ETHIOPIA NATIONAL EXPANDED PROGRAM ON IMMUNIZATION

COMPREHENSIVE MULTI-YEAR PLAN (2016 - 2020)

Federal Ministry of Health, Addis Ababa

December 2016

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Immunization cMYP is a key strategic and management document for national immunization programs that provide national goals, objectives and strategic directions that address all components of the immunization system relevant to the country. The new cMYP (2016-2020) is the result of the collaborative work of the Federal Ministry of Health and key partners working in health.

The Federal Ministry of Health would therefore like to express its special thanks for the tireless efforts of the technical team supporting the national immunization program for the successful preparation of the document in the shortest possible time. Our appreciation goes also to CHAI, WHO, UNICEF, USAID, JSI, and other relevant EPI partners for their support throughout the entire process of this document development.

The Maternal and Child Health (MCH) directorate would also like to acknowledge the ICC members and the cMYP review team for their active participation and constructive comments improving the quality of this document.

LIST OF ACRONYMS

AD	Auto Disabled (Syringes)
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
BCC	Behavioural Change Communication
BCG	Tuberculoses Vaccine (Bacillus-Calmette-Guerin)
BPR	Business Process Re-engineering
CCE	Cold Chain Equipment
CDC	Centers for Disease Control and Prevention
cMYP	Comprehensive Multi Year Plan
CSO	Civil Society Organization
cVDPV	Circulating vaccine derived poliovirus
DCI	Development Cooperation of Ireland
DHS	Demographic and Health Survey
DPT	Diphtheria-Pertussis-Tetanus Vaccine
EPHII	Ethiopian Public Health Institute
EPI	Expanded Program on Immunization
ESARO	Eastern and Southern African Regional Office for UNICEF
FMOH	Federal Ministry of Health
GAVI	Global Alliance for Vaccine and Immunization
GIVS	Global Immunization Vision and Strategies
GTP	Growth and transformational plan
GVAP	Global Vaccine Action Plan
HEP	Health Extension program
HepB	Hepatitis B
HEW	Health Extension Workers
Hib	Haemophilus influenza type B.
HMIS	Health Management Information System
HPN	Health, Population and Nutrition group
HPV	Human Papilloma Virus Vaccine
HRE	Human Resources for EPI
HSDP	Health Sector Development Plan
HSEP	Health Service Extension Program
HSS	Health Service Support
ICC	Inter-Agency Coordinating Committee
IDS	Integrated Disease Surveillance
IDSR	Integrated Disease surveillance and Response
IEC	Information Education Communication
IIP	Immunization in Practice
IMR	Infant Mortality Rate
IPC	Inter Personal Communication
IPV	Inactivated Polio Vaccine
IST	Inter-country Support Team
JRF	Joint Reporting Form
MDG	Millennium Development Goal
MLM	Mid-Level Management
MNT	Maternal and Neo-natal Tetanus
NGO	Non-Governmental Organization
NIDs	National Immunization Days
NIP	National Immunization Program
NNT	Neo-Natal Tetanus
OPV	Oral Polio Vaccine
PAB	Protected At Birth
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PCV	Pneumococcal Conjugated Vaccine
PFSA	Pharmaceuticals Fund and Supply Agency

REC	Reaching Every Child/Community
RED	Reaching Every District
SDPRP I	First Sustainable Development and Poverty Reduction Plan
SIAs	Supplemental Immunization Activities
SNIDs	Sub-National Immunization Days
SNNPR	Southern Nations Nationalities and Peoples Region
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
VDPV-2	Vaccine Derived Polio Virus type 2
VPD	Vaccine Preventable Diseases
WHO	World Health Organization
WPV	Wild Polio Virus

EXECUTIVE SUMMARY

The Federal Democratic Republic of Ethiopia is the second most populous country in sub Saharan Africa with an estimated population of approximately 92.05 million people[1] and the tenth largest by area with its 1.1 million square kilometres. The health service coverage currently reaches 100%.

There are feasible child survival strategies interventions implemented by the Federal Ministry of Health (FMOH) to help attain the Millennium Development Goals (MDGs). These strategies provide a conducive environment for the enhancement of immunization programs. As a result, Ethiopia achieved the MDG4 goal of reducing under-five mortality by 2/3 from the 1990 baseline in 2012, three years before the 2015 target year. The under-five and infant mortality rates in 2014 were 64 and 44 per 1000 live births respectively. The health status of Ethiopian children has improved significantly over time.

The Expanded Programme on Immunization (EPI) was launched in Ethiopia in 1980 with the objective of increasing vaccination coverage by 10% annually. However, the coverage in the first 20 years remained low although during the 1990's good progress was observed through Universal Child Immunization (UCI). Since 2004, the reaching every district (RED) approach has been implemented in Ethiopia in districts with poor immunization coverage and high dropout rates. As a result, the coverage showed marked improvement; DPT3 coverage increased from 52% in 2003 to 87% in 2014. However, the variation in coverage among and within regions is large. Now, the RED strategic approach is recast to reaching every children/community (REC) strategic approach in order to address inequities within districts.

Ethiopia joined the polio eradication initiative in 1996 and the first mass vaccination campaign was conducted within one year. The Acute Flaccid Paralysis (AFP) surveillance system was established in 1997 and global targets for AFP surveillance were first achieved in 2004.

[1] 2015 projection estimate based on 2007 population census

The last indigenous case of wild poliovirus (WPV) in Ethiopia was interrupted in December 2001. Nevertheless, Ethiopia suffered several WPV importations between 2004 and 2008. Ethiopia had been polio free for more than four years from 2009 to 2012.Most recently, an importation of WPV in the Horn of Africa (HOA) with progressive increase in number and geographical extension was reported from neighbouring countries Somalia and Kenya in 2013. Due to high cross border population movement and low population immunity in Somali region of Ethiopia, a case of Wild Polio Virus types I (WPV1) was detected, in Dollo zone. A total of 10 cases of wild poliovirus type I were reported all from Dollo zone in 2013 and 2014. The last WPV case was reported in January 5, 2014. A confirmed case of VDPV-2 (ambiguous type) was reported in December 2014 from Nogob zone of Ethiopia Somali Region. An additional VDPV case in the Dollo Zone, Somali Region was reported in April 2015.

A series of sub-national and national polio immunization days (NIDs) were conducted and result, the outbreak was contained and in March 2015, Ethiopia was removed from the list of "polio infected" countries by the WHO.

Measles mortality reduction and maternal and neo-natal tetanus (MNT) elimination activities are also being conducted. Case-based measles and Neonatal Tetanus (NNT) surveillance is integrated with AFP surveillance. The morbidity and mortality due to measles has been reduced dramatically. Many districts have become MNT-free.

Between 1999 and 2013; 15 million women of childbearing age (aged 15-49) in 62 high risk zones in all regions except Addis Ababa, Harari, and Dire Dawa, received three rounds of the Tetanus Toxoid (TT) vaccine. Following the completion of TT Supplemental Immunization Activities (SIAs) in identified high-risk zones in Ethiopia, an MNT elimination pre-validation assessment was conducted in April 2011. The country was partially validated to have eliminated Neonatal Tetanus. The FMOH in collaboration with Regional Health Bureaus (RHB) and UNICEF complete the third-round TT SIA activities in four high risk zones of in Somali Region and if the post SIA coverage result is more than 80% the country will be validated.

This Comprehensive Multi-Year Plan (cMYP) 2016 to 2020provides a framework to plan activities to achieve the major objectives of the immunization program as endorsed in the National EPI Implementation Guideline. Through the situation analysis, key issues/barriers that may impede the progress have been identified.

The previous immunization cMYP, now in its last year of implementation, which covered the period from 2011-2015, its two main priorities: 1) to improve routine immunization coverage and 2) to introduce new vaccines (PCV and Rotavirus). The immunization coverage as measured by DPT-HepB-Hib (Penta) 3 was 87% in 2014; and PCV10 and Rotavirus vaccines were introduced as per the cMYP plan in 2011 and 2013 respectively.

Lack of regularly updating and mid-term review of the plan was identified as key gap in the previous cMYP. The new cMYP ensures that the strategies in the plan are sufficiently comprehensive using GVAP framework. The priority areas identified in the new cMYP include 1) increasing immunization coverage in all target population with all vaccines with a focus on hard to reach areas, 2) introduction of Inactivated Polio Vaccine (IPV measles second dose (MCV2), Measles Rubella (MR) Vaccine, Meningitis A (Men A) vaccine, Human Papilloma Virus (HPV) vaccine, birth dose hepatitis B, and Yellow Fever (YF) vaccines, and 3) improvement of vaccine supply management and cold chain capacity at all levels.

The primary objective of this strategic plan is to achieve at least 90% national coverage and 80% coverage in every district with all vaccines by 2020. It is also planned to reduce the incidence of vaccine preventable diseases through integrated interventions that would strengthen the overall health system. The cMYP will be implemented within the framework of the Global Immunization Vision and Strategies (GIVS) in four main strategic areas and the Monitoring and Evaluation, accountability frame work of Global Vaccine Action Plan (GVAP). The plan encompasses all components of immunization services: service delivery, vaccine supply, quality and logistics, disease surveillance and accelerated disease control, advocacy, social mobilization and communication (ACSM) and program management.

The main implementers of the plan will be the FMOH and regional governments with material, technical and financial support from international and local development partners. The framework of the cMYP should therefore form the foundation for all regions planning and implementation of immunization activities in order to support implementation efforts that lead to sustainability, equity, the desired high coverage and impact.

The total estimated 5-year budget of the cMYP is 1,319 million USD of which, 930 million USD is immunization specific and the remaining is for health system strengthening and SIAs. The main partners that will finance the immunization program are GAVI (61%), National and sub national Government 33%, UNICEF (2%) and WHO (2%), and other partners (1%). The contribution of the government for the immunization specific financing will be 18%.

Monitoring and evaluation of the cMYP will be done regularly by RHBs, FMOH and EPI partners. An annual operational plan will be prepared at the national level based on this strategic plan. Woredas will develop detailed micro plans based on the national strategic plan and regions will aggregate the district micro plans to develop regional immunization plans.

CHAPTER ONE

COUNTRY INFPORMATION

1.1 General profile and demography

Ethiopia the oldest independent country, located in the north-eastern part of Africa, also known as the Horn of Africa, lies between 3 and 15 degrees' north latitude and 33 and 48 degrees' east longitude. It has the tenth largest land mass in Africa, covering 1,104,300 square kilometres (with 1 million sq. km land area and 104,300 sq. km water). It borders with five countries: - on the north and northeast by Eritrea, on the east by Djibouti and Somalia, on the south by Kenya, on the west by the Sudan and southwest by South Sudan. There are topographic-induced climatic variations broadly categorized into three groups: the "Kola", or hot lowlands, below approximately 1,500 meters, the "Wayne Degas" at 1,500-2,400 meters and the "Degas" or cool temperate highlands above 2,400 meters.

Figure 1: Map of Ethiopia, its location in Africa

Projections from the 2007 population and housing census estimate the total population for the year 2016 to be 93.35 million. Ethiopia is the home of a variety of nations, nationalities and peoples varying in population size from more than 33.7 million to less than 250 thousand spread across regions of the country and with more than 80 different spoken languages. The largest city in the country is Addis Ababa, the capital, with 3.4 million people estimates in 2016 which accounts for 3.6% of the total population. The average size of a household in Ethiopia is 4.8 (Mini EDHS 2014).

The pyramidal age structure of the population has remained predominately young with 44.98% under the age of 15 years, and over half (52%) of the population in the age group of 15 and 65 years. The population in the age group of over 65 years' accounts for only 3% of the total. While the sex ratio between male and female is almost equal, women in the reproductive age group constitute 23.4% of the population. The average fertility trend in recent years has shown a decline from the 1990 level of 6.4 births per women to 4.1 births (Mini EDHS 2014), an average of nearly 2 birth drop per women in 24 years. The estimate also showed variations in fertility among women living in rural (4.5) versus urban (2.2) areas with rural women having an average of two more births per woman compared to their counterparts in urban areas (Mini EDHS 2014). Whilst the population is still growing faster at an annual rate of 2.6 %, the lowest population growth is recorded as 1.8% for Amhara region, lower than population replacement.

1.2 Administrative profile and Governance

The Ethiopian constitution, introduced in 1994 created a federal government structure, with three branches of governance and administration. The executive branch includes the Prime Minister, Council of Ministers and Council of State. The legislative branch has a bicameral Parliament consisting of the House of Federation or upper chamber and the House of People's Representatives or lower chamber, the latter being elected by popular vote from single-member districts to serve five-year terms. The judicial branch comprises federal and regional courts.

The Federal Democratic Republic of Ethiopia is composed of nine Regional States: Tigray, Afar, Amhara, Oromia, Somali, Southern Nation Nationalities and Peoples Region (SNNPR), Benishangul-Gumuz, Gambella, and Harari; and two City Administration councils of Dire Dawa and Addis Ababa. The regional states and city administrations are further subdivided into 941 administrative Woredas (districts). A Woreda/District is the basic decentralized administrative unit and has an administrative council composed of elected members. The 941 Woredas are further divided into about 16,657 Kebeles (Rural 15,130 & Urban 1,527), the smallest administrative unit in the government.

1.3 Socio-economic Situation

Ethiopia's Human Development Index (HDI) value for 2013 is 0.435 which is in the low human development category positioning the country at 173 out of 187 countries and territories. The Government of Ethiopia has been implementing a comprehensive economic reform program over the past decade. This had an important bearing on developments in the health sector. Frequent droughts combined with poor cultivation practices make Ethiopia's economy very vulnerable to climatic changes. Currently the country is finishing Growth and Transformation Plan (GTP) 1 and preparing GTP2 and has made utmost effort to ensure the transformation from Agricultural to industrial lead economy. There have been a number of policy initiatives and measures taken in these directions which included privatization of state enterprises and rationalization of government regulation; Ethiopia has shown an impressive economic growth over the last twelve years, although the per capita of 630 USD is still substantially lower than the regional average (Gross National Income, Atlas Method).In 2004-2005, 38.7% of Ethiopians lived in extreme poverty as measured by the national poverty line of less than $0.6 per day and five years later at 29.6%, which is a decrease of 9.1 percentage points.

During the first Sustainable Development and Poverty Reduction Plan (SDPRP I) period (2002/03 - 2004/05), real GDP grew on average by about 5 percent per annum. However, during the first three years of Plan for Accelerated and Sustained Development to End Poverty (PASDEP) period the country registered an average of double digit economic growth of 11.8% per annum with steady and strong positive performance in real GDP. This steady growth marks significant progress in realizing Ethiopia's objective to become a middle-income country in the next decade. Ethiopia is still one of the least developed countries in the world, with an estimated Gross Domestic Product (GDP) per capita of $630 per year (2014 estimate). Ethiopia's annual per capita health expenditure is $ 16.1 (NHA, April 2010).

Another important feature of economic reform in Ethiopia is equal opportunity for women to participate in the economic development of the country which is enshrined in the constitution. The Ethiopian Constitution recognizes the principle of equality of access to economic opportunities, employment and property ownership for women.

Following this, the government has formulated a national gender policy, which recognizes equality between the sexes and sets up mechanisms for the improvement of women's conditions, such as the establishment of the Ministry of Women's Affairs. The main strategies employed to implement the national policy include gender mainstreaming in sector and development programs, advocacy and capacity-building initiatives. The health sector has committed to strengthen the gender mainstreaming at all level of the health system through implementation of the Gender Mainstreaming Manual developed in 2013.

1.4 General Health Status

The major health problems of the country remain largely preventable communicable diseases (including vaccine preventable diseases for children) and nutritional disorders. The country has shown an improvement in prevention and control of communicable diseases as a result of an integrated effort made by the government and its partners, such as through the EPI Program. Despite major progress which have been made to improve the health status of the population in the last two decades, Ethiopia's population still face a high rate of morbidity and mortality and the health status remains low in terms of quality and equity of services. Figures on vital health indicators from UN 2014 Report show a life expectancy of 64 years and an Infant Mortality Rate (IMR) of 44 /1000. The under-five mortality rate has been reduced to 64/1000 with more than 90% of child deaths due to pneumonia, diarrhoea, malaria, neonatal problems, malnutrition and HIV/AIDS, or often a combination of these conditions. Although there has been a gradual decline in the incidence rates of these diseases during the past 25 years, still these are very high compared to other developing countries.

The Health Sector has developed a 20-year vision document to achieve the health outcomes that commensurate with a lower-middle income country by 2025 and a middle-middle-income country by 2035. This 20 years' National health sector plan will be implemented on four series of five years' consecutive plans to ensure the achievements of national goals. Revision of the health policy is underway and is expected to address those issues which were not well focused in the current health policy. The Sector has prepared a comprehensive Health Sector Transformation Plan

(HSTP) in alignment with the national Growth and Transformation Plan (GTP) two. Quality, efficiency and equity of services are major focus areas for HSTP.

1.5 Health System Organization

The health sector has implemented Business Process Re-engineering (BPR) for the last couple of years and introduced a three-tier health care delivery system. The first level is a Woreda/District health system comprising a primary hospital (with population coverage of 60,000-100,000 people), health centers (1/15,000-25,000 population) and their satellite health posts (1/3,000-5,000 population) that are connected to each other by a referral system. A primary Hospital, health center and health posts form a Primary Health Care Unit (PHCU) with each health center having five satellite health posts. The second level in the tier is a General Hospital with population coverage of 1-1.5 million people; and the third is a Specialized Hospital that covers a population of 3.5-5 million. The EPI program (immunization service) is implemented in all tiers in Ethiopia. The Ethiopian Health care System is augmented by the rapid expansion of the private for profit and NGO sector which are playing a significant role in boosting the health service coverage and utilization thus enhancing the public/private/NGOs partnership in the delivery of health care services in the country.

Regions and districts have RHBs and district health offices, respectively for the management of public health services at their levels. The devolution of power to regional governments has resulted in the shifting of decision making for public service delivery from the central level to the regions and down to the district level.

Currently the potential health coverage has reached about 100%. Construction of health centers and primary hospitals are underway which will make the potential PHC coverage 100%. However, there is much to be done to improve quality of care. The rapid scale up in Health Extension program (HEP) capacities, especially health extension workers (HEWs) who have been strengthened by establishment of the Health Development Army (HDA), has resulted in substantial increases in outputs related to health promotion, prevention, and service use, which represent real and considerable progress in access and equity of package of basic PHC services.

1.6 EPI Services Delivery

Democratization and decentralization of the health service has brought an opportunity for the EPI program as the implementing bodies (woredas) are becoming more capable both administratively and economically to play a role in resource mobilization and allocation for immunization programmes in their respective areas. Some regions and woredas have already started allocating budgets for operational costs, and a few have started contributing for capital costs by procuring refrigerators. This financial contribution and commitment at every structure has shown primary ownership and responsibility for establishing good governance and for providing effective and quality immunization services. However, contributions for purchase of vaccines and injection materials by the regions and woredas have yet to be started.

1.7 Justification for the development of new cMYP

Implementation of the past CMYP 2011-2015 has ended. GAVI, UNICEF and WHO recommend for countries to prepare new CMYP one year before completion of the previous one. Hence this new cMYP, which covers the period 2016-2020, is developed using Global Vaccine Action Plan (GVAP) framework ensuring that all components of the immunization system are sufficiently addressed. It is also aligned with the Health Sector Transformational Plan I (HSTP I)

CHAPTER TWO

SITUATIONAL ANALYSIS

2.1 The Expanded Program on Immunization in Ethiopia

The Expanded Program on Immunization (EPI) was established by the World Health Organization in 1974 to control vaccine preventable diseases. In Ethiopia, the EPI Program was launched in 1980 with the objective of achieving 100% immunization coverage of all children under two years old by 1990. In 1986, the coverage target was reset to 75% and the target age group was changed to less than one-year-old but progress in increasing coverage has been slow. With the introduction of new approaches such as Reaching Every Districts (RED) and Sustainable Outreach Services (SOS) for immunization in 2003, improvement has been documented. However, system-wide barriers related to geographic coverage still remain as gaps, requiring bridging approaches such as the Enhanced Outreach Strategy[2], even as the country moves towards a more equitable geographical coverage with construction and staffing of 16,251 additional peripheral health facilities.

The routine immunization program is funded primarily by partners and government. The partners largely channel their funds through UNICEF and WHO. Whilst the bulk of vaccine costs are financed by GAVI for the new vaccine and UNICEF for some traditional vaccines, the government has also mobilized resources to cover the cost of vaccines for BCG and TT, 50% of OPV and injection materials for traditional vaccines since 2009, in addition to the salaries of staff. Funding for a number of other components such as technical support, cold chain equipment, transport equipment, social mobilization and some operational costs have been made available by WHO, UNICEF and other development partners. In terms of health financing and budget provisions, the government has taken steps to reallocate resources from urban hospital-based curative services towards more preventive care targeting the rural population. The overall focus has been on communicable diseases, common nutritional disorders, environmental health and hygiene, and safe and adequate water supply.

[2] The Enhanced outreach strategy covers 7 million children with High Impact Child Survival interventions incl. Vitamin A supplementation, De-worming, Nutritional Screening and Targeted Supplementary Feeding.

2.2 National Immunization Program Implementation Guideline

The Ethiopian immunization implementation guideline has been revised on march 2015. Children under-one year of age and women of reproductive age group (15-49 years' age) are the targets for the currently available EPI vaccines in Ethiopia (BCG, Measles, DPT-HepB-Hib (Pentavalent), Rotavirus, Pneumococcal vaccine (PCV), OPV and TT). In addition, it is directed in the National EPI implementation guide line to introduce additional new vaccines such as Inactivated Polio Virus (IPV), Td second dose of measles,, Men A, birth dose of hepatitis B and Yellow Fever (YF) vaccines for age groups less than one-year-old infants, Human Papilloma Virus (HPV) vaccine for girls aged 9-13 years and Td vaccines for school age and women of reproductive age groups from 2015 to 2019. The country's immunization schedule for the above listed vaccines strictly follows the WHO recommendations for developing countries. Although no booster doses are recommended in routine EPI for childhood immunization, there are periodical supplemental doses for measles and polio.

Table 1: Immunization Schedule, 2015

VACCINATION FOR INFANTS			**WOMEN OF CHILD BEARING AGE (15-49 YEARS)**		
AGE	**VISIT**	**ANTIGEN**	**VISIT**	**INTERVAL**	**ANTIGEN**
Birth	1	BCG, OPV0	1	0 (as early as possible)	TT1
6 weeks	2	DTP-HepB1-Hib(Penta)1 ,OPV1,PCV1, Rota1	2	At least 4 weeks after TT1	TT2
10 weeks	3	DTP-HepB2-Hib2, OPV2,PCV2, Rota2	3	At least 6 months after TT2	TT3
14 weeks	4	DTP-HepB3-Hb3, OPV3, PCV3, IPV	4	At least 1 year after TT3 if not, in subsequent pregnancy	TT4
9 months	5	Measles	5	At least 1 year after TT4 if not, in subsequent pregnancy	TT5
6-59 months		Vitamin A Supplement		All post-natal mothers	Vitamin A Supplement

The use of static sites, outreach sites and mobile teams are recommended as appropriate strategies for delivering immunization services. According to the findings of the EPI cluster survey 2012, 97.1% of the urban surveyed health facilities and 89.2% of rural health facilities were found to provide routine immunization services. However,

comprehensive review of surveys, assessments and technical reports suggest that immunization sessions are infrequent with most facilities conducting sessions once per month. Moreover, implementation of planned outreach and static sessions is not monitored. Global goals and strategies related to specific disease control initiatives (vaccine preventable diseases) such as polio eradication, measles elimination, and maternal and neonatal tetanus elimination have been adopted in the national immunization implementation guideline.

2.3 Immunization Service Delivery

2.3.1 Implementation of cMYP 2011 -2015

The previous immunization cMYP covered the period from 2011-2015 with the two main priority areas being improving routine immunization coverage and introduction of PCV and Rotavirus vaccine into the national immunization program. Attainment of Penta 3coverage of 96 % was targeted by 2015; the actual coverage for 2014 was 87% However, the introduction of PCV and Rotavirus vaccines was realised as per the cMYP document.

Still, lack of regularly updating and mid-term review was identified as weaknesses of the previous cMYPs. The new cMYP ensures that the strategies in the plan are sufficiently comprehensive, using the GVAP frame work. The priority areas indicated in the new cMYP are increasing immunization coverage in all populations with all vaccines particularly among those in hard to reach areas, introduction of new vaccines such as IPV, MR as MCV2, MenA, HPV and Yellow fever, and improvement of vaccine supply management and cold chain capacity at all levels. Equity and quality immunization services will be given due emphasis to be in line with national and global focus.

2.3.2 Routine Immunization

Immunization services are provided in most of health facilities as static service and as an outreach service for communities residing beyond 5 km from the health facilities. Currently, almost all of the public health facilities provide immunization services even though the number of immunization services and service quality differ from facility to facility, and some districts in developing regions are supported by mobile health care

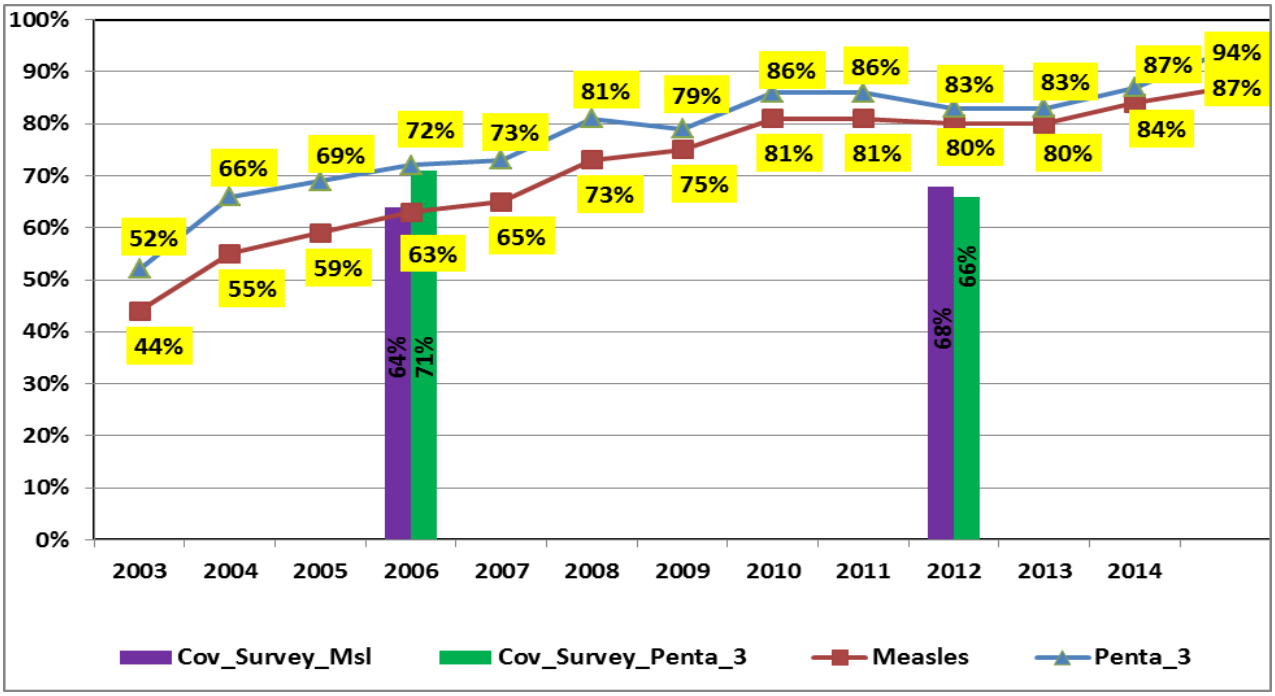
teams. Some private hospitals in Addis Ababa also provide immunization services. Immunization services are provided free of charge in public health facilities and facilities supported by NGOs. Service charges only are incurred for clients at private health facilities. Currently 10 antigens are being provided in the routine immunization program including DTP-Hib-Hep B, OPV, BCG, PCV10, Measles and Rota. Immunization service provision has shown gradual increase since 2004 reaching 86% administrative coverage of Penta 3 in 2010 and 2011.

Ethiopia introduced the Protected at Birth (PAB) method for TT immunization monitoring with the new HMIS in 2009. However, the PAB reporting was not uniformly implemented in the different regions and there was gross under-reporting of PAB. As a result, the PAB coverage was very low in 2011. Since 2012, the reporting has markedly improved and in 2014 the PAB coverage was 80%. Yet for the last three years, a decline in the national administrative coverage has been observed. See Table: 2 and Figure: 2

Table 2: Immunization Coverage in Ethiopia 2004-2015

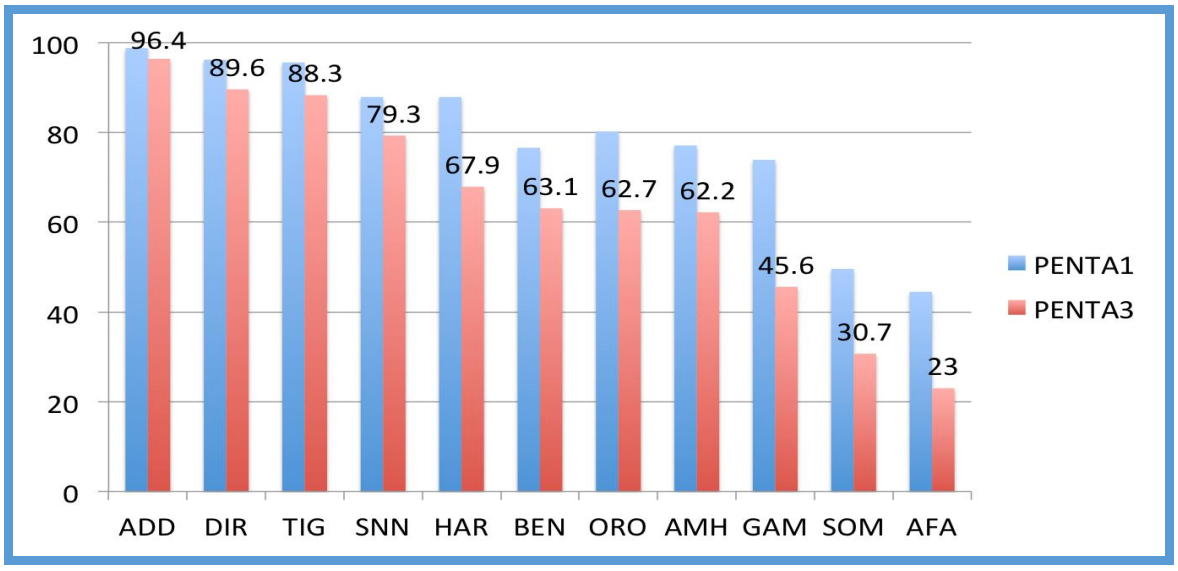
ANTIGEN	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
DPT1	75	78	80	81	87	87	90	86	95	91	93	101
DPT3	66	69	72	73	81	79	86	86	83	82	87	96
Measles	56	59	63	65	74	75	81	81	80	76	84	92
TT2+ PW/PAB	41	44.6	52.5	62	64	60	NDA	23	76	79	80	92

Figure 2: Routine EPI coverage (Penta3 & Measles) 2003 to 2015, Ethiopia (Administrative & Survey data



In the most recent coverage survey conducted in 2012; significant regional disparities were observed. Pastoral areas of Somali, Afar, and Gambella are persistently lower coverage as compared to Addis Ababa or Tigray, and Penta dropout rates also are significantly higher. This shows that the percentage of children who are unvaccinated and not reaching full immunized status is higher in pastoral areas.

Figure 3: Ethiopia: EPI Coverage by Region, Coverage Survey, 2012



In 2014, the Ministry of Health (MOH), in partnership with UNICEF, WHO and other bilateral agencies and EPI partners intensified efforts to improve routine immunization at peripheral levels. EPI partners have been supporting a routine immunization improvement plan; implementation began in July 2014.

2.3.3 Reaching Every District/Community (RED/C) Approach

The REC as RED approach was first introduced in Ethiopia in 2003. Implementation of the RED Approach was done in phases from 2004 and currently it is being implemented in all of the zones. To strengthen the implementation of RED, guidelines have been developed and distributed to the regions.

Evaluation of the RED approach was done in October 2004 and later in June 2007 by a joint team of WHO/AFRO, WHO/HQ, WHO/ICP and UNICEF/ESARO to review the impact of RED in zones and woredas where it was implemented. In general, improvement in DPT3 coverage was observed in most of the implementation areas, and it was recommended that the approach be rolled out to other areas.

2.3.4 Populations at risk of missing immunization services

Pastoralist communities throughout Ethiopia particularly in Afar, Gambella and Somali regions, have very low routine immunization coverage. In pastoralist areas where the health infrastructure is weak and populations tend to be sparse, other approaches should be considered other than the traditional static and outreach strategies. As such, in pastoralist regions there is a need to focus efforts both on improving the quantity and quality of immunization services. In addition to the HEP, the FMOH encourages the use of mobile immunization teams to reach children whose families are mobile and those in hard to reach areas with immunization services.

The Enhanced Routine Immunization (ERI) strategy targets all children under one year of age at kebele level; the children are registered by HEWs and community volunteers and unimmunized children are provided immunizations at specific immunization sites in their respective kebeles. Children who are not brought for immunization are

identified, followed up and vaccinated. Currently also the satellite health posts in the network of PHCU are getting due technical support including EPI by their health center.

2.4 Supplemental Immunization Activities

2.4.1 Polio SIAs:

Following increased risk of importation of wild polio virus (WPV) from neighbouring countries, Ethiopia has conducted subsequent polio SIAs at different times. In 2011, two rounds of polio SNIDs were conducted in 26 polio high risk zones bordering Sudan, Kenya and Somalia; the second round was integrated with Measles SIAs. Another two rounds of polio SIAs were conducted in 22 high risk zones in October and December 2012 with administrative coverage of 99.8% and 100.7% respectively.

In response to the outbreak of WPV in the Horn of Africa and confirmation of the first case of WPV in Galladin woreda of Somali region in June 2013, Ethiopia responded immediately by implementing subsequent polio SNIDs in high risk areas followed by two consecutive rounds of polio NIDs. The first emergency SIA response was conducted for the under 15 populations in the five refugee camps and host community as well.in Dollo Ado woreda of Somali Region from June 5-8, 2013 Following these, two consecutive rounds of SNIDs were conducted in June and July, 2013 in selected 22 high risk zones. The activity was also continued in August 2013 in the whole Somali region and a Polio Emergency Preparedness and Response Plan was also prepared. A summary of the NIDs in the country in the period 2013 through 2015 with administrative coverage is shown in table 3 below:

Table 3: Regional Polio NID Data of 2013, 2014 and 2015, Ethiopia

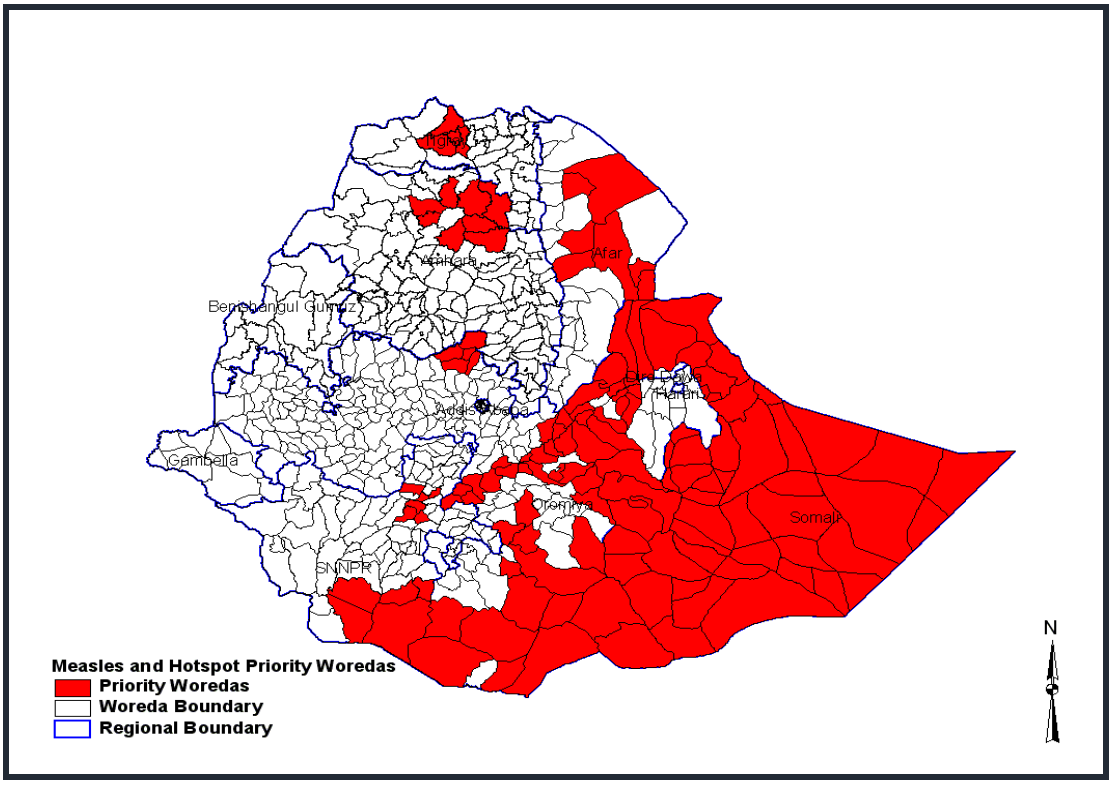
S.N	REGION	2013				2014		2015	
		1ST NID		2ND NID		1ST NID		2nd NID	
		Vaccinated	%	Vaccinated	%	Vaccinated	%	Vaccinated	%
1	Amhara	2,476,463	94.6	2,487,147	93.9	2,501,716	90.6	2,629,169	95.3
2	Oromia	4,607,196	94	5,533,222	99.6	5,786,154	103.8	6,000,225	100.2
3	SNNPR	2,846,170	101	2,929,571	100	2894731	97.4	3,030,823	102.0
4	Tigray	716,612	94.3	730,194	96.1	731,856	99.1	744,111	100.8
5	Gambella	61,711	102	53,376	95.7	61,036	104.1	62,342	106.3

6	B/Gums	155,488	98.8	160,210	99.5	167,277	102.9	169,879	104.6
7	Afar	245,204	102	245,619	97.4	257,609	98.6	256,808	98.3
8	Dire Dawa	51,364	104	47,518	91.4	58,152	99.7	58,099	99.8
9	Harari	37,697	101	39,242	103	44,417	98.4	45,008	100.3
10	Addis Ababa	282,644	112	326,648	102	332,361	103.9	353,242	104.0
11	Somali	822,662	97.1	2,328,791 (U15)	90.7	936,416	98.5	939,461	98.9
Total		**12,303,211**	**96.9**			13,771,725	99.1	14,289,167	99.7

2.4.2 Measles SIAs:

The increased measles incidence coupled with the sub-optimal routine EPI coverage at zonal level (only 17% with at least 95% measles coverage by the end of 2010) initiated the need of emergency response with SIAs. The SIA was integrated with polio campaign and targeted children between 6 months to 15 years of age and was implemented in 6 regions, 32 zones and 146 selected woredas (see Figure 4). Selection criteria were set according to the existing drought situation and history of recent suspected or confirmed measles outbreak.

Figure 4: Measles SIA prioritized woredas, Sept-Nov2011, Ethiopia



During the period, a total of 7,034,264 eligible children received measles vaccine with administrative coverage of 96.0% reported. Another nationwide follow-up measles SIAs was conducted in 2013 from May 29 to June 5, targeting children between 9-59 months of age. In Somali region, the measles campaign was integrated with polio SIAs. Of the total 11,873,928 target children, 11,609,484 were vaccinated (98%) with RCS data of 96.4%.

Table 4: Showing Measles SIAs Data from 2011-2013

S.N	PERIOD	AREA OF IMPLEMENTATION	TARGET AGE GROUP	VACCINATED	Administrative COVERAGE (%)
1	December, 2011	146 woredas (potential risk of measles outbreak and high risk drought hot spot)	6 months to 15 years	7,034,264	96.0
2	June, 2013	All regions	9-59 months	11,609,484	98.0
3	October/November 2016	368 districts	6-59 months	5,467,597	104%

Ethiopia prepared a Measles elimination strategic document in line with the recent target set by the Regional Office, aiming to achieve measles elimination by 2020 (Resolutions AFR/RC52/R2). To work towards this elimination goals, Ethiopia developed, a strategic approach that includes: 1) conducting a high quality wide-age range campaign to boost immunity for persons aged up to 15; 2) building on improvements in routine immunization to achieve high coverage with first dose of MCV; 3) supplementary immunization in the context of outbreak response as needed and 4) Introduce second dose of MCV in 2017.

2.4.3 Tetanus Toxoid SIAs

In 1999 WHO estimated about 17,875 neonatal tetanus cases and 13406 Neonatal Tetanus deaths in Ethiopia which contributed to 4.6% of the global NNT deaths.

Neonatal Tetanus Deaths is believed to be prevalent in the country due to low routine tetanus toxoid vaccination coverage coupled with the high number of deliveries handled by untrained personnel. In an effort to achieve the national target of less than one case of neonatal tetanus per 1000 live births, since 1999 the FMOH in collaboration with EPI

partners, began implementing TT supplemental immunization in high risk zones, prioritizing the goal. A summary of the TT SIAs between 1999 and 2013 is shown in table 5.

Table 5: TT SIA coverage 1999-2013, Ethiopia (High risk strategy)

YEAR	NO OF ZONES	TARGET POPULATION (15-49 YEARS)	TT1 VACCINATED		TT2 VACCINATED		TT3 VACCINATED	
			NUMBER	%	NUMBER	%	NUMBER	%
1999	1	152,020	145,939	**96.0**	142,899	**94**	123,136	**81**
2000	3	1,723,894	1,717,225	**99.6**	1,480,217	**85.9**	1,303,536	**75.6**
2001	5	2,030,778	1,968,673	**96.9**	1,709,201	**84.2**	1,465,284	**72.2**
2002	8	2,582,804	2,418,077	**93.6**	2,019,461	**78.2**	1,700,294	**65.8**
2004	9	2842250	2,690,784	**94.7**	2,292,989	**80.7**	1,795,391	**63.2**
2005	10	1,716,714	1,535,196	**89.4**	1,304,760	**76**	946,585	**55.1**
Sub Total	**36**	**11,048,460**	**10,475,894**	**94.8**	**8,949,527**	**81**	**7,334,226**	**66**
2007	**7**	1,246,621	1,204,537	**96.6**	1,147,068	**92**	1,035,826	**83.1**
2008	**11**	1,906,718	1,853,926	**97.2**	1,652,318	**86.7**	1,572,181	**82.5**
2009	**3**	80,005	76,012	**95.0**	69,820	**87.3**	67,079	**83.8**
2010	**2**	337,351	303,923	**90.1**	290,586	**86.1**	234,213	**69.4**
2010/12	**3**	387,547	355922	**91.8**	307139	**79.3**	288049	**74.3**
Sub Total	**26**	**3,958,242**	**3,794,320**	**95.9**	**3,466,931**	**87.6**	**3,197,348**	**80.8**
2012/13 sub total	**2**	**210,006**	**197,812**	**94.2**	**184,647**	**87.9**		
2013 sub total	**2**	**191,296**	**182,433**	**95.0**	151, 857	79%		
2014	**4**	401,402	173,203	**43**	151,857	**38**		
TOTAL	**70**	**15,809,406**	**14,814,432**	**94.0**	12,752,962	**81**	**10,531,574**	**84**

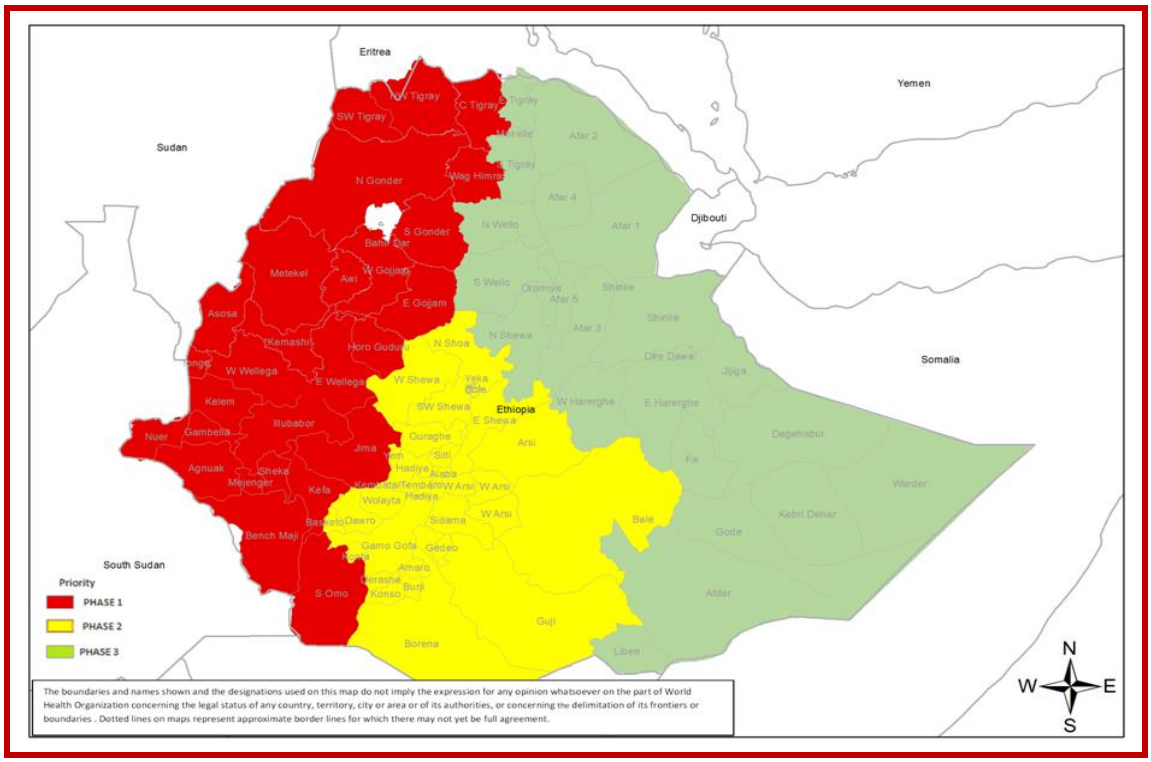
Following the completion of TT SIAs in identified high-risk zones of the country, an MNT elimination pre-validation assessment was conducted in April 2011. The assessment was carried out by international teams (including UNICEF and WHO) in high-risk areas of Afar regional state. The country was partially validated to have eliminated neonatal tetanus. For complete validation in 2015/2016, FMOH in collaboration with Regional Health Bureaus (RHB), UNICEF and WHO, planned to complete the third-round TT SIA activities in four high risk zones of in Somali Region.

2.4.4 Meningitis A (MenAfrivac) campaign

Ethiopia suffered major epidemics of meningococcal meningitis that occurs every 8-12 years. A risk assessment carried out early in 2012 showed that 5 of the regions were at

high risk for an outbreak; the remaining 6 regions were at low to moderate risk for meningitis outbreaks. Accordingly; the country planned to conduct a three-phase mass campaign for individuals between 1-29 years of age (70% of the total population) over a three-year period from 2013 to 2015. The main objective of Men "A" campaign was to eliminate epidemics of meningococcal meningitis caused by serotype "A" thereby reducing morbidity and mortality among the population by achieving ≥95% coverage in all target areas. The risk levels and phases of the Men A SIAs is shown in Figure 6 below.

Figure 5: Phase1, Phase 2 and Phase 3 Men A campaign sites in the country, Ethiopia.



A summary of the characteristics and performance of the first two phases of the Men A SIAs is shown in Table 6 below

Table 6: Data of phase I and II Meningitis "A" campaign in 2013 and 2014

S.N	PERIOD	AREA OF IMPLEMENTATION	TARGET	VACCINATED	COVERAGE (%)
1	October, 2013	30 zones in Tigray, Amhara, Gambella, B/Gumz, SNNPR and Oromia regions	18,926,853	18,616,135	98.4
2	October, 2014	45 zones in Addis Ababa, Oromia and SNNPR	26,910,795	26,268,708	97.6
3	November 2015	27 zones in Eastern and North Eastern part	15,910,620	16,174,546	102

The third phase of Men "A" campaign is planned for implementation in late 2015 targeting 15,833,812 individuals in the remaining 28 low risk zones.

2.5 Disease Surveillance and Accelerated Disease Control

2.5.1 Disease surveillance

In Ethiopia, VPD surveillance is implemented within the framework for the Integrated Disease Surveillance and Response (IDSR) strategy; the strategy that was adopted by the FMOH in 2001.

After the restructuring of the FMOH in 2009, the country adopted IDSR as part of Public Health Emergency Management (PHEM) and VPD surveillance became a component of the PHEM core process, at the federal level within the Ethiopian Public Health Institute (EPHI). The VPD surveillance infrastructure (human and logistics) have provided the platform on which IDSR implementation was rolled out nationwide.

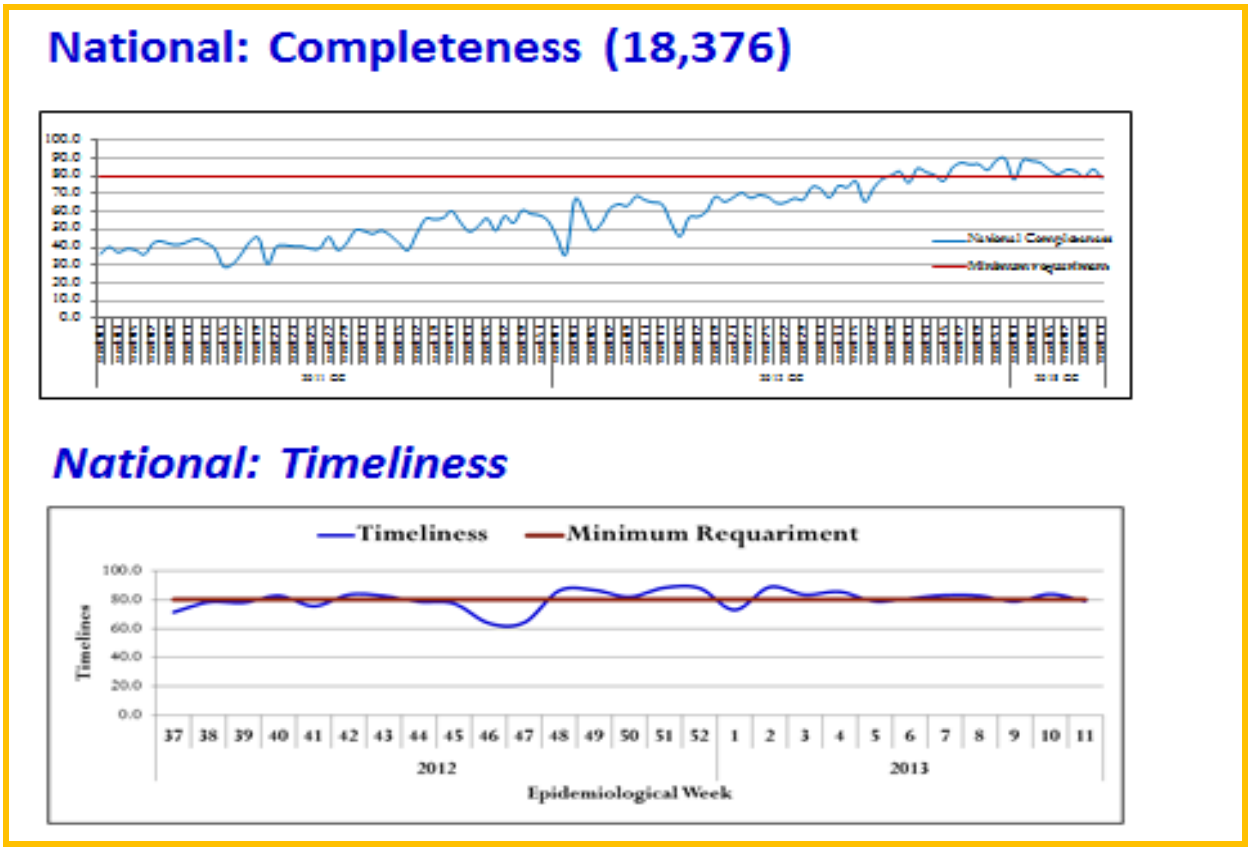
PHEM guidelines have been developed in 2012 for the 21 diseases under surveillance, and specific guidelines for diseases and disease conditions such as AFP, Measles, MNT and Cholera have been finalized and PHEM trainings have been conducted. Since PHEM's establishment, there has been a steady increase in completeness of PHEM reporting. Community level data is captured by Health Extension Workers (HEWs) through community based surveillance volunteers. Recently, the establishment of the HDA has provided an additional source of community based data. Other community

based surveillance structures have been established by PHEM and partners (including Core Group, JICA and WHO).

Case based surveillance of AFP, Measles, NNT, YF and sentinel surveillance for new vaccines; pediatric bacterial meningitis (PBM) and Rota virus gastroenteritis exists.

In terms of national completeness and timeliness of disease surveillance reporting, Ethiopia has achieved the minimum requirement of 80% completeness and timeliness in 2013. See details in figure 6 below.

Figure 6: National Disease Surveillance Performance, in Terms of Completeness and Timeliness



2.5.1.1 AFP Surveillance

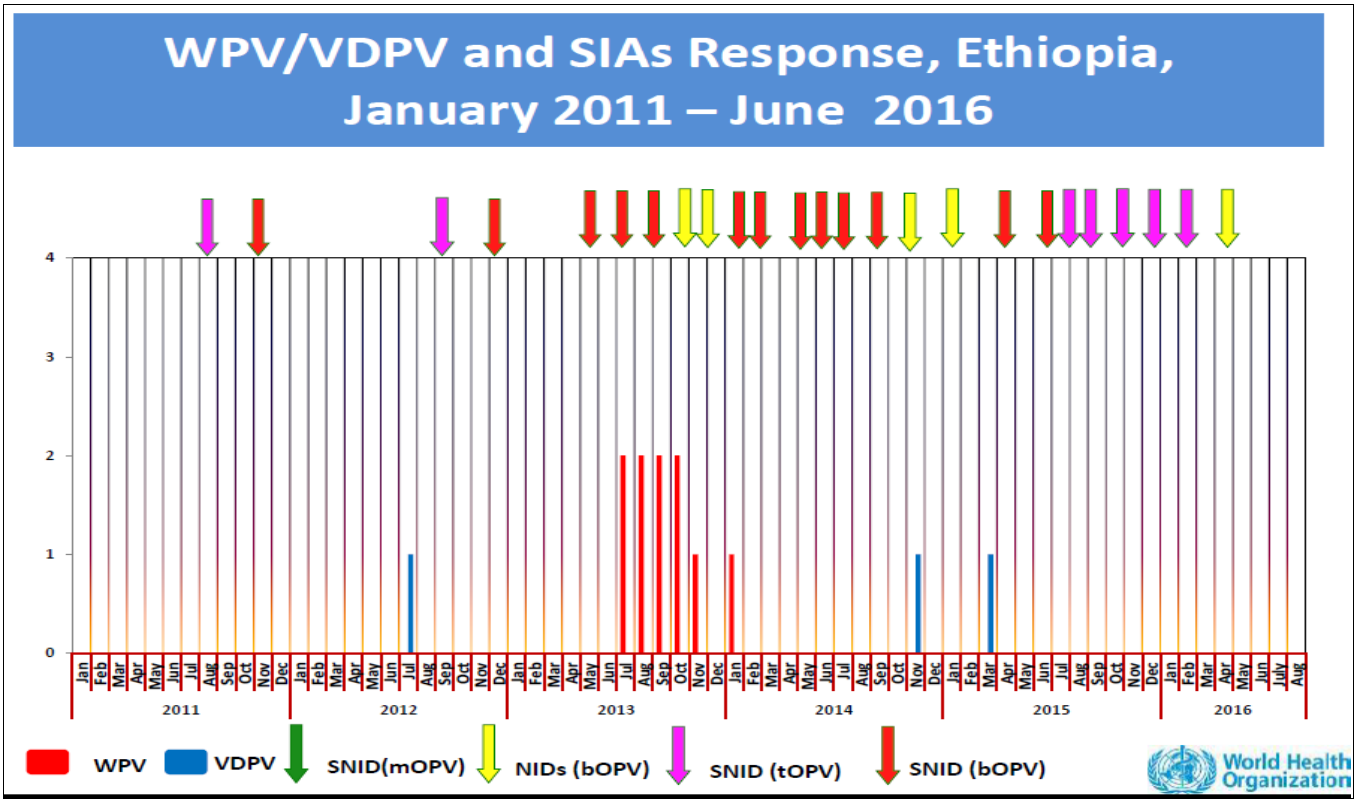
The Polio Eradication Initiative (PEI) in Ethiopia was started in 1996 following the Declaration on Polio Eradication in Africa in the same year[3]. Ethiopia reported the last case of indigenous wild poliovirus in 2001. No case had been reported until 2004. The importation in 2004 which affected the northern part of the country was genetically linked (I1C4) with virus that originated from Nigeria through Chad and Sudan. In 2005, Ethiopia had another importation that was genetically linked (I1C5) with virus circulating in Sudan. The WPV1 reported in 2006 (I1C5A) in the southern part of Ethiopia was genetically linked with virus circulating in Somalia. After the WPV in 2006, Ethiopia had a 17-month period when no WPV was detected until when two WPV-1s were identified in Gambella region, bordering southern Sudan.

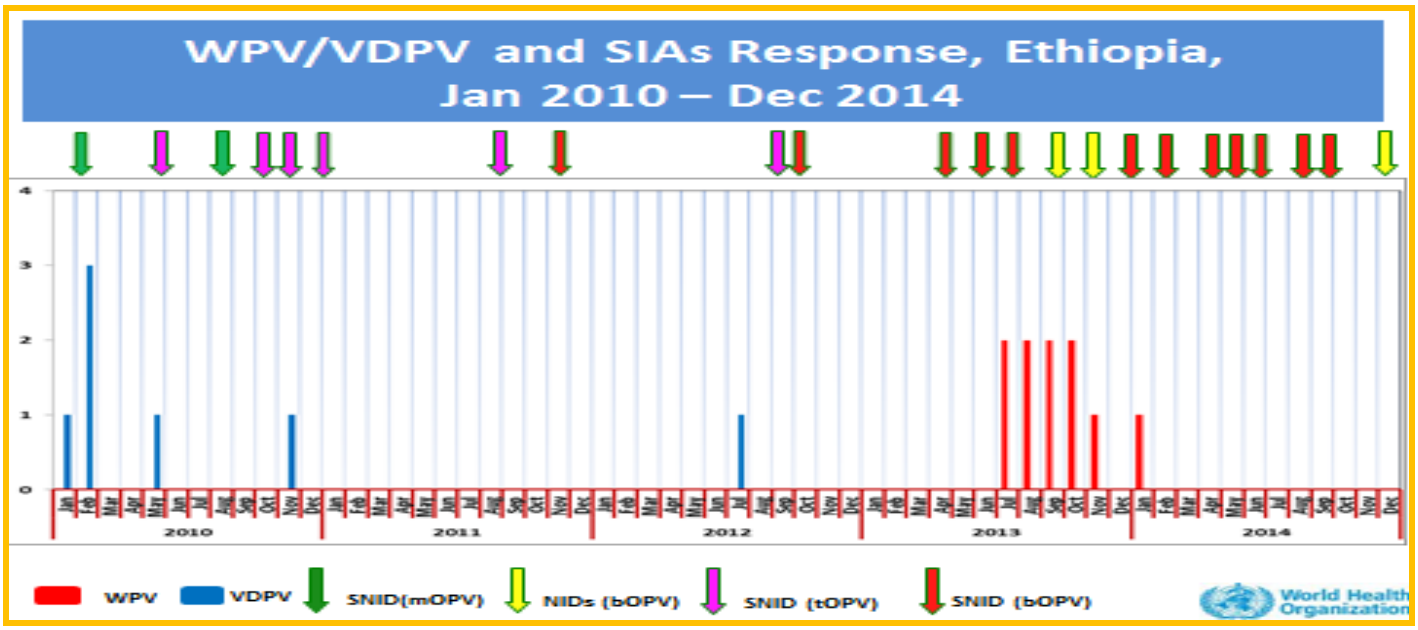
The first case of the 2008 outbreak was reported in southern Sudan in March and then was detected in Ethiopia in April and May. Ethiopia responded by conducting 2 SNIDs in Gambella region bordering South Sudan reaching approximately half a million children. Due to limited availability of resources, the desired synchronization with South Sudan did not take place. In addition, extra efforts were put in place to strengthen AFP surveillance that was sub-optimal in that particular region.

In the most recent polio outbreak in the Horn of Africa, a total of 10 WPV1 cases were confirmed in Ethiopia with date of onset of the last case on 5th January 2014. In response to the recent outbreak, 12 rounds of SNIDs and three NIDSs (two in 2013 and 1 in 2014) were conducted between June 2013 and December 2014.

[3] 8–10 July 1996 In 1996, the heads of state and government of the Organization of African Unity committed to eradicating polio in Africa as an urgent priority and confirmed their strong determination to make Africa polio-free.
http://polioeradication.org/tools-and-library/policy-reports/declarations-and-resolutions/#accordion-1-2

Figure 7: WPV/VDPV and SIAs Response, Ethiopia, Jan 2010-Dec 2014,





Nationally, AFP surveillance has been sensitive enough to identify polio cases including ambiguous and circulating vaccine derived poliovirus (cVDPV). The two most important AFP surveillance indicators of non-polio AFP (NP-AFP) and stool adequacy rate have been achieved at national level; however, sub national gaps have been identified. The

other concern is the laboratory indicator of Non-polio enterovirus isolation rate which has been declining, for the past four years to levels below the target of 10%.

Table 7: Summary of AFP surveillance indicators Ethiopia, 2011-2014

INDICATORS	TARGET	2011	2012	2013	2014
NP-AFP rate per 100,000 ≤ 15 Yrs.	2.0	2.7	2.9	2.9	3.1
Stool adequacy	80%	88%	89%	87%	87%
Timelines and completeness of reporting of priority diseases	80%	94%	90%	85%	ND
Investigated ≤ 2 days of notification	80%	98%	93%	97%	97%
Specimen arriving at lab ≤ 3 days	80%	98%	99%	99%	97%
Specimen arriving in good condition	90%	91%	91%	82%	78%
Non-polio enterovirus isolation rate	10%	7.6	4.6	7.9	7.3
Timely Lab result within 14 days of receipt	80%	83%	76%	77%	81%
Proportion of AFP cases with zero/unknown doses	0	6%	6%	10%	11%
Number of cases with wild polio virus	0	0	0	9	1
Proportion of polio cases with zero/unknown/ doses	0	0	0	66%	0%

2.5.1.2 Measles surveillance:

Measles case based surveillance has been in place in Ethiopia since 2003, which was supplemented by laboratory surveillance starting from 2004.

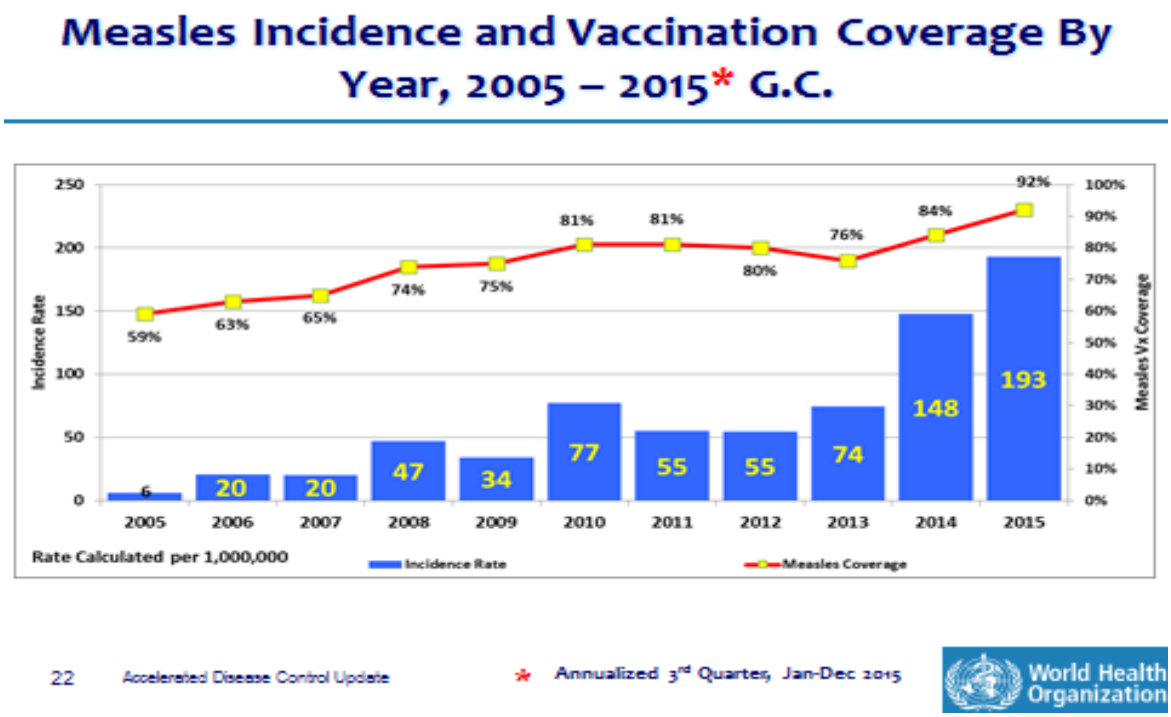
Major measles surveillance indicators were achieved over the past four years and the surveillance was able to confirm a number of cases and outbreaks. Available data shows that in Ethiopia, measles incidence dropped to 2 per 100,000 populations during 2004 and 2005 but has been in excess of 5 cases per 100,000 since 2010. In 2014, measles incidence was 11.1 cases per 100,000 populations. A total of 302 measles outbreaks were confirmed in 2014 compared to 243 in 2013 and 146 in 2012. A total of 249 woredas were affected by measles outbreaks in 2014 compared to 192 in 2013 and 125 in 2012. Though measles surveillance has identified outbreaks and cases each year and major surveillance indicators are achieved nationally, some surveillance indicators are not achieving the target.

Several rounds of measles campaigns have been conducted in the past as part of the regular follow up preventive campaign and also response to outbreaks. The two recent measles vaccination campaigns were conducted in 2010/11 (measles best practice campaign) and 2013, targeting children below 5 years of age. However, measles outbreaks continue to occur in most parts of the country with nearly 70% of the reported cases among children less than 15 years. Epidemiologic data from the past several years show a decreasing proportion of measles cases in children under 5. This age group made up 56 % of measles cases reported in 2008 but only 30% of cases in 2014.

Table 8: Measles surveillance indicator, 2011-2014, Ethiopia

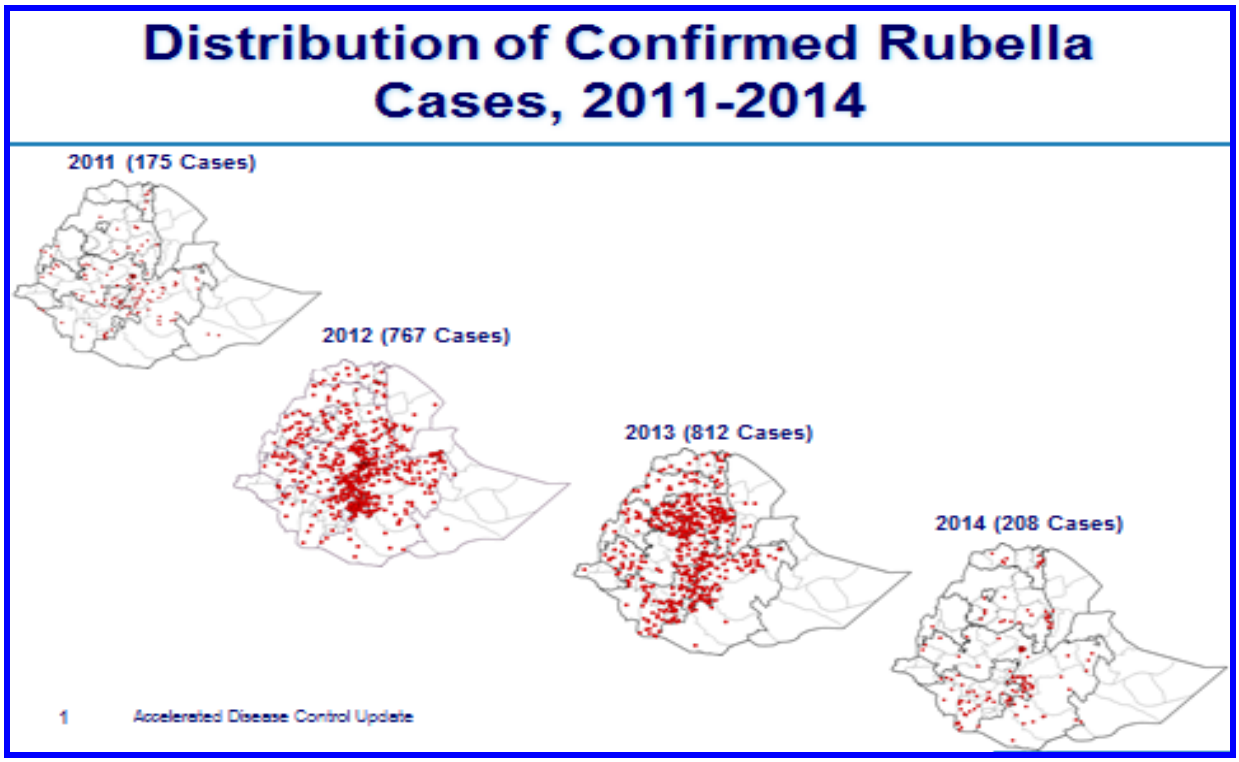
INDICATORS	TARGET	2011	2012	2013	2014	2015
Annualized rate of investigation of suspected measles cases (/100,000)	>=2	7.3	5.1	6.2	6.0	4.8
Proportion of woredas with >=1 case per 100,000 with a blood specimen (%)	80	96	99	100	80	76
Proportion of reported measles cases with blood specimen (%)	80	100	96	99	91	42
Proportion of measles IgM+ (%)	<10	29	26	35	53	49

Figure 8: Measles coverage and measles incidence rate 2005-2015, Ethiopia



The measles surveillance platform is also used to identify rubella cases, and as a result of the intensive case based surveillance for measles, which includes laboratory testing for the detection of rubella-specific IgM antibody in cases of rash illness where Measles IgM antibody is negative. The incidence of rubella infection was unmasked for the first time in 2011. In addition to the increase in cases, a large rubella outbreak in the Benishangul-Gumuz region in late 2012 increased recognition of rubella disease in Ethiopia.

Figure 9: Distribution of confirmed Rubella cases, Ethiopia, 2011-2013



2.5.1.3 Neonatal tetanus surveillance

The elimination of neonatal tetanus (NT) – defined as a rate of <1 NT case/1000 live births in every district in a country –has been a global goal since 1989 when an estimated 800,000 deaths from NT occurred each year. Elimination of maternal tetanus was added to the program objectives in 2000 when UNICEF, WHO and UNFPA renewed their commitment to NT elimination, forming the Maternal and Neonatal Tetanus (MNT) Elimination Initiative.

Strategies for MNT elimination include high coverage with TT vaccine among pregnant women and in high risk areas in all women of child bearing age, access to clean delivery service; and effective surveillance. Efforts to reduce NNT in Ethiopia began in 1980 with the start of the EPI program which included TT immunization of women of reproductive age, particularly during pregnancy. This was further strengthened by declaring NNT as one of the immediately reportable diseases and enhancing case based surveillance using the AFP surveillance network and infrastructure. AFP and measles activities integrated

capacity building and sensitization on NNT surveillance for health workers and community members.

In April 2011, the government of Ethiopia concluded that the country had likely eliminated maternal and neonatal tetanus as a public health problem and requested a formal assessment by WHO. In 2011, the country was validated (partially), to have achieved NNT elimination, except security-compromised Somali Region. Therefore, following the success of MNTE, the country entered in a new phase called sustaining elimination which requires:

- ☑ Continued strengthening of routine immunization activities for both pregnant women and children,
- ☑ Maintaining and increasing access to clean deliveries, reliable NT surveillance, and introduction of school-based immunization, where feasible

However, considering the population size and traditional value towards neonatal death, there may be unreported cases of NNT. In the past many years, nationally the number of reported NNT cases was below the acceptable number compared to the number of live births in the country. Low awareness among health workers and the community about NNT as one of the reportable diseases, its case definition and reporting process is a major gap.

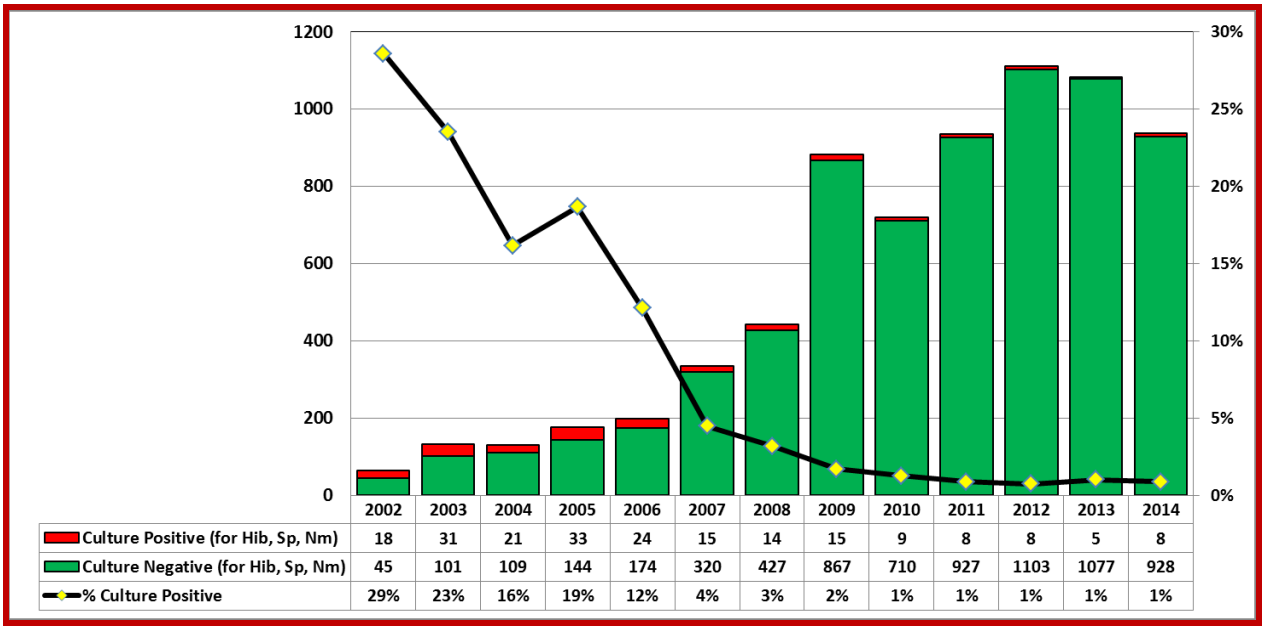
2.5.1.4 Paediatric Bacterial Meningitis/Hib Surveillance

Hib and HepB vaccines were introduced in the routine immunization program in May 2007, while Pneumococcal Conjugate Vaccine was introduced in 2011. Three hospitals, Tikur Anbessa Hospital, (TAH), Yekatit 12 Hospital and Gondar University Hospital, have been conducting sentinel surveillance for pediatric bacterial meningitis (PBM): since 2002, 2008 and 2009 respectively. The sites are tertiary-level hospitals, and the aim of the surveillance is to provide information on the burden of disease, and determine disease epidemiology based on genotypes and serotypes. The sites are enrolling a significant number of cases; however, the level of performance indicators varies widely among the three sentinel sites. Regular feedback is provided from the

national level to the sentinel sites. Data is regularly analyzed and shared with the sentinel sites, EPHI, IST and AFRO.

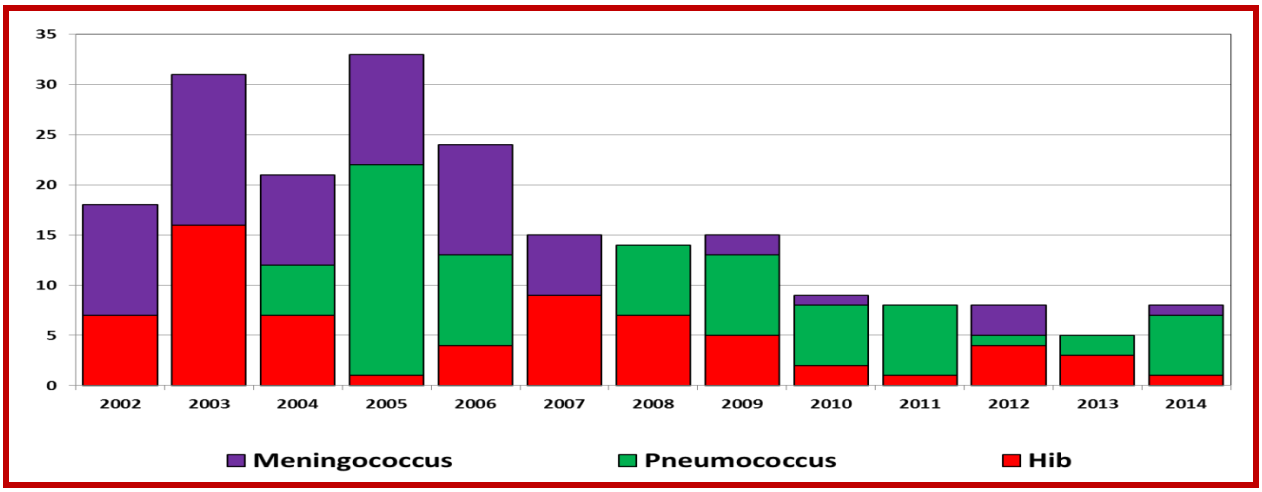
As shown in Figures 10 and 11, there has been a significant decline in the proportion and number of CSF specimens that are culture positive for Hib, Pneumococcal and Meningococcal etiologies.

Figure 10: CSF Culture results of suspected PBM cases, 2002-2014, Ethiopia



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Culture Positive (for Hib, Sp, Nm)	18	31	21	33	24	15	14	15	9	8	8	5	8
Culture Negative (for Hib, Sp, Nm)	45	101	109	144	174	320	427	867	710	927	1103	1077	928
% Culture Positive	29%	23%	16%	19%	12%	4%	3%	2%	1%	1%	1%	1%	1%

Figure 11: Etiologies identified for PBM, 2002-2014, Ethiopia



2.5.2 Surveillance for New Vaccines

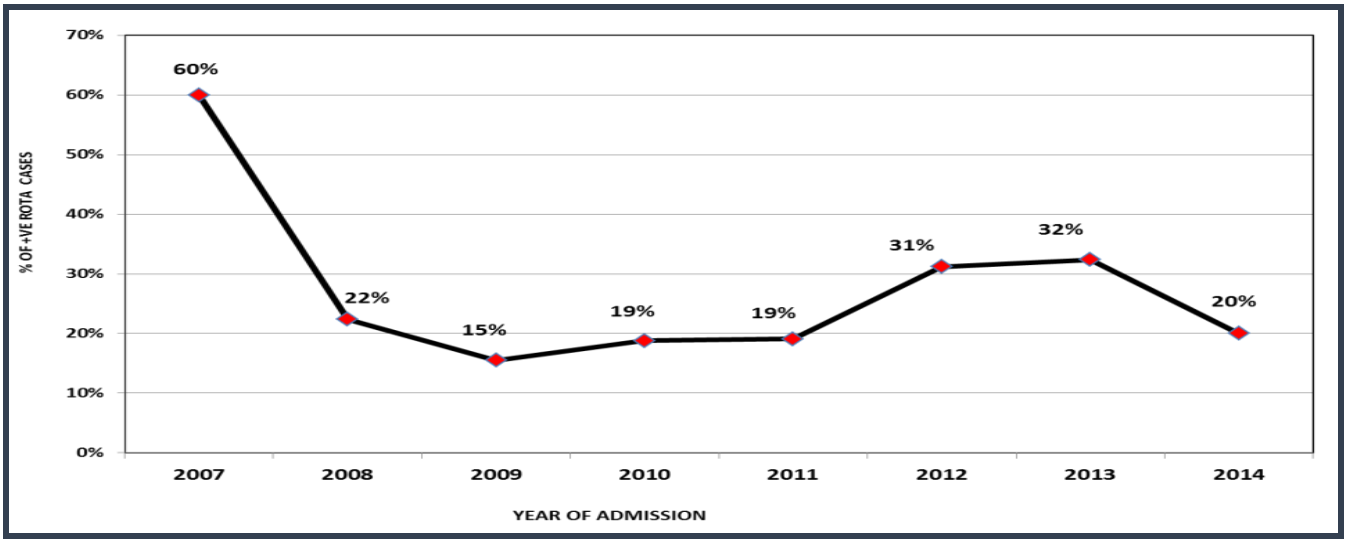
2.5.2.1 Rotavirus Surveillance

Rotavirus vaccine was introduced in November 2013.The Ministry of Health continued to work in collaboration with EPHI and WHO to monitor the epidemiological impact after rotavirus vaccine introduction. Surveillance activities were initiated in selected sentinel sites in 2007 at the Black Lion Hospital with further expansion to two additional sites in Yekatit 12 and Betezata Hospitals in 2008 and 2011 respectively. Sentinel site coordinators and site members were designated and trained to coordinate and follow the day to day activities. The sites are enrolling a significant number of cases however the level of performance indicators varies widely among the three sentinel sites. Data is regularly analyzed and shared with the sentinel sites, EPHI, IST and AFRO.

Table 9: Rota virus Sentinel Surveillance Indicators, 2007-2014, Ethiopia

INDICATOR	TARGET	2007	2008	2009	2010	2011	2012	2013	2014
# of <5 acute diarrhea hospitalizations reported		**60**	**210**	**454**	**533**	**524**	**295**	**352**	**310**
% stool specimens collected within 2 days of admission	***>=90***	**97**	**97**	**95**	**99**	**100**	**100**	**100**	**100**
% of collected stool specimens that arrive at laboratory for testing	***>=95***	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
% of received specimens that are tested	***>=90***	**100**	**100**	**97**	**100**	**100**	**100**	**100**	**100**
(%) ELISA Rotavirus confirmed cases	***>=20%***	**60%**	**22%**	**15%**	**19%**	**19%**	**31%**	**32%**	**20%**

Figure 12: Rotavirus Positivity Rate, 2007-2014, Ethiopia



2.5.3 Accelerated Disease Control

There are twenty-four identified priority reportable diseases for the country, which includes measles, polio and NNT among the vaccine preventable diseases. Standard case definitions have been developed for all priority diseases and health workers have been trained on the Integrated Disease Surveillance Report (IDSR) strategy. A Woreda Rapid Response Team (WRRT) has been established in each Woreda, and health facility focal persons are trained to coordinate the WRRT activities at health facility level. The main function of the WRRT is to analyse surveillance reports at woreda level and detect outbreaks for necessary intervention. The team prepares epidemic preparedness plans and submits them to woreda epidemic response committee for financial and logistic support. WHO supported the training of focal persons throughout the country on the IDSR strategy, Epidemic response committees have also been established at zonal, regional and national levels and these committees provide necessary support to woreda epidemic response committee and the WRRT.

2.5.3.1 Polio Outbreaks

For polio, case-based surveillance has been introduced to identify outbreaks in a timely way. Training of health workers on outbreak investigation was conducted by WHO Surveillance Officers. At all levels, the Epidemic Rapid Response Team (RRT) are also responsible for the Polio Outbreak Response. All the six WPV importations (from 2004

till 20013) were detected in a timely fashion and Polio SIAs were conducted in high risk areas to prevent transmission particularly in those regions which border countries with active polio transmission and high risk zones and regions.

2.5.3.2 Measles Outbreaks

Case-based surveillance for measles started in 2003. Since 2005 (Jan 2005 till Jun 2009) a total of 300 outbreaks were reported from all the regions. In 2009 alone a total of 60 measles outbreaks were reported in the country. The response to measles outbreak is guided by the National measles outbreak response guideline. Outbreak response is implemented by case management with Vitamin A supplementation and prioritising high risk areas for the follow up immunization campaigns.

Table 10: Situational Analysis by Accelerated Disease Control Initiatives, Ethiopia 2011 to 2014

TYPE OF DISEASES TARGETED FOR ACCELERATED CONTROL	INDICATOR	2011	2012	2013	2014	2015
Polio Eradication	OPV3 coverage	86%	83%	82%	87%	94%
	Non-Polio AFP Rate per 100,000 in < 15 yrs. of age	2.0	2.7	2.9	3.1	3.1
	Stool Adequacy Rate	80%	88%	87%	87%	92%
	Extent: NID/SNID No. of rounds/Coverage range	4 NIDs >95%	8 SNIDS >90%	5 SNIDs & 2 NIDs	6 SNIDs & 1 NID; />90%	4 SNIDs/1 NID 99%
	Wild polio virus circulating	0	0	9	1	0
MNT elimination	Routine TT2+/PAB coverage	23%	66%	79%	77%	92%
	Number of districts reporting > 1case per 1,000 live births	NA	NA	NA	NA	NA
	Was there any SIA (Y/N)	Yes	No	Yes	Yes	Yes
Accelerated Measles Control	Routine Immunization Measles coverage	81%	80%	76%	84%	92%
	No. of outbreaks reported	196	146	243	302	293
	No of woredas with outbreaks	143	125	192	249	242
	woredas that conducted Measles SIAs	146	0	824	ND	368

2.5.4 Laboratory Services

2.5.4.1 Polio Laboratory

The national polio laboratory located in the EPHI was accredited by WHO in 2001. In 2005, the laboratory proficiency test score and score of onsite review evaluation was 100% and 96% respectively, leading to full accreditation of the laboratory. Since its establishment, the laboratory has scored an excellent proficiency test and onsite review evaluation scores. In 2009 alone, 93% of the lab reports were timely done within 14 days of receipt of specimens. In 2009 (January to July), a total of 1,498 stool specimens were collected and 10.7% of cases were positive for non-polio enterovirus and 4% primary isolates of polio virus were reported*. (the current laboratory capacity intra-type differentiation of Positive polio cases need to be included).*

The lab continues its reputation in all areas of work. In 2014 a total of 2641 stool specimens were collected and processed, and timeliness for reporting viral isolation results in 14 days after samples receipt was 80.9% the timeliness for reporting suspected isolates for ITD. On the other hand, percentage of L20B isolates confirmed as polio virus and score for the most recent viral isolation PT were 100% and 95% respectively, while score obtained on site review was 90%.

2.5.4.2 Measles Laboratory

The measles national laboratory is located in the same premise with polio laboratory and all the necessary resources such as equipment, reagents and trained personnel are available. The measles laboratory was accredited in September 2005. In 2009 alone, a total of 3170 suspected measles cases were reported and 223 (19%) of the specimens submitted were positive for measles and 50 (4.3%) were positive for rubella specific IgM. Rubella tests are done on all cases which are negative for measles specific IgM.

In 2014, a total of 16,210 suspected measles cases were reported and 13, 305 (82%) of the cases were positive for measles; and 213 (10%) out of 2047 “Measles IgM negative” cases were positive for rubella specific IgM*.* The national measles lab established and maintained accreditation for the last couple of years, however, the vastness of the country and the work load at the national measles lab, necessitated the establishment of

sub national measles/rubella labs. After several assessments conducted by national and WHO experts, two labs in Bahir Dar and Hawassa were selected and approved by AFRO to be sub national labs. Final preparation was made including training of lab personnel. The labs are now both accredited and able to test specimens for measles.

2.6 GAVI Support

Ethiopia has been benefiting from the GAVI support in particular the New Vaccine Introduction Support (NVS), Health System Strengthening Support (HSS) and GAVI CSO in the last five years.

2.6.1 New Vaccines Introduction

GAVI supported the introduction of Pneumococcal Conjugate Vaccine (PCV 10) and Rota virus vaccine in Ethiopia on 16 October 2011 and on November 2013 respectively

2.6.2 Supplemental Immunization Activities

2.6.2 GAVI HSS

Ethiopia is also one of the first countries to use the GAVI HSS support to strengthen its health system. Ethiopia received 76.5 million USD from GAVI for four years. The fund was allocated to strengthening human resources for delivery of basic health services; to improve supply, distribution and maintenance systems, and to enhance the organization and management of health services delivery.

2.6.3 GAVI CSO Support

Ethiopia has been one of the few pilot sites for the GAVI CSO support. The total amount of this support is US$ 3,320,000 for a two-year period. Five Civil Society Organizations were selected and awarded with this fund and they are working on improving EPI services and its outcomes in hard to reach and low coverage areas.

2.7 Immunization Logistics

Vaccine are very sensitive biological products; they lose their potency if they are subjected to a temperature beyond the recommended ranges. Proper forecasting,

procurement, handling, storage and distribution of the vaccine are vital in order to maintain proper vaccine supply chain system. To maintain and excel in vaccine supply and cold chain system, it is key to achieve different strategies in the immunization program in Ethiopia.

2.7.1 National Cold Chain Equipment Inventory & Effective Vaccine Management

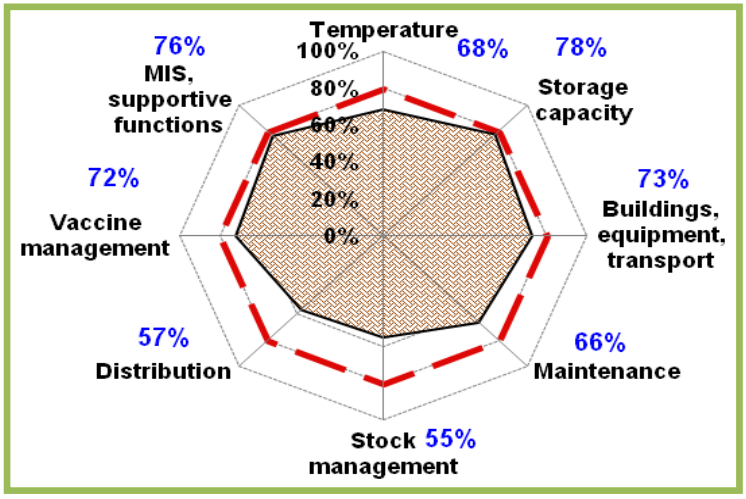
A national cold chain equipment inventory was done in 2013 with an objective of quantifying and characterizing the condition of cold chain equipment throughout the country. The survey documented that, 20,660 refrigerators/freezers were available at different levels of the health system (health post, clinic, health centre and hospital, woreda, zone and region). 61.8% of the refrigerators/freezers at health facility level and 63.5% of refrigerators/freezers at administrative level (woreda to region) were functional during the inventory. However, the functionality varied across the regions of the country.

Lack of maintenance due to shortage of trained cold chain technicians and spare parts are the major reasons for non-functionality of the freezers/refrigerators. Kerosene and electricity are major sources of energy for almost all refrigerators/freezers. Solar is the least utilized energy source. Overall, there are 37,574 Vaccine Carriers (VC) and 13,079 Cold Boxes (CB) existing at the health facility level in the country. The majority (57%) of the cold boxes and vaccine carriers are found at health post level.
Inventory of waste management facilities was also conducted (discuss findings)

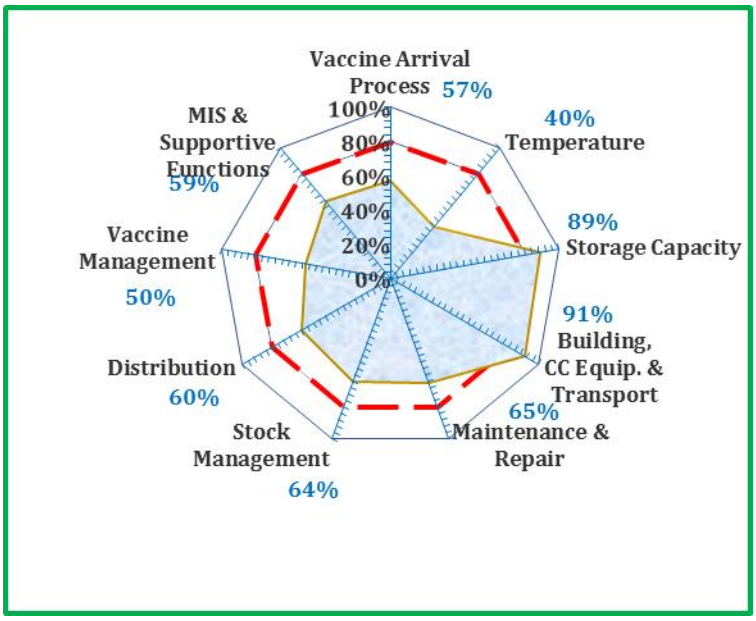
2.7.2 Effective Vaccine Management Assessment

National effective vaccine management assessment (EVM) was conducted in 2013 and assessed the performance scores of 10 Regional vaccine store, 23 Zonal vaccine stores, 28 Woreda vaccine stores and 30 Health facilities. The main strengths revealed by the 'criteria' scores were in storage and transport capacities and qualitative aspect of the infrastructure used throughout the vaccine supply chain. The main areas of weakness were in storage temperature, stock management, distribution and to some extent in vaccine management policy and procedures. The EVM assessment shows a global average score of 67%. The findings are summarized in spider graph below to compare the different indicators among the supply system.

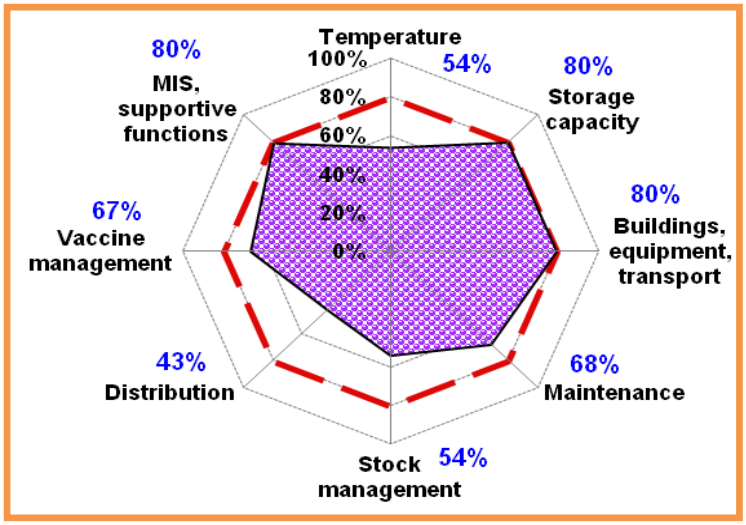
Figure 13: Effective Vaccine Management Assessment Report at Different Levels, 2013



(A) National Consolidated Figure



(B) Performance by PFSA Figure



(C) Consolidated Regional Figure

2.7.3 Cold chain Rehabilitation and EVM improvement Plan

The cold-chain system has to be rehabilitated periodically and expanded to meet the changing requirements of an immunization program since it helps to improve quality of service, increase efficiency of the system and reduce operational costs. It accounts for mainly immunization program expansion (population growth, coverage and NVI) and status of cold chain equipment (CCE) (lifespan, functionality status, source of energy).

The cold chain inventory identified weakness in lack of adequate maintenance capacity, poor organizational structure and staffing of the repair and maintenance functions, lack of standard operating procedures, inadequate resource mobilization for maintenance operations, miss-management, mal-distribution and shortage of spare parts, insufficient tools to carry out repair and maintenance, and inadequate planning, implementation and monitoring of preventive and curative maintenance.

The rehabilitation plan considers the following shortcoming for CCE replacement:

- ☑ 3,357 refrigerators and freezers are age of more than 10. years
- ☑ 5,997 refrigerators and freezers are age of between 5 and 10 years.
- ☑ 8,504 refrigerators and freezers are of age between 1 and 5 years.

In addition, 7,668 refrigerators used kerosene as their energy source and hence needs to be considered in the phase-out plan since kerosene is identified as a major problem in health facilities for discontinuation of the immunization session. In addition, frequent electric break down was considered as a main reason for failure of CCE especially for cold rooms.

2.7.3.1 Criteria for cold-chain equipment replacement and expansion plan

Equipment replacement and expansion plan has been established through a list of criteria to be followed for deciding the priority in which replacement and expansion or supply should be made. These are:

A. Replacement

- ☑ ***1st priority:*** (a) Filling the gap as per the current system and plan; (b) Refrigerators and freezers which do not comply with the PQS or PIS or which are "obsolete" and not usable to be replaced.
- ☑ ***2nd priority:*** Absorption refrigerators which are 10 years and older as the lifespan of the equipment and the strategy to slowly start the phase out of kerosene refrigerators for the transition to electric or solar equipment.
- ☑ ***3rd priority:*** Compression refrigerators and freezers which are above 10 years of age
- ☑ ***4th priority:*** Refrigerators and freezers which their PQS/PIS status is unknown. Due to the cold chain inventory data.
- ☑ ***5th priority:*** Absorption refrigerators which are of age between 5 and 10 years
- ☑ ***6th priority:*** Absorption refrigerators which are of age less than 5 years considering the 5-year plan and the strategy to further progress with the gradual phasing out of kerosene refrigerators as a transition to either electric or solar equipment.

In general, in the coming five years all non-optimal cold chain will be replaced.

B.*Expansion*

Currently, only about 30% health posts have cold chain equipment, which most of their cold chain equipment are absorption and non-optimal. Therefore, within coming five years, all health facilities (health posts, Health centers & Hospitals) and health administrative structure cold stores (Woreda, Zone. Region/Hubs) will be equipped with optimal and appropriate cold chain equipment.

2.7.4 Cold Chain Equipment Optimization Platform

At all levels of the supply chain system, the absence of cold chain equipment, obsolete technologies and non-functional equipment constrain the effectiveness of delivering services and limit the overall coverage and quality of the immunization program. The 2013 cold chain inventory (CCI) and the EVMA result described the cold chain system in Ethiopia to be one of the bottlenecks for achieving routine immunization program objectives (to reach every child with a potent and safe vaccine within a reasonable

distance). It is known that the suboptimal equipment also poses risks to vaccine potency. The temperature monitoring study (2010) revealed that 50% and 21% of observed vaccine storage and shipments were at risk of freezing with the most significant challenges at health facility level. Thus in addition to the key challenge for potency of vaccines administered, suboptimal equipment have implications for efficiency of the supply chain in terms of recurring maintenance and fuel costs which have diverted funding from preparations for New Vaccine Introduction (NVI). Newer, optimal technology, such as solar direct drive refrigerators show promise in minimizing these costs.

Equipping these health posts is a top priority for the Government of Ethiopia and is seen as an important step to address the disparity in coverage. This will enable to address some of the challenges in reaching pastoral populations in these areas and curbing dropout rates by specifically, (a) modifying frequency of service delivery- allowing immunization sessions to happen every day in a fixed post - as opposed to a few times a month via outreach; (b) strengthening the immunization delivery platform to give a timely dose very quickly after birth (crucial for the fight against Hepatitis -with the birth dose of Hep B planned to be introduced shortly and vaccines that may require a timely birth dose in the future), and (c) in supporting a broader primary healthcare agenda in line with Ethiopia's new Health Sector Development Plan. Since the vaccines would be on-site at each HP, the Health Care Worker can save time and costs involved in picking up vaccines for outreach and instead dispense immunization or other PHC services.

Despite the actions already taken, further steps are necessary to rehabilitate the cold chain in order to enhance immunization coverage equitably. The opportunity with Gavi CCEOP will be utilized to replace and equip 8,397 HPs and 1,646 HCs. In addition, for 17 PFSA hubs, 1032 freezers (5 freezers for each of the 17 PFSA hubs) will be procured for ice pack production. Generally, the strategies in the immunization supply chain design is to equip 100% of health Centres and health posts with an optimal CCE to provide astatic immunization services from the GAVI CCEOP and SDG-PF enabling regular, more frequent provision of services to nomadic populations even in remote areas.

The CCE in the CCEOP includes 6,096 SDD refrigerator, 3,711 ILR and 1,600 long term passive devices. In order to improve immunization quality and coverage, initial distribution plan will be primarily done to pastoralist region and hard to reach areas with a total budget ceilings of US $61,787,680. Hence, Government will secure the available funding from GAVI CCEOP and fill the remaining gaps from its treasury and by mobilizing funds from partners.

The combination of new optimal CCE products in country to address current cold chain infrastructure gaps and maintenance system improvements will result in the following:

- ☑ *Expected vaccines availability:* By addressing the equipment gaps in the current network and expanding storage capacity (more storage points to reduce outreach distances), we expect availability to improve and reduced instances of stock-outs.
- ☑ *Safety, potency and wastage:* Through new technologies that offer user-independent/ non-freeze, the country will significantly cut wastage rates.
- ☑ *Storage and transport utilization:* Increase the national and sub-national capacity to optimize delivery frequencies and raise storage capacity.
- ☑ *Coverage improvement equitably in all areas:* Improve accessibility to immunization service and coverage specifically in developing regions and hence reduce the disparity in immunization coverage.

2.7.5 Transition plan

FMOH and developmental partners are supporting the vaccine transition plan at PFSA where phased approach will be implemented to successfully transit and become a model to most African countries. During phase I, transition took place in three selected hubs and currently a national scale up to all PFSA hubs in place up to zonal level. While engaging, and building the capacity of PFSA in managing vaccine logistics and cold chain equipment, vaccine will be delivered to directly to woreda health office and health center by PFSA. Limiting factor for successful transition of the plan is:

1. Refrigerated trucks: Seventeen cold rooms and 5 cold rooms procured by GAVI and UNICEF increases the gross national cold chain capacity by 880 cm3. In addition, GoE

has committed to construct cold room at airport to be managed by PFSA trained staffs to avoid any delay in clearance and avoid vaccine congestion at cargo. The investment to construct cold room by government and developmental partners is very much promising for the transition plan. However, more capacity building activities has to be done in areas of distribution

The total volume required to store a one quarter consumption of antigens for routine immunization is 235 CBM and the volume will add up to 271 CBM considering HPV and IPV which are on the pipeline. Hence, in order to distribute vaccine from the center to the hubs, 54 refrigerated trucks (Van) is required. Currently, 20 refrigerated trucks are available and start to provide service. Since distribution is a major challenge in vaccine distribution, having one more refrigerator to each hub and an addition three to central PFSA with a total quantity of 20 refrigerated trucks will help to fill half of the gap in vaccine distribution.

2. In addition, PFSA hubs are currently providing service to health facilities with an average of 15 route map. Accordingly, there will be more than 270 routes for direct vaccine delivery to health centers. Therefore, Hubs needs to be equipped with refrigerated pick up vehicles for vaccine delivery to health centers and procuring 25% of their needs (67 refrigerated pick up vehicles with GPS) will hasten the distribution process over the next 5 years

3. Human Resource Development: Even though vaccine management transition responsibility is given to PFSA, experience with in the agency in managing the cold chain capacity is limited and it is mainly associated with non-EPI keep cool items. Hence, in order to successfully transit and also to become a model for other countries, technical assistants that support the transition process and with a very good experience on supply chain system design, vaccine management and knowledge of vaccine commodities, strong data analysis skill, good overall consulting skills and knowledge and previous experience of vaccine supply chains is required. Hence, the support will be used to recruit 3 Technical Assistants for each Hub with a total number of 54 Technical Assistants for 2-year period.

2.7.6 Available Storage Capacity

2.7.6.1 National level

Findings from cold chain inventories on 2008 and 2013 showed, there were total of 9,880 and 20,660 refrigerators respectively, among those 20, 660 refrigerators inventoried on 2013, almost 50% of the refrigerators were in the health system for less than 5 years. This indicates that the aged cold chain system was progressively replaced by new ones and the numbers of refrigerators in the health system were increased by more than two-fold from what was on 2008.

Currently the total positive storage space available at central level is 1,095,000 litters out this, 240,000 litters is found at the old vaccine store based around Urael[4] and the remaining 856,000 litters is found in the new cold rooms located at PFSA compound. Taking a ratio of 3.5 of equipment factor for cold rooms a net 312,857 litters of positive storage capacity is available at national level. (See Table 12)

With the current available 312,857 litters of positive cold chain storage space at national level, and with an assumption of two consignments per year, the cold storage space that are available at central level will be adequate to accommodate the planned introduction of new vaccines up to 2017 (see Table 11). However, the available cold storage space will not be adequate for the new vaccines planned to be introduced beyond 2017 and more importantly, this calculation does not take in to account the non-EPI items that will be kept in the cold room which ultimately demands planning of additional volume of space for storage.

[4] Location, central cold store

Table 11: Current Available Net Storage Capacity and Future Cold Chain Requirements

YEAR	2016	2017	2018	2019	2020
Annual positive volume of vaccines, including new vaccines and non EPI keep cool items in liters	458, 205 lit	571, 900 lit	650,760 lit	690,567 lit	712, 780 lit
Available storage capacity	312,857 lit	312,857 lit	312,857 lit	312,857 lit	312,857 lit
Number of consignments / shipments per year	2	2	2	2	2
Gap	0	0	12,523 lit	32,426 lit	43,533 lit

Table 12: Location and storage capacity of currently available EPI vaccine cold *rooms*

OCATION		***QTY***	***GROSS STORAGE CAPACITY***	***REMARKS***
REGION	***VACCINE STORE NAME***			
CENTRAL/ NATIONAL	1. Urael	6*	240 m3	*1 Freezer room (45m3)
	2. PFSA (Gulele)	3	856 m3	
OROMIA	3. Dukem	2	62 m3	
	4. Adama	5	155 m3	
	4. Asebe teferi	1	32 m3	
	5. Jimma	2	64 m3	
	6. Nekemt	1	30 m3	
AMHARA	7. Bahir dar	2	62 m3	
	8. Desie	1	32 m3	
SNNPR	9. Hawassa	2	62 m3	
	10. Bonga	1	31 m3	
TIGRAY	11. Mekele	2	60 m3	
DIREDAWA	12. Dire dawa	1	30 m3	
AFAR	13. Semera	1	30 m3	
BEN-GUM	14. Asosa	1	30 m3	
SOMALI	15. Jijjiga	1	31 m3	
	16. Gode	1	30 m3	
TOTAL		33	1837 m3	

2.7.6.2 Regional Level

Similarly, the currently available cold chain stores and requirements from 2016-2020 are computed and the analysis shows that the available cold chain at sub national level is adequate to accommodate the future introduction of new vaccines (see Table 13).

Table 13: Current Available Capacity and Future Requirements for Net Positive Cold Storage at Regional Level

S/N	REGION	AVAILABLE GROSS STORAGE IN LIT	REGIONAL PROJECTED COLD CHAIN STORAGE NEED IN LIT				
			2016	2017	2018	2019	2020
1	GAMBELLA	2,000	559	581	596	611	626
2	AFAR	16,000	2,438	2,501	2,540	2,578	2,617
3	BEN-GUM	16,000	1,122	1,154	1,176	1,199	1,221
4	DIRE DAWA	16,000	546	561	569	578	586
5	TIGRAY	32,000	6,946	7,113	7,231	7,348	7,465
6	SOMALI	32,000	7,203	7,383	7,509	7,636	7,762
7	SNNPR	32,000	24,653	25,338	25,818	26,299	26,779
8	HARARI	32,000	297 lit	305	310	315	321
9	ADDIS ABABA	32,000	4,323	4,402	4,470	4,538	4,606
10	AMHARA	48,000	27,023	27,269	27,542	27,815	28,089
11	OROMIYA	80,000	45,239	46,536	47,426	48,316	49,206

2.7.6.3 Health Facility Level

The assessment of cold chain storage at health facilities from the inventory indicted that 93.1% of the visited HFs will have adequate storage capacity. If the non-functional refrigerators are maintained the percentage of HFs with adequate storage capacity will increase to 98.7%. Whereas from the visited woredas stores 79.2% of them will have adequate storage capacity and this percentage will rise to 90.3% if non- functional refrigerators are maintained.

2.7.7 Injection Safety and Waste Disposal

A national injection safety assessment was done in 2000. Following the findings of the assessment, injection safety guidelines were developed. Ethiopia shifted from re-usable syringes and needles to auto disabled (AD) syringes and needles in 2002 for all immunization activities. The recommended waste disposal method is incineration in all

health facilities using incinerators. However, burning and burial is also used in health facilities. There are guidelines on constructing incinerators at all newly constructed health facilities. The proportion of health facilities with incinerators is unknown.

2.7.8 Vaccine, Supply and Quality

The bulk of vaccine costs for new vaccines and underused vaccines is financed by GAVI, while the cost of traditional vaccines is partly financed by UNICEF. The government is also financing the cost for traditional vaccines (BCG, TT and OPV) and injection materials by mobilizing resources from partners, and in addition the government pays staff salaries. There are no significant problems at national level but weak vaccine stock and inventory management has been noted at regional and service delivery levels. There is a poor distribution system for vaccines and injection materials. This has resulted in overstocking of vaccines at central level while sub national cold rooms were not storing adequate vaccines. Vaccine wastage, particularly that of BCG is high. There is inadequate wastage monitoring at the health facility level. The strength of the cold chain to appropriately deliver potent vaccine to children was also challenged by the temperature monitoring study (TMS) in 2011.

In an attempt to address these issues, health facilities in-service training programs have been conducted to enhance staff capacity in vaccine handling and management with particular focus on the stock management, wastage monitoring, and temperatures monitoring. Remote Temperature Monitoring Devices (RMTD) has been procured to equip all cold rooms with an electronic automatic temperature recorder and an audible alarm system. Also, refrigerators at all levels have been supplied with fridge-tags to allow internal refrigerator temperatures to be monitored and record temperatures outside of the acceptable range. To tackle distribution challenges, PFSA is expected to start storage and distribution of vaccines and accessories to lower level as early as possible.

2.8 AEFI Surveillance and Monitoring

To introduce surveillance for Adverse Events Following Immunization (AEFI) into the immunization program, AEFI guidelines were developed in 2011. In addition, training

on AEFI is being conducted along with Immunization in Practice and new vaccine introduction trainings. AEFI reporting forms were printed and distributed to all health facilities. Additional training was also given integrated with the Meningitis A, Polio and Measles SIAs. AEFI reporting is still very low except following campaigns such as Men A phase II in 2014 where there was improved AEFI reporting. In 2015, the AEFI guideline is being revised considering the new vaccine introductions into the country.

2.9 EPI Advocacy, social mobilization and program communication

FMOH has made health structures reform through incorporation of health promotion components in all health programs. This will positively benefit health communication programs for development and dissemination of health education messages using the electronic and print media in the Ethiopian context. Regions also have similar units that coordinate all promotion and information dissemination activities in their respective regions. Health facilities provide health education to both in-patients and outpatients. EPI is one of the programs given priority in all these communication activities.

The MOH and other partners are working to fill the gaps in communication in EPI by updating communication materials to be used for training such as IIP, and producing job aid material to support interpersonal communication and IEC material for behavioural changes. In a bid to improve health service delivery including immunization, high level advocacy meetings were conducted at regional level in regions with low immunization coverage (Afar, Gambella, Somali and Benishangul-Gumuz). During the advocacy visits ICC and Task Forces were established at regional and woreda level in those mentioned regions. National ICC members conduct periodic advocacy visits to regions and to other partners.

However, there are still gaps in communication such as lack of integration with HEWs activities to access the grass root level of the community, absence of communication focal person at regional/woreda level, shortage of budget, and lack of operational research to assess the behavioural aspects of EPI service utilization. Thus, all partners agreed to support surveys that will assess the behavioural determinants of EPI service utilization, identify root causes and devise appropriate strategies of communication,

such as Community Conversation, to improve demand for EPI service by the beneficiaries.

2.10 Management and Human resources

2.10.1 Program Management

The government has implemented several reform programs including the civil services reform and Business Process Re-engineering (BPR). The reforms contributed to establish customer focused institutions, rapidly scale up health services including into hard to reach communities, enhances quality of care and address equity issues. Considering leadership and governance as key building blocks of health system strengthening, this policy will pave constructive ways to build inspiring leadership, effective management and good governance for health that can meaningfully transform the health sector so that country can reach middle income economic status by 2025.

Despite all efforts, many programs including EPI have critical gaps in relation with leadership, management and governance at all levels. This has a strong linkage with challenges in the health workforce management, program implementation, and limited capacity to mobilize & absorb funds.

2.10.1.1 EPI Coordination

The MCH directorate is the overall coordinating body for the EPI activities at the national level. It coordinates EPI interagency coordinating committee (ICC) efforts towards common national goals and targets. It also provides technical and financial support to the regions and ensures updating EPI implementation guideline, standardization of training manuals, job aids and any related supplies. Monitoring, supervision and program reviews are being coordinated through the directorate. RHBs also provide similar supports to the lower administration levels and health facilities.

Ethiopia has a strong ICC chaired by the State Minister of the FMOH. The members include UN agencies, NGOs, Directorates of FMOH and others Civil Society organizations and others key EPI partners. There are two sub-committees under the ICC, the main and

technical ICC The main ICC meets biannually led by H.E State Minister and the technical ICC meets quarterly led by the Director of Maternal and Child Health Directorate. The ICC is the advisory body to the FMOH and also supports the program in resource mobilization and advocacy visits to regions and other partners. There is EPI task force under the technical ICC which meets every two weeks. There are also three technical working groups under the EPI task force, each of which also meets every two weeks. The Technical working groups are named as monitoring and evaluation, logistics and communication technical working groups. FMOH, Agencies and partners are represented in all.

A National Immunization Technical Advisory Group (NITAG) is supposed to advise the ministry on immunization policy, strategy and technical issues like NVI and AEFI. However, the NITAG is yet to be established.

2.10.1.2 Health Management Information System (HMIS)

There is a health information unit within the Planning and Program Department of the FMOH. Under the new HMIS (which operates under the principles of simplification, standardization, and integration of reports), there is a revised list of 107 sector-wide indicators that have been jointly agreed upon and endorsed by the government and development partners; ten indicators are EPI- related. Reports are expected to come through quarterly on only one channel that is through the HMIS unit. Through the efforts made so far, the timeliness, completeness and reliability of data have improved and it has been possible to use the data for Woreda-based planning and performance monitoring.

A Community Health Information System (CHIS) has been designed to make the health information system and decision making effective at the grass roots level and EPI is integrated into the CHIS. In 2006 Ethiopian Fascial Year (EFY), efforts were made to speed up the CHIS implementation in rural Kebeles, increasing the CHIS coverage to 64.5%. Given the family centered provision of health services, a family folder has been designed to record health information and housing conditions of the family from birth

to death since EFY 2003. Two years later, the implementation of the family folder, had reached 40% coverage

The major challenges identified in the HMIS include delay in implementation of CHIS in pastoralist and urban areas, inadequate use of data quality assurance mechanisms at district and facility levels, inadequate coordination with stakeholders and partners at region level, gap in establishment and functioning of performance review teams, poor documentation and dissemination of monitoring and evaluation, routine information, surveys, surveillance and operational research findings; and limited practice of experience sharing and scale up of best practices.

2.10.1.3 Supervision, Monitoring and Evaluation

Each level of health administrative level is expected to supervise its immediate lower level periodically; but this regularity has been a challenge due to resource limitations. A guideline and tools for Immunization Service Support (ISS) have been finalized as part of BPR for smooth implementation. Government and development partners conduct supportive supervision through surveillance and routine immunization officers assigned to regions.

The immunization program is monitored monthly. Most health facilities utilize immunization monitoring charts posted at the facility and health offices for ease of monitoring the EPI program. In addition, quarterly review meetings of the EPI integrated with surveillance, SIAs and Public Health Emergency Management (PHEM) are key EPI program monitoring events and give updates to all the EPI actors. These are being conducted at all levels of the health structure jointly with EPI partners.

National EPI coverage surveys are also conducted every three to five years to see the broader status of vaccination for the major priority vaccines. In line with this, post introduction evaluation for new vaccines is conducted timely together with partners.

2.10.2 Human Resources for EPI (HRE)

In conjunction with the reform programs, the health workforce density in Ethiopia has increased from 0.84 to 1.3 per 1000 population between 2008 and 2013 indicating improvement in supply and availability of health workers. However, Ethiopia has major HRE management challenges including shortage, urban/rural and regional disparities, and poor motivation, retention and performance. Human resource management has gaps as a result of lack of modern human resource management.

There is an EPI team within the Maternal and Child Heath Directorate at the FMOH level which has a mix of logistics, communication and M&E components as main focus areas. However, EPI specific working teams/officers in most of the regions, zones, and Woredas/districts do not exist; most are working with other shared responsibilities. Limited training and capacity gap is felt both at program and service delivery points mainly due to the high attrition and turnover of staff.

The enabling factor for good immunization performance and broad national commitment include local recruitment of, and provision of support to, community health workers among others. Hence, the majority of immunization service is being rendered by the health extension workers recruited from the lowest administrative unit, the Kebele. The Health Extension Program (HEP) is an innovative community based program started in 2003 aiming to create a healthy environment and healthy living through the 16 essential health service packages including immunization services.

Health Development Army (HDA) is a new initiative of networking the community to expand best practices on a large scale within a short period of time and enable the community to produce and sustain their own health through implementation of the immunization extension package. As part of the HEP packages, the community HDA has received due emphasis as it helps ensure greater involvement of individuals and communities in moving from supply-driven to demand-driven immunization services.

2.11 Summary of the Situational Analysis

2.11.1 Achievements

Figure 14: Situational Analysis of Routine Immunization based on Previous Years' Data (2011-2014)

ROUTINE IMMUNIZATION	SUGGESTED INDICATOR	NATIONAL STATUS			
		2011	2012	2013	2014
Immunization coverage	Official coverage estimates % Penta 3	86	83	82	87
	Official coverage estimates % Measles	81	80	76	84
	Official coverage estimates % BCG	ND	ND	77	81
	Official coverage estimates % Penta1	86	95	91	93
	Most recent survey coverage % Penta3		65.7%	No	No
	Official coverage estimates % **TT2+ PW/PAB**	23	76	79	80
	Percentage fully immunized child	ND	ND	75	80
Immunization demand	Percentage drop-out Penta1 – Penta3	10%	7%	10%	6.5%
	Percentage drop-out Penta1 – Measles	5.8%	15.8%	16.5%	9.7%
Immunization equity	Percentage gap in DTP3 between highest & lowest socio-economic quintiles	ND	ND	ND	ND
	Number and proportion of districts with Penta3 coverage >80%	32%	48%	50.3%	73.2%
	Number of high-risk communities identified for accelerated routine immunization programming	ND	ND	ND	ND
New vaccine introduction	Number of new vaccines introduced into the routine schedule in the last plan period	1	0	1	0
	Pneumococcal Conjugate Vaccine	ND	ND	72	85
	Rotavirus coverage(Rota 2)	NA	NA	ND	73

Table 14: Situational Analysis by Accelerated Disease Control Initiatives, Based on Previous Years' Data (2011-2014)

SYSTEM COMPONENTS	SUGGESTED INDICATORS	NATIONAL			
		2011	2012	2013	2014
Polio	*OPV3 coverage*	86%	83%	82%	87%
	Non polio AFP rate per 100,000 children under 15 yrs. of age	2.0	2.7	2.9	3.1
	Non polio entero virus detection rate	7.6	4.6	7.9	7.3
	Stool Adequacy Rate	80%	88%	87%	87%
	Extent: NID/SNID No. of rounds *Coverage range*	2 NIDs >95%	8 SNIDS >90%	2NIDs and 5 SNIDs	6 SNIDs & 1 NID; >90%
	Wild polio virus (importation*)	0	0	9	1
MNT	*PAB coverage*	23%	66%	79%	80%
	Number of districts reporting > 1case per 1,000 live births	ND	ND	ND	ND
	Was there an SIA? (Y/N)	Yes	Yes	Yes	Yes
Accelerated Measles Control	*Measles coverage*	81%	80%	76%	84%
	No. of outbreaks reported	196	146	243	302
	No of woredas with outbreaks	143	125	192	2
	No woredas that conducted Measles SIAs	146	0	824	ND
	Extent: NID/SNID *Age group* *Coverage*	SNID Follow up 6-59m 89%	NID Follow up SIAs 6-59m >93%	SNID Follow up 6-59m 88%	0
Epidemic meningitis	Meningococcal A coverage	NA	NA	98.4%	97.6%

Table 15 : Situational Analysis of Routine EPI by System Components Based on Previous Years' Data (2011-2014)

SYSTEM COMPONENT	SUGGESTED INDICATOR	NATIONAL STATUS			
		2011	2012	2013	2014
1. PROGRAM MANAGEMENT					
Law & regulation	What numbers of functions are conducted by the NRA?	1	1	1	1
	Is there legislation or other administrative order establishing a line item for vaccines?	Yes	Yes	Yes	Yes
	Is there legislation identifying the sources of public revenue for immunization financing?	Yes	Yes	Yes	Yes
Policy	Has the national immunization policy been updated in the last five years?	Yes	Yes	No	Yes
Planning	Does the country have an annual work plan for immunization funded through Ministry of Health budgeting processes?	Yes	Yes	Yes	Yes
	What is the number and proportion of districts with an annual micro-plan for immunization?	100%	100%	100%	100%
Coordination	What were the number of ICC (or equivalent) meetings held at which routine immunization was discussed?	5	5	10	5
	What were the number of NITAG (or equivalent) meetings held last year?				0
Advocacy	How many presentations on immunization performance or Expenditures were made to parliament?	0	0	0	0
2. HUMAN RESOURCES MANAGEMENT					
HR numbers	Number of health workers per 10 000 population	4	4	4	4
	Percentage vaccinator posts currently vacant	0	0	0	0
Capacity-building	Number & proportion of health workers & managers trained in immunization services through MLM or IIP training per year	ND	ND	ND	87 Epi Officers trained for MLM 894 HCW trained for IIP

SYSTEM COMPONENT	SUGGESTED INDICATOR	NATIONAL STATUS			
		2011	2012	2013	2014
	Percentage of health workers trained in immunization in the last two years (data from PIE and EPI reviews)			ND	ND
	Curriculum review for pre-service medical and nursing immunization education conducted	ND	ND	ND	ND
Supervision	Average number of regional supervision visits to each district level /year	2	2	2	2
3. COSTING AND FINANCING					
Financial Sustainability	What percentage of total routine vaccine spending was financed using government funds (including loans & Excluding external public financing)?	6%	6%	8%	11.7
	What proportion of the line item in the national budget for immunization was actually funded?				
	What percentage of immunization resources are being met by the domestic health budget (as identified in the annual budget plan)?				
	Government expenditures on routine immunization per surviving infant (JRF 6700)				33%
	Are sub-national immunization budgets and expenditures Monitored and reported at national level?	Yes	Yes	Yes	Yes
4. VACCINE SUPPLY, QUALITY & LOGISTICS					
Transport / mobility	Percentage of districts with a sufficient number of supervisory/EPI field activity vehicles /motorbikes/bicycles (based on their need) in working condition	ND	ND	ND	ND
Vaccine supply	Was there a stock out of any antigen at national level during the last year?	No	Yes	No	Yes
	If yes, specify duration in months		1 month		2 month
	If yes, specify which antigen(s)		BCG		BCG
Cold-chain/	Percentage of districts with adequate numbers of appropriate and functional cold-chain equipment	85%	90%	90%	ND

SYSTEM COMPONENT	SUGGESTED INDICATOR	NATIONAL STATUS			
		2011	2012	2013	2014
logistics	What was the year of last inventory assessment for all Cold-chain, transport and waste management equipment (or EVM)?			Yes	No
	Number of PHC facilities with >80% score for all indicators on the last EVM assessment	ND	ND	ND	ND
	National consolidated EVMA score%	ND	ND	67%	ND
	Percentage districts with availability of a cold-chain replacement plan				
Waste disposal	Availability of a waste-management policy and plan	Yes	Yes	Yes	Yes
5. IMMUNIZATION SERVICES (refer also to Table RI and Table ADC)					
Routine coverage	Penta3 coverage	86%	83%	82%	87%
Demand	National DTP1–DTP3 drop-out rate	10%	7%	10%	6.5 %
	Percentage of districts with drop-out rate DTP1–DTP3 >10%	55%	42%	42%	20.5%
Equity	Percentage Penta 1 coverage	86%	95%	91%	93%
	Number of districts >80% DPT 3 coverage	32%	48%	50%	73.2%
	Percentage gap between lowest/highest socio-economic quintile	ND	ND	ND	ND
	Percentage planned outreach visits conducted	ND	ND	ND	ND
	Line list of high-risk districts/communities identified	Yes	Yes	Yes	Yes
	High-risk plan for disadvantaged communities	Yes	Yes	Yes	Yes
New vaccines	Number of new vaccines introduced into routine schedule in the last plan period	1	0	1	0
		86%	83%	82%	87%
	Pneumococcal Conjugate Vaccine	ND	ND	ND	85%
	Rotavirus coverage(Rota 2)	NA	NA	NA	73%

SYSTEM COMPONENT	SUGGESTED INDICATOR	NATIONAL STATUS			
		2011	2012	2013	2014
6. SURVEILLANCE & REPORTING					
Routine surveillance	Percentage of surveillance reports received at national level from districts compared to number of reports expected (completeness)	90%	92%	95%	
	AFP detection rate/100 000 population under 15 years-of age	2.0	2.7	2.9	3.1
	Percentage suspected measles cases for which a laboratory test was conducted	7.3	5.1	6.2	6.0
	Number of neonatal deaths for which a follow-up investigation was conducted	ND	ND	ND	ND
	Sentinel surveillance for rotavirus established	3	3	3	3
	Sentinel surveillance for meningitis (Hib/PCV) established	3	3	3	3
	Number of suspected meningitis cases tested for Hib/ pneumococcal disease and (%result positive) according to standard protocol	935(1%)	1111(1%)	1083(1%)	936(1%)
Coverage monitoring	Percentage gap in match between DTP3 survey coverage and officially reported figures		17.3%		
Immunization safety	Percentage of districts that have been supplied with adequate (equal or more) numbers of AD syringes for all routine immunizations	100%	100%	100%	100%
Adverse events	National AEFI system is established with a designated national committee	Yes	Yes	Yes	Yes
	Number of serious AEFI cases reported and investigated	ND	ND	ND	ND
7. DEMAND GENERATION AND COMMUNICATION					

SYSTEM COMPONENT	SUGGESTED INDICATOR	NATIONAL STATUS			
		2011	2012	2013	2014
Communication strategy	Availability of a routine immunization communication plan	Yes	Yes	Yes	Yes
Research	Year of last study on community knowledge, attitudes and practices in relation to immunization	Yes	No	No	No

2.12 Strengths, Weaknesses, Opportunities and Threats

This sections analyses the strengths, weaknesses, opportunities and threats of the EPI program, both internal and external, in order to identify and prioritize its principal challenges using a presentation of the activities to be implemented. The following tables will show the connections between the various issues identified, the target goals and the strategies for implementing activities in this cMYP.

Table 16 : SWOT Analysis

EPI COMPONENT	STRENGTHS	WEAKNESSES
1. Service delivery	☞ ***Achievements in immunization against the HSDP IV and MDG targets:*** ✦ MDG 4 achieved three years ahead of time line ✦ Interruption of circulation of WPV ☞ ***Access is improving particularly to PHC:*** ✦ Health facility expansion particularly to primary health care facilities ☞ ***New initiatives*** New vaccine introduction in the past 5 years include PCV, Rota. ☞ ***Coverage improvement with all available antigens***	☞ ***Missed opportunities*** ✦ Integration of EPI services with other maternal and child hood interventions ☞ ***Inadequacy in continuum of care:*** ✦ Lack of availing all services to clients at every encounter ✦ Low effective coverage from birth to 1 year of age ☞ ***Inequity/avoidable inequalities*** ✦ Access limitations to health facilities in developing regional states ✦ Regional disparity in coverage among regions,

EPI COMPONENT	STRENGTHS	WEAKNESSES
	☞ ***ERI strategy targeting children under 1 year at kebele level, registered by HEWs and community volunteers to target unimmunized children***	zones, woreda, urban and rural ☞ ***Suboptimal quality of service*** ✦ Shortage of adequately trained EPI service providers and EPI managers. ✦ Poor utilization of services ✦ Irregularity and service interruption ✦ Weak feedback system
2. Human Resource	☞ ***Improved availability of human resources for health*** □ Rapid response for the human resources production ☞ ***Improved in-service training and development*** □ New initiatives such as CPD, leadership programs, ☞ ***Existence of health extension workers (HEW) and health development army (HDA)*** □ Available in every woreda and extending from every health centre to facilitate demand for immunizations and awareness in communities	☞ ***Inadequate system for retention*** ✦ Inadequate upgrading of HEWs ✦ High attrition rate of HWs and lack of retention mechanism ✦ Inequitable distribution of skilled human resource ✦ Low provider motivation ☞ ***Inadequate mechanisms for improving capacities of immunization program management*** ・ Weak knowledge management at all levels
3. Program Monitoring/ Surveillance and HMIS	☞ ***Improved evidence generation and dissemination*** ☞ Several surveys and assessments carried out ☞ ***Improved HMIS with 10 EPI indicators*** ☞ Improved HMIS implementation in government facilities including in private health facilities ☞ Initiation of CHIS ☞ ***Improved diseases surveillance system/PHEM*** ・ Establishment of reference and regional laboratories ・ Ensured legal framework for survey and surveillance ☞ ***Improved program monitoring*** ✦ Integrated supportive supervision and inspection ✦ Documenting best practices ✦ Monthly reporting of EPI data through e HMIS ✦ Regular and participatory review mechanism ✦ Woreda based micro-planning using EPI data	☞ ***Gap in completeness and timeliness of routine EPI data*** ☞ ***Inadequate triangulation of information*** ☞ ***Weak data verification efforts at each level*** ☞ ***Weak dissemination of research and assessment findings*** ☞ ***Weak AEFI surveillance system*** ☞ ***Weak link between VPD surveillance and EPI***

EPI COMPONENT	STRENGTHS	WEAKNESSES
4. Cold Chain Logistics & Vaccine Quality	☞ ***Improved commodity security*** ☞ ***Expansion of hubs*** ☞ ***Improved cold chain infrastructure*** ☞ ***Improved cold-chain management and monitoring system*** ☞ ***Cold Chain Rehabilitation and EVM improvement plan in place and is being implemented*** ✦ Antiquated Cold chain system has been replaced and refrigerators have doubled between 2008 to 2013	☞ ***Supply chain gap in relation to supply distribution*** ☞ ***Poor capacity for forecasting, quantification procurement and stock management of supplies and commodities particularly at lower level*** ☞ ***Inadequate maintenance capacity (of cold chain equipment)*** ☞ ✦ ***Mal distribution and shortage of spare parts, insufficient tools to carry out repairs and maintenance, inadequate planning*** ☞ ***Low utilization of technology and innovations***
5. Immunization Financing	✦ ***Increased visibility of immunization resources available through mapping*** ✦ ***Availability of free MNCH including EPI as cost-exempted services*** ✦ ***Improved government financial contribution for immunization especially in traditional vaccines***	☞ ***Low visibility of immunization financing at sub-national level*** • Gaps in mobilizing local resource for immunization • Poor resource mapping capacity especially at sub-national level ☞ ***Weak financial utilization and timely disbursement at all levels*** ☞ ***Low multi-sectorial response particularly in development and investment corridors*** ☞ ***Delay in financial disbursement from partners***
6. Advocacy, Communication& Social Mobilization	☞ ***Increased community facing interventions*** ✦ HEP and HDA as a demand creation, improving access and community empowerment tool ✦ Community participation in organized manner particularly the women development army	☞ ***Weak tailored communication strategy for pastoralist and hard to reach communities*** ☞ ***Weak IPC skill from service provider side*** ☞ ***Inadequate production of communication materials***

EPI COMPONENT	STRENGTHS	WEAKNESSES
	✦ Engagement of local populations in health facility management boards and monitoring of health services by community representatives in some areas ✦ ***Increased effort in hard to reach populations as demand creation*** ✦ Increased focused social mobilization efforts in pastoralist areas implementing the MoH social mobilization ignition document. ✦ ***High level advocacy meetings conducted at regions with low immunization coverage***	☞ ***Low utilization of the available communication materials*** ☞ ***Weak utilization of communication channel mix*** ☞ ***Weak advocacy efforts on immunization*** ☞ ***Absence of communication focal person at regional/woreda level*** ☞ ***No operational research conducted to assess behavioural aspects of EPI service utilization*** ☞ ***Lack of integration with HEW activities to access the grass roots level of the community***
7. **Program Management**	☞ ***Improved performance follow up*** ☞ ***Improved coordination through technical working groups*** ✦ Use of technical working groups that meet regularly for monitoring and evaluation, logistics, and communication ✦ Encouraging multi-sectorial collaborative efforts ✦ Establishment of partner's forum at subnational level ☞ ***Improved integrated supportive supervision practice*** ☞ ***Establishment and institutionalization of PHEM*** ☞ ***Strengthened regulatory system*** ☞ ***Improved program management:*** ✦ Availability of strategies and guidelines ✦ Efforts for preparation of minimum service standards	☞ ***Continuity of achievements such as on child health*** ☞ ***Wide variation in the implementation of HDA*** ☞ ***Inadequate dissemination and alignment of strategies, plans, etc.*** • Shared vision not optimal especially at lower levels ☞ ***Inadequate follow up of plans/reviews on implementation*** • Inadequate follow-up on implementation of policies, guidelines and plans ☞ ***Weak accountability and good governance challenges*** • Variation in leadership and good governance • Weak implementation capacity among regions ☞ ***Variation in fostering coordination/ partnership (inadequate resource mobilization and utilization capacity)*** ✦ Suboptimal public-private partnership

EPI COMPONENT	STRENGTHS	WEAKNESSES
		✦ Suboptimal program leadership at sub-national levels ☞ ***Regulatory:*** ✦ Inadequate quality assurance actions ✦ Poor capacity to implement the regulatory framework ✦ NITAG is yet to be established.

OPPORTUNITIES	THREATS
✦ *Strong political commitment by the government* ✦ *Flagging HEP supported by HDA* ✦ *Improving health care seeking behaviour* ✦ *Sustained national economic development* ✦ *Improving basic infrastructure* ✦ *Improved literacy rate particularly for females* ✦ *Establishment of Vital Events Registration Agency (VERA)* ✦ *Resettlement of pastoralist communities* ✦ *Health insurance schemes* ✦ *Existence of government structure up to community level* ✦ *Urbanization*	☞ *Suboptimal level of community KAP* ☞ *Geographic inaccessibility of some communities,* ☞ *Low predictability of donor funding* ☞ *Local conflicts* ☞ *Polio importation*

CHAPTER THREE

GOALS, OBJECTIVES, KEY ACTIVITIES, INDICATORS AND MILESTONES NIP 2016-2020

3.1 Introduction

Immunization continues to be one of the most cost-effective of all child survival health interventions. Traditionally, immunization has focused on children under 5 and women but recently this is being broadened to include the wider population in line with the current global immunization vision and strategy (GIVS).

This comprehensive Multi-Year Plan (cMYP) of Action covers the years 2016-2020. The objectives and activities set forth in this plan provide the framework required to meet the previously stated goal of reducing infant and child mortality and morbidity associated with vaccine -preventable diseases (VPD). Further, this plan addresses new challenges and expands the previous plan by accounting for the introduction of new vaccines.

Ethiopia intends to introduce new vaccines into the routine immunization schedule including , a second dose of measles vaccine, Men A, HPV, birth dose of hepatitis B and Yellow Fever vaccines in the coming cMYP (2016-2020).

3.2 Goals of the cMYP

The 2016-2020 cMYP of Ethiopia aims at achieving five major goals which are within the context of the goals of GVAP with strategic components as described below:

Goal 1:	Achieve a country free of poliomyelitis by 2018.
Goal 2:	Meet vaccination coverage targets in, district, zone, region, and nationally by 2020
Goal 3:	Exceed the MDG 4 target for reducing child mortality in the country by further reduce under-five mortality from 2013 level of 64/1,000 to 35/1,000; infant mortality rate from 44/1000 to 24/1000; NMR from 28 to 14/1,000 by 2020")
Goal 4:	Meet national elimination targets (e.g. measles, MNT)
Goal 5:	Introduce new & under-utilized Vaccines

3.3 Program Objectives

Objective 1: Increase and sustain high vaccination coverage.

(a) Reach 90% national coverage and 80% in every district with all vaccines by 2020.
   - ☑ Reduce DTP-HepB-Hib1(Penta-1)- DTP-HepB-Hib3 (Penta-3) dropout rate to 2% nationally and less than 5% in all districts by 2020

(b) Ensure availability of immunization service in all kebeles by 2020
   - ☑ Reduce number of unimmunized children by 75% by 2020 from the 2014 baseline

(c) Introduce measles second dose by 2018, Men A and HPV vaccines by 2018, and Yellow Fever vaccine by 2019.

Objective 2: Maintain polio free status and fulfil the recommendations for standard AFP surveillance indicators at national and regional levels for national certification.

(a) Maintain standard surveillance 2NAFP cases /100000 (<15 Population) and Stool adequacy rate of at least 80% at all level annually

(b) All polioviruses are laboratory-contained and nationally certified polio-free by the end of 2018.

(c) Develop and finalize a National polio legacy plan by the beginning of 2016.

Objective3: Eliminate measles and develop strategies for the elimination of rubella and congenital rubella syndrome.

(a) Achieve an incidence of less than one confirmed measles case per million populations by 2020.

(b) Attain MCV1 coverage ≥95% at national and district levels either through routine or SIAs.

Objective 4: Attain/maintain elimination/control of other vaccine-preventable diseases.

(a) Maintain the MNT incidence of <1 case /1000LB by 2016 and beyond

(b) Achieve 90% PAB coverage nationally by 2016 and 90% in every district by 2020

Objective 5: Achieve 100% cold storage capacity and standard effective vaccine management indicators at all level by 2020**.**

(a) Increase the current 50% cold storage capacity to reach 100% by procuring appropriate cold chain equipment and introducing new technologies by 2020.

(b) Attain EVMA score of at least 80% by 2018 and beyond at all level

(c) Realize the PFSA vaccine transition plan by 2018.

Objective 6: Improve knowledge and practice of health workers on EPI

(a) Increase vaccine management knowledge among health workers from current score of 61% to 80% as measured by EVMA by 2020.

(b) Reduce care takers knowledge gap on EPI program and VPD from 45% to 22% by 2020.

(c) Achieve in 80% of districts, MLM capacity built on evidence based planning and program management on M&E by 2017

Objective 7: Strengthen program monitoring and evaluation to support regular evidence-based decision making at all level.

(a) Institutionalize programmatic reviews and EPI performance monitoring in all districts using HMIS captured data quarterly at national and Regional level by 2016 and beyond.

(b) Achieve 90% timeliness, accuracy and completeness of HMIS reports at all levels by 2017

Objective 8: Improve adequacy and sustainability of resources for immunization.

(a) Increase government fund allocation to 10% for traditional vaccines procurement and new vaccine co financing by 2020.

Objective 9: Strengthen coordination and accountability through improved EPI management at all levels to successfully deliver a robust immunization program and achieve planned targets.

(a) Improved EPI management at all level through established and functional structures, policy, and people in place for evidence-based decision making.
(b) Strengthen the EPI coordination platform at all levels through quarterly meetings with the involvement of EPI stakeholders to deliver a robust immunization program and achieve planned targets

Objective 10: Strengthen communication, advocacy, and demand for immunization at all levels including community by 2020.

(a) Increase awareness of the community on immunization to 95% by 2020.
(b) Build the capacity of Sub-national level in the planning, implementation and monitoring and evaluation of communication activities by 2017.
(c) Increase the involvement of political and decision makers as well as important stakeholders in immunization program at all level by 2018.
(d) Improve the IPC skills of trained health workers per health facility on interpersonal communication skills by 2017.

3.4 Strategic Areas/Approaches

The 2016-2020 Comprehensive EPI Plan shall be implemented within the framework of Global Vaccine Action Plan (GVAP).

The **key approaches for implementation are:**

1. Equity :
    a. Implementation of all components of the **Reach Every District (RED)/ Reach Every Child/Community (REC)** approach and other locally-tailored approaches to maximize the accessibility and utilization of immunization services by ensuring involvement of individuals and communities.

b. Introduction of new and underused vaccines into the routine program and use the opportunity to strengthen routine immunization. By 2020 HPV, Hepatitis B birth dose, Men A, yellow fever, rubella with second dose of measles will be introduced.

2. **Quality**

a. Improving human and institutional capacities. Individual and institutional capacity to adequately plan, implement and monitor immunization programs will be strengthened through training. The capacity to plan and manage immunization services at district and operational levels will be prioritized with a view to improving and sustaining high vaccination coverage rates.

b. Improving vaccine supply, safety and regulation. Vaccine safety monitoring systems should be enhanced by strengthening the capacity of FMHACA through the implementation of institutional development plans. The promotion of safe injection policies and practices will be improved.

3. **Coordination and Leadership**

a. **Strengthening of the ICC** which are the main ICC and the technical ICC demonstrated by regular meeting with documented minutes as stipulated in the TOR of ICC.

b. Enhancing partnership for immunization. Partnership for immunization will be expanded within the country, and with continental and international initiatives such as Harmonization for Health in Africa (HHA). Continued use of the platform of the ICC and other national and sub national/regional coordinating mechanisms to strengthen local partnerships and forge new ones will be strengthened.

4. Sustainability :-

a. **Sustainable immunization financing** will be pursued and domestic resources provided. Efforts to establish national budget lines and allocate and disburse funds for immunization will be continued in an increasing manner. The need for additional resources to reach the unvaccinated children and to increase immunization coverage to at least 90% will get strong emphasis.

b. Integrating immunization with other health interventions in the HSTP I, with immunization interventions quantified, costed and incorporated into the document. Integration of additional child survival interventions with

immunization should be pursued to leverage the potential for prevention of pneumonia and diarrhea. Immunization will also be included as a priority intervention during humanitarian emergencies to save lives and reduce morbidity, disability and mortality due to vaccine-preventable diseases.

5. **Monitoring and Evaluation :**

   a. **Improve monitoring and data quality.** The quality of immunization and surveillance data will be regularly monitored and its use at each level promoted. Information generated from HMIS and surveys will be used for advocacy and for program and service improvement. Sensitive and high-quality surveillance including laboratory confirmation, linked to the IDSR platform, should be used to monitor the epidemiological trend of vaccine-preventable diseases and guide implementation of immunization strategies.

   b. Strengthening Integrated disease surveillance and response supported by laboratory

6. **Advocacy ,Communication and demand Creation :**

   a. **Development and implementation of integrated communication** plan for routine immunization, supplementary immunization and surveillance.

   b. Advocacy with decision makers

3.5Anticipated Coverage Targets

Table 17: Baseline and coverage targets 2016 to 2020

INDICATORS	BASE YEAR	TARGETS					
	2014	2015	2016	2017	2018	2019	2020
Total Population (GR: 2.6)	89,714,313	92,046,885	94,440,104	96,895,547	99,414,831	101,999,617	104,651,607
Births (3.36%)	3,014,401	3,092,775	3,173,187	3,255,690	3,340,338	3,427,187	3,516,294
Infants' deaths (44/1000 in 2013)	132,634	126,804	114,235	104,182	86,849	78,825	70,326
Surviving infants (3.16%)	2,881,767	2,965,972	3,058,953	3,151,508	3,253,490	3,348,362	3,445,968
12-23 months old (2.5%)	2,242,858	2,301,172	2,361,003	2,422,389	2,485,371	2,549,990	2,616,290
9 old female pop (1%)	1,145,142	1,174,916	1,205,464	1,236,806	1,268,963	1,301,956	1,335,807
9-14 old female pop(8%)	7,120,978	7,306,124	7,496,083	7,690,981	7,890,947	8,096,111	8,306,610
Pregnant women (3.36%)	3,014,401	3,092,775	3,173,187	3,255,690	3,340,338	3,427,187	3,516,294
Target population vaccinated with BCG	2,441,665	2,597,931	2,760,673	2,930,121	3,106,515	3,255,828	3,410,805
BCG coverage	81%	84%	87%	90%	93%	95%	97%
Target population vaccinated with OPV1	2,680,044	2,788,013	2,906,005	3,025,448	3,155,885	3,281,395	
OPV1 coverage	93%	94%	95%	96%	97%	98%	
Target population vaccinated with OPV3	2,507,138	2,639,715	2,783,647	2,930,903	3,090,815	3,214,427	
OPV3 coverage	87%	89%	91%	93%	95%	96%	
Target population vaccinated with IPV		2,372,777	2,783,647	2,930,903	3,090,815	3,214,427	3,308,129
IPV coverage		80%	91%	93%	95%	96%	96%
Target population vaccinated with pentavalent 3 vaccine	2,507,138	2,639,715	2,783,647	2,930,903	3,090,815	3,214,427	3,308,129
Penta 3 coverage	87%	89%	91%	93%	95%	96%	96%
Target population vaccinated with pentavalent (penta 1)	2,680,044	2,788,013	2,906,005	3,025,448	3,155,885	3,281,395	3,377,049
penta 1 coverage	93%	94%	95%	96%	97%	98%	98%
Target population vaccinated with **3rd dose** of **PCV 10**	2,449,502	2,639,715	2,783,647	2,930,903	3,090,815	3,214,427	3,308,129
3rd dose PCV 10 Coverage	85%	89%	91%	93%	95%	96%	96%
Target population vaccinated with **1st dose** of **PCV 10**	2,651,226	2,788,013	2,906,005	3,025,448	3,155,885	3,281,395	3,377,049
1st dose PCV 10 Coverage	92%	94%	95%	96%	97%	98%	98%

INDICATORS	BASE YEAR	TARGETS					
	2014	2015	2016	2017	2018	2019	2020
Wastage rate in base-year and planned thereafter	6.5%	6.3%	6.2%	5.1%	4.0%	3.5%	3.0%
Wastage factor in base-year and planned thereafter	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Target pop vaccinated with 2nd dose of Rota vaccine	2,103,690	2,313,458	2,538,931	2,773,327	3,025,745	3,214,427	3,342,589
2nd dose of Rota vaccine Coverage	73%	78%	83%	88%	93%	96%	97%
Target pop vaccinated with 1st dose of Rota vaccine	2,391,867	2,788,013	2,906,005	3,025,448	3,155,885	3,281,395	3,377,049
1st dose of Rota vaccine Coverage	83%	94%	95%	96%	97%	98%	98%
Target population vaccinated with **1st dose** of Measles	2,420,685	2,550,736	2,691,878	2,836,357	2,993,210	3,147,460	3,273,670
MCV1 Coverage	84%	86%	88%	90%	92%	94%	95%
Target population vaccinated with all antigens	2,305,414	2,461,756	2,630,699	2,804,842	2,993,210	3,147,460	3,308,129
Fully Immunized Children coverage	80%	83%	86%	89%	92%	94%	95%
Target of Pregnant women vaccinated with TT+ (PAB)	2,411,521	2,567,004	2,728,941	2,897,564	3,073,111	3,255,828	3,375,642
Pregnant woman TT+ coverage (PAB)	80%	83%	86%	89%	92%	95%	96%
Targeted women with Td vaccine (7-11 Years old) 15%			11,332,812	12,935,556	13,719,247	14,534,945	15,069,831
Td coverage			80%	89%	92%	95%	96%
Penta1 to penta 3 Dropout rate	6.5%	5.3%	4.2%	3.1%	2.1%	2.0%	2.0%
penta1 to Measles containing vaccine 1 Dropout rate	9.7%	8.5%	7.4%	6.2%	5.2%	4.1%	3.1%
Target population vaccinated with Measles Rubella				2,678,782	2,993,210	6,711,575	6,959,332
MSD Vaccination Coverage				85%	92%	94%	95%
Target population vaccinated with Mena A vaccine					2,839,288	3,084,468	3,375,642
Men A Coverage					85%	90%	96%
Target population vaccinated with Birth dose of Hib					2,765,466	3,013,526	3,308,129
Birth dose of Hib Coverage (%)					85%	90%	96%
Target population vaccinated with HPV				6,152,785	1,078,619	1,171,760	1,202,226
HPV Coverage (%)				80	85%	90%	95%
Target population vaccinated with Yellow Fever vaccine						3,013,526	3,308,129
Yellow Fever Coverage						90%	96%

Table 18: National Problems, priority, Objectives and Milestones, AFRO Regional and Global Goals

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	AFRO REGIONAL GOALS	ORDER OF PRIORITY
Routine Coverage ☑ 50% of districts hadDTP3/OPV3 coverage < 80% and nationally penta3 is 87%	To achieve 97% Nationally and 80% (Penta 3) /OPV3 coverage in all districts by 2020	**80% Penta3 coverage:** By 2018: achieve 97% coverage nationally and 90% of districts at least 89% DTP-HepB-Hib3 coverage **Reduction of districts at <=80% Penta3 coverage:** 2016: 15% or less of districts have Penta3 < 50% 2017: 10% or less of districts have Penta3<60% 2018: 5% or less of districts have Penta3<70% 2019: 3% or less districts have e Penta3<80%	By 2013 reach routine immunization coverage of 90% nationally with at least 80% coverage in every district.	**1**
Low coverage in hard to reach areas	No district less than 80% by 2020	2016: 5% or less Penta dropout rate nationally and less than 10% in all districts 2017: 4% or less Penta dropout rate nationally and less than 7% in all districts By 2018:3% or less penta dropout rate nationally than 5% in all districts		**1**
High dropout rate in 42% of districts with 8% national Penta 1-3 dropout rate.	Reduce Penta1 to pPnta3 dropout rate to 2% by 2020 at national level	2019: 2% or less Penta dropout rate nationally and 5% or less in all districts 2020: 2% or less Penta dropout rate nationally and 5% or less in all districts 2020: 0% districts achieve Penta<90%		**3**

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	AFRO REGIONAL GOALS	ORDER OF PRIORITY
		By 2018:3% or less Penta1-3 dropout rate nationally than 5% in all districts		
Polio **Risk of importation**	Maintain polio free status and fulfil the recommended standard AFP surveillance indicators at national and regional levels for national certification	By 2018: documentation of polio free status will be done and achieve 95 % OPV3 coverage nationally	.	**2**
Measles Low measles vaccine coverage Measles outbreaks in many parts of the country	Achieve measles elimination status by 2020 -measles incidence < 1 cases per million population - achieve >95% SIAs coverage in all districts - Non-measles febrile rash illness rate ≥ 2.0 /100,000 population per year ≥ 80% of districts investigating ≥ 1 suspected measles case with blood specimens per year.	By 2018: routine measles coverage will be 94%. Surveillance standard indicators will be maintained Incidence of measles will decrease to < 5 cases per million population		**2**
MNT **Elimination status not achieved**	Reach MNT elimination by 2016 and maintain MNT elimination status by 2016 and beyond	2016: Achieve 90% PAB coverage 2017: Achieve 93% PAB coverage 2018: Achieve 95% PAB coverage 2019: Achieve 96% PAB coverage 2020: Achieve 97% PAB coverage		**3**
Measles second dose is not yet introduced into routine EPI	Introduction of measles second dose and Rubella vaccine by	By 2018: PIE of MSD done coverage at least 94 %		**1**

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	AFRO REGIONAL GOALS	ORDER OF PRIORITY
	2017			
Men A is not yet introduced into routine EPI	Introduction of new Men A vaccine by 2018	By 2018: Men A vaccine is introduced and reach coverage of 80%		**2**
HPV vaccine not yet introduced	Introduction new HPV vaccine by 2018	By 2018: HPV vaccine introduced and attain a coverage of 80%		**2**
Yellow Fever not introduced in high risk areas of Ethiopia	Introduction Yellow Fever vaccine in high risk areas by 2019	2019: Yellow Fever vaccine introduced (75%)		**2**
Hepatitis B Birth Dose Vaccine not yet introduced in Ethiopia	Introduction of Hepatitis B Birth Dose Vaccine by2018	2018: Hepatitis B Birth Dose Vaccine (85%) 2019(90%) national coverage 2020(96%) national coverage		**3**
Immunization Safety and waste management No assessment done on injection safety and waste management **- involvement of NRA in AEFI surveillance not adequate**	Ensure injection safety and waste management in all health facilities by 2020 and institutionalize AEFI surveillance at HF level by 2020	2016: conduct immunization safety and waste management assessment Prepare and distribute AEFI guidelines Conduct TOT on AEFI surveillance By 2018-well established AEFI surveillance system will be in place	By the end of 2008, all immunization injections are administered safely.	**3**
Surveillance weak data quality and use: weak completeness, timeliness and accuracy of data and information use Weakness in NNT surveillance system	Achieve 100% timeliness, accuracy and completeness of reports by 2020 Achieve NNT surveillance standard indicators in all regions by 2020	By 2018: 90% timeliness and completeness of reports will be achieved and maintained, NNT community based surveillance will be improved		**3**

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	AFRO REGIONAL GOALS	ORDER OF PRIORITY
Vaccine Supply weak vaccine stock management and distribution system	Computerized vaccine stock management in all districts and direct delivery of vaccines to HFs by 2020	2018: direct vaccine delivery to districts instituted by PFSA		**2**
Cold Chain / Logistics Inadequate capacity at central level and weak cold chain maintenance at lower level No Freeze monitoring at all levels (zone, woreda and cluster). HC storage space (with new vaccine introduction) could be a bottle neck	Expand the central cold room net storage capacity to a net volume of 2000 m3 by 2020 and trained one mid-level cold chain technician in each district by 2017.	PFS By 2018: 800 mid-level cold chain technician trained. Regional hubs in place, transition completed ,80 high level trained cold room technicians, additional cold rooms at the centre additional refrigerators for zone, woreda and cluster HFs procured		**2**
Communication /Advocacy, Social Mobilization and Program Communications Inadequate sub-national level capacity on immunization communication Low level of commitment or support of political and decision makers as well as important stakeholders in immunization at all level Poor social mobilization activities at grass root level	To build the capacity at the sub-national level in the planning, implementation and monitoring and evaluation of communication activities by 2017. To increase the involvement of political and decision makers as well as important stakeholders in immunization program at all level by 2018 To improve the participation of HDAs & Social Mobilization committees by	2018: -Trained communication focal person at regional level and/or EPI focal person at all level trained on communication to improve their capacity in the planning and coordination of communication activities. 2016-2018: -Conduct a series of advocacy visits and workshops to ensure the commitment and support of political leaders, heads of sector offices and important community leaders to immunization program 2016: - Establish and /or revitalize the HDAs & Social Mobilization committees 2016-2020: Disseminate immunization		**3**

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	AFRO REGIONAL GOALS	ORDER OF PRIORITY
Inadequate IPC skills among health workers. Lack of awareness of the community on importance of immunization, Shortage of job aids and other IEC materials to facilitate awareness creation process Weak involvement of media in immunization messages dissemination. Lack of communication research and assessment on immunization	2016/17 To improve the IPC skills of trained health workers per health facility by 2017 To increase awareness of the community on immunization to 95% by 2020 To standardize Immunization messages. To produce and distribute IEC materials by 2020 To strengthen relationship, capacity and involvement of media in immunization program by 2016/17 To conduct regular monitoring of communication activities by 2018-2020 To produce research based communication messages and materials by 2017/18 To conduct formative research and immunization communication assessment and	messages to the grass root communities through HDAs and social mobilization committees 2016/17 Train at least one health worker per health facility on IPC skills in all public health facilities and increase IPC 2016-2020: Production and distribution of IEC materials in five languages 2016/17: - Strengthen relationship and improve capacity of media to give coverage to immunization activities/events and disseminate messages to the community 2016-2020: - Disseminate immunization messages in five languages through national and local radio and TV 2016-2020: -Conduct regular monitoring of communication activities at all levels 2016 -2020: - undertake assessment and research to get inputs for communication activities and evaluate results and achievements		

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	AFRO REGIONAL GOALS	ORDER OF PRIORITY
	survey by 2017			
Management and Planning Inadequate financial allocation for EPI by federal and regional governments	Increase government fund allocation to 10% for traditional vaccine and procurement and new vaccine co finance by 2020	2018: procure 100% of BCG, and TT, and co-finance MR, Rotavirus and Pentavalent vaccines; government spending on EPI at 9%, budget line for vaccine procurement will be continued		**4**
-Weak leadership and management capacity at district level.	In 100% of districts build ML capacity on evidence based planning and program management on M&E by 2020	2018: 100% of districts have trained ML managers		**4**

3.6 Planning by immunization system component

Table 19: Service Delivery and New Vaccine Introduction

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
To achieve 80% Penta3 coverage in all districts by 2020, and 97% coverage nationally	RED approach implementation in every district and kebeles	Conduct micro planning workshops in all districts with the involvement of community leaders with community leaders annually	X	X	X	X	X
	Capacity building for EPI managers and health workers	Train health workers and EPI managers on MLM, IIP, and IRT	X	X	X	X	X
Ensure accessibility of immunization service in all kebeles by 2020	Plan to reach all kebeles at least four times per year in difficult to reach areas and areas with large number of unvaccinated children using health extension workers.	Implement enhanced routine immunization in emerging regions and zones with large number of unimmunized children	X	X	X	X	X
	Design local strategy and implement for pastoralist areas.	Organize and deploy mobile health teams for pastoralist and other hard to reach populations	X	X	X	X	X
Reduce Penta dropout rate to less than 3% nationally and 5% in all districts by 2020	Intensify defaulter tracing mechanism using community based structures	Conduct defaulter tracing using HEWs	X	X	X	X	X
		Provide continued orientation and training on EPI to case teams (according to new BPR) to strengthen immunization program	X	X			
		Register target groups house to house using HEW and vaccinate	X	X	X	X	X
	Incorporation of immunization in the emergency preparedness and response plans	Incorporate immunization services in emergency preparedness plans and activities		X	X		
		Conduct post PCV AEFI assessment					
		Provide immunization services in populations affected by complex emergencies	X	X	X	X	X
Introduction of IPV by 2016, Measles second dose by 2018, Men A by 2018, HPV	Introduce new vaccines according to plan	Introduce HPV and MSD vaccines in routine EPI program by 2018			X		
		Introduce Yellow fever vaccine in to routine immunization program by 2019				X	
		Introduce Men A into routine EPI program by 2018			X		

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
by 2018,birth dose of hepatitis vaccine by 2018 and Yellow Fever vaccine by 2019		Introduce IPV vaccine in routine EPI program by 2016	X				
	Strengthen leadership and advance planning for new vaccine introduction	Apply for MR, HPV, Mena A birth dose of hepatitis and Yellow Fever vaccine introduction according to plan	X	X	X	X	X
		Strengthen new vaccine introduction taskforce to include advocacy and consensus building	X	X	X	X	X
	Expansion of Cold Chain Storage space to meet NVI requirements	Expand PFSA cold rooms by installing additional cooling units and other facilities, and construction and installation of new cold rooms according to cold chain plans and NVI requirements	X	X			
	Capacity building on new vaccine introduction at all levels	Conduct cascade training from EPI managers to health workers from each HF on new vaccines	X	X			
	Evaluate vaccine management practices	Evaluate program impact of pneumococcal and rota virus vaccines introduction to derive lessons learned for improving future NVIs			X		
		Revision of monitoring tools to better capture new vaccine introduction status and practices during roll out		X			
Achieve, document and maintain polio free status by 2020	Utilize surveillance data to implement appropriate activities	Conduct polio campaigns in high risk areas synchronized with neighbouring countries	X	X			
	Shift to bOPV from tOPV	Conduct national level tOPV inventories	X				
Achieve measles elimination status by 2020	Conduct SIAs to enhance protection from targeted diseases	Conduct national measles SIAs in 2017 and 2019		X		X	
Reach MNT elimination by 2016 and maintain MNT elimination status by 2016	School based TT immunization	Implement routine school TT immunization in all secondary school and above	X	X	X	X	X
Achieve 90% PAB coverage by 2016 and in every district by 2020							

Table 20: Advocacy, Social Mobilization and Program Communications.

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
To increase awareness of the community on immunization to 95% by 2020	To build the capacity of Sub-national level in the planning, implementation and monitoring and evaluation of communication activities by 2017.	Assign one EPI Communication focal person or Technical assistant at regional level to properly plan and coordinate communication activities	X				
		Establish or revitalize communication working group at regional level and lead the communication activities	X				
		Train communication focal person at regional level and/or EPI focal person at all level on communication to and improve their capacity in the planning and coordination of communication activities	X	X	X	X	X
		Improve the participation of HDAs & Social Mobilization committees by 2016/17	X	X			
		Prepare and distribute communication guideline on EPI to all HEWs	X				
		Conduct community conversation on EPI in each kebele regularly	X	X	X	X	X
	To increase the involvement of political and decision makers as well as important stakeholders in immunization program at all level by 2018	Conduct advocacy and consensus building meeting with regions and stakeholders including funding vaccines	X	X	X	X	X
		Identify partners and encourage to contribute to EPI program	X	X	X	X	X
		High level advocacy meetings in poor performing regions	X	X	X	X	X
To increase awareness of the community on immunization to 95% by 2020	To improve the IPC skills of trained health workers per health facility on interpersonal communication skills by 2017	Train at least one health worker per health facility on interpersonal communication skills in all public health facilities and increase IPC	X	X	X	X	X
	To produce and distribute IEC materials by 2020	To produce research based communication messages and materials by 2017/18 and to standardize Immunization messages.		X	X		
		Produce and disseminate immunization messages in five languages through national and local radio and TV	X	X	X	X	X
		To strengthen relationship, capacity and involvement of media in immunization program by 2016/17	X	X	X	X	X
		Dissemination of immunization messages to the grass root communities through HDAs and social mobilization committees	X	X	X	X	X
	To conduct regular monitoring of communication activities by 2018-2020	Conduct national community based behavioural determinant survey on immunization service by 2017	X		X		X
		Conduct caretakers KAP assessment on EPI			X		
		Strengthen regional ICC through advocacy visits/ supportive supervision	X	X	X	X	X

Table 21: Surveillance

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
To strengthen NNT surveillance system at all levels by 2020	Conduct Vaccine preventable diseases surveillance under the umbrella of integrated disease surveillance (AFP, measles and NNT)	Conduct active surveillance for AFP, measles and MNT in all districts	X	X	X	X	X
		Improve timeliness and completeness of reporting of surveillance data and feedback	X	X	X	X	X
		Establish a data base, conduct regular analysis and monitoring of surveillance activities at all levels	X	X	X	X	X
		Strengthen cross country and cross regional surveillance	X	X	X	X	X
		Active surveillance in high risk districts	X	X	X	X	X
		Include VPDs in integrated surveillance and monitoring systems set up in complex emergencies	X	X	X	X	X
	Strengthen the laboratory to adequately support vaccine preventable disease surveillance	Build national capacity for VPD sero-typing and surveillance	X	X	X	X	X
		Provide sufficient reagents	X	X	X	X	X
		Update the reporting tools to include new diseases or conditions under surveillance and train health workers on the new tool and guides	X	X	X	X	X
	Build the capacity to conduct AEFI surveillance	Provide in-service and pre-service training of HW/HEWs on EPI diseases and AEFI surveillance	X	X	X	X	X
		Build sero-typing and disease burden study capacity at national level	X				
		Conduct biannual risk assessment on VPD	X	X	X	X	X
	Strengthen Surveillance deploying National and international and local STOP	Deploy international, national and local (in Gambella and Somali) STOP teams for active search	X	X	X	X	X
Strengthen community surveillance for VPD by 2020	Initiate community surveillance system	Involve CSO and other NGOs in community based VPD surveillance	X	X	X	X	X
		Train HEW on VPD surveillance to promote community based system	X	X	X	X	X
To achieve AFP surveillance standards that qualify for polio free certification by 2020	Implement activities for polio virus containment	Document of polio free certification			X		
		Maintain polio certification level surveillance	X	X	X	X	X

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
To achieve measles surveillance standards for pre-elimination status by 2020		Support the polio and measles labs to maintain accreditation level support the expansion of measles surveillance	X	X	X	X	X
		Assure the training, equipment, reagents and quality control procedures of polio/measles laboratories	X	X	X	X	X
Establish pneumococcal disease surveillance system by 2020		Establish a surveillance system for estimating burden of disease and sero-typing for pneumococcal disease	X	X	X		

Table 22: Vaccine Supply, Quality and Logistics

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
To establish vaccine quality control system at national level by 2020	Establish national vaccine quality control and AEFI surveillance committee	Strengthening the Capacity of the national regulatory authority (DACA)		X			
	Capacity building of health workers on AEFI monitoring	Develop a guide line on storage, distribution and administration of vaccines to be used at all levels	X		X		X
		Train district managers and health workers on AEFI	X	X	X	X	X
To expand cold storage capacity in line with introduction of new vaccines, population growth and coverage expansion plan at all levels by	Ensure regular availability of sufficient vaccine cold chain spare parts	Purchase and distribute to all levels vaccine temperature monitoring tools	X	X	X	X	X
		Select and purchase equipment to replace 10% of C.C each year	X	X	X	X	X
		Purchase cold chain spare parts and tools	X	X	X	X	X
		Procure cold boxes	X		X		X
		Conduct planned preventive and corrective maintenance at all levels	X	X	X	X	X

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
2020							
To directly deliver vaccine and EPI logistics to each HFs by 2020 by PFSA	Construct distribution hubs in appropriate selected sites which will be within reasonable distance to HFs	Upgrade existing PFSA hubs to be used for routine vaccine storage and distribution	X	X	X		
		Establish effective vaccine delivery system in all districts	X	X	X	X	X
	Strengthen the PFSA's human resource capacity for vaccine, cold chain and logistics management:	Train on cold room maintenance, vaccine and logistics management for PFSA staff	X		X		X
	Strengthen transportation capacity of PFSA	Procure 5 cold trucks for PFSA vaccine transportation	X		X		X
To establish effective vaccine management system in all districts by 2020	Monitor Vaccine demand linking with supply	Monitor stock management in every district using the data base					
		Conduct accurate demand forecasting activities	X	X	X	X	X
		Procure vaccines based on annual vaccine forecast from prequalified suppliers	X	X	X	X	X
		Prepare quarterly target based accurate forecasting of national vaccine requirement	X	X	X	X	X
	Design follow up mechanism for tracking EPI supplies	Establish vaccine stock recording, monitoring and reporting system in all districts	X	X	X	X	X
		Establish wastage monitoring and control system and conduct vaccine inventory regularly	X	X	X	X	X
	Build the capacity of health workers on vaccine, cold chain and EPI logistics management	Encourage local and district level contribution to health services and immunization program	X	X	X	X	X
		Train HWs and technicians on cold chain maintenance	X	X	X	X	X
		Conduct training on vaccine management and preventive maintenance for regional cold room managers	X		X		X
	Establish cluster of incinerators and waste management system	Construction of incinerators in all new health facilities	X	X	X	X	X
		Burning and burial of injection materials in health facilities without incinerator	X	X	X	X	X

Table 23: Program Management, Human resources, and Financing

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
Program Management							
EPI management improved at all level through established and functional structures, policy, and people in place for evidence-based decision making	Advocate on the use and for establishment of NITAG	Support the meetings of the NITAG	X	X	X	X	X
	Implement and regular review of immunization annual plan with clear responsibilities and timelines defined	Create and draft evidence-based and well-costed annual plan in alignment with strategic cMYP					
		Endorse the cMYP and print and distribute to all regions, zones, districts and HFs	X	X	X	X	X
		Include all immunization partners on quarterly technical working group meetings to ensure necessarily follow up on all immunization activities in annual plan	X	X	X	X	X
	Train officer leaders and focal persons EPI management	Identify program management skill building areas and conduct appropriate training on management skills and tools	X	X	X	X	X
		Establish a regular management training for EPI with support from international experts and partners	X	X	X	X	X
	Review of EPI policy	Training HW at all level on the EPI policy	X	X	X	X	X
Integration of EPI with other intervention	Strengthen immunization program within health sector reform(BPR)		X	X			
Monitoring and evaluation							
Strengthen program ME through programmatic reviews and EPI performance monitoring system in all districts using HMIS captured data by 2020	Regular supportive supervision and program monitoring	Identify and intervention to be integrated and integrate activities					
		Conduct supportive supervision at all levels quarterly	X	X	X	X	X
		Monitor and evaluate efficiency, effectiveness and impact of combined interventions		X	X	X	X
	Periodic assessment of immunization service delivery	Conduct program performance review meeting quarterly at district and regional level and quarterly at national level	X	X	X	X	X
		Conduct national EPI coverage survey in 2016 and 2018	X		X		
		Conduct evidence based experience sharing and operational research		X		X	
Achieve 90% timeliness,	Capability building on computerized data monitoring	Establish national database of district EPI performance indicators	X	X			

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
accuracy and completeness of reports by 2020	for EPI						
	Improve data quality and monitoring system	Revise the supervisory tools	X	X	X	X	X
		Conduct supervision using the tools	X	X	X	X	X
	Conduct DQS assessment integrated with supportive supervision regularly	Train district health management team using the tool	X	X	X	X	X
		Training EPI managers and HWs on DQS use	X	X	X	X	X
Human resource							
Adequate and qualified health force for immunization	Improve staff retention and motivation	Research for health worker retention and motivation mechanism	X	X			
		Implement the realistic retention and motivation mechanisms	X	X	X	X	X
		Assigning clear and specific role and responsibilities for every EPI focal person at all level	X	X	X	X	X
Achieve in 80% of districts ML capacity built on evidence based planning and program management on M&E by 2020	Use Integrated District Health Management Training Tool (IDHMT) to improve the capacity of district health team.	Integration of EPI training in the preserve EPI curricula	X	X			
		Train district health management team using the DHMT tool	X	X	X		
		Train district health management team with focus on EPI program implementation	X	X	X	X	X
To reduce care takers knowledge gap on EPI program and VPD from 45% to 22% by 2020	Training health facility focal person on immunization in practice	Conducting training needs assessment	X	X	X	X	X
		Conduct MLM and IIP training	X	X	X	X	X
		Conduct supportive supervision quarterly at all levels to motivate and improve health worker's capacity	X	X	X	X	X
		Orient new staff on immunization	X	X	X	X	X
		Provide data quality self-assessment and database management training to all districts		X	X	X	X
Financing							
to increase government fund allocation	Advocate for government cabinet to increase local budget allocation	Submit the annual financial request for the Ministry of Health and Finance and Economic Development to secure financing	X	X	X	X	X
		Conduct resource mobilization from partners	X	X	X	X	X

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2016	2017	2018	2019	2020
to 10% for traditional vaccine and procurement and new vaccine co finance by 2020		Design immunization financing sustainability mechanism					
	Advocacy though ICC for increased government financing for vaccine and device procurement	Organize and conduct advocacy workshops on Immunization financing	X	X	X		

CHAPTER FOUR

COSTING, FINANCING AND FINANCING GAPS

4.1 Macroeconomic Information

The macroeconomic information was included for purposes of placing the costing and financing information in context. The 2014 GDP per capita is 630 USD (CIA World fact book) and it is expected to increase by a minimum of 10% annually.

Table 24: Macroeconomic information, current and projected, Ethiopia

MACROECONOMIC INDICATORS	2014	2016	2017	2018	2019	2020
GDP per capita	630	762	839	922	1015	1116
Total Health Expenditures per capita (THE per capita)	3.80	4.56	5.47	6.57	7.88	9.46
Government Health Expenditures (GHE %)	9.1%	9.6%	10.0%	10.5%	11.1%	11.6%

4.2 Methodology for costing the cMYP

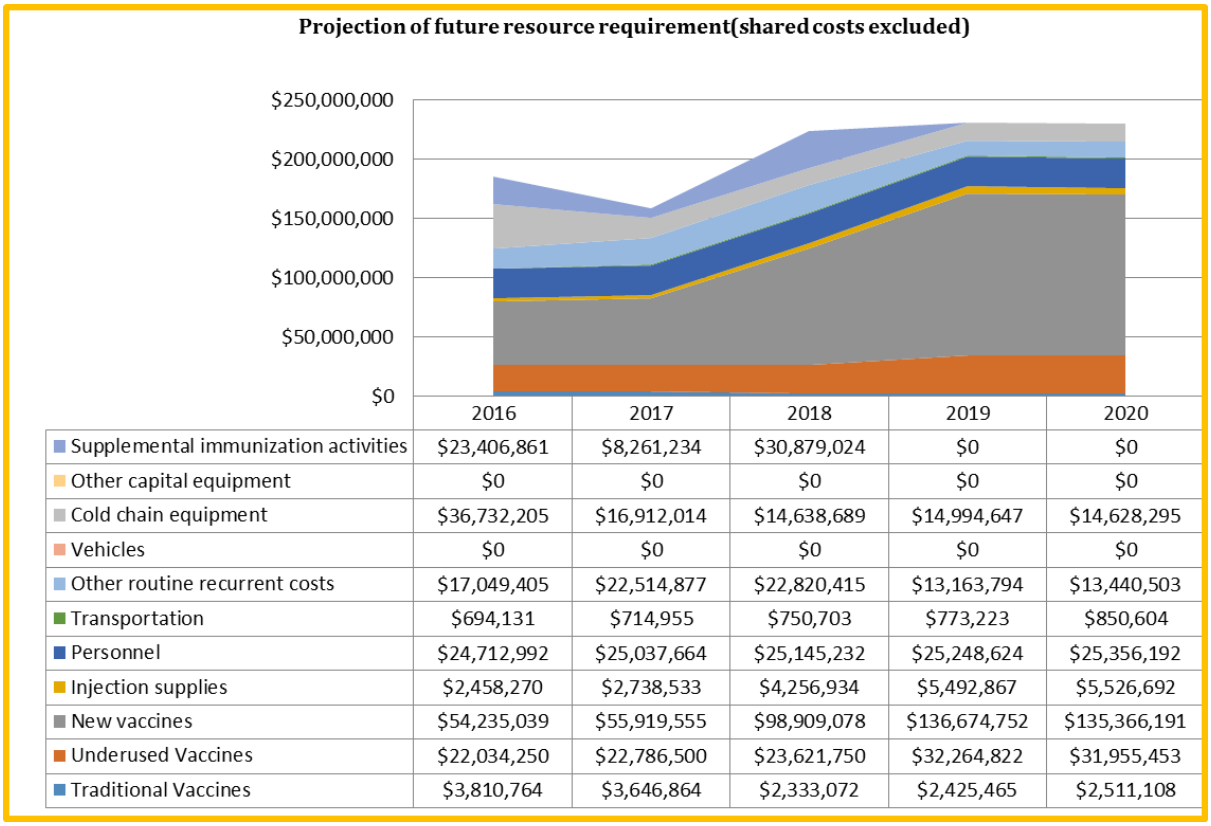
For the planned activities to successfully take place during the planned period, it is key to have adequate financing for all the proposed activities. To ensure financing is secured, it is the responsibility of the Ministry of Health and the EPI program with support by the ICC to ensure the availability of the required financial and material support from both domestic and foreign sources.

The cost implications for the proposed program activities and how they are related to the available financing for respective categories of the program is highlighted in this section. Strategies are proposed to improve financial viability. Implementing this multiyear plan will require increasing costs over the 2016-2020 periods. The major increases in program cost are driven mainly by:

- Introducing of new vaccines
- Supplemental immunization activities
- Increase in population of children to be vaccinated due to coverage improvements and increase in the annual birth cohort.

- Cold chain expansion and rehabilitation

Figure 15: Immunization Program projection of future resource requirements in USD, 2016-2020



	2016	2017	2018	2019	2020
Supplemental immunization activities	$23,406,861	$8,261,234	$30,879,024	$0	$0
Other capital equipment	$0	$0	$0	$0	$0
Cold chain equipment	$36,732,205	$16,912,014	$14,638,689	$14,994,647	$14,628,295
Vehicles	$0	$0	$0	$0	$0
Other routine recurrent costs	$17,049,405	$22,514,877	$22,820,415	$13,163,794	$13,440,503
Transportation	$694,131	$714,955	$750,703	$773,223	$850,604
Personnel	$24,712,992	$25,037,664	$25,145,232	$25,248,624	$25,356,192
Injection supplies	$2,458,270	$2,738,533	$4,256,934	$5,492,867	$5,526,692
New vaccines	$54,235,039	$55,919,555	$98,909,078	$136,674,752	$135,366,191
Underused Vaccines	$22,034,250	$22,786,500	$23,621,750	$32,264,822	$31,955,453
Traditional Vaccines	$3,810,764	$3,646,864	$2,333,072	$2,425,465	$2,511,108

The activities and inputs of the different EPI system components are costed. The costs are derived in different ways based on the interventions and planned activities. The ingredient costing method (considering the product of unit prices, and quantities needed each year along with proportion of time used for immunization) was used for costing inputs like vaccines, personnel, vehicles, cold chain equipment, etc.

Based on immunization practices rule of thumb was applied such as a percentage of fuel cost as representative of maintenance costs for vehicles. This was used for deriving costs for injection supplies, and maintenance of equipment, and vehicles.

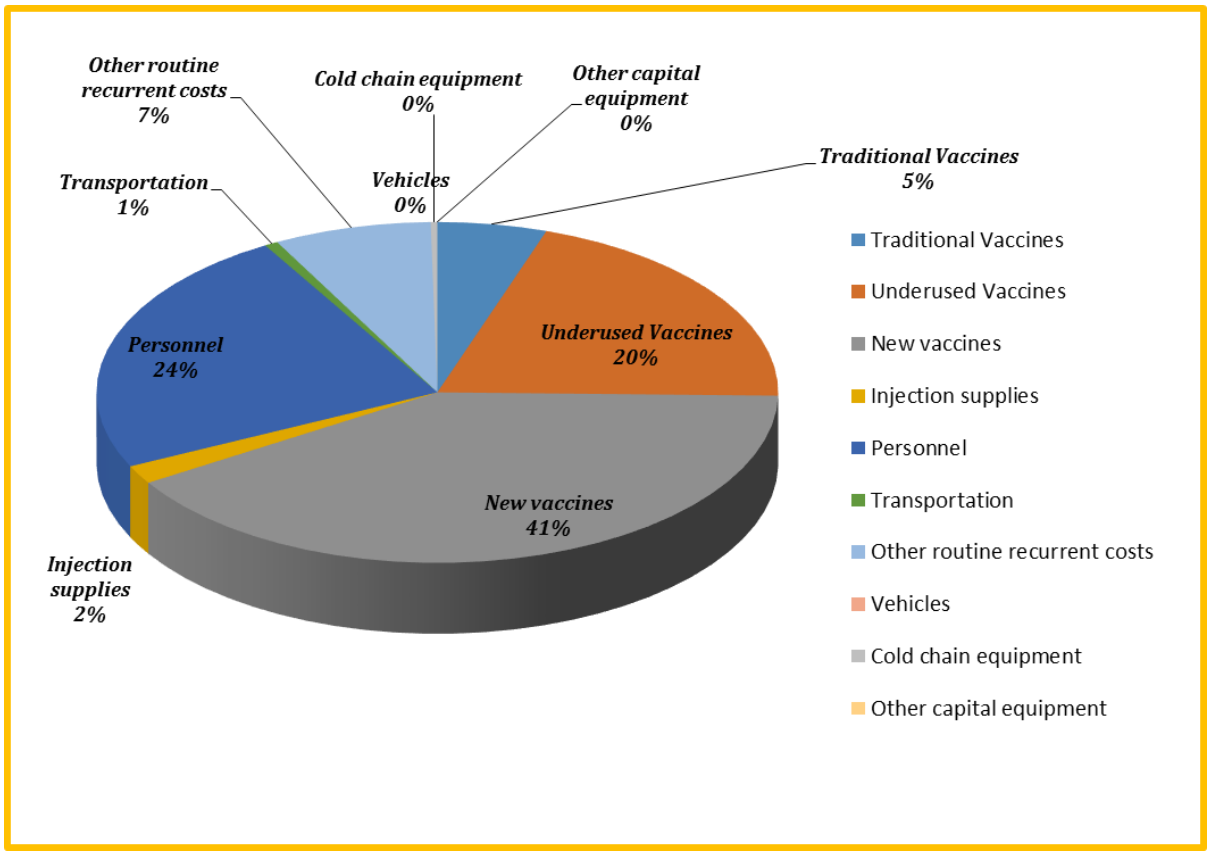
Based on the information retrieved from the past expenditure data on lump sum was used to estimate future expenditure. E.g. cost per child for specific campaign or training activities. All these different approaches are brought together in a pre-designed cMYP Excel costing tool. These derived costs are based on the following components:

- ☑ Vaccines and injection supplies
- ☑ Personnel costs (EPI specific and shared)
- ☑ Cold chain equipment, maintenance and overheads
- ☑ Operation cost for campaigns
- ☑ Program activities, other recurrent costs and surveillance

4.2.1 The Expenditure profile of baseline year (2014)

The expenditure profile of the immunization program was analysed for 2014 as a baseline. The total expenditure in 2014 was 191,985,623. The result yielded 41% spent on new vaccines (PCV and Rota) and 20% on under used vaccines (DPT-HepB-Hib), 26% on personnel, 2% on injection materials, and 7% on other recurrent costs which include disease surveillance, program management cold chain maintenance and short term training. The details are illustrated in figure 16 below.

Figure 16: Costing Baseline Profile (shared costs and campaign excluded)in Ethiopia, 2014



4.3 Costing of cMYP 2016-2020

4.3.1 Vaccines and Injection Equipment

The costs are a function of the unit prices for individual vaccines, with quantities determined by the target population, which is adjusted for by coverage and wastage targets. The prices are based on information from UNICEF supply division. For the period of five years a total of 649 million USD will be needed for the traditional, under used and new vaccines and injection materials, the majority of this will be for the new vaccines (PCV, Rota, HPV, and Men A) will cost 481 million USD), and under used vaccine (DPT-HepB-Hib, IPV, MR and Yellow Fever) will cost 133 million USD) and the cost of traditional vaccines will be 14.7 million USD.

4.3.2 Personnel Costs (EPI specific and shared)

Over the period of 2016-2020, the total program cost (minus shared costs) is o 1000 million USD (965 million routines and 62.6 million for campaigns). The cost estimates as with vaccines and injection equipment are based on unit expenditure on different personnel cadres working in EPI at the different levels of the system and the numbers of personnel, adjusted for by time spent on EPI related activities. The cost and time spent on supervision, and outreach activities were included for the different cadres of staff at the different level of the system. The unit expenditures are based on Government gross wages. The quantities available and needed for the duration of the cMYP were included. Time spent on EPI was estimated by input of the different level of staff at different levels. The total cost (salary, allowance during supervision and outreach activities) for personnel working in EPI related activities is about 262 million USD.

4.3.3 Cold Chain Equipment Procurement and Maintenance

Equipping health posts with solar refrigerator is a top priority for the Government of Ethiopia and is seen as an important step to address the disparity in coverage. This will enable to address some of the challenges in reaching pastoral populations in these areas and curbing dropout rates by specifically, (a) modifying frequency of service delivery- allowing immunization sessions to happen every day in a fixed post - as opposed to a few times a month via outreach; (b) strengthening the immunization delivery platform to give a timely dose very quickly after birth (crucial for the fight

against Hepatitis -with the birth dose of Hep B planned to be introduced shortly and vaccines that may require a timely birth dose in the future), and (c) in supporting a broader primary healthcare agenda in line with Ethiopia's new Health Sector Development Plan. Since the vaccines would be on-site at each HP, the Health Care Worker can save time and costs involved in picking up vaccines for outreach and instead dispense immunization or other PHC services.

Despite the actions already taken, further steps are necessary to rehabilitate the cold chain in order to enhance immunization coverage equitably. The opportunity with Gavi CCEOP will be utilized to replace and equip 8,397 HPs and 1,646 HCs. In addition, for 17 PFSA hubs, 1032 freezers (5 freezers for each of the 17 PFSA hubs) will be procured for ice pack production. Generally, the strategies in the immunization supply chain design is to equip 100% of health Centres and health posts with an optimal CCE to provide astatic immunization services from the GAVI CCEOP and SDG-PF enabling regular, more frequent provision of services to nomadic populations even in remote areas.

The CCE in the CCEOP includes 6,096 SDD refrigerator, 3,711 ILR and 1,600 long term passive devices. In order to improve immunization quality and coverage, initial distribution plan will be primarily done to pastoralist region and hard to reach areas with a total budget ceilings of US $61,787,680. Hence, Government will secure the available funding from GAVI CCEOP and fill the remaining gaps from its treasury and by mobilizing funds from partners.

4.3.4 Operational Costs for Campaigns

Ethiopia is a priority country for polio eradication and currently conducting supplementary immunization activities to prevent polio importation and reintroduction. The Technical Advisory Group recommended conducting of polio supplementary immunization activities on twice a year at national level. Ethiopia is also a priority country for measles and neonatal tetanus elimination. Measles follow-up through supplementary immunization should be conducted every 2 to 3 years covering children 6 to 59months and corrective TT supplementary immunization will be conducted in those areas selected as high risk areas (low routine coverage and low SIAs

coverage in the last TT SIAs). The total cost estimated to conduct the planned supplemental immunization activities is 12 million USD.

4.3.5 Costs for Immunization by Components cMYP (2016-2020)

The total program cost of both EPI specific and shared costs during the five years' period is 1319 million. Vaccine and injection material costs account for 49 % followed by shared health system costs (22%) and personnel costs (10%).

Table 25: Costs for the Different cMYP Components (Shared and EPI specific)

COST CATEGORY	EXPENDITURES IN 2014	FUTURE BUDGET REQUIREMENTS					
		2016	2017	2018	2019	2020	TOTAL 2016-2020
Vaccines (routine only)	68,695,675	80,080,053	82,352,919	124,863,900	171,365,039	169,832,752	628,494,663
Injection supplies	1,819,939	2,458,270	2,738,533	4,256,934	5,492,867	5,526,692	20,473,296
Personnel	24,647,664	24,712,992	25,037,664	25,145,232	25,248,624	25,356,192	125,500,704
Transportation	661,077	694,131	714,955	750,703	773,223	850,604	3,783,616
Maintenance and overhead	2,506,655	2,587,797	2,625,077	2,734,038	2,782,498	2,837,301	13,566,711
Short-term training	855,375	3,489,930	7,504,098	7,503,881	879,260	759,056	20,136,225
IEC/social mobilization	70,000	1,216,095	1,155,416	2,288,155	1,163,369	1,140,036	6,963,072
Disease surveillance	3,380,000	3,809,598	4,293,798	4,839,539	5,454,645	6,147,930	24,545,511
Program management	967,992	5,945,985	6,936,487	5,454,801	2,884,023	2,556,180	23,777,476
SUBTOTAL	**103,604,377**	**124,994,851**	**133,358,947**	**177,837,183**	**216,043,548**	**215,006,743**	**867,241,274**
Routine Capital Costs	326,586	3,673,2205	16,912,014	14,638,689	14,994,647	14,628,295	97,905,850
Campaign Costs	31,387,649	23,406,861	8,261,234	30,879,024 -	--	-	62,547,120
Shared Health Systems Costs	56,667,011	57,167,706	57,805,061	58,302,965	58,810,827	59,328,847	291,415,407
TOTAL	**191,985,623**	**242,301,623**	**216,337,256**	**250,778,837**	**289,849,022**	**288,963,885**	**1,319,109,651**

CHAPTER FIVE

MONITORING AND EVALUATION

The cMYP provides a comprehensive overview of the National Immunization Program and is the document that provides direction and guidance to national and sub national levels for incorporation into their annual plans. It is also the document that will advise national policies in setting national targets for all immunization indicators. National performance will therefore be monitored based on the indicators set in the cMYP. The cMYP contain a set of program and financial indicators. These indicators will be monitored and feedback provided to policy and program managers. Monitoring of the cMYP will be done within the existing health sector monitoring and reporting framework.

The MoH, it's Agencies and Development Partners have agreed to a set of national indicators for monitoring the sector and it includes indicators for monitoring the health of the population at both governmental and international levels. Data for measuring these indicators are collected routinely and supplemented with periodic reviews and surveys. The Ministry's routine process reports are collated from sub-national levels through to national level. An annual review process is conducted culminating in a health summit attended by all main stakeholders in health. During the health summit the report of an independent review of the sector is presented and discussed. Surveys such as the Maternal Mortality Surveys (MMS), Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) are conducted periodically to provide information on the health status of the country. Routine monitoring is carried out periodically from national to sub-national levels to monitor the implementation of programs and plans. In addition, EPI FMOH considers progress against annual plans on a regular basis to monitor progress and ensure targets are on track and being met in a timely manner.

The NIP will also be assessed through monthly and quarterly reports from the district levels. The quarterly reports will cover both M&E indicators and activity completion status. Reflection on quarterly reports will allow for timely monitoring of progress at all

levels, and support identification for targeting bottlenecks and resolving key issues arising during implementation. With the development of the cMYP, an annual NIP review will be instituted as a forum for bringing together all relevant stakeholders within the private and public sector including CSOs and NGOs. This review meeting is intended to allow for greater participation of district level non-state sector organizations in information sharing and consensus building.

In addition, a mid and end term evaluation will be organized specifically for the NIP to evaluate progress and performance in the implementation to contribute to the performance analysis of the sector and more specifically provide direction on future investments in the NIP.

5.1 Indicators for monitoring the cMYP

5.1.1 Macroeconomic Indicators

The NIP has been and continues to be one of the health programs with high government commitment. The government of Ethiopia is committed to ensuring that new and underused vaccines are available to the population for the prevention of all forms of diseases. Total government commitment also translates into its budget allocation to the health sector. Key indicators for measuring government commitments to health and to the NIP will be assessed through a set of macroeconomic indicators.

5.2 Financial Indicators

The NIP will also pay close attention to monitor financial indicators within the cMYP. This will include regular monitoring of commitments, expenditures, and disbursement of funds in a timely manner to all levels. Regular monitoring minimally bi-annually) will allow for EPI FMOH to ensure committed funds are reaching intended targets, and reallocate funds as needed.

5.3 Program Indicators

The NIP will continue to monitor and report on the coverage of all antigens through the routine reporting system. The cMYP provides targets for coverage and wastage rates for routine immunization. Additionally, programe specific indicators will measure progress

against the cMYP throughout the next 5 years. See 5.5 Monitoring and Evaluation Framework for indicator details.

5.4 Surveillance System

The NIP will work with the Public Health Emergency Directorate to monitor Vaccine preventable diseases closely and AEFIs, following the introduction of upcoming new vaccines in in the next 5 years. This will include post introduction monitoring activities. A set of monitoring indicator swill be used to monitor post implementation activities.

5.5 Monitoring and Evaluation Framework cMYP

Table 26: Monitoring and Evaluation Framework for cMYP

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
SERVICE DELIVERY											
Increase and sustain high vaccination coverage	Reach 90% national coverage and 80% in every district with all vaccines by 2020	% of fully immunized children	National health information	Annual	EPI/MOH	83%	86%	89%	92%	94 %	95%
		% of woredas with > 80% fully immunized	National health information	Annual	EPI/MOH	ND	60%	70%	73%	77%	80%
	To achieve 80% Penta3 coverage in all districts by 2020	% of Penta 3 coverage	National health information	Annual	EPI/MOH	87%	91%	93%	95%	96%	96%
		% of woredas with > 80% Penta3 coverage	National health information	Annual	EPI/MOH	64.4%	67.5%	70.6%	73.8%	76.9%	80%
	Reduce Penta dropout rate to less than 3% by 2020	National Penta 1–Penta 3 drop-out rate	National health information	Annual	EPI/MOH	6%	3%	3%	3%	2%	2%
Ensure accessibility of immunization service in all kebeles by 2020	Reduce number of unimmunized children by 75% by 2020 from the 2014 baseline	% reduction of unimmunized children from baseline	National health information	Annual	EPI/MOH	13%	7.4 %	5.8 %	4.1 %	3.3 %	3.3 %
NEW VACCINE/DISEASE CONTROL											
Introduce IPV by 2016	Introduction of IPV by 2016 to reach 97% coverage by 2020	coverage of IPV	National health information	Annual	EPI/MOH	NA	93%	94%	95%	96%	97%
Introduce measles second dose as vaccine by 2018, Men A vaccine and HPV vaccines by 2018, and Yellow Fever vaccine by 2019.	Introduction of HPV by 2018 to reach 90% coverage by 2020	HPV coverage	National health information	Annual	EPI/MOH	0	0	0	80%	85%	90%
	Introduction of MSD by 2018 to reach 94% coverage by 2020	MR coverage	National health information	Annual	EPI/MOH	0	0	0	85%	90%	94%
	Introduction of MenA by 2018 to reach XX% coverage by 2020	MenA coverage	National health information	Annual	EPI/MOH	0	0	0	80%	95%	96%

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
Introduction of birth dose of hepatitis by 2018	Introduction of birth dose of hepatitis by 2018 to reach 96% coverage by 2020	Birth dose of HBV vaccine coverage	National health information	Annual	EPI/MOH	0	0	0	85%	90%	96%
Introduction of yellow fever by 2019	Introduction of yellow fever by 2019 to reach 91% coverage by 2020	Yellow fever vaccine coverage	National health information	Annual	EPI/MOH	0	0	0	0	75%	91%
Maintain polio free status and fulfil the recommend standard AFP surveillance at national and regional levels for national certification by 2020	*(a) All polioviruses are laboratory-contained and nationally certified polio-free by the end of 2018.*	Polio free certificate	AFP surveillance report	Annual	PHEM/MOH	1 case	0	0	Polio free	0	Polio Certified
	(b) A National polio legacy plan is finalized by the beginning of 2016.	A National polio legacy plan document	MOH report	Annual	PHEM/MOH	NA	Plan				
Eliminate measles by 2020 and advocate for the elimination of rubella and congenital rubella syndrome.	*(a) Achieve an incidence of less than one confirmed measles case per million populations by 2020. (pg. 69)*	incidence of confirmed measles cases per million	Measles surveillance Report PHEM/MOH	Annual	PHEM/ EPI Surveillance MOH	11.1/ 100,000	8.8/ 100,000	6.6/ 100,000	4.4/ 100,000	2.2/ 100.000	<0.1 per 100,000
	(b) Attain MCV1 coverage ≥95% at national and district levels and at least 95% SIAs coverage in all districts. (pg. 69)	MCV1 coverage	EPI/MOH Report	Annual	EPI/MOH	80%	90%	92%	94%	95%	96%
	Attain rubella coverage ≥94% at national and district levels and at	MR coverage	Coverage report		PHEM/IDSR Team	0	0	80%	85%	90%	94%

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
	least 94% SIAs coverage in all districts	incidence of confirmed congenital rubella cases	IDSR	PRN	PHEM/MOH	ND	NA	NA	4.4/ 100,000	2.2/ 100.000	<0.1/ 100,000
Attain and maintain elimination/control of other vaccine-preventable diseases.	a) Reach MNT elimination by 2016 and maintain MNT elimination status by 2016	Number of children affected by maternal neo-natal tetanus	IDSR	PRN	PHEM/MOH	ND	0	0	0	0	0
	(b) Achieve 90% PAB coverage nationally by 2016 and every district by 2020	PAB coverage	Coverage report	Annual	EPI case team	80%	90%	95%	95%	97%	98%
Strengthen NNT surveillance system at all levels by 2020	a) Achieve 100% timeliness, accuracy and completeness of reports by 2020	report timeliness %	EHMI Report	Monthly	EHMI	ND	70%	80%	85%	95%	100%
		report completeness %	EHMI REPORT	Monthly	EHMI	ND	70%	80%	85%	95%	100%
	c)Achieve NNT surveillance standard indicators in all regions by 2020	% of indicators achieved	IDSR	PRN	IDSR	ND	75%	80%	85%	90%	95%
	d)Strengthen community surveillance for VPD by 2020	# of HEWs or community persons trained on VPD surveillance	Training report	Annual	IDSR team	ND	60%	65%	75%	80%	90%
ADVOCACY, COMMUNICATION, AND SOCIAL MOBILIZATION (ACSM)											
Strengthen communication, advocacy, and demand for immunization at all levels including	To increase awareness of the community on immunization to 95% by 2020	caretaker acceptance of immunization in poor performing regions	ACSM report	Annual	ACSM case Team /MOH	ND	65%	70%	75%	85%	95%

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
community by 2020		caretaker acceptance rate of immunization nationally	ACSM report	Annual	ACSM case Team /MOH	ND	60	70	80	90	95
Strengthen communication, advocacy, and demand for immunization at all levels including community by 2020	a) Build the capacity of Sub-national level in the planning, implementation and monitoring and evaluation of communication activities by 2017.	Number of documented meetings of communication working group at regional level	ACSM Report	Annual	ACSM case Team /MOH	ND	12	24	48	PRN	PRN
		Number of regions with 1 established position for EPI communication focal person or technical assistant	ACSM report	Annual	ACSM case Team /MOH	ND	All	All	All	All	All
	b) Increase the involvement of political and decision makers as well as important stakeholders in immunization program at all level by 2018	Number of High level advocacy meetings between government at all levels and stakeholders in poor performing regions conducted per year	ACSM report	Annual	ACSM case Team /MOH	ND	1	2	2	PRN	PRN
	c) improve the IPC skills of trained health workers per health facility on interpersonal communication skills by 2017	Number (%) of HWs trained on ACSM per year	ACSM Training report	Annual	ACSM case Team /MOH	ND	50%	60%	70%	80%	90%
VACCINE QUALITY & COLD CHAIN LOGISTICS											
To expand cold storage capacity and improve effective vaccines management in line with introduction of new vaccines, population growth and coverage expansion	a) To establish vaccine quality control system at national level by 2020	% of health facility experience freeze excursion	CCL report	Annual	PFSA/MOH	ND	< 40%	<30%	<20% %	<15%%	<10%
		% of woreda cold store experiencing freeze excursion	CCL report	Annual	PFSA/MOH	ND	<30%	<25%	<20%	<10%	<5%

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
plan and campaigns at all levels by 2016		% of zonal cold store experiencing freeze excursion	CCL report	Annual	PFSA/MOH	ND	<20%	<15%	< 10%	< 10%	<5 %
		% of cold chain equipment with continuous temperature monitoring device	CCL report	Annual	PFSA/MOH	ND	50%	60%	70 %	80%	100%
	b)100% cold storage capacity reached and maintained in line with introduction of new vaccines, population growth and coverage expansion plan at all levels by 2020	% cold chain capacity reached maintained at woreda level	CCL report	Annual	PFSA/MOH	ND	70 %	80 %	90 %	95%	100 %
		% cold chain capacity reached maintained at national level	CCL report	Annual	PFSA/MOH	ND	70 %	80 %	90 %	95%	100 %
		% cold chain capacity reached and maintained at zonal level	CCL report	Annual	PFSA/MOH	ND	80 %	85 %	90 %	95%	100 %
		% of cold chain devices in need of maintenance is maintained	CC maintenance Report	Annual	PFSA/MOH	ND	<40	<30	<25%	<15%	<10%
	c) To directly deliver vaccine and EPI logistics to each HFs by 2020 by PFSA	stock out of consumables at health facility	CCL report	Annual	PFSA/MOH	ND	<35	<25 %	<15 %	<10 %	<5%
		stock out of consumables at woreda cold store	CCL report	Annual	PFSA/MOH	ND	<30%	<20%	<15 %	<10 %	<5%
To expand cold storage capacity and improve effective vaccines management in line with introduction of new vaccines, population growth and coverage expansion plan and campaigns at all levels by 2016	d)Establish effective vaccine management system in all districts by 2020	Wastage rate	VMA report/PFSA	Annual	PFSA	6.50%	6.30%	6.20%	5.10%	4.00%	3.50%
		EVMA score	VMA report/PFSA	q/2yr	PFSA	61%	67 %	72 %	80 %	85%	90%
		% of woreda stores reporting stock on electronic stock management tool on a monthly basis	CCL report/PFSA	Monthly	PFSA	ND	70%	80%	85%	95%	100%
		% of zonal stores reporting stock on electronic stock management tool on a monthly basis	CCL report/PFSA	Monthly	PFSA	100%	100%	100%	100%	100%	100%

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
		# of HWs and technicians trained on cold chain maintenance	CC maintenance report/PFSA	Annual	PFSA	ND	50%	70%	80%	85%	95%
		% of HWs trained on stock management techniques/EVM (?)	training report /PFSA	Annual	PFSA	ND	50%	65%	75%	85%	95%
		% of woreda, zonal, regional cold store managers trained on EVM	Training report	Annual	PFSA	ND	70 %	75%	85%	95%	100%
PROGRAM MANAGEMENT											
Strengthen coordination and accountability through improved EPI management at all levels to successfully deliver a robust immunization program and achieve planned targets	Improved EPI management at all level through established and functional structures, policy, and people in place for evidence-based decision making	% of reviews of conducted Vs planned in woredas per year	Minute report	Annual	EPI/MOH	ND	70%	85 %	100%	100 %	100%
		% reviews conducted vs planned by regions per year	Minute report	Annual	EPI/MOH	ND	80 %	85%	100 %	100 %	100 %
		% reviews of performance conducted vs planned by national level per year	Minute report	Annual	EPI/MOH	ND	90%	100 %	100 %	100%	100 %
MONITORING AND EVALUATION											
Strengthen program monitoring and evaluation to support regular evidence based decision making at all levels	Strengthen program ME through programmatic reviews and EPI performance monitoring system in all districts using HMIS captured data by 2017	% of planned routine immunization, supportive supervision visits conducted by woreda to health facilities	SS reports	Annual	HMIS unit	ND	50%	60%	70%	85%	95%
		% of planned routine immunization, supportive supervision visits conducted by region to woreda	SS Reports	Annual	HMIS Unit	ND	60%	75%	85%	90%	95%
		% of woredas with access to and using EPI performance indicator database	HMIS report	Annual	HMIS Unit	ND	80%	85%	90%	95%	100%

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
		% of woreda health management teams trained on using EPI performance indicator database for decision making	Training report	Annual	HMIS unit MOH	ND	30%	50%	60 %	70 %	85%
	Achieve 90% timeliness, accuracy & completeness of reports by 2017	% of woredas completing monthly immunization reports on time	HMIS report	Annual	HMIS unit MOH	ND	50%	70%	85%	90%	95%
		% of regions completing monthly immunization reports on time	HMIS report	Annual	HMIS unit MOH	100%	100%	100%	100%	100%	100%
		number of quarterly reports summarized and disseminated by EPI at national level per year	HMIS report	Annual	HMIS unit MOH	ND	50 %	70%	80%	90%	100%
		DQS score (VF & Discrepancy)	DQS score report	Biannual	HMIS unit MOH	ND	75 %	80%	85 %	95%	97%
HUMAN RESOURCES											
Improve knowledge and practice Health workers on EPI	a) Vaccine management among health workers from current score of 61% to 80% as measured by VMA by 2020	VMA score	EVMA Survey	Q/2yr	EPI/MOH	61 %	65 %	69 % (Survey)	73 %	77 %	80% (Survey)
	b) To reduce care takers knowledge gap on EPI program and VPD from 45% to 22% by 2020	EPI KAP score	EPI KAP survey	Q/2yr	EPI/MOH	45%	41%	37% (Survey)	32%	27%	22% (Survey)
	c) Achieve in 80% of districts MLM capacity built on evidence based planning and program management on M&E by 2017	% of woredas that have received MLM training	Training report	Annual	EPI/HR/MOH	ND	66%	80%	89%	90%	97%
FINANCING											

GENERAL OBJECTIVES	SPECIFIC OBJECTIVES	INDICATOR	DATA SOURCE	FREQUENCY OF DATA COLLECTION	RESPONSIBLE FOR DATA COLLECTION	YEAR					
						BASELINE 2014	2016	2017	2018	2019	2020
Improve adequacy and sustainability of resources for immunization	to increase government fund allocation to 10% for traditional vaccine and procurement and new vaccine co finance by 2020	% increase of government funding allocated to immunization against baseline year	National Health account	Annual	Resource mob. Directorate/ MOH	ND					10%

5.6 Immunization Program Annual Work Plan for 2016

Table 27: Immunization Program Annual Work Plan for 2016

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
SERVICE DELIVERY AND PROGRAMME MANAGEMENT																			
1. Conduct micro planning workshops in all districts with the involvement of community leaders with community leaders annually						X	X	X											
2. Conduct micro planning workshops in all districts with the involvement of community leaders		Districts and zone							X	X	X	X	X	X		150		WHO, UNICEF	
3. Organize and deploy mobile health teams for pastoralist and other hard to reach populations		Regions districts	X	X	X	X	X	X	X	X	X	X	X	X					

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
4. Implement enhanced routine immunization in emerging regions and zones with large number of unimmunized children	ERIA will be conducted in 14 zones and 4 emerging regions where the coverage is low and no. of unvaccinated children are high	Region, District,	X	X	X	X	X	X	X	X	X	X	X	X		450	Govt	UNICEF GAVI	
5. Improve routine coverage by Strengthening outreach and fixed immunization services	allocate adequate funds for fuel for vaccine distribution and outreach transportation	Region, District, HF	X	X	X	X	X	X	X	X	X	X	X			935		UNICEF	
6. Improve routine coverage by Strengthening outreach and fixed immunization services		Region, District, HF		X	X	X	X	X	X	X	X	X	X	X		4700		UNICEF/GAVI	
7. Train health workers and EPI managers on MLM, IIP, and IRT	One MLM training for EPI managers and IRT For HEW will be conducted	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		760	Govt.	UNICEF, WHO	

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
8. Support the meetings of the NITAG			X	X	X	X	X	X	X	X	X	X	X	X					
9. Organize and deploy mobile health teams for pastoralist areas	More mobile health teams will be deployed in Somali and Afar regions	Region	X	X	X	X	X	X	X	X	X	X	X	X		125	Govt	UNICEF	
10. Conduct defaulter tracing using HEWs	HEW will have defaulter tracing capacity and means	Districts	X	X	X	X	X	X	X	X	X	X	X	X		0			
11. Conduct national EPI coverage survey in 2016	GAVI recommends new national coverage survey	National					X	X	X	X	X	X	X	X		200		WHO	
12. Support and roll out IPV vaccine in routine EPI program by 2016		National, regional and district	X	X	X	X	X	X	X	X	X	X	X	X					
13. Conduct HPV demon selected districts		Districts																	
14. Conduct national level tOPV inventories		National, regional and district	x	x	x														

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
15. Maintain polio certification level surveillance			X	X	X	X	X	X	X	X	X	X	X	X					
16. Support the polio and measles labs to maintain accreditation level support the expansion of measles surveillance			X	X	X	X	X	X	X	X	X	X	X	X					
17. Establish national database of district indicators		National						X	X	X	X	X	X	X		0			
18. Conduct supportive supervision quarterly at all levels to motivate and improve health worker's capacity	Case teams in all directorates will conduct regular supportive supervision to respective regions	National Region, Districts	x			x			x			x				2785	Gov't		
19. Conduct programme review meetings quarterly at district and regional level and annually at national	The national integrated review meeting is held in October every year	National Region, Districts										x				821	Gov't		

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
level																			
20. 'tConduct TT elimination validation assessment		National Region, Districts					X	X	X	X	X	X	X	X					
21. Register target groups house to house using HE?W and vaccinate	To reach the un reached children in every house hold	District	X	X	X	X	X	X	X	X	X	X	X	X					
22. Provide immunization services in populations affected by complex emergencies	Emergencies could lead to outbreak of VPD and should be properly addressed	Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		50		UNICEF, OCHA	
23. Upgrade PFSA cold rooms by installing additional cooling units and other facilities , and construction and installation of new cold rooms	The Cooling units and other facilities of the new PFSA cold room will be upgraded by UNICEF and WHO	National	x	x												21		UNICEF	

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
24. Train EPI managers and health workers on IPV	Cascades of trainings will be conducted to reach Health workers	National Region, Districts	X	X	X											328		GAVI/UNICEF/WHO	
Conduct national AEFI work shop			X													25		GAVI,WHO	
ADVOCACY AND COMMUNICATION																			
25. Conduct high level sensitization meeting with political leaders and decision makers on the new vaccine introduction and its launching			X	X												95		GAVI, Rotary	
26. Develop and distribute IEC/BCC materials	Communication materials to increase demand for immunization are needed: Pilot their relevance and cultural acceptability	National Region				X	X	X	X	X	X	X	X	X		20	Gov	UNICEF	

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
27. Conduct regular monitoring of communication activities at all levels	EPI communication activities will be monitored at all levels	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X					
28. Train HWs/HSEWs on Interpersonal communication	IPC training will be given utilizing IIP guidelines	District						X	X	X	X	X	X	X					
29. Conduct Advocacy and consensus building meeting with regions and stakeholders on funding vaccines	Advocacy for resource mobilization for new vaccine co financing	National Region										X	X	X		8		CRDA	
30. Conduct community conversation on EPI in each kebele regularly	HEW will coordinate community conservation	District	X	X	X	X	X	X	X	X	X	X	X	X					
31. Identify partners and encourage to contribute to EPI program	Partners such as CRDA/COREGROUP, is involved in organizing high level advocacy in emerging region	National						X	X	X	X	X							

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
32. Develop and transmit radio messages on immunization	WHO supports preparation of radio messages	National Region	X	X	X	X	X	X	X	X	X	X	X	X		200		WHO	
SURVEILLANCE AND ADC																			
33. Conduct Active surveillance for AFP, measles and MNT in all districts	Community based surveillance will be expanded in collaboration with partners such as core group	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		0			
34. Build national capacity for pneumo and rota virus sero-typing and surveillance	Rota virus sero-typing and surveillance will be conducted	National	X	X	X	X	X	X	X	X	X	X	X	X		15		WHO	
35. Strengthen Cross country and cross regional VPD surveillance	Ethio-Sudan cross border AFP surveillance activities will continue	National Regions	X	X	X	X	X	X	X	X	X	X	X	X		20		WHO	
36. Conduct In-service and pre-service training of HW/HEWs on EPI diseases surveillance (integrated with IIP)	Disease surveillance training will be conducted with IIP	District						X	X	X	X	X	X	X		0			

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
37. Conduct Regular monitoring of VPD surveillance activities at all levels	WHO surveillance officers will actively be involved	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		2379	Gov't	UNICEF WHO	
38. Under take Documentation of polio free certification		National	X	X	X	X	X	X	X	X	X	X	X	X		0			
Deploy international, national and regional STOP for active search	WHO will deploy international STOP teams	National	X	X	X	X	X	X	X	X	X	X	X	X		0			
39. Include VPDs in integrated surveillance and monitoring systems set up in complex emergencies		National										X	X	X		0			
40. Involve CSO and other NGOs in community based VPD surveillance	CORE group is involved in community surveillance	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		0			
41. Polio eradication	polio vaccine procurement for supplementary campaign in	National, Regional, district, HF				X	X									625		UNICEF	

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
	high risk areas																		
42.Polio eradication	polio campaign in high risk areas operational cost	National, Regional, district, HF				X	X									2983		WHO	
43.Measles control	Vaccine and injection material procurement for Measles SIAs	National, Regional, district, HF										X	X	X		3955		UNICEF	
44.Measles control	Measles SIAs operational cost	National,										X	X	X		9269	Gov't	UNICEF	
45.Tetanus elimination	TT vaccine and injection material procurement for corrective campaign	National, Regional, district, HF						X	X	X						140		UNICEF	
46.Tetanus elimination	corrective campaign operational cost	National, Regional, district, HF						X	X	X						2044		UNICEF	
VACCINE SUPPLY, QUALITY AND LOGISTICS																			

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
47. Training of district managers and health workers on AEFI	The training will be cascaded through TOT training	National Region, Districts						X	X	X	X	X	X	X		41		WHO	
48. Include AEFI in national database for district monitoring	AEFI indicators will be included	National							X	X	X	X	X	X					
49. Select and purchase equipment to replace 10% of C.C each year	It is part of a national plan to replace all refrigerators every 10 years	National												X		2484		UNICEF	
50. Purchase cold chain spare parts and tools	Continuous supply of spare parts and maintenance tools for technicians are available	National										X	X	X		300		UNICEF	
51. Purchase and distribute additional FT		National					X	X	X	X	X	X	X	X					
52. Train HWs and technicians on cold chain maintenance	Cascaded cold chain training for technicians (high level, mid-level, and users) will	National Region	X	X	X	X	X	X	X	X	X	X	X	X		137		UNICEF	

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
	be conducted																		
53. Promote burning and burial of injection waste materials in health facilities or to incinerate	Health facilities without incinerators will be encouraged to have the facility	District	X	X	X	X	X	X	X	X	X	X	X	X					
54. Establish cold chain inventory(CCI) data base	Computerized district level stock management data base will be in place	National							X	X	X	X	X	X					
55. Construct additional cold rooms in PFSA hubs to be used for routine vaccine storage	PFSA will implement direct vaccine distribution to HFs through branch hubs in the country	National	X													100		UNICEF, WHO	
56. Train senior cold chain technicians on cold room maintenance																20			

ACTIVITIES	CONSOLIDATED & INTEGRATED ACTIVITIES	WHERE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available		Pitfall
																	Gov't	Partners	
57. Procure traditional vaccines based on annual vaccine forecast from pre-qualified suppliers through UNICEF	traditional vaccine BCG, TT and OPV, measles procured	National											X	X		3973	Gov't	UNICEF	
58. Procurement of under used vaccines	Procurement of penta															32880	Gov't	GAVI	
59. Procure new vaccines	Procurement of PCV															74794	Gov't	GAVI	
60. Procure new vaccines	Procurement of penta															TBD	Gov't		
61. Procure new vaccines	Procurement of IPV															TBD	Gov't		
62. Procure new vaccines	bOPV															TBD	Gov't		
63. Procure new vaccines																TBD	Gov't		
64. Procurement of injection materials	Syringes, safety box															2545	Gov't	GAVI	

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																	Gov't	Partners	
65. Prepare quarterly forecasts of accurate target based national vaccine requirement	Regional cold rooms will collect vaccines based on their quarterly share	National										X	X			0			
66. Procure cold trucks for PFSA vaccine transportation	PFSA has to strengthen its transportation capacity to handle direct vaccine distribution to HFs	National	X	X	X	X	X	X	X	X	X	X	X	X		250		UNICEF	
67. Procure cold boxes	PFSA will purchase additional cold boxes for vaccine distribution	National										x	x	x		200		UNICEF	
68. Coordinate immunization financing through the ICCs	ICC will work on Resource mobilization	National	X	X	X	X	X	X	X	X	X	X	X	X					