256,698
PCV-13	415,880	349,643	359,240	374,750	385,045
MR		447,444	371,379	389,520	404,289
Mn A			123,707	102,676	105,757

Table 14: Government vaccine co-financing estimated amount in USD For the coming 5 years for new and underused vaccines

Vaccine type	2017	2018	2019	2020	2021
Penta	67,218	89,927	71,849	74,950	77,009
Rota	44,812	46,619	47,899	49,967	51,340
PCV-13	83,929	69,929	71,848	74,950	77,009
MR		89,489	74,276	76,504	80,858
Mn A			24,741	20,535	21,152

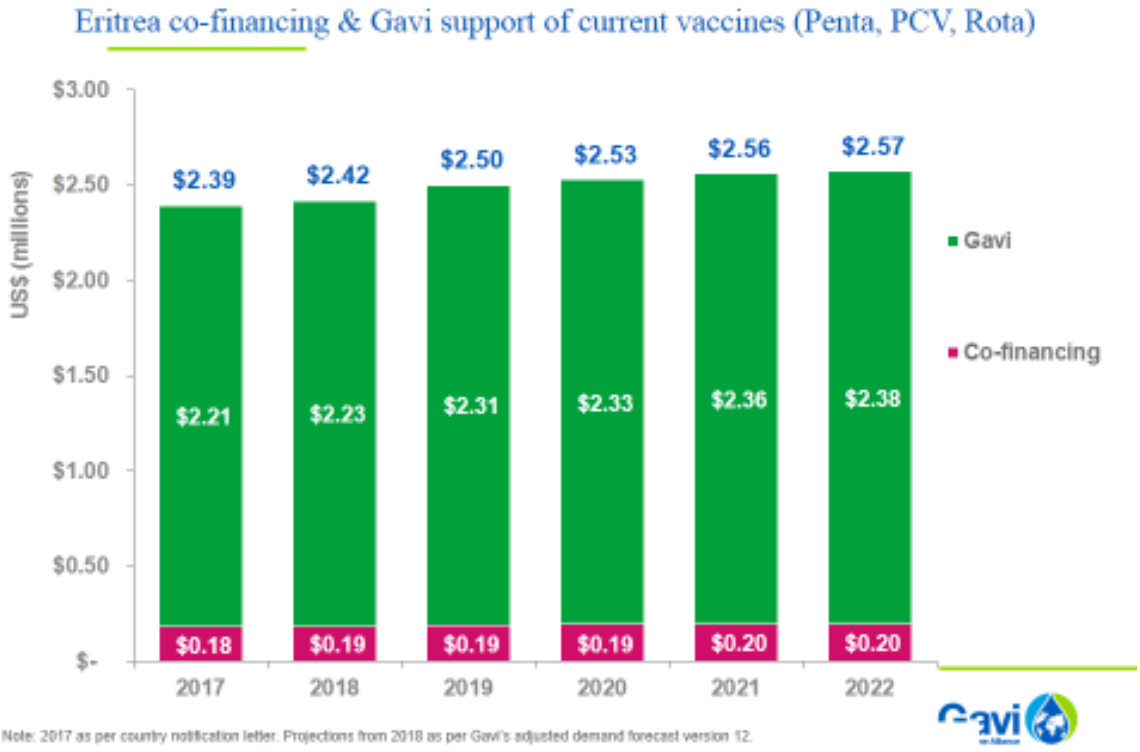
Table 15: GAVI Vaccine co-financing estimated amount in USD for 5 Years for New & underused vaccines

Vaccine type	2017	2018	2019	2020	2021
Penta	686,988	716,767	736,441	768,239	789,345
Rota	376,423	391,600	402,348	418,721	431,252
PCV-13	2,212,483	1,748,213	1,796,198	1,873,752	1,925,231
MR		183,452	152,265	156,833	165,789
Mn A			50,720	42,097	43,360

Eritrea is classified with low income countries and the co-fining amount allocated is 20% for both underused and new vaccines supported by Gavi. In 2016 the country has started to co-finance 15% of all the expenses on traditional vaccines and there is a plan to increase the co-financing amount in yearly base. The Government has already approved 20% of the total cost of traditional vaccines for 2017.

Graph 3: Eritrea co-financing and GAVI support estimate 2017-2022

(Source: Gavi, 2016)



Dashboard of costing cMYP 2017-2021

Table 15: Projected Resources needed and funding by year

Metric	2017	2018	2019	2020	2021	TOTAL 2017 -2021
Total resources needed:	**5,507,158**	**13,476,436**	**6,770,969**	**6,951,102**	**6,365,972**	**39,071,637**
Secured Funding:	3,801,721	4,466,898	4,592,340	4,571,782	4,759,349	**22,192,091**
Probable funding gap:	1,705,438	9,009,538	2,178,628	2,379,320	1,606,622	**16,879,546**
Probable funding:	1,660,558	8,949,196	2,108,586	2,307,881	1,533,753	**16,559,974**
Possible funding gap:	44,880	60,342	70,042	71,439	72,869	**319,572**

Table: 17 Summary of baselines expeditures, and projected costs, by year

Year	Vaccine supply and logistics (routine only)	Service delivery	Advocacy and Communication	Monitoring and disease surveillance	Program management	SIAs	Total direct costs
2015	3,235,947	912,118	20,000	216,725	249,200	514,042	5,148,031
2017	3,662,215	957,561	23,370	235,258	268,122	0	5,146,526
2018	4,390,021	1,013,670	24,552	244,612	295,818	7,130,773	13,099,445
2019	4,739,577	1,062,467	25,795	254,386	309,816	0	6,392,042
2020	4,011,358	1,105,926	27,100	264,605	322,052	831,348	6,562,389
2021	4,169,402	1,167,616	28,471	275,287	334,836	0	5,975,611
Total	**20,972,573**	**5,307,240**	**129,288**	**1,274,148**	**1,530,644**	**7,962,121**	**37,176,013**

The table above illustrates the estimated expenditures of the program on various areas such as vaccine supply and logistics, service delivery, advocacy and communication for social mobilization activities, monitoring and diseases surveillance, program management and vaccine and vitamin A supplementation to boost the herd immunity in VPDs in the

community. Baseline expenditure (2015) is described and based on the projected population size for immunization services and other associated program components the ministry have developed amount of budget for the coming five years (2017-2021).

Table16: Strength, Weakness, Opportunity and Threats (SWOT) analysis of the EPI program

No.	Strength	Weakness	Opportunity	Threats
1	Existence of EPI teams at central and Zonal levels,	Inadequate staff at Central EPI Unit (unavailability of training officer and cold chain technician), and high turnover of trained health workers at service level,	Highest level political support for the EPI program and harmonizing forum of both the government and partners	Existing curricula and modules for training mid-level health professionals not being reviewed to include updated principles of EPI/IDSR program
2	Availability of National Health Policy and Health Sector Strategic Development Plan,	Weak national research capacity to produce evidence for driving policy changes and health system innovations for better health system performance	Leaders, from all levels of the administrative structure advocate for EPI,	Eritrea has not conducted national census which leads to in consistency in calculation of EPI/surveillance indicators,
3	Availability of EPI strategic plans, and updated EPI Policy document,	There is no strategic plans at the sub-zoba level	There is no cultural and religious taboo or resistance for immunization by the community.	There is no standard EPI Communication Strategy to drive community demand generation for EPI health services.
4	Availability of EPI annual plans, supported with a budget at zoba level	All districts had no annual work plans	Strong EPI partners: WHO, UNICEF, JICA, GAVI. Implementation of RED/REC and SOS approach in some districts appropriately	The country have many hard to reach area and nomadic population,
5	Funds are available and financed through the annual government budgetary to support the EPI programmers for: personnel, supervision, training and other management support activities)	Low percentage contribution of the government towards the purchase of traditional vaccines.	GAVI financial support for immunization program is in place, there is strong support on strengthening health systems and on the procurement and supply of new and traditional vaccines.	Immunization is free of charge as result communities are not sharing cost of vaccines and immunization services,
6	Introduced the Reaching Every District (RED)/ and Reaching Every Child (REC) strategy,	Lack of accessible transport and fuel shortage for immunization services to outreach and hard to reach areas,	There is strong community participation and support for immunization	Funding is not adequate for sustainable outreach services (SOS) for hard to reach areas
7	Availability of computerized stock management tool used for monitoring vaccine movement at central and zonal levels.	There is no computerized stock vaccine management at sub-zoba levels.	There is good system and skills to monitor vaccine stocks management using computerized system.	Weak skills of Mid-Level Managers (MLM) on computerized quality stock management of vaccine and un availability of computer at district levels

No.	Strength	Weakness	Opportunity	Threats
8	Stock cards are used to monitor vaccine stocks at all levels of the district and health facility levels.	Poor data quality management in all programs at all levels.	Modern computerized stock management tools are available to monitoring vaccine movement at national and sub national (limited0	Inadequate cold and dry storage capacity at the Central and Zoba levels,
9	Existence of integrated supervisory checklist of vaccine preventable diseases (VPDs).	Supervision is irregular and not carried out as planned (monthly or quarterly).	Integrated EPI/surveillance supervision check list and work plans available	There are no EPI/surveillance specific vehicles at all levels.
10	Availability of WHO PQS standard cold chain equipment with adequate storage capacity at all levels	Preventive maintenance of the cold chain equipment is not done in regular base	Availability of trained cold chain focal person at sub national level and biomedical engineering division at national level that makes support for the EPI unit	Unavailability of enough spare parts for the cold chain and shortage transport support to conduct preventive maintenance from national to service level
11	Centralized EPI reporting system through HMIS from district to national level	Data harmonization meeting and validation of the report is not done in a regular base	Availability of DQS training manuals and trained staffs	Funding for DQS and conducting data harmonization meeting is not available
12	Availability of at least two EPI trained focal person for vaccination service at each facility	Frequent turnover of staffs affects the quality of the service and regular reporting system.	At least two EPI IIP training is done in each zoba in yearly base	IIP training is not yet updated to include the newly introduced vaccines and new technology
13	Updated and uniform EPI reporting tools and reporting guidelines at all levels which included the newly introduced vaccines	Immunization registers for child vaccination not yet updated and SOP for EPI is not available at all levels	Availability of EPI partners for technical and financial support	Funds for printing of reporting tools and registers is not adequate
14	Availability of IDSR guidelines, training materials, various forms and specimen kits at all levels	Limited supervisory visits from one level to another and no written feedback and there is no community based surveillance activities	Existence of well-structured surveillance reporting system from health facility level to national level	Existence of surveillance structure from national to health facility and not fully linked with community,

No.	Strength	Weakness	Opportunity	Threats
15	Written terms of reference for the focal points available at zoba, sub-zoba level	Irregular surveillance review meetings held at zoba level.	Availability of IDSR focal persons at sub national, district and HFs level	There is no surveillance activity for YF
16	Operational Guidelines for IDSR available at all levels,	Delayed accountability of partner funds (WHO) leading to delay in release of funds especially for surveillance activities.	Availability well-structured surveillance from national to service level	Inadequate surveillance funding
17	Existence of integrated supervisory plan and checklist with respects to vaccine preventable diseases (VPDs).	Community based surveillance structure is not yet well established.	Availability of village health committee and community health workers	There is probability of cases not being reported from the community level to the health facilities,
18	Case based surveillance and data available at Zoba, Sub-zoba and health facility level.	There are delays to ship stool specimens from the national laboratory to Nairobi related to in availability of flights	Availability of WHO office to give technical and financial report	There is no accredited Polio laboratory in the country,
19	A list of health facilities with prioritization available at national, zoba and sub-zoba levels,	There were no written schedules for visiting surveillance sites in the sub-zoba and health facilities	Availability of trained and well skilled man power at all levels	Weak internet connection and frequent interruption of data transmission
20	Electronic database available at Zoba levels and data completeness and timeliness maintained at all levels	Electronic data base not available at district and health facilities level and there is no structured management	Availability of trained and well skilled man power at all levels	Frequent disruption of electric power in urban areas and breakdown of refrigerators in health facilities located in the remote areas.
21	Sentinel of Rota virus and PBM at national pediatric referral hospital	There is no regular follow-up and report of the sentinel sites	Availability of a number of experts pediatricians at the national pediatrics referral hospital	Turnover of the pediatricians less follow up on the sentinel sites
22	Existence of EPI communication strategy	There is delay in printing and distribution of the EPI communication materials to service level.	Availability of EPI communication materials at service level	EPI communication materials are not printed and disseminated

Table 17: Situational analysis of routine EPI by immunization system components

System Components	Suggested indicators	RESULTS		
		2013	2014	2015
1. SERVICE DELIVERY				
Immunization Coverage	Official Coverage Estimates % Penta 3	95%	95%	95%
	Official Coverage Estimates % Measles(JRF)	90%	90%	85%
	Penta 3 coverage estimates as per administrative report	81%	81%	83%
Coverage Monitoring	% gap in match between Penta 3 survey coverage and officially reported figures	14%	14%	12%
	HPV Coverage	NA	NA	NA
	Most Recent Survey Coverage % Penta 3	95%	95%	95%
Immunization Demand	% Drop Out Penta 1- Penta 3	8%	9%	7%
Immunization Equity	% gap in Penta 3 between highest and lowest socio economic quintiles	NA	NA	NA
	Number of districts with penta 3 coverage > 80%	40	42	45
	Number of high risk communities identified for accelerated routine immunization programming	16	16	16
Integration	% Services provided at fixed facilities	85%	85%	85%
	Guidelines on outreach health service package developed	yes(Needs to be updated)	yes(Needs to be updated)	yes(Needs to be updated)

Situational analysis by accelerated disease control initiatives suggested indicators

Disease Control Initiative	Suggested indicators	National status		
		2013	2014	2015
Polio	Coverage survey OPV3	98% (coverage survey	----------	----------
	Administrative OPV3 coverage	80%(admin data)	81%(Admin data)	83%(Admin data)
	WHO and UNICEF (WUENIC) estimates	99%	99%	97%
	Non-polio AFP rate per 100,000 children under 15 years of age	3.64	3.54	3.71
	Number of rounds of national and sub national immunization days	2 NIDs 96.8% (Independent monitoring	2 SNIDs 95 %	1NID 95%(independent monitoring)
MNT	% target population protected at birth from neonatal tetanus	94%	96%	94%
	Number and proportion of districts reporting > 1 case of neonatal tetanus per 1000 live births	0	0	0
	Was there SIA? (Y/N)	Yes	Yes	Yes
	Neonatal deaths reported and investigated	0	0	0
	Delivery at Facility Rate	32%	34%	34%
Measles & Rubella	Measles coverage (1st dose)	77% (Admin data) 96% (coverage survey)	72% (Admin data)	78% (Admin data) 95% (coverage survey)
	Measles coverage (2nd dose)	NA	NA	76% (JRF)

Situational analysis by accelerated disease control initiatives suggested indicators

Disease Control Initiative	Suggested indicators	National status		
		2013	2014	2015
Measles	Number of lab confirmed measles/rubella outbreaks	8	1	0(JRF)
	Geographic extent National Immunization Day	Polio NID	Polio SNIDs	1 National NID
	Age group	9 months-5 years	9months-5years	9months-5years
	Coverage	96.8%	85%	83%
	Total Measles Cases (Lab/Clinical/epidemiological)	188 clinical 47 lab confirmed	177 clinical 1 lab confirmed	176 clinical 110 lab confirmed
	Total Rubella Cases(Lab/Clinical/epidemiological)	19	33	30
Yellow Fever	YF coverage	NA	NA	NA
	Number and percentage of districts reporting > 1 suspected case	0	0	0
	Was a preventive campaign conducted? (Y/N)	No	No	No
Epidemic Meningitis	Meningococcal A Coverage	NA	NA	NA
New vaccine Introduction	No of new vaccines introduced into the routine schedule in the last plan period	0	2	1

Situational analysis by accelerated disease control initiatives suggested indicators

Disease Control Initiative	Suggested indicators	National status		
		2013	2014	2015
Routine surveillance	Percentage of surveillance reports received at national level from districts compared to number of reports expected	95	95	95
	AFP detection rate/100,000 population under 15 year of age	2.7	4.2	4.2
	% suspected measles cases for which a laboratory test was conducted	100	100	100
	Number of neonatal deaths for which a follow up investigation was conducted	0	0	0
	Sentinel Surveillance for Rotavirus establish	Yes	Yes	Yes
	Sentinel Surveillance for meningitis (Hib/PCV) established	No	No	No
Adverse Events	National AEFI System is active with a designated national committee	Yes	Yes	Yes
	Number of serious AEFI cases reported and investigated	NA	0	0
Communication Strategy	Availability of a routine immunization communication plan	yes	yes	yes
Demand	% of outreach services held as planned	50%	70%	60%

Situational analysis by accelerated disease control initiatives suggested indicators

Disease Control Initiative	Suggested indicators	National status		
		2013	2014	2015
Cold Chain and Logistics	% of health facilities with adequate numbers of appropriate and functional cold chain equipment	ND	ND	22%
	What was the year of last inventory assessment for all cold chain, transport and waste management equipment (or EVM)	2012	----------	----------
	No. of health facilities with > 80% score for all indicators on the last EVM assessment	NA	NA	NA
	% Health facilities with availability of a cold chain replacement plan	100	100	100
Vaccine supply	Was there a stock-out at national level during the last year?	No	No	Yes
Financial sustainability	What percentage of total routine vaccine spending was financed using government funds? (including loans and excluding external public financing)	18%	18%	18%
Capacity building	No. of health workers & managers trained in immunization services through MLM or IIP training per year;	550	480	540
	% of health workers trained in immunization in the last two years (data from PIE and EPI reviews);	ND	90%	90%
	Curriculum review for pre-service medical and nursing immunization education conducted	NO	NO	NO
Supervision	Average no. of central supervision visits to each District level Per year	NO	NO	NO

Table 18: National objectives, Milestones and priority setting accelerated disease control and introduction of new vaccine

Immunization service	Current performance	Objectives	Milestone	Order of priority
Accelerated disease control and introduction of new vaccines				
Polio Eradication	95% OPV3 coverage has been achieved and polio free status maintained. Non-polio AFP rate per 100,000 children under 15 years of age is 3.6 nationally 4 out of 6 Zobas have 2 or more AFP rate per 100,000 children.	To maintain polio free status & achieve >95% valid coverage of OPV3 by 2021	OPV 3 coverage 98% by 2019	1
		To achieve all zobas > 2/100,000 AFP detection rate	Non Polio AFP rate >2/100,000 children reported by all Zobas in 2018	1
MNT elimination	Sustained MNT elimination and achieved more than 94% of the target population protected at birth from neonatal tetanus	To achieve 95% children protected from MNT at birth by 2021	95% target population protected at birth from NT by 2018	1
Measles and Rubella elimination	85% Measles 1 coverage has been achieved as per WUENIC 2015. Measles 2 coverage is at 76%. On average above 50 cases of lab confirmed measles has been reported in the past 3 years	To achieve >95% Measles coverage (MCV1 and MCV2) at national level with above 80% coverage in every district	MCV1 and MCV2 coverage is above 90% Nationally and above 80% every district by 2018	1
		To introduce and achieve > 95% coverage of MR 1 and 2 vaccination and establish a CRS surveillance system by 2021.	MR introduced by 2018. MR coverage >90%by 2019. CRS surveillance system established by 2018	2
	On average above 25 cases of lab confirmed rubella has been reported in the past three years. There is no surveillance system for tracking incidence of CRS	To conduct a wide age range catch up MR campaign (9 month - 15 years) to achieve >90% MR coverage by 2018.	MR SIA (9months -15 years) conducted and >90% coverage achieved by 2018	1

National objectives, milestones and priority setting routine immunization service

Immunization service	Current performance	Objectives	Milestone	Order of priority
Accelerated disease control and introduction of new vaccines				
Introduction of new vaccine	High burden of cervical cancer due to HPV.	To introduce HPV vaccination to girls 9-13 years of age in three districts and achieve >90% of the target by 2018.	Three districts introduced in three districts by 2018	2
Yellow fever	Eritrea has not yet conducted risk assessment for yellow fever and the vaccine is not given routinely	Conduct risk assessment and introduce yellow fever vaccination and achieve >95% coverage by 2021	Yellow fever risk assessment conducted by 2017. Introduce YF vaccination by 2018, Achieve >90% coverage by 2019.	1
Meningococcal A Neisseria vaccine	Risk mapping done, Eritrea is in the Meningococcal belt region	To conduct a wide age range (9month- 29 years) campaign and achieve >90% coverage to stop Men A transmission by 2021 To scale up HPV vaccination to girls 9-13 years of age in three Zobas and achieve >70% coverage by 2021	By 2018 campaign conducted and >90% coverage achieved. By 2021, three Zobas introduced HPV vaccine and achieve >65% in three targeted Zobas	2 3
Hepatitis Disease	High prevalence (up to 6%) of hepatitis among pregnant women in some regions(SRS)	To introduce Hepatitis birth dose and achieve >90% coverage by 2021.	Introduced Hep birth dose by 2019. Achieve coverage of >90% by 2021	3
Polio eradication	Polio eradication is a priority globally and nationally agenda	To introduce IPV and achieve >90% coverage by 2021	IPV introduced by 2018, and achieve >90% coverage by 2019.	1

National objectives, milestones and priority setting on routine immunization service

Immunization service	Current performance	Objectives	Milestone	Order of priority
Routine immunization Service				
Immunization Coverage	National Penta 3 coverage >95% (Coverage survey data)	To increase Penta 3 coverage from 95% to 98% at National level by 2021	By 2019 national Penta 3 coverage to be 97%, by 2020 national coverage to be 98%	1
	National Measles coverage >85% (Coverage survey)	To achieve measles coverage from 85% to 95% by 2021.	By 2019 national measles coverage to be 90%, by 2020 national coverage to be 95%	1
Immunization Demand	17% of districts have Pent 1- Pent 3 dropout rate >15%	Reduce Pent 1- Pent 3 dropout rate from 15% to 8% at high risk districts by 2021	By 2018 to reach 9% By 2020 to reach 8%	1
Immunization Equity	Gap in Penta 3 between highest and lowest socio economic quintiles	Survey to be done in 2017	Survey done by 2018.	3
	22% of the districts have penta 3 coverage <80%	To decrease the percentage of districts with Penta 3 coverage <80% from 22% to 10% by 2021	By 2018 to decrease to 15%, by 2020 to decrease to 10%	1
	16 districts are identified as high risk for accelerated routine immunization programming	To decrease the 16 districts with high risk to 8 by 2021.	By 2018 to 12, By 2020 to 10	1
EPI guidelines	Guidelines are available but needs to be updated	All health facilities to have an updated Guidelines on Outreach health service package	By 2018 all health facilities to have updated outreach health service package	1
Hospital burden due Rota virus caused diarrhea	Rotavirus Coverage at national level is 98%(from PIE result)	To sustain the rota vaccine coverage at 98%	By 2018 ,98%, By 2020, 98%	1

National objectives, Milestones and priority setting on program management

Immunization service	Current performance	Objectives	Milestone	Order of priority
Program Management				
Law and Regulation	NRA meets once in a year	The NRA to meet twice a year	2017-2021: meets twice a year	3
	There is legislation and administrative order in line item for vaccines.	To review legislation and administrative yearly in line item for vaccines.	2017-2021 legislation available	3
Policy	The national immunization policy not updated	To update the national immunization policy by 2017.	2017 update the EPI policy	1
Planning	The country has an annual work plan for immunization funded through Ministry of Health budgeting processes	To develop annual work plan and budget yearly	2017-2021	1
Coordination	The ICC held meetings 3 times a year to discuss on immunization issues.	To conduct ICC meeting 3 times a year	2017-2021	2
	The NITAG was established in 2016	To conduct a meeting 3 times a year	2017-2021	3
	Two health workers/vaccinators available per 10,000 population	To be available 2 vaccinator per 10,000 population yearly	2017-2021 2 vaccinators per 10,000 population in the country	1
	20% vaccinator posts currently vacant	To decrease the vacancy post by 4% yearly	2017- 2021 decrease 4% every year	
	All vaccinators trained on immunization in practice.	To train 350 vaccinators on IIP yearly	2017-2021 train 350 vaccinators yearly	2
	No mid-level manager trained conducted on MLM.	Train 50 mid-level manager on MLM yearly	2017-50, 2018-50 , 2019-50, 2020-50, 2021-50 trained on MLM	1

National objectives, milestones and priority setting program management

Immunization service	Current performance	Objectives	Milestone	Order of priority
Program Management				
Capacity Building	All vaccinator trained on post introduction evaluation of New vaccine	To train 350 vaccinators on new vaccine introduction	2018 train all vaccinators on new vaccine In 2009 train all vaccinators on new vaccine introduction	3
	No curriculum review conducted for pre-service medical and nursing immunization education.	Updating curriculum of preserve medical and nursing on immunization by 2017.	Update the EPI curriculum in 2017	1
	No supervision conducted from central office to districts	Conduct supportive supervision twice year	Twice per year supportive supervision conducted from 2017-2021	1
Strengthen cold chain system	Solar technicians at	Refreshment training for 18 solar technician at sub national level by 2017	All solar technical will be updated with maintenance skill	1
	Cold chain assessment and inventory done Improvement plan developed	Replace absolute and none standard CCE at service level based on the plan	By 2018 85% of the HFs have PQS CCE and with adequate storage equipment	1
EPI communication strategy	EPI communication plan developed but not printed and distributed to sub national level	Updated and print the EPI communication materials Distribute to service level	By 2018 EPI communication materials distributed to service	

7. STRATEGIES, KEY ACTIVITIES, & TIME LINES of EPI cMYP 2017-2021

Table 19: Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Service delivery: Routine Immunization				2017	2018	2019	2020	2021
Routine Immunization Coverage	To sustain Penta 3 coverage at 98% at national level by 2021	Strengthen routine immunization activities	Conduct outreach services,	√	√	√	√	√
			Training for health workers	√	√	√	√	√
			Data quality self-assessment training	√	√	√	√	√
			Social mobilization	√	√	√	√	√
			Conduct PIRI	√	√	√	√	√
			Supportive supervision from Nation/ Zoba to lower levels	√	√	√	√	√
	To increase measles coverage from 85% to 95% by 2021.	Strengthen routine immunization activities	Conduct outreach services,	√	√	√	√	√
			training for health workers	√	√	√	√	√
			Social mobilization	√	√	√	√	√
			Conduct PIRI	√	√	√	√	√
			Supportive supervision from Nation/ Zoba to lower levels	√	√	√	√	√
Immunization demand	Reduce Pent 1- Pent 3 dropout rate from 15% to 8% at high risk districts by 2021	Defaulter tracing activity Social mobilization	Sensitize the community	√	√	√	√	√
			Train community health workers	√	√	√	√	√
			Train health workers on tracing vaccine take defaulters	√	√	√	√	√
			Conduct PIRI	√	√	√	√	√
			Supportive supervision from Nation/ Zoba to lower levels	√	√	√	√	√

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Service delivery: Routine Immunization				2017	2018	2019	2020	2021
Improve access and utilization of immunization service.	To decrease the 16 districts with high risk of vaccine preventable disease to 8 by 2021.	Resettlement of the scattered population to suitable areas Strengthen RED/REC approach	Advocate for local administrators to resettle the scattered population 2018	√	√	√	√	√
			Mobilize the community to maintain the roads	√	√	√	√	√
			Conduct PIRI four times per year in each district	√	√	√	√	√
Integration	All health facilities to have updated Guidelines on Outreach health service package	Develop guideline and standards Conduct survey	Develop ,print, and disseminate guild line	√				
Immunization equity	To determine socioeconomic disparity on vaccine uptake by 2017	Survey	Hire expert, train data collectors, hire cars/transport Conduct the survey	√				

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Accelerated diseases control and introduction of new vaccine				2017	2018	2019	2020	2021
Polio eradication	Maintain polio free status & achieve >95% coverage of bOPV3 by 2021	Expansion and strengthening routine static and outreach services.	Conduct regular routine immunization services in static and outreach sites.	√	√	√	√	√
			Conduct periodic intensified routine immunization in less accessible areas (low performing districts)	√	√	√	√	√
			Conduct periodic supervision at national twice a year and Zonal level quarterly	√	√	√	√	√
		Integration of immunization with CHNW.	Conduct defaulter tracing activities during AVW.	√	√	√	√	√
			Conduct health education before immunization session.	√	√	√	√	√
		Community mobilization	Develop IEC materials and disseminate messages on polio through mass media, community meetings.	√	√	√	√	√
		Introduction of IPV	Introduce IPV in routine EPI			√	√	√
		Strengthen AFP surveillance	Training of health workers on AFP surveillance, monitoring and supervision of surveillance Have updated Polio outbreak preparedness and response simulation plan document	√	√	√	√	√

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Accelerated diseases control and introduction of new vaccine				2017	2018	2019	2020	2021
MNT elimination	Achieve >95% children protected from neonatal tetanus at birth by 2021	Td vaccination for school girls. Strengthen Td vaccination during ANC. Community mobilization for Td	Conduct biannual Td vaccination session in all junior and high schools.	√	√	√	√	√
			Trace unvaccinated pregnant mothers and give Td vaccination during ANC.	√	√	√	√	√
			Conduct regular health education on Tetanus to WCBA.	√	√	√	√	√
			Train CHWs to trace unvaccinated WCBA	√	√	√	√	√
Measles elimination	To achieve >95% Measles coverage (MCV1 and MCV2) at national level and above 80% coverage in every district By 2018	Expansion and strengthening routine outreach services. Integration of immunization with CHNW. Community mobilization Strengthen measles surveillance	Conduct regular routine immunization services in static and outreach sites.	√	√	√	√	√
			Conduct periodic supervision at national twice a year and Zonal level quarterly	√	√	√	√	√
			Conduct defaulter tracing activities during AVW.	√	√	√	√	√
			Conduct health education before immunization session.	√	√	√	√	√
			Develop IEC materials and disseminate messages on polio through mass media, community meetings.	√	√	√	√	√
			Develop reminder mechanism (colander, etc)	√	√	√	√	√
			Training of health workers on IIP, IPC, DQS and vaccine management.	√	√	√	√	√
			Training of HWs on measles surveillance, monitor and supervise surveillance activities.	√	√	√	√	√
			Lab support (reagents, reference labs, transportation, training)	√	√	√	√	√

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Accelerated diseases control and introduction of new vaccine				2017	2018	2019	2020	2021
Measles Rubella (MR) Elimination	Introduce and achieve vaccination coverage of MR1 and MR2 > 95% and 90% respectively by 2021.	Capacity building Community Mobilization and sensitization. Development of introduction plan	Prepare and submit proposal and secure funding for procurement of the vaccine.	√	√	√	√	√
			Ensure cold chain capacity at all levels.	√	√	√	√	√
			Revise, update, and print reporting tools including child card.	√				
			Train service providers and create awareness on MR dose uptake using multi-channel.		√	√	√	√
			Develop IEC materials and launch introduction of MR vaccine.		√			
			Integrate with routine immunization program		√	√	√	√
	Establish CRS surveillance system by 2018	Capacity building Monitoring and evaluation	Train health workers on CRS surveillance		√	√	√	√
			Equip the CSR sentinel site with necessary laboratory items		√			
			Develop formats for reporting CRS		√			
			Conduct periodic supervision		√	√	√	√
			Make data analysis of aggregated data every quarter/six months		√	√	√	√
			Develop improvement plan and action plan		√	√	√	√

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Accelerated diseases control and introduction of new vaccine				2017	2018	2019	2020	2021
Measles Rubella (MR) Elimination	Conduct a wide age range catch up MR campaign (9 month - 15 years) to achieve >90% coverage by 2018.	Capacity building of health workers Social mobilization activities to increase community awareness and participation on the campaign	Conduct meeting with community and CHWs		√			
			Develop zoba and sub zoba micro plans		√			
			Procurement and distribution of vaccine and injection safety materials		√			
			Develop, print and distribute field guides, reporting tools		√			
			Develop and disseminate message about the campaign using multimedia channel.		√			
			Post campaign monitoring activities by independent monitoring groups					
	Conduct MR follow-up campaign (9-59 months age children	Micro planning Capacity building of health workers Social mobilization activities to increase community awareness and participation on the campaign	Micro planning at district level by involving respected community members and CHW					√
			Mapping of less accessible geographical areas					√
			Procurement and distribution of vaccine and injection safety materials					√
			Develop, print and distribute field guides, reporting tools					√
			Post campaign monitoring activities by independent monitoring groups					√

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Accelerated diseases control and introduction of new vaccine				2017	2018	2019	2020	2021
Yellow Fever vaccine	Introduce yellow fever vaccination and achieve >95% coverage by 2021	Study/ Survey	Conduct YF risk mapping in all zobas	√				
			Develop and submit proposal		√			
			Develop vaccine introduction plan		√			
			Ensure cold chain availability		√			
		Capacity building	Procure vaccine			√		
			Train health workers		√			
			Update reporting tools		√			
		Social mobilization	Conduct community meetings and disseminate messages using multi-channel		√			
			integrate with routine immunization program		√	√	√	√
			Conduct PIE		√	√		
Meningococcal A vaccine	Conduct a wide age range (9 month- 29 years) campaign and achieve >90% coverage to stop Men A transmission by 2021	Capacity building	Prepare proposal and secure budget	√				
			Train health workers		√			
			Conduct meeting with community and CHAs		√			
			Develop zoba and sub zoba micro plans		√			
		Social mobilization	Procurement and distribution of vaccine and injection safety materials.		√			
		Conduct campaign	Develop, print and distribute field guides, reporting tools.		√			
			Develop and disseminate message about the campaign using multimedia channel.		√			

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Accelerated diseases control and introduction of new vaccine				2017	2018	2019	2020	2021
Introduction of new vaccine	Introduce HPV vaccination to girls 9-13 years of age in three districts and achieve >90% of the target by 2018.	Study/survey	Assess and identify high HPV prevalence in districts.	√				
			Develop funding proposal and secure funding.	√				
			Identify target population and develop plan.	√				
		Capacity building	Procure vaccine.		√			
			Develop and print reporting tools.	√				
			Train service providers.		√			
		Social mobilization	Create awareness on HPV using multi-channel.		√			
			Develop IEC materials and launch introduction of HPV vaccine.		√			
			Conduct PIE			√		
	Introduce hepatitis birth dose and achieve >90% coverage by 2021.	Social mobilization	Prepare and submit proposal and secure funding.		√			
			Procure vaccine.			√		
			Ensure cold chain capacity at all levels.		√			
		Capacity building	Revise, update, and print reporting tools including child card.		√			
			Train service providers.			√		
			Create awareness on Hepatitis using multi-channel.			√		

Objectives, strategies, activity and time line for five years

Immunization service	Objectives	Strategies	Activity	Time line				
Accelerated diseases control and introduction of new vaccine				2017	2018	2019	2020	2021
Introduction of new vaccines	Introduce IPV and achieve >90% coverage by 2021	Social mobilization Capacity building	Prepare and submit proposal and secure funding.	√				
			Procure vaccine.		√			
			Ensure cold chain capacity at all levels.	√				
			Revise, update, and print reporting tools including child card.	√				
			Train service providers.		√			
			Create awareness on IPV using multi-channel.		√			
			Develop IEC materials and launch introduction of IPV vaccine.		√			
			Integrate with routine immunization program		√	√	√	√
Update EPI communication strategy	Availability of updated EPI communication strategy in all levels	Revise and update Communication materials	Assess the communication materials		√	√	√	√
			Updated EPI communication strategy					
			Discrimination to lower levels					

Immunization service	Objectives	Strategies	Activity	Time line				
Program Management				2017	2018	2019	2020	2021
Laws and Regulation	The NRA conducted a meeting twice a year	Strengthening the NRA Monitoring on vaccine safety	Conduct meeting every 6 months,	√	√	√	√	√
	The legislation and administrative line items for vaccine reviewed yearly.	Strengthening the legislations and administrative procedures	Conduct a meeting once a year updating legislations	√	√	√	√	√
Policy	The national immunization policy updated by 2017.	Review the national immunization policy,	Meeting and desk review conducted, the policy document printed and distributed	√				
Planning	Annual work plan and budget developed yearly	Strengthening the annual work plan	Conduct quarterly review meeting Conduct annual meeting Annual work plan printed and distributed to concerned bodies	√	√	√	√	√
Meeting	ICC meeting conducted 3 times a year	Enhancing ICC members meeting	Coordinating meeting Minutes of meeting shared to all ICC members	√	√	√	√	√
	The NITAG meeting conducted 3 times a year	Re-enforcement the NITGA members	Develop guidelines, Conduct meeting The guidelines lines materials distributed	√	√	√	√	√
	Two vaccinators available per 10,000 population yearly	Capacity building	Updating the IIP modules Print and distributed the IIP modules to all health facilities	√	√	√	√	√

Immunization service	Objectives	Strategies	Activity	Time line				
Program Management				2017	2018	2019	2020	2021
Service delivery	58 EPI focal person and 14 Cold chain technician assigned in Each sub zoba by 2017-2021.	Capacity building	To train 350 vaccinators on IIP yearly	√	√	√	√	√
			58 EPI focal person 14 cold chain focal persons assigned in each sub zoba	√	√	√	√	√
Capacity Building	Term of reference developed for the staff of Sub-Zoba and Health Facility by 2017	Capacity building	Term of reference for the staff developed. Term of reference printed and distributed to all health staff.	√	√	√	√	√
			To train 350 vaccinators on new vaccine introduction	√	√	√	√	√
			To train 50 mid-level manager on MLM yearly	√	√	√	√	√
Institutionalization of sub zoba level management	Sub-zonal Health management office established by 2017.	Capacity building	Establish Sub-zonal office Assigned staff at Sub-zoba level Prepare teaching annual for the newly assigned staff. Conduct training. Equip and furnish the sub Zonal Offices	√	√	√	√	√
Health workers retention at service level	The vacancy post decreased by 4% yearly		Assigning vaccinators Conduct training for the newly assigned vaccinators	√	√	√	√	√

Immunization service	Objectives	Strategies	Activity	Time line				
Program Management				2017	2018	2019	2020	2021
Curriculum for pre service	Updating curriculum of preserve medical and nursing on immunization by 2017.	Curriculum of preserves medical. Nursing on immunization reviewed and updated by 2017	Conduct consensus building work shop Print and disseminate the updated curriculum	√	√			
Financing	The government financing for traditional vaccine 15% -35% and for new vaccines 20%-40% yearly.	Joint Evidence-based advocacy with Ministry of National Development, MOH and Ministry of Finance	The government financing 20% for traditional vaccine The government financing 30% for new vaccines.	√	√	√	√	√
Supervision	Supportive supervision conducted twice year	Supportive supervision	Carry out supportive supervision	√	√	√	√	√
	Secure a means of transportation to 450 outreach service 2017-2021.	Procurement	Procure 60 Motorcycle per year. Procure 120 bicycles per year.	√	√	√	√	√

Objectives, strategies, activity and time line for five years

Objective	Strategies	Activities	Time line				
Program management: CCE			2017	2018	2019	2020	2021
100% of the zoba use computerized Stock Management Tool (SMT) of EPI logistics	Institutionalized computerized stock management of EPI logistics	Provide computers and necessary tools for zoba	√	√	√	√	√
		Vaccine arrival at national and delivery to Zoba cold chain is as scheduled	√	√	√	√	√
		Training data clerks to use the equipment and analysis data at zoba level	√	√	√	√	√
100% of Zobas (Districts) and 95% of health facilities are with adequate number of functional cold chain equipment	Enhance cold chain capacity by Timely replacement of ageing and absolute equipment	Update cold chain inventory	√	√	√	√	√
		Procure cold chain equipment to replace 10-15 % of equipment annually for absolute CCE	√	√	√	√	√
		Procure spare parts for Cold Chain Equipment	√	√	√	√	√
		Train CC technicians in updated guidelines and procedures	√	√	√	√	√
Secure enough amount of cold chain equipment and spare parts for replacement and maintenance	Build Capacity of CC technicians	Training Cold Chain Technicians	√	√	√	√	√
	Procurement of equipment and spare parts	Procure cold chain equipment and spare parts to make it available	√	√	√	√	√

Department of Public Health
Family and Community Health Division
EPI Annual Work Plan & Estimated Budget need for 2017

- **Objectives of the program**

  - By the end of 2017, DEPT-HepB-Hib3 immunization coverage will be >90/80 percent at national and district level respectively.
  - By the end of 2017, measles morbidity and mortality will be reduced by 90% and 95% respectively comparing with pre-immunization level of the country.
  - To maintain polio free and NNT elimination status by achieving >95% valid immunization coverage of OPV3 and child protected at birth at national level.
  - Maintained stock level of all vaccines at all levels with adequate storage capacity and optimum temperature status to have potent vaccines for children and WORAG.

1. General Objective: By the end of the year, fully immunized coverage of <1yr age children will be >95% by improving access and utilization of the EPI services through addressing problems affecting the various components of the EPI program.

1.1 Specific objective: Procure sufficient amount of vaccines & injection safety materials to vaccinate at least 95% of the targeted children <1yr and 99% of the health facilities will have functional cold chain equipment with adequate storage capacity for vaccines throughout the year.

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.1.1	Procurement of EPI logistics	Preparation and submission of vaccine forecasting tool for 2017	Availability of adequate Quantity of all vaccines at all level.	Adequate stock balance of all traditional, new & under used vaccines and no stock out of vaccines					MOH/UNICEF	3,150,000 1,560,000 34,852,725	Gov. UNICEF GAVI
		Procurement of 42 Solar Direct Drive (SDD) and AC refrigerators and 120 Sealed solar batteries	% of HF with functional & adequate net storage Capacity of vaccines at all level.	99% of the HFs have functional CCE & adequate storage capacity throughout the year					MOH/UNICEF	900,000 4,735,725	UNICEF JICA

2.1Specific objectives: To make available of at least two health workers in each health facility with upgraded skills and adequate knowledge on vaccine and cold chain management

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.2.1	Capacity building	Training of 550 HWs & MLM on Vaccine and CCE Management	# of health workers trained on IIP modules & RED/REC approach	Availability of at least two EPI trained HWs in each HF					EPI/MOH	1,050,000	UNICEF

3.1Specific objectives: DPT-HepB-Hib3 & Measles administrative immunization coverage will increase by 5% from that of 2016 (83% and 81% to 88% and 85% respectively)

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.3.1	Strengthen routine immunization service to increase coverage & decrease dropout rates	Provide routine static & outreach immunization activities PIRI) in less accessible areas and nomadic population group	DPT-HepB-Hib3 coverage Measles (MCV1) coverage	DPT-HepB-Hib3 coverage 88% Measles (MCV1) coverage is >85% at national level					EPI/MOH	2,400,000	WHO

4. 1Specific objectives: To conduct Effective Vaccine Management (EVM) assessment at national level

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.4.1	Effective Vaccine Management (EVM) assessment	Develop implementation plan and Conduct EVM assessment	Implementation of EVM and status determined	EVM conducted in selected HFs						600,000	UNICEF

1. **General Objective:** By the end of the year, fully immunized coverage of <1yr age children will be >95% by improving access and utilization of the EPI services through addressing problems affecting the various components of the EPI service.

5.1Specific objectives: Conduct EPI coverage survey to reveal the actual immunization coverage

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.5.1	Survey	1.Micro planning & training 2.Conduct field operational activities	Implementation of the coverage survey	Cluster sampled households in all zobas to reveal estimated immunization coverage					WHO UNICEF EPI/MOH	1,050,000	UNICEF WHO Gov.

6.1 1Specific objectives: Availability of harmonized EPI data at different levels for decision and planning purposes.

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.6.1	Data use for action	Implementation of Data Quality Self-Assessment (DQS) at zoba & sub zoba levels. Data Harmonization meeting at national level	% of completeness, timeliness and accuracy of EPI monthly report submitted	Timelines and completeness of EPI report at district level will be > 95%						225,000	WHO

7.1 Specific objectives: >95% of mothers of children < 1yr old will understand the importance and use of vaccines and when to return back for the next dose of the vaccines

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.7.1	Social mobilizations	Increase awareness and demand on vaccine demand by caregivers using various media outlets and IEC materials	% of care takers aware of vaccine use and when to return back for the next vaccine dose	95% of the care takers will understand when to return for the next vaccination					UNICEF MOH	180,000	UNICEF

8.1Specific objectives: Develop SoPs for effective management of the EPI components

#	Strategy	Activity	Indicator	Target	Time line				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.8.1	Develop policies, strategies and protocols	Development of SoPs for effective vaccine and cold chain management	Availability of EPI SoPs for vaccine and cold chain management at all levels	Copy of SoP will be available at each health facility					EPI/MOH UNICEF	450,000	UNICEF

1. General Objective: By the end of the year, fully immunized coverage of <1yr age children will be >95% by improving access and utilization of the EPI services through addressing problems affecting the various components of the EPI service.

10.1Specific objectives: Conduct assessment and Temperature Mapping Survey

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.10.1	Survey and Temperature Mapping	Study or survey that will help programing temperature status	Temperature mapping and monitoring conducted	Vaccine temperature monitoring status had determined at all levels					EPI/MOH UNICEF	150,000	UNICEF

11.1 Specific objectives: Conduct EPI coverage survey and reveal the actual achieved immunization coverage of all districts

11.1Specific objectives: Conduct monitoring and supervision activities and provide feedback on the spot to improve vaccination service at facility level.

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.11.1	Monitoring and supervision	1. Update EPI & IDSR integrated supervision check list. 2. Conduct supervision	Number of supervisory visits made in each district per year	At least one supervisory visits will be conducted in each district					EPI/MOH	225,000	UNICEF

12.1Specific objectives: Updating and printing of EPI reporting tools and child health cards.

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.12.1	Upgrade EPI reporting tools	Updating EPI reporting tools Print and distribute 400,000 CHCs, 100,000 tally sheets 40,000 summary sheets	No. of reporting tools updated and printed	Printing and distribution of 400,000 CHC & 100,000 tally sheets and 40,000 summary sheets						1,500,000	GAVI HSS

13.1Specific objectives: Procurement of Solar Direct Drive (SDD) (25), electrical refrigerators (17)and 120 sealed solar batteries

#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.13.1	Procurement of CCE	Procurement Solar & Electrical refrigerators and dry sealed batteries and spare parts	No. of batteries and spare parts procured	42 refrigerators and 120 sealed solar batteries procured and distributed						600,000	UNICEF

1.	**General Objective:** By the end of the year, fully immunized coverage of <1yr age children will be >95% by improving access and utilization of the EPI services through addressing problems affecting the various components of the EPI service.											
	14.1 Specific objectives: Conduct EPI equity assessment to determine if there is differences in gender and economic status in uptake of vaccines to improve access and utilization of the immunization services.											
#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.14.1	Equity assessment	Conduct equity assessment on EPI services at national level	Equity assessment conduct and strategies designed to reach out if there is gaps	Equitable access and utilization of EPI for all children					EPI/MOH UNICEF	450,000	UNICEF
15.1 Specific objectives: Introduction of IPV into routine immunization in the 4th quarter of 2017 in all health facilities and achieve >95% coverage annually. UNICE											
#	Strategy	Activity	Indicator	Target	Time frame				Responsible	Budget	
					Q1	Q2	Q3	Q4		Amount	Source
1.15.1	Introduction of IPV	Developing introduction plan Conduct training & social mobilization activities	Introduction of IPV into routine immunization at the 14 weeks age of a child	Availability IPV in all health facilities and achieve >95% coverage					EPI/MOH UNICEF	1,725,000	GAVI
Total Cost for year										**54,303,450**	

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