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MINISTRY OF HEALTH-ETHIOPIA

የዜጎች ጤና ለሃገር ብልጽግና!
HEALTHIER CITIZENS FOR PROSPEROUS NATION!

Ethiopia National Expanded Program on Immunization

COMPREHENSIVE MULTI-YEAR PLAN (2021-2025)

**Federal Ministry of Health
Addis Ababa
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List of Abbreviation

AD	Auto Disabled Syringes
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
BCC	Behavioural Change Communication
BCG	Bacillus-Calmette-Guerin
BPR	Business Process Re-engineering
CDC	Centres for Disease Control and Prevention
CMYP	Comprehensive Multi Year Plan
CSO	Civil Society Organization
DHS	Demographic and Health Survey
DPT	Diphtheria-Pertussis-Tetanus vaccine
DQA	Data Quality Audit
EPI	Expanded Programme on Immunization
GAVI	Global Alliance for Vaccines and Immunisation
GIVS	Global Immunization Vision and Strategies
Hep B	Hepatitis B
HEW	Health Extension Workers
HF	Health Facility
Hib	Haemophilus influenza type b
HMIS	Health Management Information System
HPV	Human Papilloma Virus Vaccine
HSDP	Health Sector Development Program
HSEP	Health Service Extension Program
HSS	Health Service Support
HW	Health Worker
ICC	Inter-Agency Coordinating Committee
ICST	Inter-country Support Team
IDS	Integrated Disease Surveillance
IEC	Information Education and Communication
IIP	Immunization in Practice
IMR	Infant Mortality Rate
IPC	Inter-personal Communication
IPV	Injectable Polio Vaccine

ISS	Immunization Service Support
ITN	Insecticide-Treated Bed Net
JRF	Joint Reporting Form
KABP	Knowledge, Attitude, Behaviour and Practice
MDG	Millennium Development Goals
MDVP	Multi-dose Vial Policy
MLM	Mid-level Managers
MNT	Maternal and Neonatal Tetanus
FMOH	Federal Ministry of Health
NGO	Non-Governmental Organization
NIDs	National Immunization Days
NIP	National Immunization Program
NNT	Neonatal Tetanus
OPV	Oral Polio Vaccine
PAB	Protection At Birth
PCV	Pneumococcal Conjugated Vaccine
PFSA	Pharmaceuticals Fund Supply Agency
RED	Reaching Every District
SIAs	Supplemental Immunization Activities
SNIDs	Sub-National Immunization Days
SOS	Sustainable Outreach Services
TFI	Task Force on Immunization
TOT	Training of Trainers
TT	Tetanus Toxoid
UCI	Universal Child Immunization
UNICEF	United Nations Children Fund
VMA	Vaccine Management Assessment
VPD	Vaccine-Preventable Diseases
VVM	Vaccine Vial Monitor
WFP	World Food Program
WHO	World Health Organization
WPV	Wild Polio Virus
WRRT	Woreda Rapid Response Team

Acknowledgment



Immunization Comprehensive Multi Year Plan (cMYP) is a key strategic and management document for National immunization programs that provide national goals, objectives and strategic directions which address all components of immunization system relevant to the country. The new cMYP (2021-2025) is the result of the collaborative work of the Ministry of Health and partners working in health.

In spite of the gains made during the previous multi-year plans, several challenges in the delivery of EPI services including the COVID-19 global pandemic need a collaborative effort of all stakeholders to sustain the previous gains and optimally reaching zero doses children, under vaccinated children and missed communities.

The current cMYP (2021-2025) document has strategies conforming to the vision of the global Immunization Agenda/IA2030/ which envisioned as “a country where everyone, everywhere, at any age should fully benefit from all vaccines for good health and well-being”.

The 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 those partners for their financial as well as technical support without which it would have not been possible to prepare this document.

A handwritten signature in black ink, appearing to read 'Dereje Duguma'.

Dereje Duguma, MD, MPH
State Minister, Ministry of Health

Preface



Immunization is a key priority of the basic package of Essential Health Services in Ethiopia. The implementation of the 2016-2020 comprehensive multi-year plan (cMYP) for EPI accelerated government's efforts to achieve better health for the children and women of Ethiopia through the reduction of morbidity, mortality and disability from vaccine preventable diseases (VPDs), thereby contributing to the enhancement of the quality of life and productivity.

A thorough situation analysis, comprehensive EPI and surveillance review conducted in 2018 provided useful information on best practices, weaknesses, opportunities, and lessons learned over the previous years that formed the basis for development of this cMYP (2021-2025). The current cMYP(2021-2025) document preparation process has taken in to account the Governments' second Health Sector Transformation Plan/HSTP II/, experience gained during the past years of implementing routine and supplemental immunization activities, new vaccine introduction and the global Immunization agenda 2030/IA2030/, GAVI 5.0, and WHO technical immunization guidelines for program use at all levels.

Establishment of the structures for immunization program management at the national and regional levels; all vaccines, injection materials and equipment used at all levels conform to WHO standards/specification and strong support and collaboration from Development Partners for EPI.

The process of development of the new comprehensive multi-year plan for 2020-2025, has accorded the stakeholders and partners an opportunity to reorganize approaches to address the current/future challenges and to explore opportunities for more effective and efficient delivery of services.

Focus will be made to improve immunization coverage through reaching all un-immunized and under immunized children in every district/Woreda/community; introduction of new and underused vaccines like Hepatitis B birth dose, Yellow fever, MenA etc. and maintaining a high quality and sensitive disease surveillance system at all levels in order to detect and respond timely to any Vaccine Preventable Diseases outbreaks.

Lastly, the Maternal and Child Health Directorate pledge full commitment in implementation of the plan and look forward to attainment of the set objectives and targets. The directorate would also like to express its appreciation for the unreserved efforts of the EPI case team, other Directorates of the FMOH, EPI stakeholders and partners for their invaluable contributions.

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Executive Summary

The comprehensive multiyear plan (cMYP) is the medium term or strategic plan for the Expanded programme on Immunization (EPI) in Ethiopia, prepared in consonance with the 5 year strategic plan of the health sector for the year 2021 to 2025.

The goals of the cMYP are:

- Reduce morbidity and mortality from vaccine-preventable diseases for everyone through the life course.
- Leave no one behind by increasing universal and equitable access and use of new and existing vaccines.
- Ensure good health and wellbeing for everyone by strengthening immunization within primary health care and contribute to universal health coverage and sustainable development.
- Achieve vaccine-preventable diseases elimination and eradication goals.

This strategic plan will be guided by the above goals and consistent with the goals of immunization agenda 2030.

There are enabling and impeding factors that affect the effective implementation of all components of the immunization system in the country. Improved access and quality immunization services have been major challenges because of difficult topography in the most hard-to-reach areas and resource constraints. Despite these challenges there is government commitment, dedicated service staff and effective collaboration from partners like GAVI, WHO, and UNICEF and so on to support and provide immunization services.

Great amount of work has been done for developing the cMYP starting from the situational analysis to costing, monitoring and evaluation. The progress of implementation of the cMYP will be monitored

through time-tested mechanisms such as annual EPI review meeting.

The role of the ICC in ensuring that the plan is on the proper track. It is expected that this national plan will serve as a guide and template for regional and district annual plans during 2021-2025.

The current plan is presented in five chapters described briefly as below:

Chapter One: Country Information

This describes the country profile and demographic information, administration and politics, the macroeconomic environment, the health status, and the Expanded Programme on Immunization (EPI) in Ethiopia.

Chapter Two: Situation Analysis

This chapter provides information on the current issues and challenges of the immunization programme in Ethiopia. It further provides detail description of the strengths and weaknesses of all the components of the immunization system in the country.

Chapter Three: Goals, Objectives, Key Activities, Indicators and Milestones

This chapter focuses on the goals and objectives of the cMYP for each of the strategic components, key activities, indicators, and milestones.

Chapter Four: Costing, Financing and Financial Gaps

This chapter elaborates on the plans for financing and sustainability of the plan.

Chapter Five: Monitoring, Evaluation and Implementation

This is the final chapter describing the monitoring and evaluation mechanisms which are put in place to ensure effective and efficient implementation of the plan.

1.1 Governance and demography

Ethiopia is the second most populous country in Africa, with a unique cultural heritage, diverse population, mixed ethnicity, and different religions. Administratively, Ethiopia comprises of 10 National

Regional States (NRSs), also called Regions (ክልል/ Kilile) and two city administrative councils under a constitutional federal system. The regions and city administrations are further divided into 108 Zones, 1054 Districts and 32,000 urban dwellers and farmers association commonly known as ‘kebeles’.



Figure 1. 1 Map of Ethiopia

According to projections from the 2007 National Census, the estimated total population for the year 2020 is about 101 million in Ethiopia, ranking as second in Africa and 12th in the world. Ethiopia is home to more than 80 ethnic groups with the same number of languages and dialects. The population is characterized by a rapid growth (2.6%), high total

fertility rate of 4.6 births per woman (2.3 urban and 5.2 rural) and a corresponding crude birth rate of 32 per 1000 in 2016. As demonstrated in the contrasting population pyramids for 2020-2029 shown below (Fig. 2), the younger population will keep growing in the next decade.

Population structures by age and sex (Percent)

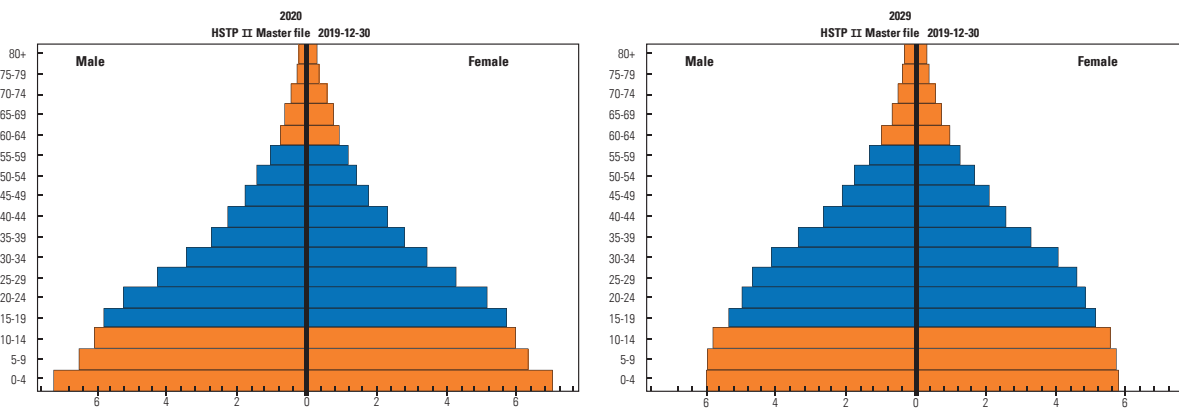


Figure 1. 2 Population structures by age and sex

1.2 Socio-economic Situation

Ethiopia has been implementing a number of macroeconomic policies, including a market-based and agriculture-led industrialization, and has classified as a Low-Income Economy Country (LIEC). In 2018, the gross domestic product (GDP) per capita was US\$ 790, an increase from US\$ 340 in 2010. Annual per capita health expenditure during 2016-2017 was US\$ 33.2 showing increment from US\$ 28.5 in 2013/14 but still falls short of the WHO recommended US\$ 86. According to the Ethiopian Poverty Assessment, households have experienced a remarkable reduction in the poverty rate from 39% of the population living below US\$ 1.25 purchasing power a day in 2004/05 to 29% in 2010. The poverty level fell by around 20% between 2011 and 2016 (World Bank, 2019). Despite rapid economic growth, the country remains one of the world's poorest countries. Poverty and income inequality remain persistent challenges in Ethiopia.

Ethiopia's economic growth led the country to the early attainment of the Millennium Development Goals (MDG), particularly in hunger, gender parity in primary education, child mortality, HIV/AIDS, and malaria. Between 2000 and 2017, Ethiopia's HDI (Human Development Index) value increased from 0.283 to 0.463, an increase of 63.5 per cent still it is below the average which is 0.504.

Ethiopia experiences cyclical hazards leading to the humanitarian crisis including disease outbreaks, recurrent droughts, flooding, and insecurity which resulted high morbidity and mortality, people displacements (IPDs), health care interruptions, and other social and economic disruptions. In 2020,

about 8.4 million people were affected and needed humanitarian assistance. Women and children were disproportionately affected by the humanitarian crisis. For the health sector, about 5.9 million people were reported to have humanitarian needs among which women and children constituted larger proportion. Thus, it needs for urgent RMNCH interventions and strengthening of primary health care services including routine and supplementary immunization services.

1.3 Health Problems of Mothers and Children in Ethiopia

About 80% of morbidities in mothers and children are attributable to communicable diseases including vaccine-preventable diseases and sickness associated with nutritional disorders. The country has shown significant improvements in prevention and control of communicable diseases by integrating health service deliveries such as immunization and other maternal and child health services. The UN 2019 Report showed that life expectancy was at 67.85 years while IMR and under-five mortality rates were respectively 37/1000 and 44/1000 live births/year. Though mortality rates have been declining, deaths of children from preventable diseases such as pneumonia, diarrhea, malaria, neonatal problems, malnutrition and HIV/AIDS are still very high.

1.4 Health System Organization

The Ethiopian health service delivery system is structured into three-tier systems. This includes primary, secondary, and tertiary levels health care tier systems (Fig. 03).

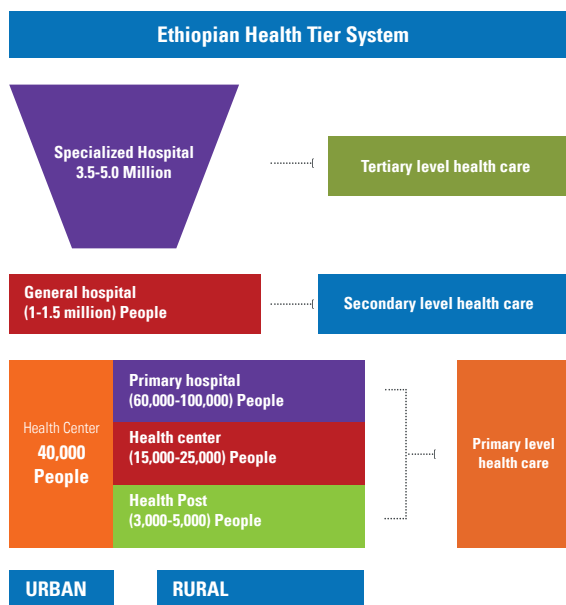


Figure 1. 3 Ethiopian Health Tier system

As illustrated in Fig. 3, the primary health care unit (PHCU) consists of health posts at the community level, health center, and primary hospital. One health center is attached to five-satellite health posts, aimed to provide services to a population of approximately 25,000. Health centers provide both preventive and curative services and serve as referral centers for health posts and as practical training sites for Health Extension Workers (HEW). Primary hospitals are organized to provide ambulatory, inpatient, and emergency surgical services to approximately 100,000 populations.

At the second tier, general hospitals are organized to provide curative health services and serve as a referral center for primary hospitals. It also plays vital role in the training of health officers, nurses, and emergency surgeons. At the third tier is the highest

or tertiary health care system consisting specialized hospitals that serves as a referral center for general hospitals and as training centers for medical doctors and specialists. Furthermore, private health care facilities at different levels supplement the overall health care delivery.

Regional Health Bureaus (RHB), Zonal Health Departments (ZHD) and Woreda Health Offices (WoHOs) provide a coordinated health management and leadership services at their respective levels. The decision-making process is decentralized from the regions and down to the district level (PHCU level). According to FMOH 2018/19 report, there are 338 hospitals, 4,063 Health Centers and 17,574 Health Posts, which the latter is staffed by 42,000 Health Extension Workers (HEWs).

1.5 EPI Service Delivery

In Ethiopia, EPI was first launched in 1980 with six antigens but expanded tremendously over the years, which the routine immunization (RI) program at present provide services with a total of 12 antigens. Expansion of EPI has significantly contributed to the prevention of maternal and child death, suffering and disability among populations including remote and

hard to reach areas. Introduction of new vaccines such as Hep-B and Hib (as Pentavalent vaccine) in 2007, PCV in 2011, Rotavirus Vaccine in 2013, Inactivated Polio Vaccine (IPV) in 2015, HPV in 2018 and Measles second dose (MCV2) in 2019 were among the greatest achievements of the program. The administrative structure of EPI in Ethiopia is designed based on the administrative structure of the country.

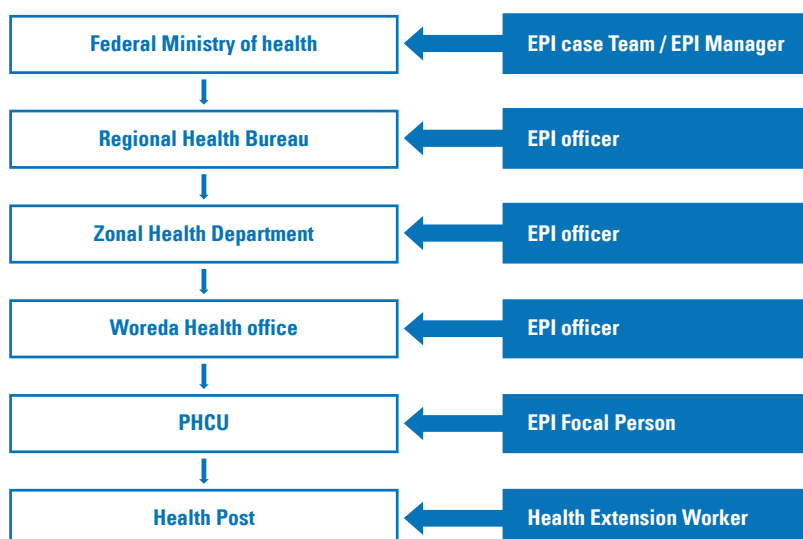


Figure 1. 4 immunization service structure in Ethiopia

1.6 Rationale for the development of new cMYP (2021-2025)

The cMYP of the EPI program is a key strategic and management document covering the next five

years in alignment with the national immunization program goals and objectives along with the second Health Sector Transformation Plan (HSTP II) and in reference to the global strategic frameworks such as Immunization Agenda 2030 and the Gavi 5.0.

In this section the immunization performance situation over the previous five years (2016-2020) of multi-year plan is analysed focusing on immunization system components of:

- i. Service delivery
- ii. Surveillance
- iii. Vaccine supply and quality
- iv. Logistics
- v. Communication/social mobilization and
- vi. Program management, capacity building and finance.

2.1 Expanded Programme on Immunization in Ethiopia

In Ethiopia, the EPI programme was launched in 1980 with the objective of reaching universal coverage to all children under 2 years of age by 1990, with a review of the policy to reduce coverage to 75% and reduce target age of children to under one year old. The Reaching Every Districts (RED) and Sustainable Outreach Services (SOS) approaches were introduced in 2003. As part of an effort in addressing the immunization inequity and increase coverage, the Periodic Intensification of Routine Immunization (PIRI) has been implemented since 2018 in selected poor-performing woredas of agrarian and pastoral regions. Other strategies to increase immunization coverage have also been implemented including Child Health Day events, intensified outreaches, and pulse campaigns.

Increasing health infrastructure and human resources over the past five years has also made an impact to improve access to quality immunization services and increasing vaccine management and storage capacity by installing significant number of SDD refrigerators.

2.2. National Immunization Implementation Guideline

The Ethiopian immunization policy implementation guideline was developed in 2004 and it has been revised in 2015 and 2019. The revised immunization policy implementation guideline (2019) highlighted the second year of life immunization platform and adolescent girl vaccination from the introduction of measles second doses (MCV2) and human papillomavirus vaccine (HPV) into the routine immunization program. Children of the under-one year of age, the second year of life, adolescent girls (9-14 years) and women of reproductive age group (15-49 years) are the targets for the currently available vaccines in the immunization program of Ethiopia (BCG, Measles, DPT-HepB-Hib or Pentavalent, Rotavirus Vaccine, Pneumococcus vaccine (PCV), OPV, IPV, HPV and Tetanus diphtheria(Td) vaccine).

The country's immunization schedule for the below-listed vaccines strictly follows the WHO recommendations for developing countries. Although no booster doses recommended in routine EPI for childhood immunization, there are periodical supplemental doses for measles and polio.

Table 1. Routine Immunization antigens, site administration and schedule

No.	Vaccines	Target diseases	Age	Route/Site of administration
1	BCG	Severe forms of Tuberculosis	At Birth or soon after	Intradermal (ID), Rt deltoid
2	PCV	Meningitis and pneumonia (streptococcal and pneumococcal)	Weeks 6,10 & 14	Intramuscular (IM), Rt anterolateral thigh
3	OPV	Poliomyelitis	Birth (OPV0), weeks 6, 10 & 14	Oral
4	IPV	Poliomyelitis	Week 14	IM, Rt thigh 2.5 cm below PCV injection site
5	DPT-Hib-HepB	Diphtheria, Pertussis, Meningitis & pneumonia associated with Haemophilus influenza and Liver disease due to Hepatitis B virus.	Weeks 6, 10 & 14	IM, Lt anterolateral thigh
6	TT/Td	Tetanus/diphtheria	At 0, 1 & 6 months, 1st & 2nd year for TT 1st dose early as possible 2nd dose 4 week after 1st dose 3rd dose 6 months after 2nd dose 4th dose 1 year after 3rd dose 5th dose 1 year after 4th dose	IM, Lt Deltoid
7	MCV	Measles	9 and 15 months	Subcutaneous (SC), Rt deltoid
8	Rotavirus vaccine	Rotavirus-associated gastro-enteritis	Weeks 6 & 10	Oral
9	HPV	Human papillomavirus, associated with cervical cancer and anogenital wart	Age ----- 0, 6 months for Quadrivalent	IM, Deltoid muscle of upper arm

2.3 Immunization Service Delivery

2.3.1 Implementation of cMYP 2016 -2020

The 2016-2020 cMYP aimed to achieve the national and sub national vaccination coverage targets set at HSTP I, a polio-free status, eliminate measles, and MNT, introduce new vaccines IPV, MCV2, MR, Men A, HPV and Yellow Fever in line with the GVAP goals and improvement of vaccine supply management and cold chain capacity at all levels.

2.3.2 Achievements of Child, Infant and Neonatal Mortality Reduction

There has been significant reduction in infant (IMR) and under 5 (U5MR) mortality rates during the last two decades, shown in Fig. 6 below, and largely believed that increased access to immunization and introduction of new vaccine has significantly contributed.

Trends of under 5, infant and neonatal mortality rate per 1000 live births from 2005 to 2019 EDHS

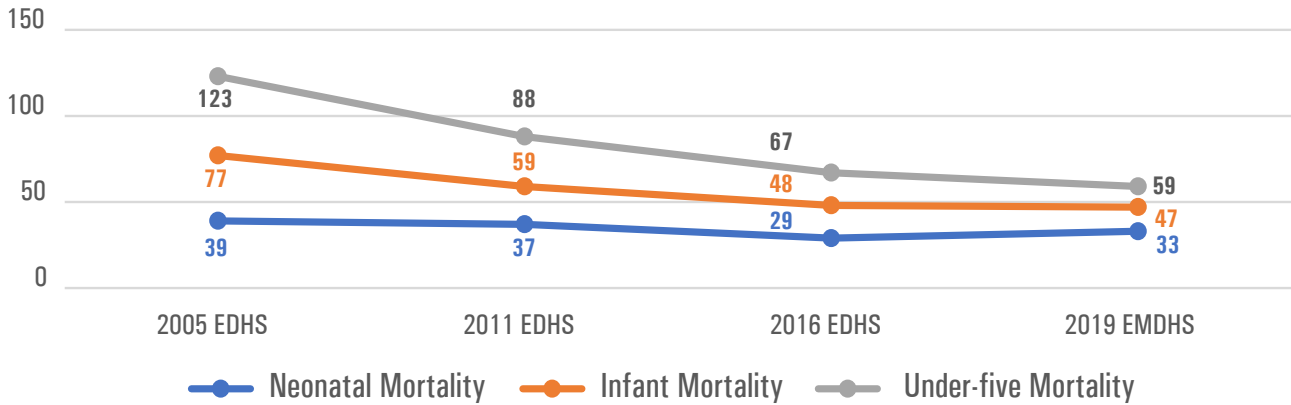


Figure 2. 1 Trends in childhood mortality rates, 2005 – 2019

2.3.3 Performance of Routine Immunization during EFY 2008-2012 (2016-2020)

Immunization performance assessed by Penta 3 and MCV1 coverage as indicators for the period 2008-2012/2016-2020 shows that coverage was maintained at 95% for Penta 3 and 90% for MCV1 with uneven coverage levels among regions. Administrative coverage was higher in Addis Ababa, Harari, Oromia and SNNP while data from Somali, Afar and Gambella was low. The estimates in both directions were inconsistent with what was shown by survey estimates. Coverage for Amhara, Tigray

and Benishangul-Gumuz regions were relatively consistent by different data sources. The most recent Penta 3 and MCV1 administrative coverage estimates for EFY 2012 (2019/2020) showed 97% and 93% respectively, with large variations between regions where coverage for Afar, Somali, and Dire Dawa was 70-80% while Amhara, Gambella and Tigray achieved between 80-90%. Coverage for Addis Ababa, Benishangul-Gumuz, Oromia, Harari and SNNPR regions remained high at more than 90% coverage. MCV1, follow similar pattern with Penta 3 with slight variations (Table 2).

Table 2. Administrative vaccination coverage of Penta 3 and MCV1 by region, cMYP EFY 2008 to 2012

Region	2008		2009		2010		2011		2012	
	Penta3	MCV1	Penta3	MCV1	Penta3	MCV1	Penta3	MCV1	Penta3	MCV1
Addis Ababa	100%	100%	100%	85%	100%	85%	154%	145%	108%	146%
Afar	100%	94%	92%	88%	82%	69%	74%	67%	74%	72%
Amhara	92%	90%	93%	90%	93%	89%	88%	84%	87%	88%
B. Gumez	99%	93%	100%	96%	97%	93%	89%	84%	90%	85%
Dire Dewa	79%	78%	78%	76%	86%	79%	79%	71%	78%	72%
Gambella	77%	61%	85%	76%	85%	74%	88%	78%	85%	70%
Haraeri	100%	92%	100%	93%	100%	100%	111%	100%	111%	98%
Oromia	100%	99%	100%	97%	97%	93%	105%	96%	104%	99%
SNNP	99%	97%	100%	97%	96%	93%	75%	93%	100%	73%
Somali	76%	71%	80%	75%	77%	71%	80%	69%	78%	91%
Tigray	89%	86%	78%	85%	91%	85%	89%	85%	89%	86%
National	98%	94%	97%	94%	96%	90%	96%	90%	97%	93%

2.3.4 Immunization data quality

Immunization data in Ethiopia varies greatly by sources such as administrative, WUENIC, and surveys largely due to differences in methodology in data collection, use of inaccurate and dissimilar denominators, inadequacy in recording, and reporting. The problem is so chronic and deep rooted that “information revolution” is one of the

four transformation agendas stipulated in the HSTP I and HSTP II. The agenda embraces data generation and digitalization, staff capacity building, motivation and practice in data management including analysis and data use for action. The overall discrepancy where Penta 3 and MCV1 coverage estimates by administrative, WUENIC and surveys between 2000-2019 is shown in Figures 2 and 3 below.

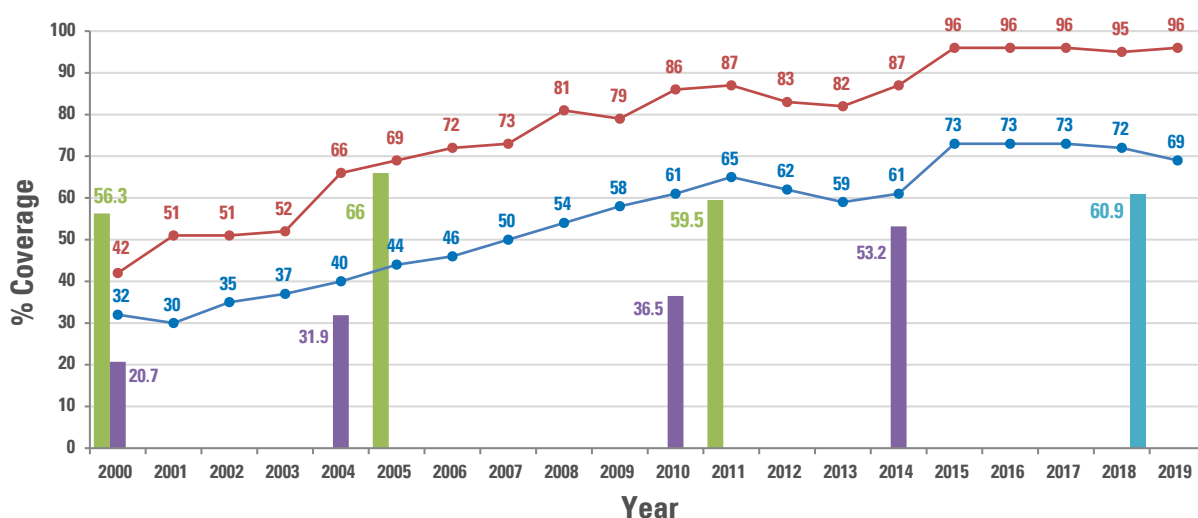


Figure 2. 2 Trends of Penta 3 coverage by different data sources from 2000 to 2019

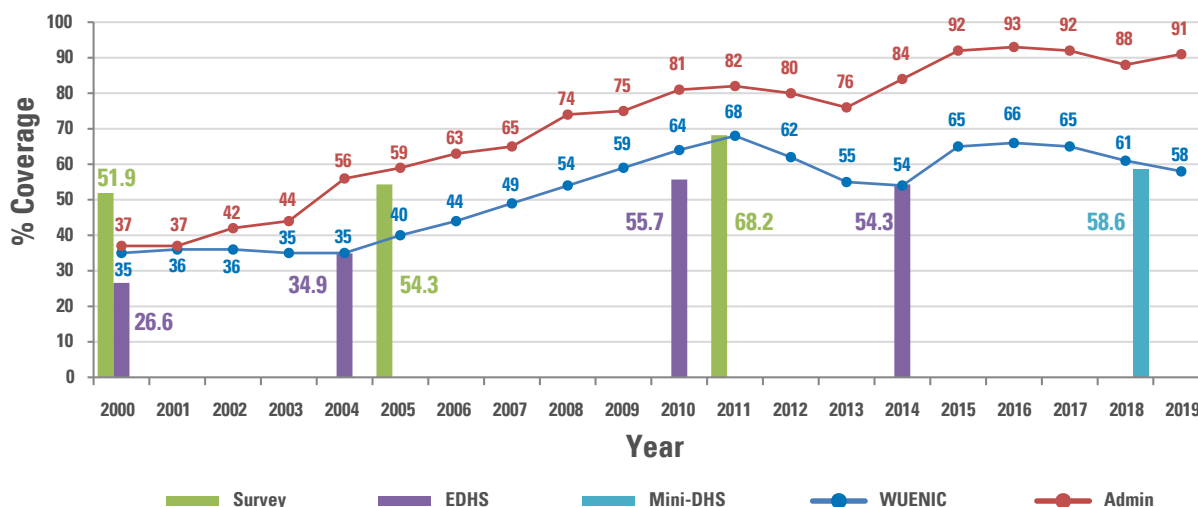


Figure 2.3 Trend of MCV1 coverage by different sources from 2000 to 2019

Recent Mini-DHS survey findings (EMDHS 2019) demonstrated that Penta 3 and MCV1 coverages were very low and only one out of four children in Afar and Somali regions received the third dose of Pentavalent vaccine. Not far from that, data for Oromia and SNNP was 53% and 50% respectively and 70-79% for Dire Dawa and Gambella. Tigray, Benishangul-Gumuz, Amhara achieved 80% to

90%. The MCV1 coverage follow similar pattern. Using dropout as an indicator, the survey revealed Drop Out Rate (DOR) for Penta1-3 and Penta1-MCV1 were similarly high in Afar with 43% and 37%, and Somali 38%, and 26%, SNNP with 30% and 20%, and Oromia with 27% and 34%. Details are shown on Table 3 below.

Table 3. Immunization coverage for selected antigens and dropout by region, Ethiopia EMDHS 2019

Region	Penta 1	Penta 3	MCV1	MCV2	DOR Penta 1-3	DOR Penta 1-MCV1	All types of vaccines	Never been vaccinated
Addis Ababa	96.3	93.1	90.6	3.3	3	6	83.3	3.7
Afar	45.5	25.9	28.5	8.5	43	37	19.8	44.9
Amhara	84.4	80.2	71.3	13.3	5	16	62.1	14.8
B./Gumuz	89.2	81.2	77.4	1.6	9	13	66.7	9.8w
Dire Dawa	95.2	74.2	74.2	17.7	22	22	53	2.6
Gambella	76.3	65	57.6	21.2	15	25	38.3	14.2
Harari	65.3	52.8	58.7	7	19	10	45.8	20.4
Oromia	73.4	53.6	48.7	5.2	27	34	29.9	18.9
SNNP	72.7	50.8	58.2	15.3	30	20	38	24.2
Somali	42.2	26.2	31.1	1.4	38	26	18.2	48.8
Tigray	95.4	84.4	82.9	17.2	12	13	73	4.6
National	76.3	60.9	58.6	9.1	20.2	23.2	43.1	19.2

The MEDHS findings also revealed that 1.25 million children were unvaccinated with Penta 3, of which 95% were from five regions. Oromia Region was home to 569,705 (47.6%) followed by SNNPR with

322,566 (25.7%) unvaccinated children. Amhara and Somali regions had 136,824 (10.9%) and 134,383 (10.7%) respectively.

Number of Unimmunized (mini-EDHS 2019)	Oromia	Amhara	SNNPR	Somali	Tigray	AA	Afar	BG	Dire Dawa	Gambela	Harari	National
	569,705	136,824	322,566	134,383	27,836	5,689	38,985	6,578	3,965	4,688	3,599	1,254,810

Similarly, marked differences of MCV1 coverage and dropout rates between Zones and Districts indicating the build-up of unprotected children with potentials of increased risk for measles outbreaks and jeopardizing the measles elimination goals. The introduction of MCV2 and the extension services to second year of life is hoped to improve coverage of not only MCV but also of other antigens. Coverage has increased steadily but has not met national,

regional, and global targets as disparities across geographic areas and population groups continue to prevail. EDHS survey findings and recent inequity assessment by UNICEF identified geographic area (pastoralist), household wealth, caregivers' education, and place of residence (urban) as determinants influencing access to and utilization of immunization services³. Details are shown on Fig. 8 below.

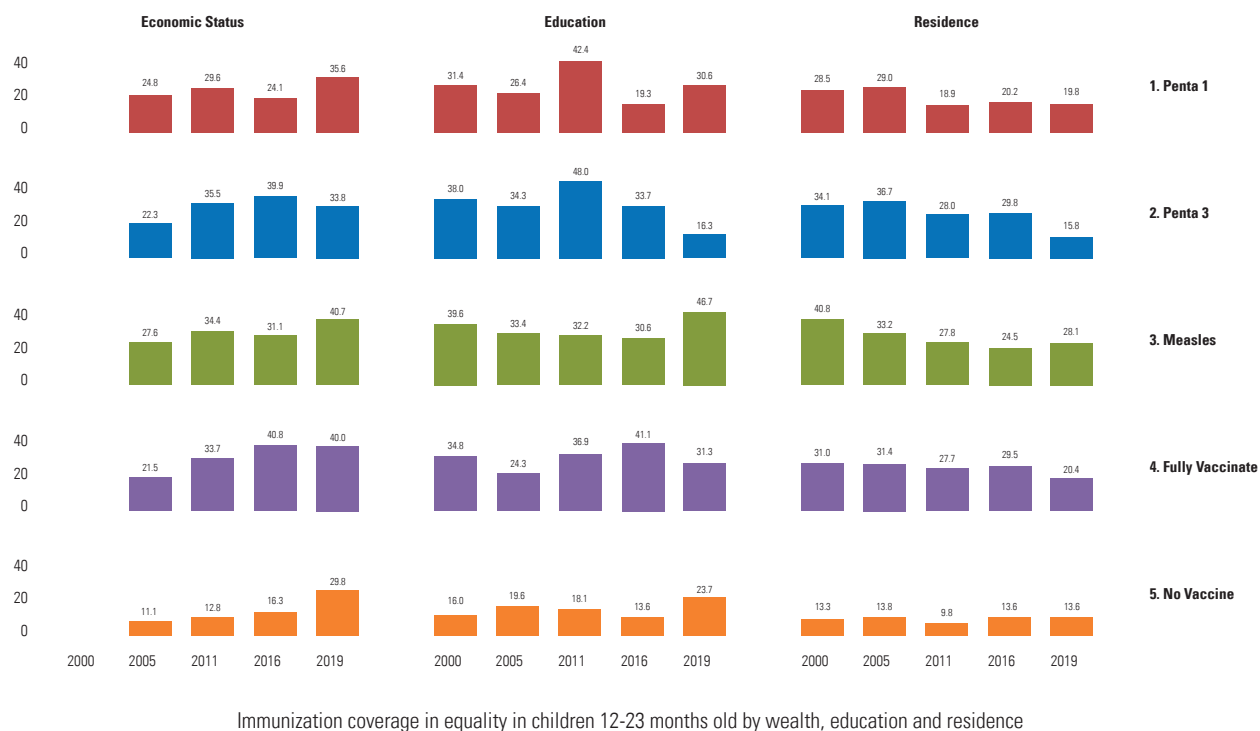


Figure 2. 4 Ethiopia (DHS2000-2019) Immunization Inequity Trend

The disparity can also be seen by examining dropout rates (DOR) where DOR in Addis Ababa, Dire Dawa and Tigray reduced from 37-7%, 56-29% and 55-29% respectively during 2005-2016 (Fig. 11). In contrast, Afar, Somali, Oromia, Gambella and SNNP regions had the highest number of defaulters during the same period. Therefore, equity analysis and reaching every child (REC) planning and implementation monitoring, targeting high-risk communities should be the focus in the future planning. Multiple factors may play as

barriers but frequent appointments for multi-dose vaccines, stock out of vaccine supplies on the date of visit are major players. Low level of awareness on vaccination schedules, fear of multiple injections and AEFI, illness of child or mother, distance and difficult terrain and lack of transportation are also identified as barriers to vaccination completion. Absence and unfriendliness of health workers and failure to provide key messages are also contributors to the high dropout rates.

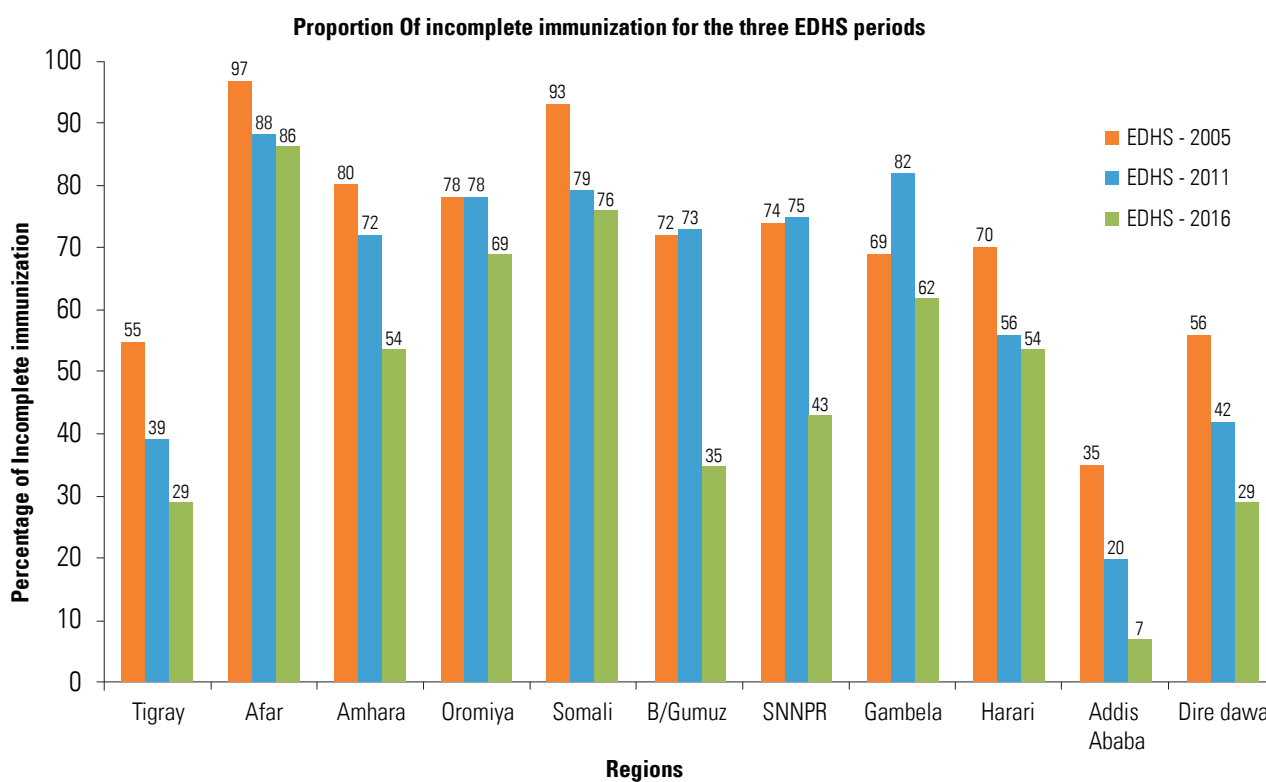


Figure 2. 5 Proportion of incomplete immunization for the three EDHS periods Melaku et.al BMC

2.3.5 Routine Immunization Service Provision Platforms and Strategies

In Ethiopia, routine immunization service is available at almost all government health facilities through one or a combination of static, outreach, and mobile (extended outreach) strategies depending on the distance between the health facility and community's settlement.

According to Service Availability and Readiness Assessment (SARA) 2018, about 81% of health facilities offer child immunization services ranging from 17% in Addis Ababa and 88% in Oromia Region. MOH administrative data report (2012 EFY), has shown that 67.1% children received vaccination from health posts while 28.4% and 4.4% of children received from health centres and hospitals respectively. Immunization services is by and large

(98.5%) provided by government health facilities as private facilities and NGOs contribute for only 1.0% and 0.5% respectively. The distribution of services in Addis Ababa City was slightly different as contributions by government, private and NGO health facilities were 82.9%, 14.4% and 2.7% respectively. Infants may start vaccination at the facility of their birth but are likely to shift to their nearest government facility for completion.

2.3.6 Reaching Every District/Child/ (RED/REC) Approach

The RED strategy approach is a five-component strategy aimed at reaching all eligible children in all districts and was first introduced in 2004. It was implemented in phases to reach current level of nationwide implementation. Since the introduction of the approach, there has been increased effort to train health workers and use guidelines. The RED guide has also been revised and contextualized as recently as 2018, reprinted and distributed to the regions. As the result of RED implementation, the EPI program has generally improved and DPT 3 has increased but it was also realized that its practical application of RED components was sub-optimal to achieve the intended provision of equitable and quality immunization services. The MOH has continued its effort to enhance and maximize the operationalization of the RED strategy and currently leading an effort to roll out of the strategy to woreda and health facility levels through the development of a simplified and user friendly version of the RED guide for use at PHCU level. At present the PHCU level RED guide which was field tested is in the process of printing in different languages and will soon be ready for use by the lower level health facilities to enable them to reach every child with quality services.

2.3.7 Periodic Intensification of Routine Immunization (PIRI)

In 2018, MOH initiated Periodic Intensification of Routine Immunization (PIRI) strategy to improve immunization coverage, reduce dropouts and the transmission of vaccine-preventable diseases. PIRI is tailored to improve the immunization inequity and to reach every child with available and new vaccines using a combined routine immunization and campaign-style strategies in 140 low performing woredas, including all woredas in the developing regional states and in selected zones of agrarian regions. PIRI is instrumental in increasing coverage but has a limitation that the approach lacks the system to track achievements particularly in measuring additional number of children reached by the PIRI approach.

2.3.8 Urban Immunization

Immunization programme in urban areas is often masked by the notion of better access to services and increased utilization leading to high vaccination coverage. The true picture is, however, to the contrary due to multiple factors including large number of undocumented and underserved populations. Urban population has seemingly better geographic access to health services, service utilization is less known. Urban population is rapidly growing as rural populations and migrants are attracted to seek better opportunities and end up settling in slums with difficulty accessing services.

Undocumented migrant populations distort the denominator with which vaccination coverage is calculated sending an inflated coverage data. The problem is a lot more complex and the health system alone cannot solve. Particular attention and strategies are urgently required to address the

problem, especially to reduce disparities and missed opportunities. Besides, strengthening community health facility linkage, communication, and referral system among health facilities in urban are essential to ensure children complete the required doses.

2.3.9 Catch-up vaccination

Catch-up vaccination refers to vaccinate children who missed doses for any reasons (e.g. delays, security, stock outs, access, hesitancy, service interruptions, etc.) and for which they were eligible as per the immunization schedule. Providing catch-up vaccination at fixed, outreach, mobile and/or PIRI mini campaigns or local innovative strategies are part of immunization programs. Immunization services are interrupted due to various reasons including security incidence, public unrest, flooding, and COVID-19 pandemic. The missed children should be reached with specific catch-up plans. As catch-up vaccination is not frequently practiced program, it is critical to prepare catch-up guidelines.

2.3.10 Impact of COVID-19 on Immunization Programme

Following a report of the first case in March 2020, COVID-19 pandemic has affected the health system in many ways. The pandemic diverted the attention of policy makers, political leaders, and public health professionals. In Ethiopia, some health facilities have been designated as solely COVID-19 isolation and treatment sites by leaving out other essential health services provision. Health sector monthly analytic report in April 2020 by MOH showed that immunization coverage in the country has declined with an average of 6% with variations among regions. The draft report from the recent

“National Facility Assessment for Monitoring the Continuity of Essential RMNCAH Services during COVID-19” commissioned by UNICEF and conducted by Development Research and Training (dab) in Amhara, Oromia, SNNP, and Somali regions of the country reported that outreach services were interrupted in 1.6% of the surveyed facilities. In 46% of health facilities reported that demand for health care services had declined. Highly affected health care facilities were primary hospitals (60%) followed by health centres (49%) and health posts (34%). The reported reasons for the decline in demand were fear of exposure to COVID-19 among service seekers while visiting the facilities (77%), fear of being labelled as having contracted COVID-19 (58%), mixed messages - i.e. stay at home message conflicting with expectation to seek essential health services - (55%), and lack of information on availability of services (41%). It is essential to prepare scale-up plans for intensifying immunization activities to close the gaps and prevent of VPDs outbreak.

2.3.11 New Vaccines Introduction

In the previous cMYP (2016-2020), it was planned to introduce six new vaccines, Inactivated Polio Vaccine (IPV), measles second dose, MR, Men A, Human Papilloma Virus, and Yellow Fever vaccines into the national immunization program. The introduction of IPV, HPV and MCV2 was conducted in 2015, 2018 and 2019 respectively. Post introduction evaluation for HPV and MCV2 vaccines indicated the successful implementation for HPV and MCV2 vaccines into the routine immunization system. Additional efforts are needed to reach out-of-school girls and improve rollout of MCV2.

2.3.12 Polio SIAs and Progress in Polio Eradication Initiative

In 1988, the WHO endorsed a resolution to eradicate poliomyelitis by the year 2000, which then the Global Polio Eradication Initiative (GPEI) was established. Ethiopia has adopted the Global Polio Eradication Initiative since 1996. Since then, several polio vaccination-campaigns have been conducted at national and sub-national levels. Case-based AFP surveillance was established in 1998. Ethiopia introduced Inactivated Polio Vaccine (IPV) into the routine immunization schedule in 2015. The trivalent oral polio vaccine (tOPV 1, 2, 3) was switched to bivalent (bOPV 1, 3) in 2016 based on epidemiological evidences and global directions. The country has been conducting a series of successful national and sub-national polio SIAs.

Ethiopia was considered a polio endemic country until 2001 when the last indigenous confirmed wild poliovirus was isolated from a child in the SNNP Region. However, the country experienced multiple polio outbreaks following five separate importations from neighbouring countries. There were 22 reported WPV cases in 2004, 17 WPV cases in 2005, three WPV cases were reported in 2006, and other three

cases were reported along the border of Sudan and in 2008. Besides, a total of 10 confirmed WPV cases were reported from Dollo Zone of Somali Region in 2013. The last WPV case was reported from the same zone and region on 5th January 2014.

Several rounds of polio SIAs at national, sub national and high risk targeted were conducted since the start of PEI in Ethiopia. The following table shows selected SIA conducted during the last cMYP period (2016-2020). Ethiopia has been certified as polio free status in 2017. WPV3 was eradicated in Ethiopia and the world in 2017. Africa WHO/AFRO declared polio free in August 2020 and awarded a certificate in October 2020.

Polio SIA has been continuously conducted at national and sub-national covering 19-33% of the under-five population in selected zones based on risk analysis. Case based AFP surveillance is still in place at all the regions. A summary of the polio NIDs and mOPV2 SIAs in the country during the period 2013 through 2020 with administrative coverage are shown in below table.

Table 4. Polio (bOPV) SIAs coverages, 2016-2019, Ethiopia

NO	REGION	2016				2017				2019				2020			
		1 st Round SIAs		2 nd Round SIAs		1 st Round SIAs		2 nd Round SIAs		1 st Round SIAs		2 nd Round SIAs		3 rd Round SIAs		Vaccinated	%
		Vaccinated	%	Vaccinated	%	Vaccinated	%	Vaccinated	%	Vaccinated	%	Vaccinated	%	Vaccinated	%		
1	Amhara	493,801	96.8	487,971	97	499,489	96	499,671	96					513,257	96		
2	Oromia	2,531,921	105.9	2,460,982	103	2,795,361	114	2,531,385	104	1,450,642	103	1,473,317	103	2,666,079	104		
3	SNNPR	252,012	105.3	251,381	100	259,515	103	267,046	106					274,064	101		
4	Tigray	75,344	102	74,398	103	73,063	98	74,420	102					74,133	99		
5	Gambella	101,724	94.5	114,846	100	116,601	97	126,103	98	142,794	103	144,528	96	147,655	99		
6	B/Gums	184,119	97.3	185,868	102	190,473	98	192,243	108					184,601	92		
7	Afar	273,500	98	253,910	100	250,853	99	251,090	99					268,855	98		
8	Dire Dawa	59,516	97.2	60,791	99	60,698	103	63,564	104					72,184	114		
9	Harari	46,113	95.6	46,241	97	49,237	99	49,338	101					51,554	104		
10	Addis Ababa																
11	Somali	1001325	96.3	1,022,712,	98	1,062,709	98	1,056,775	98	1,176,428	99	1,163,897	98	1,230,955	99	1,414,120	100%
Total		5,019,375	101.6	4,959,135	100	5,357,999	106	5,111,635	102	2,769,865	101	2,781,742	100	5,482,337	101	1,414,120	100%

Remark: Target for 2019 in 1st and 2nd rounds was 19% of the national target

Ethiopia is currently affected by circulating vaccine derived polio viruses type 2 (cVDPV2) since 2019. The first cVDPV2 case was reported from Dolo Zone of Somali Region on 20 May. Ethiopia has conducted

six rounds of SIA with mOPV2 vaccines in each affected and other risk zones in the three regions between June 2019 to March 2020 (Table. 5).

Table 5. mOPV2 SIAs coverages, 2018-2020, Ethiopia

No.	REGION	2018				2019				2020	
		1 ST Round SIA		2 ND Round SIA		1 ST Round SIA		2 ND Round SIA		2 ND Round SIA	
		Vaccinated	%	Vaccinated	%	Vaccinated	%	Vaccinated	%	Vaccinated	%
1	Oromia					738,808	106			736,808	108
2	SNNP					975,771	106			1,027,710	111
3	Somali	497,953	99	509,049	102	281,336	101	588,839	100		
	Total	497,953	99	509,049	102	1,995,915	104	588,839	100	1,764,518	108

2.3.13 Measles SIAsW

Despite implementation of measles elimination strategies including conducting measles SIAs and introducing MCV2, Ethiopia is not on track to achieve measles elimination targets. Thus, the country developed a measles elimination plan for 2018-2022 to accelerate implementation of the elimination interventions.

Ethiopian routine immunization coverage data indicates there are close to 1.2 million children unvaccinated for measles vaccine with MCV1 coverage of 58%, suboptimal population immunity. In addition, since the introduction of MCV2 in routine immunization in 2019, coverage progressed to 53% for 2012 EFY. Ethiopia has conducted several measles SIAs in the past 17 years, primarily targeting children age 6/9-59 months

(follow up vaccination campaigns) and children of age 6/9 months to 14 years (catch-up vaccination campaigns), mostly achieving coverage of above 95%. The first phase “catch-up” vaccination campaigns, targeting children 6 months to 14 years, were conducted from 2003 to 2005 and covered all regions, zones and woredas. Following the catch-up measles SIAs, Ethiopia has been conducting follow up measles SIAs almost every 2-3 years targeting children 6/9-59 months depending on the analysis of measles epidemiology and susceptible population profiles. Despite of the efforts to improve routine immunization and frequent measles SIAs, rampant measles outbreaks still has continued to occur in the country, particularly every 2-3 years after each measles SIA because of accumulation of susceptible population due to persisting low routine measles vaccination coverage.

**Measles immunity profile, Ethiopia
As of December 31, 2022**

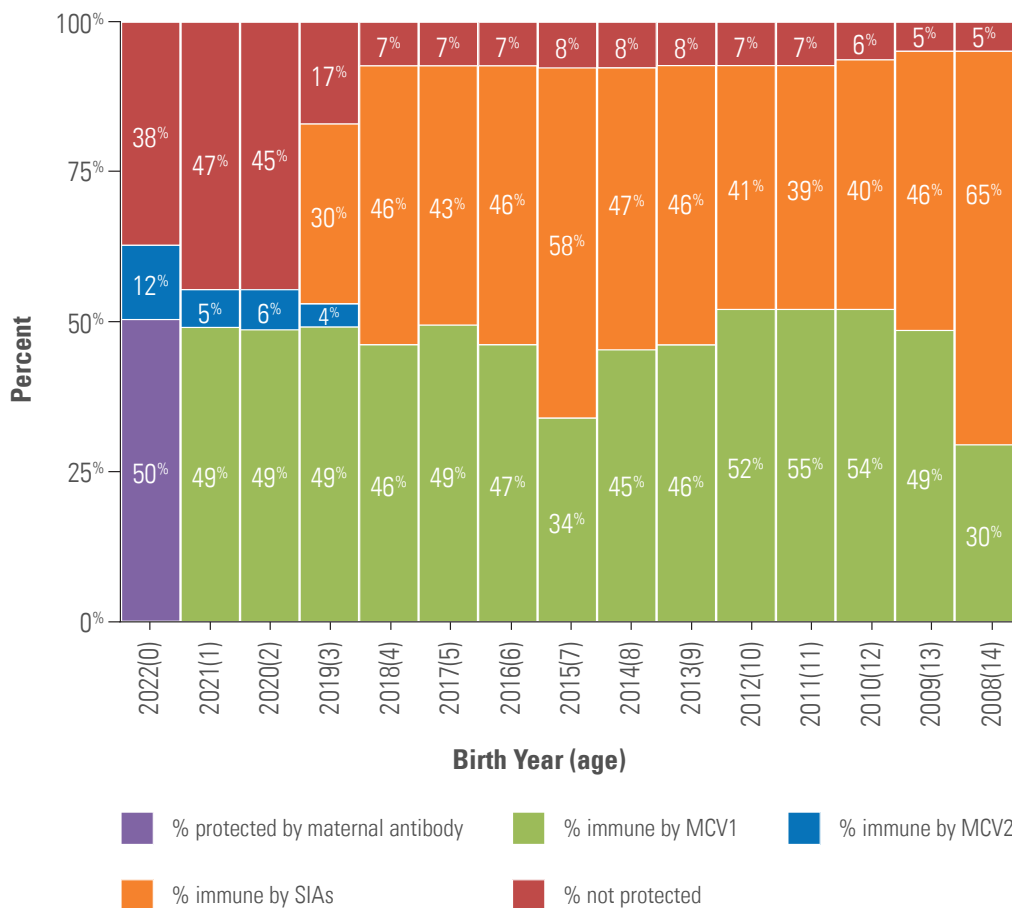


Figure 2.6 Measles immunity profile for population ≤ 19 years, Ethiopia, 2020.

The planned measles follow up SIA for 9-59 months old children in April 2020 was postponed to July 2020 because of the COVID-19 pandemic. Because of the continued progressive measles outbreaks in many parts of the country, the MOH decided to conduct the measles vaccination campaign during the early transmission of COVID-19 in the country

by undertaking all the necessary precautions to prevent further spread of COVID-19 during the campaign. This most recent campaign achieved 97% administrative coverage.

Table 06 Measles Supplementary Immunization Activities, Ethiopia, 2011-2020

Year	Number of Zones/ Woreda	Target population		Coverage			Remarks
		6/9-59 months	6/9 month- 14 years	Vaccinated	Admin (%)	RCS1/ Coverage survey (%)	
Dec 2011	146 woredas (potential risk of measles outbreak and high-risk drought hot spot), targeting age group 6 months-14 years		7,034,264	7,034,264	96	96.4	Covered total 32 Zones: all Zones in Somali and selected zones in Oromia, SNNP, Amhara, Tigray and Afar.
June 2013	All woredas in all regions, targeting age group 6-59 months	11,873,928		11,609,484	98	91	
2015	368 woreda selected from all regions except Addis Ababa	4,795,622	56,637	5,046,349	104		Emergency SIAs in drought affected woredas. It was 9–59 months in Benishangul Gumuz Region.
2016	All except Addis Ababa – Woredas		25,706,550	24,935,354	97	94	545 woredas in 62 zones covered
2017	All woredas in all regions		24,814,965	24,070,516	97	93	All woredas
2020	All woredas in all regions		14,950,084	14,501,581	97		All woredas

Ethiopia is now planning for a measles SIA in 2022 targeting all children 9-59 months old and implementing innovative strategies to reach zero-dose and under-immunized children.

2.3.14 Maternal and Neonatal Tetanus SIAs

Ethiopia was declared free of Maternal and Neonatal Tetanus by the WHO and UNICEF expert validators in June 2017 and it is a significant achievement for the country. However, Neonatal Tetanus death

is believed to be prevalent in pocket areas of 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 sustain MNTE, Ethiopia developed sustaining strategies including:

1. Reduce to less than one case of neonatal tetanus per 1,000 live births by 2010,
2. Increase Penta 3 coverage >80% in all woredas,

3. Increase access to skilled attendants at birth and clean cord care practices to >80% in all woredas,
4. Achieve high Td2+ coverage or Td protection among pregnant women to >80% in every woredas, achieve Td vaccination of school children, achieve 100% timeliness, accuracy, and completeness including zero-dose reports from all reporting health facilities and strengthening programme communication on Td immunization and MNCH services.

2.3.15 Meningitis A vaccination campaign

Ethiopia has had outbreaks of meningococcal meningitis occurring every 8-12 years. A risk assessment in 2012 showed that 5 regions were at high risk and the remaining 6 regions were at low to moderate risk for meningitis A outbreaks. Accordingly, the country planned to conduct Men A mass vaccination campaigns for individuals of age 1-29 years (70% of total population) in three phases over a three-year period from 2013 to 2015. The geographical meningitis epidemic risk levels and risk-based phases of the Men A SIAs is shown in Figure 18.

Phase I Men A SIA was conducted in October 2013 in the most high-risk areas of the country that are found at the African meningitis belt. During phase I Men A SIA, a total population of 18,926,853 in the age 1-29 years living in 30 zones in six regions (Tigray, Amhara, Gambella, Benishangul-Gumuz, SNNP, and Oromia) were targeted. Phase II Men A SIA was conducted in October 2014 targeting a total population of 26,910,795 in the age 1-29 years living in 45 zones in three regions (Addis Ababa City Administration, Oromia, and SNNP). The third phase of Men A campaign was conducted in October/November 2016 targeting a total population of 15,910,620 who are 1-29 years old living in 257 woredas, 27 zones in seven regions (Afar, Amhara, Harari, Oromia, Somali, Tigray, and Dire Dawa City Administration). High administrative coverages

were achieved in all three phases of the Men A mass vaccination campaigns with above 97.6% and post campaign coverage survey report for the third phase mass vaccination campaign showed coverage of 94%.

2.4 Disease Surveillance

2.4.1 Vaccine-Preventable Diseases Surveillance

In Ethiopia, VPD surveillance is implemented within the framework for the Integrated Disease Surveillance and Response (IDSR) strategy; the strategy 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 was 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. Recently, Maternal Death Surveillance and Response (MDSR), scabies, and perinatal death have also been included into reportable diseases.

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, such as, pediatric bacterial meningitis (PBM) and

Rotavirus gastroenteritis are also undergoing. Ethiopia has achieved 91.7% national completeness and 90.2% timeliness for disease surveillance in 2020.

2.4.1.1 AFP Surveillance

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; 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%.

Currently, cVDPVs have emerged as a global key challenge in the final stage of eradication efforts. Ethiopia is currently affected by circulating vaccine derived polio viruses type 2 (cVDPV2) starting from 2019 to 2020, with first onset of paralysis in 20 May 2019 occurred in Somali Region/Dolo Zone. Cases of cVDPV2 have been then confirmed in several regions, namely Somali (Dollo Zone), Oromia (West Arsi Zone), SNNPR (Wolayita Zone), and in Amhara region (Oromo special zone). In addition, three cVDPV2 have been isolated from three environmental sample from Addis Ababa in 2019. As response to the cVDPV2 outbreaks, Ethiopia has been conducting a series of SIAs with monovalent oral polio vaccine type two (mOPV2), in each affected and risk areas between June 2019 to March 2020 (Table 5).

Table 7. Summary of AFP surveillance indicators in Ethiopia, 2016-2020 (Source EPHI VPD weekly update)

Indicators	Target	2016	2017	2018	2019	2020
NP-AFP rate per 100,000 < 15 Yrs.	2.0	3.1	2.5	2.3	2.6	2.5
Stool adequacy	80%	91%	92%	93%	90%	90%
Timelines and completeness of reporting of priority diseases	80%	-	86.2%	89.6%	89.12%	90.2%
	90%		88.4%	93.1%	93.4%	91.7%
Investigated < 2 days of notification	80%	93%	92%	93%	89%	-
Specimen arriving at lab < 3 days	80%	99%	99%	99%	98%	79.8%
Specimen arriving in good condition	90%	85%	92%	89%	95%	98%
Non-polio enterovirus isolation rate	10%	9.10	7.20	7.00	3.90	6.8
Timely Lab result within 14 days of receipt	80%	89%	90%	91%	90%	67.4%
Proportion of AFP cases with zero/ unknown doses	0	9%	10%	5%	6%	-
Number of cases with wild polio virus	0	0	0	0	0	0
Proportion of polio cases with zero/ unknown/ doses	0	0	0	0	0	-?

2.4.1.2 Measles surveillance

In Ethiopia, measles is a major health problem and common cause of morbidity and mortality in children. Ethiopia initiated measles case-based surveillance in 2003, integrated with the AFP surveillance which was supported by laboratory investigation starting from 2004. The measles case-based surveillance has been established to ensure that any area

where measles virus may still be circulating is detected in a timely manner and no imported case is detected late. Though measles surveillance has identified outbreaks and cases each year and major surveillance indicators are achieved nationally, some surveillance indicators were not achieving the target. Trends of measles surveillance performance indicators for the previous years is indicated in Table 6.

Table 8. Measles case-based surveillance performance indicators, 2010-2020 (Source: measles surveillance update 2020)

Measle Surveillance Quality Indicators, Ethiopia, 2010 - 2020												
Indicators	Target	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Annualized rate of investigation of suspected measles case per 100,000	≥2	3.8	7.3	5.1	6.2	6	4.8	3.6	3.1	2.9	2.7	2.4
Non- measles febrile Rash Rate	≥2	2.6	2	3.8	3.9	2.1	2.3	1.9	2.4	3.2	2.1	1.4
Proportion of Woreda with ≥1 cases per 100,000 with a blood sample (%)	≥80	83	96	99	100	80	76	63	69	70	80	54
Proportion of reported measles cases with blood specimen (%)	≥80	100	100	96	99	91	42	100	100	100	100	100
Proportion of measles IgM+ (%)	<10	14	29	26	35	53	49	40	18	13.2	27	36

In 2020, a total of 1503 confirmed measles outbreaks were reported compared to 2255 in 2019 and 1204 in 2018. A total of 108 woredas were affected by

measles outbreaks in 2020 compared to 125 in 2019, and 55 in 2018. (see Table 7).

Table 9. Summary of Measles Outbreaks, by Year, Ethiopia, 2010 – 2020

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
#of Measles Outbreak	76	60	196	146	243	293	128	67	55	142	112
#of Woredas Affected with Measles Outbreaks	59	51	143	125	192	242	113	61	55	125	108
#Igm + cases from the Outbreak	309	248	945	623	1402	1567	690	315	241	792	531
#EPI-linked cases	3092	1530	2582	3178	3982	9054	2159	1194	963	1363	972
#Total Confirmed Outbreak cases	3201	1776	3527	3801	5384	10,621	2849	1509	1204	2155	1503

The measles incidence rate in the country used to be varied from year to year, mainly affected by measles SIAs (Table). Measles incidence in 2019 was reported to be 40 per million population per year, with wide variation among regions, ranging from

20 per million population per year in Tigray to 76 per million population per year in SNNPR and Addis Ababa (Table 8). There is also wide variation in the measles incidence among zones (Fig. 10).

Table 10. Measles Incidence Rate by Region, Ethiopia, comparison between 2018 & 2020

Region	Incidence Per 1,000,000 population		
	2018	2019	2020
Addis Ababa	7	76	27
Afar	12	24	23
Amhara	7	33	17
B/Gumuz	1	25	9
Dire Dawa	4	42	24
Gambella	165	50	2
Hareri	4	38	0
Oromia	1	40	21
SNNPR	6	39	19
Somali	93	76	19
Tigray	4	20	15
National	16	40	19

In 2019, the most affected regions by measles outbreaks were Oromia, SNNPR, Amhara, and

Somali regions have been contributing of majority of the measles cases in the previous years.(see Fig 11)

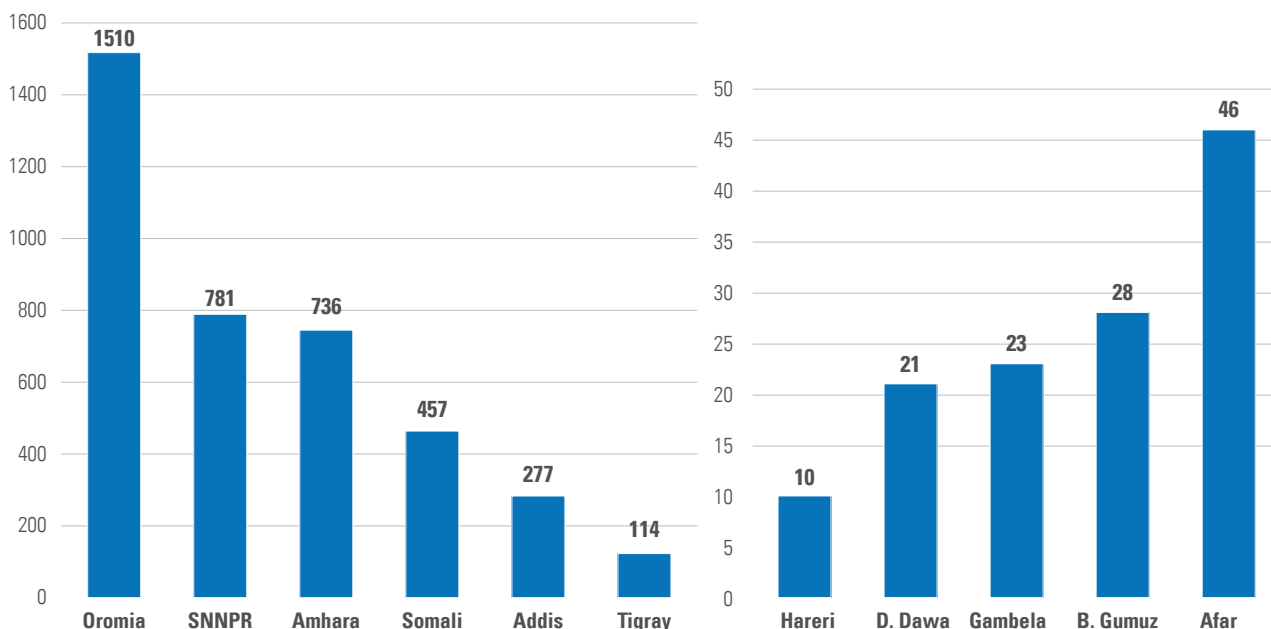


Figure 2. 7 Comparison of Confirmed Measles Cases by High and Low Contributing Regions, Ethiopia, Jan-Dec 2019

Larger proportion of measles cases occur in the age group below five years, though there has been

gradual increase in the proportion of measles cases in adults as shown in Fig. 12 below.

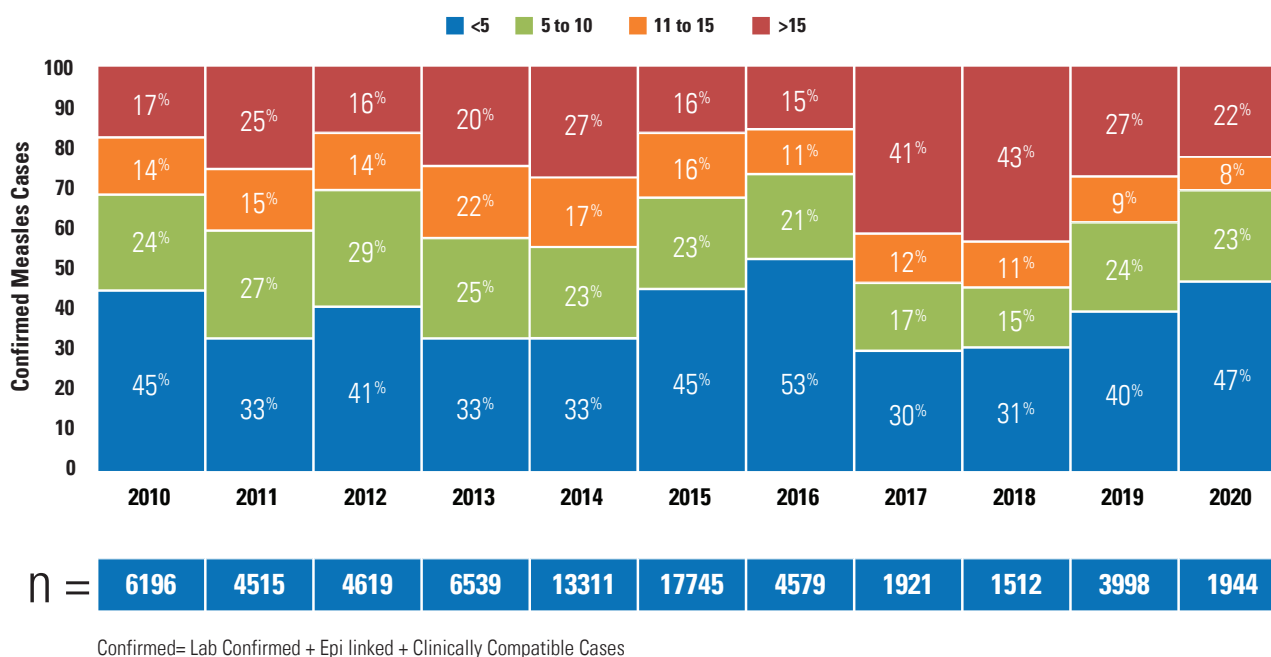


Figure 2. 8 Trend of Confirmed Measles Cases by age Distribution, 2010–2019, Ethiopia)

2.4.1.3 Rubella Surveillance

The measles surveillance platform is also used to identify rubella cases, 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. The trend of confirmed rubella cases for the previous 10 years is indicated in Fig.13 below.

**Lab Confirmed Rubella Cases by Year, Ethiopia
2010 - 2020**

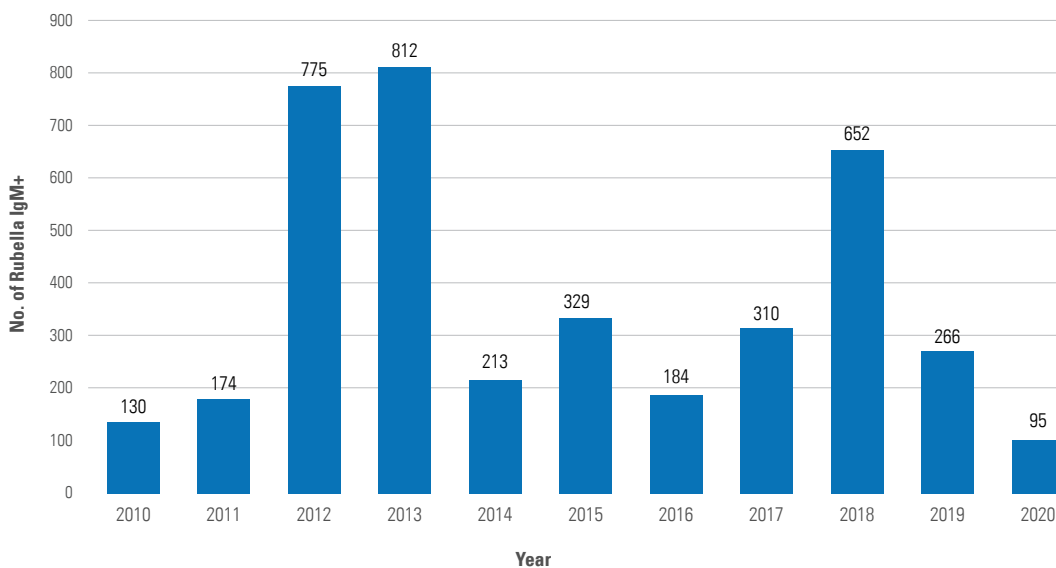


Figure 2.9 Lab confirmed Rubella Cases by Year, Ethiopia, 2010-2020

Children of age below 10 years account for majority (84%) of the confirmed Rubella cases. The age and

geographic distribution of confirmed Rubella cases is indicated in Figs 14.

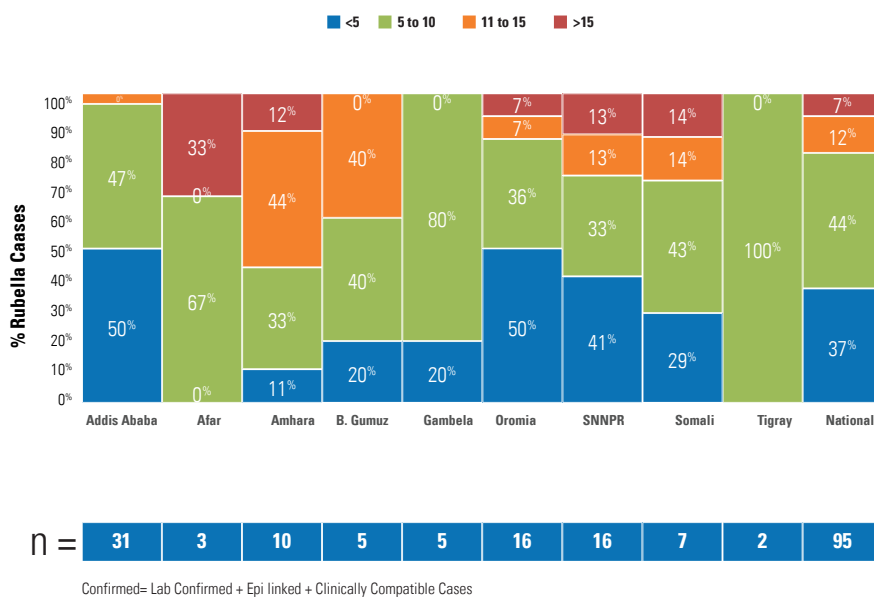


Figure 2.10 Age distribution of Confirmed Rubella Cases by Region, Ethiopia, Jan to Dec 2020

2.4.1.4 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. As MNT is not an eradicable disease, the first milestone is to achieve MNT elimination in all countries, while the second is to maintain elimination status in all districts of countries that have achieved validation status.

In Ethiopia, efforts to reduce NNT began in 1980 with the start of the EPI program which included TT immunization of women of reproductive age, with more focus to pregnant women. This was further strengthened by including 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. Considering the population size and traditional value towards neonatal death, there was an assumption that there might be unreported cases of NNT, as 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 has been a major gap. Following

the success of MNTE, the country entered in to 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
- Ensuring reliable NT surveillance
- Introduction of school-based immunization, where feasible

Ethiopia was validated for elimination of Maternal Neonatal Tetanus (MNT) in June 2017. Sustaining the MNT elimination through the recommended strategies will be the major strategic direction in this strategic planning period.

2.4.1.5 Paediatric Bacterial Meningitis/Hib Surveillance

Hib and HepB vaccines were introduced in the routine immunization program in May 2007, while Pneumococcal Conjugate Vaccine (PCV) 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.

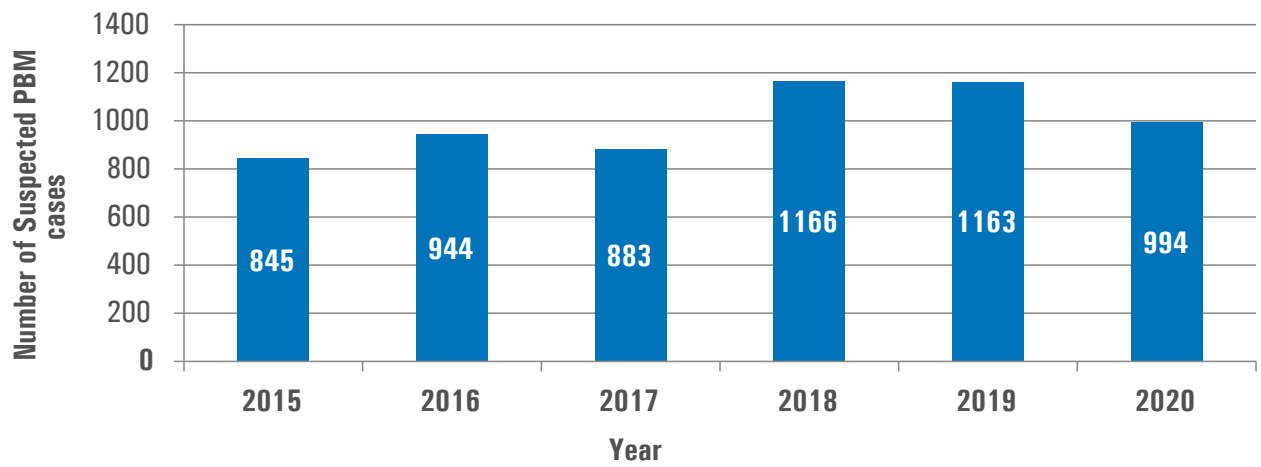


Figure 2.11: Number of Suspected Pediatrics Bacterial Meningitis Cases per Year from 2015-2020

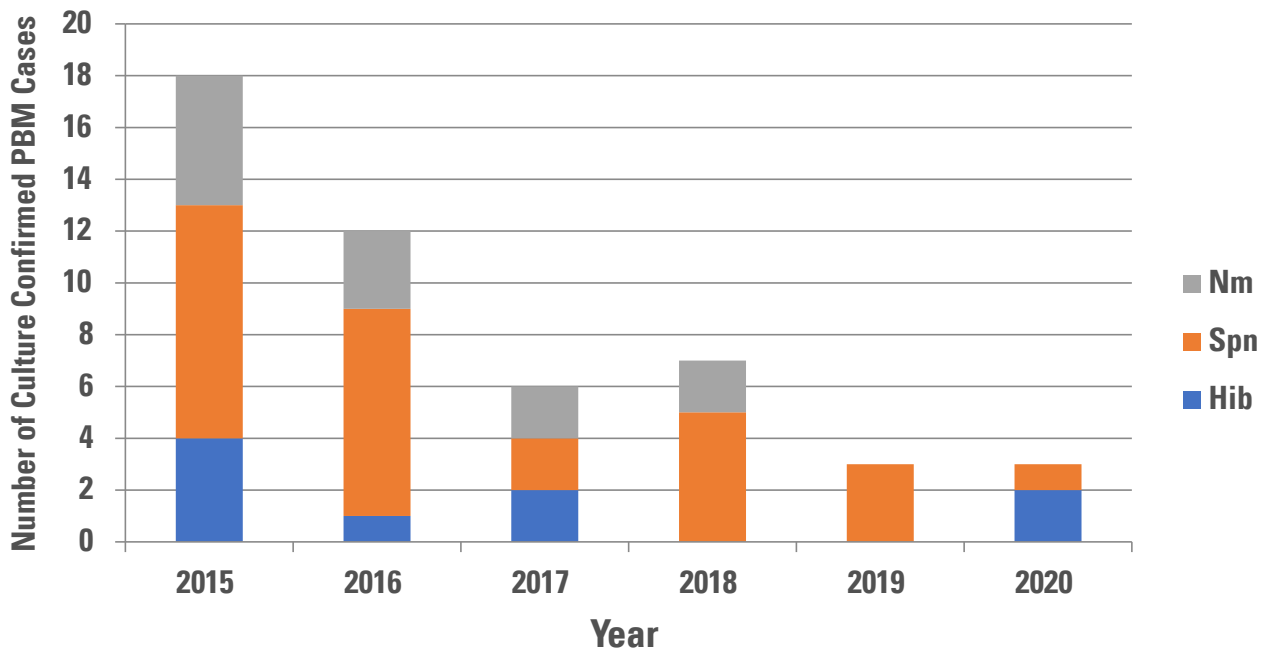


Figure 2.12 Etiologies identified for PBM, 2015-2020, Ethiopia;

Note: etiologies are HiB, Streptococcus pneumoniae (Spn) and Neisseria Meningitides (Nm)

2.4.1.6 Rotavirus Surveillance

The FMOH 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 Black Lion Hospital with further expansion to other two sites in Yekatit 12 and Betezata Hospitals in 2008 and 2011, respectively.

Sentinel site coordinators and site members were designated and trained to coordinate the day-to-day activities. Rotavirus vaccine was introduced in November 2013. Rota Sentinel surveillance is ongoing in referral hospitals where there are teaching hospitals.

Table 11. Rota Virus Positivity Rate, sentinel surveillance indicators, 2015-2020, Ethiopia

Indicators	Target	2015	2016	2017	2018	2019	2020
# of <5 acute diarrhea hospitalizations reported	>=80	301(126%)	210(88%)	180(75%)	225(94%)	353(148%)	208(87%)
% stool specimens collected within 2 days of admission	>=90	100	100	100	100	100	100
% of collected stool specimens that arrive at laboratory for testing	>=95	100	100	100	100	100	100
% of received specimens that are tested	>=90	100	100	100	99.1	98.9	100
(%) ELISA Rotavirus confirmed cases	>=20%	301(100%)	210(100%)	180(100%)	223(99.1%)	349(98.9%)	38(18%)

2.4.2 Laboratory

2.4.2.1 Polio Laboratory

The national polio laboratory is located in the EPHI. Since its establishment, the laboratory has scored an excellent proficiency test and onsite review evaluation scores.

2.4.2.2 Measles Laboratory

The measles national laboratory is 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. There are also two regional laboratories in Amhara and SNNPR (Hawassa) but do not do tests due to lack of reagents, adequate sample comes from the regions and other related problems.

2.4.2.3 Rota Laboratory

Rotavirus infection was determined by using an antigen capture enzyme immunoassay (EIA; ProSpecT™ Rotavirus kit, Oxoid Ltd, United Kingdom) at the national polio and measles laboratory

of the Ethiopian Public Health Institute (EPHI). All positive samples were further characterized by molecular methods at the Rotavirus Regional Reference Laboratory (RRRL): SAMRC Diarrheal Pathogens Research Unit, Department of Virology, Sefako Makgatho Health Sciences University, Pretoria, South Africa. The rota laboratory is in the same premise with polio and measles laboratory and all the necessary resources such as equipment, reagents and trained personnel are available. The measles laboratory was participate on EQA and the achievement were 100%.

2.4.2.4 Bacteriology Laboratory

The three hospitals conduct sentinel surveillance for pediatric bacterial meningitis (PBM): Tikur Anbessa Hospital, (TAH), Yekatit 12 Hospital and Gondar University Hospital, are still doing PBM detection and treatment starting since their establishment at the accredited bacteriology laboratory at EPHI. In 2019 and 2020 there is no culture confirmed case of Neisseria Meningitides and the culture confirmed Streptococcus pneumonia decreased year to year.

2.5 Immunization Supply Chain Management

The success of any immunization activity, whether routine, campaign, or VPDs emergency responses, ultimately depends upon having the right product available in the right quantity at the right time and place. Immunization supply chains (iSC) have a unique attribute due to their dependency on a well-

functioning end-to-end cold chain management to ensure vaccines potency to the last mile, and ultimately to every person being immunized. iSC requires adequate, appropriate, and functional cold chain and transportation infrastructures and well skilled human power, quality data to ensure availability of quality and potent vaccine at all level of the supply chain.

2.5.1 Effective Vaccine Management

The Global EVM design helps countries achieve high standards of performance in immunization supply chain. It also helps to best practices that need to be promoted, scaled up, and sustained at all levels. The Effective Vaccine Management (EVM) initiative is a corner stone for strong immunization supply chain. EVM is generally geared along with the six supply chain essentials namely: system Design, Cold Chain Equipment (CCE), Temperature monitoring & control (TMC), Distribution, Human Resource (HR) and Data;

The MOH has conducted Effective Vaccine Management Assessments, (EVMA) in 2019, to evaluate the performance and identify areas of improvement. The assessment result showed an improvement from the 2013 EVM cumulative score, which was 65% to 70%. The assessment showed an improvements in majority of the criteria except for three indicators, E3 (storage capacity (i.e. vaccine, dry supplies& transportation capacity)), E5 (maintenance of building, cold chain equipment and vaccine delivery vehicles) and E9 (MIS & supportive functions).

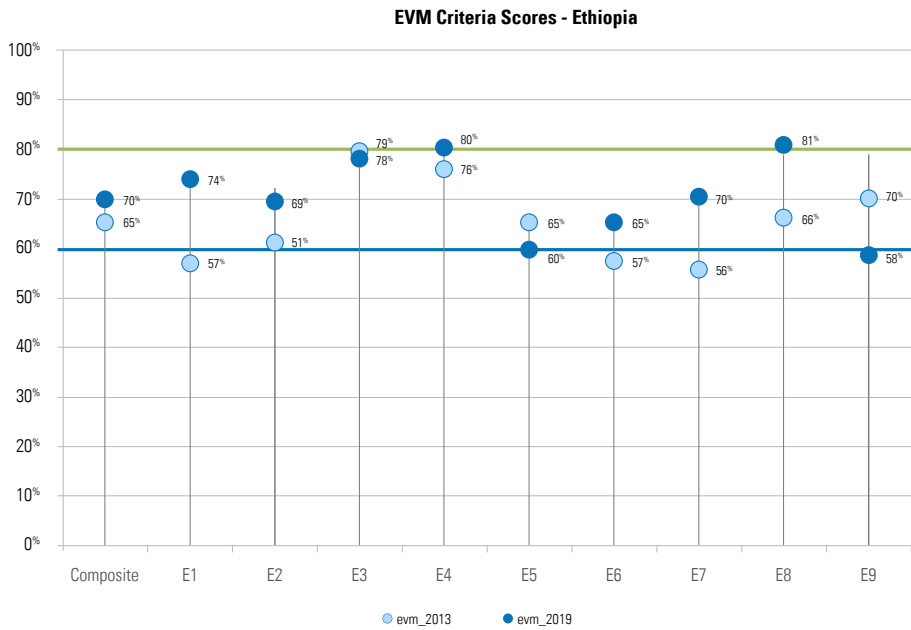


Figure 2. 13 Assessment results EVMA 2013 & 2019 – Composite and Criteria score

Figure 35 below shows the performance by supply chain level for the two assessments conducted in 2013 and 2019. The 2019 result shows that there has been an improvement in the composite scores at the primary store (National) from 60% to 78% and Sub-national level (Hub) from 64% to 74%, whereas there is no change (63%) at the lowest distribution

points (Woreda) and there is decline at service points (Health Facility) from 71% to 65%. Comparison of the criteria scores for 2013 and 2019 assessments at national and sub national levels shows significant improvement as the level progresses in all the criteria whereas the opposite is true for the Woreda and health facility levels.

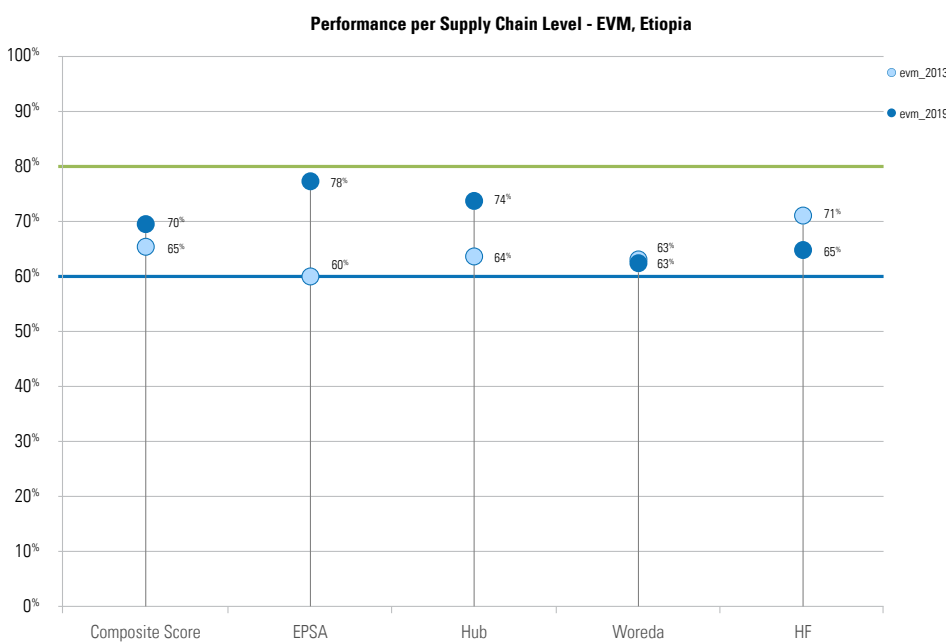
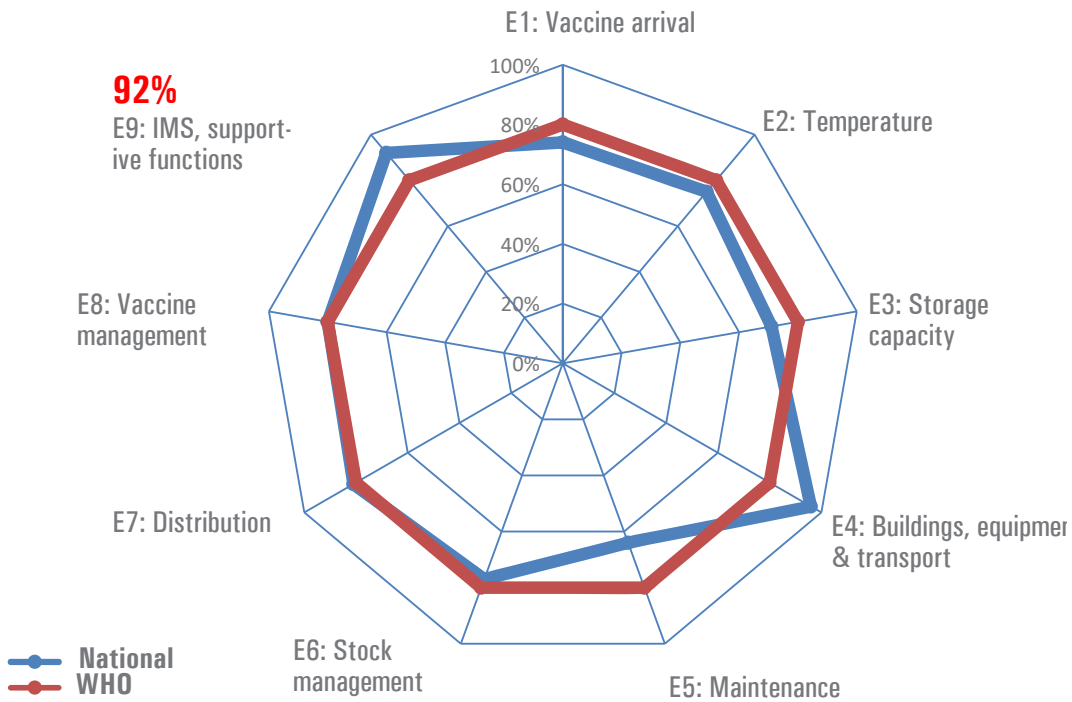
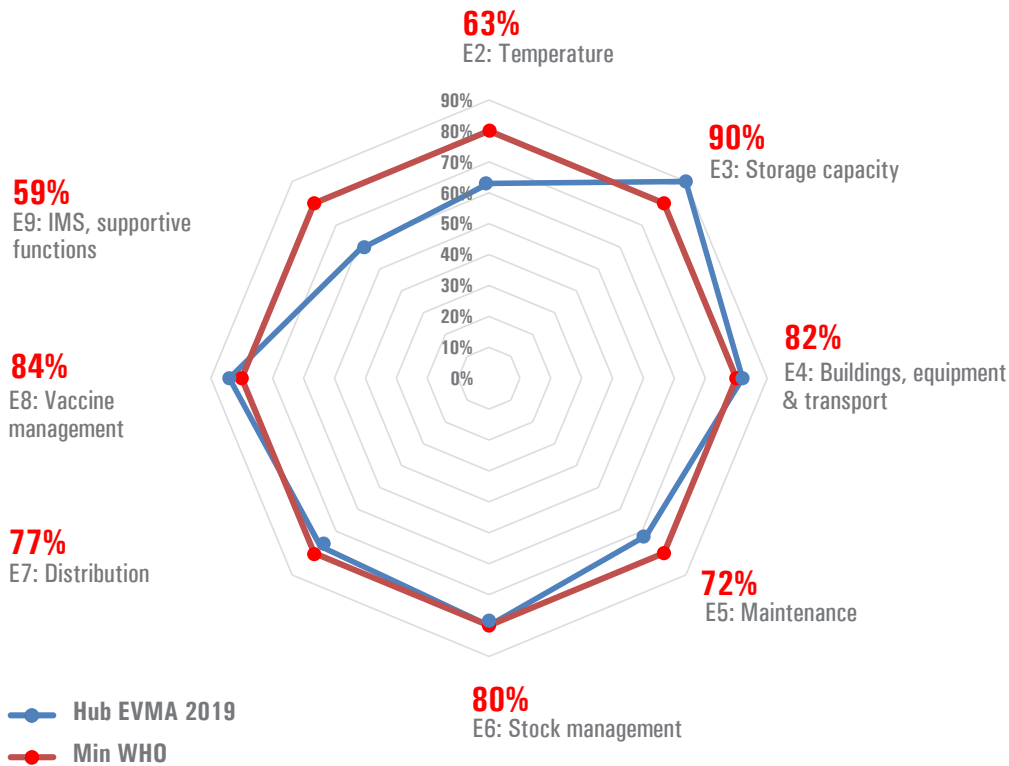


Figure 2. 14 EVM performance per supply chain level for 2013 and 2019

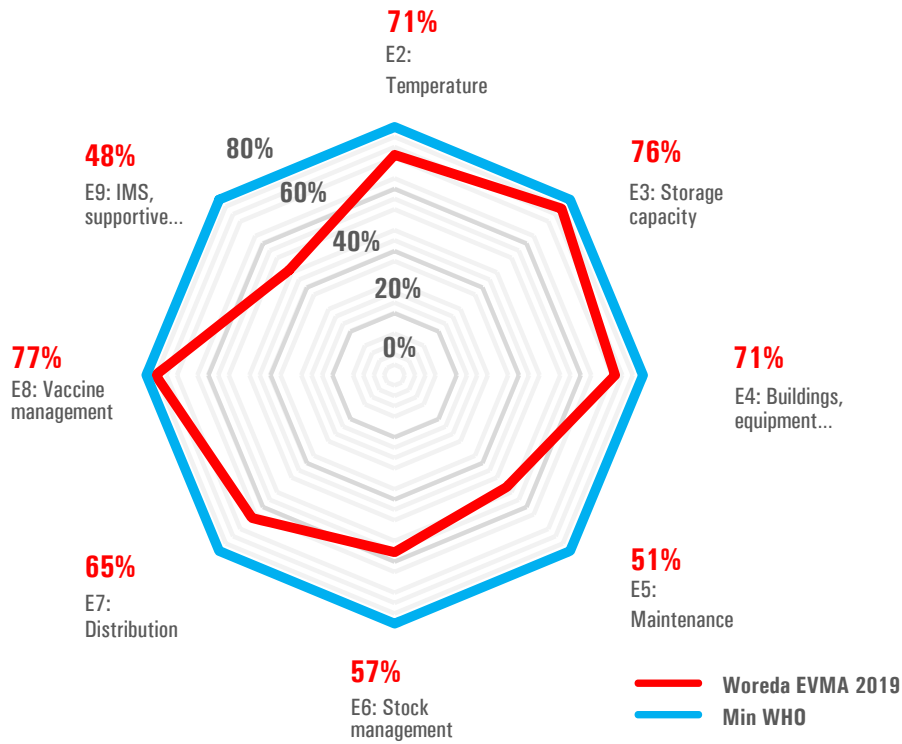
National level EVMA 2019 Result by criteria



Hub Leve EVMA 2019 result



Woreda level EVMA 2019 result



HF level EVMA 2019 result

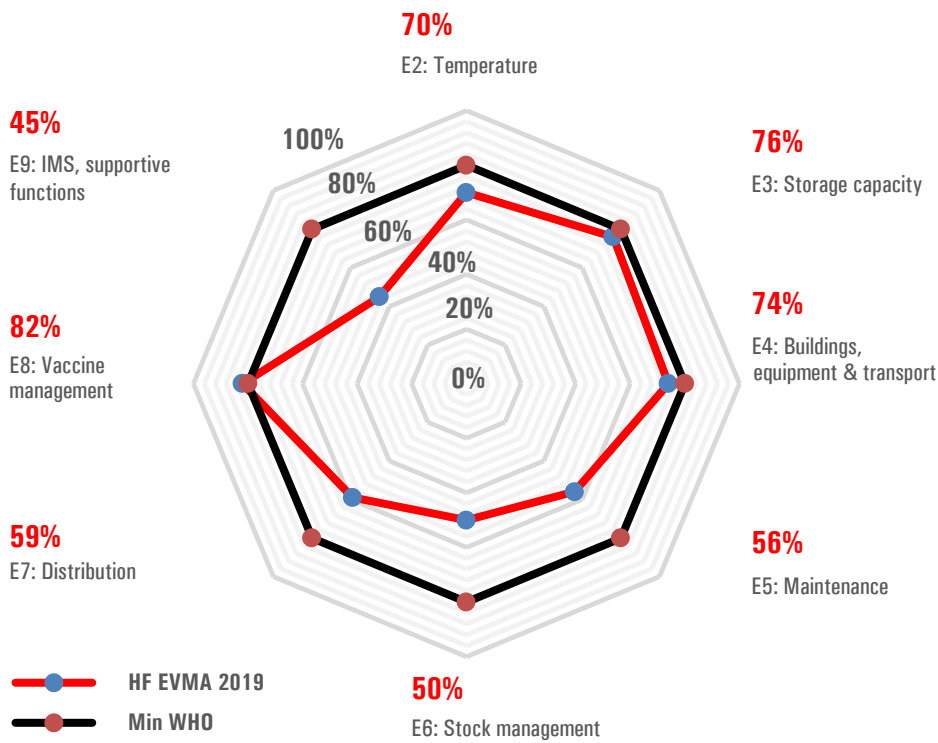


Figure 2. 15 EVMA performance in supply chain level by EVM criteria 2019 EVMA

Based on the 2019 EVMA result, continuous improvement plan (cIP) is developed for the identified gaps with implementation period from 2021 to 2025.

2.5.2 Cold Chain Equipment Management

The vaccine cold chain is not only an integral part, but the very backbone, of an immunization program. It is a system for storing and transporting vaccines at recommended temperatures from the point of manufacture to the point of use, thus ensuring the potency and safety of vaccines throughout the transport and storage phases.

Ethiopia CCE Expansion and Replacement Plan (2018-2020) and implementation

- The cold-chain system has to be rehabilitated periodically and expanded to meet the changing requirements of an immunization programme. Managers are encouraged to use this process to improve quality of service, increase efficiency of the system and reduce operational costs. The rehabilitation planning process should involve an assessment of the impact of expected changes on the required capacity at each level of the programme. Both static and outreach immunization service delivery depend on a reliable, adequate and functional cold chain system.
- In the context of Ethiopia, equipment lifespan, functional status, the shift from Kerosene refrigerators to electric and solar driven cold chain equipment, the expansion of the immunization services close to community, the introduction of new vaccines and other interventions such as campaigns were the key reasons for the development of the cold chain rehabilitation and expansion plans. In addition, there has been a growing demand for cold chain equipment in Ethiopia as a result of population growth, expansion of health services, and an increase in immunization coverage. Moreover, there is a continuous need to replace aging and

non-functional cold chain equipment. Because of the indicated (above) reasons, Ethiopia has developed CCE Expansion and Replacement Plan (2018-2020). EFSA (PSA) transition plan was in advance stages in most hubs to reduce the five tier system in to a mix of four/three-tier system.

- All CCE procured and installed before 2013 are going to be replaced taking into consideration the 10-year lifespan of CCE. This will be complemented by the fact that all absorption refrigerators will be phased out by 2022 from the vaccine Supply Chain of the country irrespective of ages. If there are CCE procured after 2013 and not meeting the CCE technology requirement, replacement of these kind of equipment will be also considered.
- The new and underutilized vaccine introduction plan for the coming 5 years includes measles second doses (or MR), HPV, Td, MenA, HepB at birth and Yellow Fever.
- Consideration is made to population projection for the coming 10 years to enable the programme to meet its requirement in terms of NUVI plan and population increase in alignment with the lifespan of cold-chain equipment which is considered 10 years.
- As vaccination campaign is one of key strategies that aim at increasing population immunity against vaccine-preventable diseases and have the potential to constrain the cold chain capacity, 25% additional storage capacity need is considered for vaccination campaigns and other interventions during estimation of the storage capacity requirement.

In 2017 onwards, the GAVI CCEOP project was commenced with total budget close to 27mUSD to equip health facilities with optimal cold chain equipment

In 2018, addressing access limitation to immunization service in four developing regional states: Somali, Afar, Benishangul-Gumuz & Gambella) and in 2019 covering regional disparity in equity and coverage among regions in pastoral areas of Agrarian Regions: Oromia: Borena , Guji, West Guji,, Bale); SNNPR: South Omo zone, Bench Maji Zone and in all rural District with less than 80% coverage. Accordingly, a total of 846 refrigerators were installed from the total 934 systems accounting for 91%. The remaining units are pending installation due to security and other unforeseen reasons.

The challenges with poor data quality of the national cold chain inventory data, delay in operational deployment plan development, procurement process and installation and shortage of the budget are the main challenges encountered through the implementation both (SDG-PF & CCEOP) projects. On top of this, security situation in some part of the country is one of the pressing issue still ongoing and affecting the timely installation and completion of the projects.

Since in 2013, the country procured and installed 61 Cold rooms, 2 freezers were installed and as a result cold storage capacity increased from 1,300 in 2013 to 4,248 cubic meters. In the last five years, over 27 cold rooms were regularly maintained (both corrective and preventive) at different hubs. Five new cold room's installation at different EPSA hubs: (AA-Hana Mariam (2), AA- Jackros (1) Semera (1) & Assosa (1) in 2019 as a result of new five cold room installation cold storage volume increased by 462M3 gross. Re-location of cold rooms from RHB/ Zonal HO to EPSA compound made in five sites (Dire-dawa, Semera, Dessie, Nekemte & Assosa).

Monitoring of cold rooms temperature through installing of Remote Temperature Monitoring devices (RTMDs) is being conducted to all EPSA hubs, (except Negele hub). In addition, temperature monitoring devices with GPS to monitor the

temperatures of refrigerator trucks equipped with RTMD recently and using data for action will start soon. Through Gavi HSS & other funding sources, the country procured over 8,134 Solar Direct Drive refrigerators (SDDs) and installed over 99.8% of it to accommodate newly introduced vaccine, replacing the old and expanding immunization service to hard and difficult to reach areas. The SDG turnkey project was initiated to procure 6000SDDs and equip health post with optimal cold chain. The overall all implementation of this project is rated as 99%, (only 59 refrigerators are pending installation due to different reasons). These efforts bring up the total health post with cold chain equipment (optimal and non-optimal) providing immunization service point estimated to more than 50%.

Existing CCE at woreda cold stores will be re-positioned as needed and non-functional CCE will be repaired until woreda cold stores are bypassed through EPSA's supply chain strategy, at which point the remaining CCE equipment will be relocated to health facilities.

National Cold Chain Equipment Inventory

National cold chain equipment inventory (CCEI) was conducted in 2020 with the objective of quantifying and characterizing their variety, capacity and functional status among HPs, HCs, Hospitals, and administrative units throughout the country. The survey also aimed to evaluate the cold chain storage capacity and distribution by the level in the health system as well as to identify immediate and long-term requirements thereby meeting future EPI needs

According the CCEI survey data:

A total of 20,765 refrigerators and freezers were found at 20, 797 different levels of the health structure from all regions of Ethiopia, summarized as follows;

Table 12. Model type and manufactures of equipment

Model	Qty	Percent (%)	Manufacturer	Qty	Percent (%)
RCW 50EK	3577	17.2	Haier	3960	19.1
TCW 15R SDD	2552	12.3	Sibir	4068	19.6
HTC-40 SDD	2405	11.6	SunDanzer	1149	5.5
TCW 3000 AC	2085	10.0	Vestfrost	1060	5.1
V 170EK	2072	10.0	B.Medical system	2613	12.6
V 110EK	1844	8.9	Dometic/B.Medical system	5823	28.0
HTC-60 SDD	1113	5.4	Dulas	291	1.4
BFRV 55 SDD	1149	5.5	Electrolux	190	0.9
PR 265EK	812	3.9	Electrolux/Dometic	116	0.6
MK 304	474	2.3	Other	467	2.2
MK 404	319	1.5	Unknown	200	1.0
HBC-340	255	1.2	Zero	828	4.0
VC 200 SDD	208	1.0	Total	20765	100.0
Other	1592	7.7			
Unknown	308	1.5			
Total	20765	100.0			

- From the total 40,593 passive containers inventoried, 27,029 are vaccine carriers (VC) and 13,564 cold boxes (CB)
- The national average of health facilities (hospitals and health centres) with functional incinerators was reported to be only 26%
- From the total of 20,765 equipment inventoried, 13,170 (63.4%) were functional, 6204 (29.9%) nonfunctional due to variety of reasons, 836 (4.0%) obsolete and 555 (2.7%) uninstalled.

Table 13. Functionality Status of the equipment by facility type

Facility Type	Functional Status									
	Functional		Non-functional		Obsolete		Uninstalled		Total	
	N	%	N	%	N	%	N	%	N	%
Comp./Speci./Referral Hospital	37	86.0%	3	7.0%	0	0.0%	3	7.0%	43	100.0%
EPSA Centarl Store	18	90.0%	0	0.0%	1	5.0%	1	5.0%	20	100.0%
EPSA Hub	148	87.6%	11	6.5%	2	1.2%	8	4.7%	169	100.0%
General Hospital	116	72.0%	33	20.5%	7	4.3%	5	3.1%	161	100.0%
Health center	5032	59.4%	2798	33.0%	404	4.8%	233	2.8%	8467	100.0%
Health Post	6416	65.6%	2783	28.5%	315	3.2%	267	2.7%	9781	100.0%
Primary Hospital	288	73.7%	80	20.5%	15	3.8%	8	2.0%	391	100.0%
Woreda Vacine Store	1115	64.3%	496	28.6%	92	5.3%	30	1.7%	1733	100.0%
Total	13170	63.4%	6204	29.9%	836	4.0%	555	2.7%	20765	100.0%

Reason for non-functionality includes lack of spare part, power supply, lack of technicians etc.

Table 14. Reasons for the non-functionality of the equipment

Reasons for Non Functionality	N	Percent (%)
Other	139	2.2
Power	1730	27.9
SP & Technician	2106	33.9
Spare part	1371	22.1
Technician	801	12.9
Tool kit	57	0.9
Total	6204	100.0

2.5.3. Vaccine Direct Delivery

Since the beginning of the transition in 2014, EPSA has been engaged in a number of activities to operationalize the transition of vaccines including updating LMIS, carrying out system design and delivering vaccines directly to Woredas and Health facilities. In addition, 20 refrigerated trucks were procured and deployed to the 17 EPSA hubs to increase the efficiency of vaccine distribution to the last mile

Three EPSA hubs (Bahir Dar, Jimma and Mekele) were selected to begin the transition by taking over storage and distribution of vaccines from RHBs and ZHDs, and scaling up delivery to zones from all other hubs by 2015. The second phase was to bypass all ZHDs and deliver vaccines from all EPSA hubs to Woreda Health Offices (WoHOs) by end of 2016. The third phase which is currently under implementation is delivering vaccines to all WoHOs and accessible health facilities. The final phase is direct delivery to health facilities by bypassing WoHOs.

Implementation of this initiative was possible through collaborative work between EPSA (Head Office and Hubs), MOH, RHBs, ZHDs, WoHOs and development partners supporting vaccine supply chain. Furthermore, costing analysis has been done for facility level distribution with multi stakeholder analysis and dialogue made before starting the last mile distribution.

Currently, EPSA has directly delivering vaccines to a total of 1067 health facilities and 876 woreda health offices across all regions and the 2 city administrations. The plan for the year 2012 E.C. was to deliver for a total of 1200 health facilities. This means the Agency has achieved 87.1% of the direct delivery plan. There are hubs that achieved over their plan.

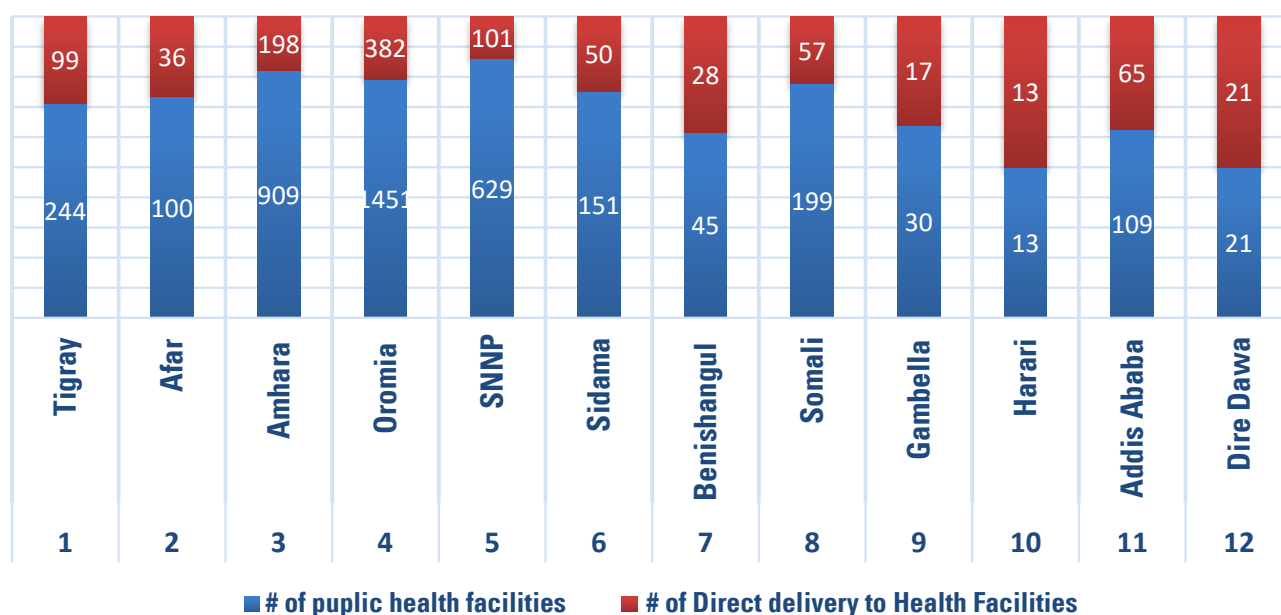


Figure 2. 16 Regional distribution of health facilities accessed by direct delivery, 2020.

2.5.4 Injection safety and waste disposal

Injection safety is the safe handling of all injection equipment, routine monitoring of the availability and use of safe injection equipment, and correct disposal of contaminated injection equipment. A safe injection is one that results in no harm to the recipient, the vaccinator, and the surrounding community. Starting from 2002 Ethiopia uses.

- Disposable, sterile, single-use syringes, and needles, which are used once only and then disposed of safely. They are used for mixing freeze-dried vaccines (BCG and measles) with their diluents and will never be re-used.

- Auto-disable (AD) syringes are the preferred type of injection equipment for administering vaccines. These are also used once and cannot be re-used, because the plunger of the syringe cannot be pulled back again once it has been pushed forward to inject the vaccine.

In addition, leak proof boxes are specifically designed to receive syringes with their needles attached with minimal capacity of 100 syringes and should not be reused. The recommended waste disposal method is incineration in all health facilities using incinerators. However, burning and burial is also used in health facilities. Waste disposal for mOPV2 vaccine is centralized. mOPV2 is a vaccine used for

polio outbreak response only. All empty, partial used and broken mOPV2 vials are collected and disposed at national or sub national waste disposal facilities.

2.5.5 Vaccine, Supply and Quality

In Ethiopia, the bulk of vaccine costs for new vaccines and underused vaccines are financed by GAVI, and the government. Government pays co-financing for new vaccines while the cost of traditional vaccines (BCG, TT, and OPV) and injection materials are financed by the government, 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 woreda and service delivery levels.

Limitation of reliability and timelines of vaccine delivery and collection with absence of regular update on vaccine storage space availability at center, hub and facility level, Shortage of means of transport at all level, lack of computerized stock control system are some of the challenge for vaccine supply and distribution. Weak temperature management during storage and transportation, vaccine stores are not temperature mapped, weak and no calibration of temperature monitoring devices, freeze indicators are not used during transportation. There is also inadequate distribution capacity due to shortage of refrigerator vehicles at EPSA level there is no self-sustained power reserve for refrigerated vehicles.

Equipping all 17 WICR, Remote Temperature Monitoring Devices (RTMD) procured and 10 WICR were equipped with Fridge Fone and installation with senior technician done. Generally, 17 CRs (cold rooms) have been installed with a remote temperature monitoring devices and 10 RTMD in 11 CRs locations are currently properly functioning. RTMD are installed in all cold room. As a result vaccine store managers and supervisors of WICR are using installed RTMDs to monitor their respective WICR temperature remotely.

All WICR (previous and new arrival) are equipped with standby generators. To prevent power surge, more than 2000 voltage stabilizer procured and distributed sites using electricity. Also for all WICRs big size voltage stabilizers procured distributed

2.5.6 Adverse Event following immunization (AEFI)

The Ethiopian Food and Drug Authority (EFDA) is National Regulatory Authority in the country with the mandate to monitor the safety of all medical products including vaccines. The regulatory authority has been working to improve patient care and safety in relation to the use of medicines and vaccines in collaboration with various stakeholders. Vaccines used in national immunization programs are considered safe and effective when used correctly. Vaccines are, however, not risk-free and adverse events will occasionally occur following vaccination.

AEFI surveillance system focuses on vaccine safety and it utilizes tools such as guidelines and procedures geared to assure public health protection through the use of vaccines with proven safety profile. The current system for monitoring drug safety (pharmacovigilance) is being coordinated by the National Regulatory Authority (NRA) called Ethiopian Food and drug authority). EFDA has been working to improve patient care and safety in relation to the use of medicines and other medical interventions in collaboration with various stakeholders.

An effective and well-functioning AEFI surveillance system will eventually boost trust, public confidence and will also help improve the quality of the immunization program in the long run. It is therefore essential that all stakeholders like NIP, EFDA, vaccine manufacturers, laboratories, healthcare providers and development partners make concerted efforts to provide documented evidence through an effective AEFI surveillance system. This will ensure the provision of best immunization services to the community including effective monitoring and response to AEFIs.

In the past five years, the regulatory authority in collaboration with other stakeholders has performed the following major activities;

- Preparation, revision and dissemination of AEFI surveillance tools such as the national AEFI guideline, AEFI case reporting and investigation formats for healthcare providers
- Established the national AEFI causality assessment committee that evaluate and assign causality for serious AEFI reports
- Provision and follow up of training of personnel involved in AEFI surveillance. In this regard more than 2000 health professionals were trained about AEFI.
- Conducted supportive supervision of AEFI surveillance activities to regions and health facilities
- Conducted active AEFI surveillance on HPV vaccine in selected primary schools in Addis Ababa
- Coordinated and conducted serious adverse event of the AEFI investigation and causality assessment process of serious AEFIs during campaign immunization (19 serious AEFIs of measles vaccine and 1 AEFI of HPV) and during routine immunization (2 serious AEFIs of Pentavalent vaccine).

2.6. EPI Advocacy, social mobilization and program communication

Community engagement, communication, advocacy and social mobilization play an important role in generating demand, building confidence and trust in the immunization services among the communities. MOH Ethiopia has made health structures reform through incorporation of health promotion component in all health programs. This will positively benefit health communication program for development and

dissemination of health education messages using different media platforms including mass media, electronic media, print media and community media in Ethiopia country context. Regions also have similar units that coordinate all health 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 demand generation activities with the aim of increasing the knowledge and practice the target communities in relation to their Health.

2.6.1 Advocacy

MOH has been conducting advocacy activities throughout the country with a higher priority given to regions which had lower coverage of eligible target population. Launching events and press conferences were also conducted when introducing new vaccines as part of advocacy to multi stakeholders. During the past cMYP, CSO engagement workshop was also conducted.

Moreover, sensitization of media agencies was done to engage them in strengthening immunization advocacy and communication activities. Engaging the media professionals, political leaders, religious leaders and key influential persons has been done on a regular basis by disseminating core immunization messages to target populations.

For the cMYP 2021-2025, there is a need to develop a national Demand Generation on Immunization with multifaceted strategies including advocacy, tailored demand generation, intensification of community engagement, media engagement, evidence generation and social mobilization plan of actions.

2.6.2 Community Engagement and Social Mobilization

Community engagement and social mobilization on immunization services was given high priority

throughout cMYP 2016-2020 implementation. Engagement of all stakeholders at all levels was strong with key messages and tailored trainings. In addition to mainstream media use of social media including Telegram, Facebook, Instagram and other social media networks were critical in reaching target population for RI as well as SIAs.

Social mobilization through community gathering platforms, religious & community leaders and other influential persons was implemented proactively. Mapping of special populations such as refugees and IDPs had been done but there is limited tailored strategies on reaching those population with immunization services.

2.6.3. Program Communication

2.6.3.1. Evidence Generation

Although there were some studies available around behavioral aspect of immunization practices during last cMYP, there is still limited evidence around demand generation activities. Majority of the studies applied quantitative methodologies at regional or national level with limited focus on qualitative insight. Given the ethno-linguistic diversity of Ethiopia, there is a need to conduct behavior and social drivers around immunization practices in a contextualized manner.

2.6.3.2 Risk Communication

Risk /crisis communication includes the range of communication capacities required through the preparedness, response and recovery phases of a serious public health event to encourage informed decision making, positive behavior change and the maintenance of trust.

Ethiopia needs to develop locally-relevant communication strategies for rapid response to public concerns, including those relating to AEFI. Whether a public concern reveals an underlying

problem, or is shown to be unfounded, if the concern persists it should be addressed through dialogue with the communities concerned.

National communication strategies will include ongoing risk–benefit communication on vaccine safety, both for the general population and for specific target groups. This will include focus on the balance of risk and benefit, the benefits of vaccination to the individual and society and the importance of reporting any AEFI that are observed.

2.6.4. Challenges and gaps

- Lack of demand generation on immunization services plan of action at the national and region levels
- Poor attention from regional or lower level leadership on immunization communication
- Absence of immunization communication officer at regional/zonal and woreda levels
- Weak integration of communication activities with HEWs activities in some areas
- Limited dedicated budget for demand generation, communication and social mobilization interventions
- Limited researches that evaluate/assess social and behavioural aspects of immunization practices
- Though there is structure in some places women development army is not functional in some places , dissolving in some woreda/zones
- Increasing vaccine hesitancy among parents to bring children for immunization services
- Repeated interruption of pregnant women conferences
- Decreasing commitment (increasing burnout)of health care providers including health extension workers

- No team for risk communication or risk mitigation
- Lack of risk communication guideline/strategy at the national and regional levels
- Limited development and implementation tailored demand generation interventions in the worst-off communities with high number of zero-dosed and under-immunized children
- Limited engagement with Civil Society Organizations on addressing vaccine hesitancy and demand related issues.

2.7 Program Management

2.7.1 Planning

The health sector strategic planning is guided by the principles of the “one plan”, “one budget” and “one report”. Every year Woreda-Based Health sector planning is prepared through a top-down and bottom-up approach. EPI is part of the WBHSP. Within the HSTP II, Immunization falls within the Maternal, Newborn and Child Health section. Pentavalent 3, MCV1 and fully immunization was mentioned as an indicator for performance of the sector and general budget support. The last cMYP 2015-2020 was aligned with HSTP I, the Global Vaccine Action Plan (GVAP) and the Regional Strategic Plan for Immunization. Districts developed detail EPI micro plan based on WBHSP every year and RHBs compile the EPI micro plan and develop annual RI improvement plan. Despite a good planning platform at all levels of the health system, there were challenges. The cMYP document has not been available for quick reference at lower level to develop quality operation plan at lower level

2.7.2 Administration and Coordination

The MCH directorate is the overall coordinating body for the EPI activities at 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. RHBs also provide similar supports to the lower administration levels and health facilities to implement planned activities.

The Ethiopian National Immunization Technical Advisory Group (E-NITAG) has advisory roles and provides evidence based technical recommendations on immunization including on new vaccine introduction. It is an independent, advisory body that provides transparency and credibility to the decision-making process and contribute to building public confidence in the vaccination programme. The Immunization program is coordinated by EPI task force that is led by EPI case team manager. Developmental partners’ program coordinators are actively engaged and took their achievable assignments. Under the EPI TF, there are three technical working groups namely M & E, communication & advocacy and logistics & supply TWGs where all EPI partners are members. M&E TWG is the main technical lead of the EPI program, planning and M&E through direct communication with the ICC and E-NITAG. The core activities of the TWG include macro and micro -planning, selection of service delivery strategies, training, assessing country readiness, developing tools for M&E, monitoring of the overall readiness levels of all components, and providing key evidence for E-NITAG, as needed.

The communication TWGs lead and coordinate efforts that will boost community acceptance of Immunization and high-level advocacy. The core activities under this TWG include, supporting regions to achieve a high level of acceptance and demand, design and development of communication and training materials.

The logistics and supply TWG are responsible for planning all logistic needs including procurement, customs clearance, cold chain, distribution.

Despite Strong ownership, planning and implementation by the government with good coordination mechanism at FMOH level and existence of dedicated EPI unit at MOH at all levels (regional level), there is high shortage of human resource in number and quality at all level of the EPI structure.

The immunization program also extended up to service delivery level. HEWs delivering immunization service through static, outreach and mobile strategy in every health post/Keble, cold chain expansion and vaccine transition, direct delivery to woredas by EPSA going on, DHIS_2 Implementation started all over the country and there is VPD Surveillance system to inform EPI program for further improvement of the program. However, monitoring quality of service at session level were not conducted

2.7.3 Health Information system /Immunization data Management

Ethiopia has been using health information generated by the District Health Information System (DHIS2) deployed at all woredas and health facilities. Before DHIS2, e-HMIS and paper based HMIS were used to monitor EPI performance. The DHIS2 was primarily aimed to produce quality health information that supports local evidence-based decision-making for service quality improvement and ultimately to achieve desired health service outcomes. At health post levels, the Federal Ministry of Health (FMOH) implements the Community Health Information System (CHIS) which was later upgraded to e-CHIS and piloted in selected woredas alongside immunization registration books. e-CHIS comprise of family folder pouch, integrated maternal and childcare card, tally sheets and reporting formats. At health center and hospital levels, there is a standardized immunization register to capture immunization information.

Health Data Quality Review was conducted in 2018 by focusing on system assessment and

data verification based on selected indicators. In responding the identified problem, immunization data quality improvement plan was prepared in 2018 based on data quality review and efforts have been made to improve the data quality through, securing tools, conducting RDQA/DQAs, staff capacity building on DHIS institutionalization and implementation.

However, critical challenges were observed on immunization data management and use. According to study by EHPI in 2018, the system assessment showed that there were limited checking of quality of report, absence of skilled staffs and no tracking databases, lack of sources document (28% did not have sources document) and only around half of HFs had matched report with the source document.

Moreover, according to FMOH information revolution document, cultural transformation on information use is still the most challenging part that are linked to technical, organizational, and behavioral factors. Likewise, limited data triangulation practices among internal and external data sources, inadequate accountability, lack of leadership and governance on information management are widely observed.

2.7.4 Monitoring, Supervision and Evaluation

Monitoring

The immunization program is monitored on monthly basis with a total of 13 EPI related indicators. Most health facilities and woreda health offices utilized and updated immunization monitoring charts for monitoring and evaluating immunization performances. In addition, performance review meetings have been conducted integrated with other MNCH services on a quarterly basis. However, use of GPS/GIS for geocoding the services delivery points, locating and identifying zero doses as well as missed communities is limited. Besides, limited software assisted data collection and analysis process has made monitoring process tedious.

Similarly, lack of process monitoring indicators (like quality services delivery), lack of data disaggregated by strategies (static, outreach and mobile), session interruption and quality monitoring practices, limited use of locally amended coverage validation tools, like RCS, inconsistent practices of RDQA/DQA and limited actions on data quality discrepancies were among the quantified challenges.

Evaluation

Health sector annual review meeting (ARM) to which immunization program is part of, is conducted yearly at national level. In February 2020, the Ministry of Health (MoH) conducted integrated post-introduction evaluation (PIE) of MCV2 and HPV vaccines. The findings of the evaluation found that the high political commitment for the new vaccines' introduction, with broad stakeholder involvement to be instrumental in the successful preparation and planning for both MCV2 and HPV vaccine.

Similarly, comprehensive EPI/ vaccine-preventable disease surveillance review was conducted and evaluated country progress towards the global and national targets; identify opportunities, gaps and challenges in the immunization system to provide evidence for the program's strategic directions and priority activities. However, immunization coverage survey and cMYP review have not been conducted in the past five years.

At national level the various evaluation activities conducted include:

- EDHS survey from January 18, 2016, to June 27, 2016, that provided immunization coverage estimates at the national and regional levels and for urban and rural areas,
- Annual Performance Report (APR) was conducted and document prepared which represented the yearly Health Sector Transformation Plan (HSTP) performance, focused on the progress made in the implementation of the health sector's annual plan

- Effective Vaccine Management Assessment (EVMA) conducted in 2019 to identify the strengths and weaknesses of the cold chain at all levels of the health system; the first was conducted in 2013 and the second conducted 2019,
- Within the last 5 years, Ethiopia Demographic and Health Survey (EDHS) was conducted in 2016 and 2019 to provide up-to-date estimates of key demographic and health indicators,
- GAVI Joint Appraisal /Multi sector dialogue (JA) meeting was conducted jointly with core and extended partners yearly
- Joint Reporting form (JRF) for coverage estimation were prepared annually

Supervision

Capacity building through supportive supervision at each level of health administrative level expected to be conducted quarterly basis to the immediate lower level. In the last five years there were number of supportive supervisions conducted integrated with other MNCH programs in collaboration with partners. In 2012 EFY, the EPI was able to conduct selected supportive supervision to poorly performing regions based on low coverage after the country implemented the REC/PIRI approach.

However there was a number of challenges observed which includes irregularity of supportive supervision, limited EPI program specific supportive supervision & mentorship), getting the number of the supportive supervisions conducted, inadequate culture of providing feedback after supportive supervision staff shortage, lack of transport, delayed funding flow from the national to the regional and district level, data management with regards to timeliness, accuracy, analysis and feedback at all levels.

2.8 Strengthening human and institutional resources

2.8.1 Staffing

Ethiopia has 273,601 health work forces employed in public health facilities; of these 181,872 (66.5%) are health care workers and 91,723 (33.5%) are administrative and supporting staffs. Among health care workers, the three largest categories include Nurses 59,063 (21.59%) followed by Health Extension Workers 41,826 (15%) and 18,336 (6.71%) are Midwifery professionals. In addition to this,, about 60,000 health workers employed in the private health sector.

According to the National Human Resource for Health Strategic Plan of Ethiopia; the overall health professionals to population ratio has increased from 0.84 per 1000 in 2010 to 1.5 per 1000 in 2016. However, there are high disparities in health work force population ratio among regions indicating highest in Addis Ababa and Dire-dawa City Administrations, whereas the lowest are in Gambella, Harari and Benishangul-Gumuz regions. there are challenges with regards to modern human resource management includes; staff turnover, high attrition rate, and weak HRIS tracking system secondary to low motivation. Despite the rapid expansion of immunization program in its scope and type of antigens, the current immunization structure and staffing in Ethiopia is grossly inadequate and not uniform among regions.

2.8.2 Capacity Building for EPI

2.8.2.1 Pre-service Training

The pre service training in Ethiopia consisted of some EPI components in the curricula but not yet materialized. Ministry has planned integrate EPI training in the pre service health curricula but was not achieved due to different reasons.

2.8.2.2 In-service Training

Immunization is one of the most cost effective public health programs that require frequent In-service training in which the country is investing huge resources. The major training categories in immunization include IIP, MLM, RED/REC, EVM and Cold Chain maintenance. , In-service training system in Ethiopia is fragmented, has no regulation and course accreditation mechanism as well as never linked with license renewal. Moreover it also lacks adequate mentorship, digitalization of training and training impact assessment mechanism. On the other hand, the trainings conducted so far were not supported by need assessment resulting in unwise use of human and financial resources. .

EPI program training status (2016-2020), Ethiopia.

Despite limited data on capacity building EPI focal and health workers across all levels, there were numbers of health care providers trained in the last five years by FMOH, RHBS and partners.

- RED/C training for woreda health office and health facilities,
- Integration of EPI training in the preserve EPI curricula,
- mid-level management training
- immunization in practice
- Effective vaccine management,
- Vaccinology training for MoH staffs and Infectious disease experts,
- cold chain management trainings
- Provide data quality self-assessment and database management training.

2.8.3 Research and development

Immunization Agenda (IA) 2030 promotes countries to participate in the development of new vaccines,

accelerating innovation to improve programme performance, surveillance and quality of data. This strategic direction was reaffirmed in the 2016 Addis declaration on Universal Access to Immunization. Even though African has the highest incidence of mortality caused by infectious diseases, has limited capacity to manufacture affordable and essential vaccines.

The challenges include in African vaccine development are; lack of adequate finances, skilled manpower, limited research and institutional capacities.

Despite all these challenges, FMOH, EPHI, Armauer Hansen Research Institute (AHRI) and Universities

were engaged in different scientific knowledge improvement projects and new technologies development activities.

Various operational and implementation researches focus on Immunization system were conducted in the last five years. The research outputs which served as input to strengthen immunization program in Ethiopia. These evaluations and researches include; EPI program reviews were also conducted to assess the introduction of the new vaccines, (PIE Post introduction assessment), coverage evaluation after conduct go measles SIA, other includes serological surveys, EVMA and VPD burden risk analysis.

2.9 Partnership and financial sustainability

2.9.1 National EPI Stakeholder Analysis

Stakeholders	Behaviors we desire	Their needs	Institutional response
Community	Participation, engagement, and Ownership	Information on services Access and utilize immunization services	Community mobilization, ensure participation Quality and equitable service and information; ensure community trust and confidence
MOH, regional Governments; zonal and woredas administrations	Policy and guideline formulation, coordination, mobilize domestic and interantional resource for immunization	Implementation of Policies, guidelines etc. ensure equity & quality; plan, implement, monitor, evaluate & report	Put in place equitable and quality immunization services; a strong M&E system and comprehensive capacity building mechanisms
ICC, NITAG, and technical working groups	Advise, approve, and provide guidance on immunization program	Verification and reference, guidance and decision-making	Evidence-based decision making and guidance and being proactive to respond to emergencies, adapt new technologies, vaccines and systems, etc

Stakeholders	Behaviors we desire	Their needs	Institutional response
Sector Ministries (Education, Women's Affairs, Finance, etc.)	Intersectoral collaboration, strengthen national and sub-national political and social commitment to immunization	Evidence-based plans/ Reports Effective and efficient use of resources and coordination Technical support	Collaboration, advocacy and integration
Health professional training institutes	Knowledgeable, skilled, and ethical health professionals trained on immunization	Technical, policy support and guidance, and execute research	Support and synergize to continuously assess the need and gaps in immunization program and recommend a better way of doing immunization
Development Partners (donors, implementing partners)	Harmonized and aligned Participation More on financing Technical support and System strengthening	Involve in planning, implementation, and M&E, aspire better health, and disadvantaged group	Government leadership Transparency Efficient resource use Build financial management capacity and sustainability
Local NGOs and CSOs/FBOs	Harmonization & aligned Participation, Technical assistance; system strengthening	Involvement in planning, implementation & M&E Participation	Advocacy, technical support, capacity building domestic resource mobilization

The Ministry of Health (MoH) has been implementing the Health Sector Programs in collaboration with development partners (DPs) in a more harmonized and aligned approach. Given this, the Ministry has been working towards further strengthening its partnership through Partnership and Cooperation directorates (PCD) to attain its vision, to see healthy, productive, and prosperous Ethiopians. MOH through its PCD and other relevant directorates arranges the fund flow into different channels.

Channel 1

- **Channel 1a (un-earmarked):** Donor money goes into the government's (MOF) account and is disbursed through government procedures. A typical example of funding that uses this channel is the Promotion of Basic Services (PBS) funding that donors support.
- **Channel 1b (earmarked):** Donor money goes into the government (MOF) account and the money is earmarked for specific use (consistent with government priorities). This earmarked fund is transferred to MoH tagged with a two-figure code and sent to the region and zone/woreda (with a location code).
- The funds are reported on and accounted for separately and are used to support activities agreed upon only, often according to its specific procurement and disbursement procedures.

Channel 2:

- **Channel 2a (un-earmarked):** This is funding that goes into the health sector's account directly and is spent at various administrative levels of the health sector in line with the rules and regulations of GoE's financial management system.
- **Channel 2b (earmarked):** This is a project type of funding. Funds are provided directly to the health sector and managed and accounted for by the sector. This channel is mainly used by vertical funds like GAVI and UN agencies.

- The accounting and reporting should follow government procedures in compliance with the donor's requirements.

Channel 3: In this financing channel, DPs usually carry out any procurement and pay the contractor directly (through implementing partners). Government merely agrees to what is to be provided by the donor ensuring alignment with its priorities. The government obtains the list of interventions and allocated finances from partners through resource mapping and ensures its alignments during plan developments.

Health Pooled Fund: This fund was established in 2005 by five DPs to provide support to MoH. It fills a critical gap in capacity and is the first pooling arrangement in the health sector. It provides support in technical assistance, sector reviews, operational research, and other activities at the MoH level. There are several partners which support the immunization program activities in Ethiopia including GAVI, WHO, UNICEF, CDC, USAID, and BMGF.

2.9.2 GAVI support

Ethiopia has benefited from GAVI support in relation to New Vaccine Introduction Support (NVS), Health System Strengthening Support (HSS), Cold Chain Equipment Optimization Platform Support (CCEOP), PEF Targeted Country Assistance (TCA), PIRI, and CSO support in the last five years. The country introduced two new vaccines into the routine immunization program in the last five years; Human Papillomavirus Vaccine (HPV) in the last quarter of 2018 and Measles Containing Vaccine second dose (MCV2) in February 2019. So far, 1.2 million 14-year-old girls and 3.3 million 15-23 months aged children were targeted for HPV and second dose of measles vaccines respectively. In the last five years, Ethiopia had switched tOPV to bOPV (2016), TT to Td (2020), and 2 doses of PCV 10 to 4 doses of PCV13 (2020) vaccines, in line with global vaccine availability and epidemiological evidence of VPDs. Ethiopia is also one of the first countries to use the GAVI HSS

support to strengthen its health system. The fund was allocated to strengthening human resources for the delivery of basic health services; to improve supply, distribution, maintenance systems and to enhance the organization and management of health services delivery.

The Cold Chain Equipment Optimization Platform (CCEOP) was aimed to support the country with improving the supply chain and contribute to efforts to strengthen the coverage and equity of immunization. Because of the country's effort, GAVI supported the scale up and sustainability of the supply chain for

the immunization program. GAVI Targeted Country Assistance (TCA) is also one support area provided by GAVI to country immunization programs in their efforts to improve coverage and reduce equity barriers to immunization services. TCA is provided by partner agencies including core partners (WHO, UNICEF, CDC) and expanded partners. In the last five years, core and expanded partners through TCA support had planned and implemented key prioritized activities and contributed significantly to the overall achievements of the EPI program in Ethiopia.

Table: **Budget Support from selected EPI Partners in the last 5 years**

Budget source	Type of Support	Amount in USD
Government	Co-financing	22,073,485.00
GAVI	HSS	70,211,000.00
	HSS-2 Quality	12,913,463.00
	HPV	2,968,334.00
	MSD (MCV 2)	2,672,270.40
	Measles SIA	5,799,746.00
	PCV Switch	827,032.00
	CCEOP	13,177,093.00
	CSO	3,320,000.00
	PEF (TCA)	10,676,959.07
	PIRI	-
	Total GAVI Support	116,925,293.07
SDG pool fund	RI strengthening	6,718,945.43
WHO-GPEI	Polio	47,147,394.99
UNICEF	AWP	12,000,000.00
Grand Total		182,791,633.49

The GAVI fund has brought a significant contribution for strengthening immunization systems to sustainably and equitably increase immunization coverage to meet national standards through PIRI operationalization. Civil Society Organization (CSO) support was also one of the few pilot areas provided

by GAVI in Ethiopia for two subsequent years. GAVI CSO Support fund has learned partnership and networking among government agencies, PVOs/NGOs, and community was vital to reach the unreached communities and to avoid duplication of efforts.

2.9.3 Government Contribution

The Ethiopian government has been co-financing the immunization program with an average of 4.1 million USD annually for the last five years. Total government co-financing contribution in this cMYP period remains at 18%. The government will continue co-financing the immunization program in a very organized and well-coordinated manner.

2.9.4 Other Donors:

Significant budget support has been in place from UNICEF for the routine immunization program through the annual work plan. At the same time, budget support for the polio eradication program used to be channeled from the Global Polio Eradication Initiative (GPEI) through the WHO country office. Besides, potential donors like USAID, CDC, and BMGF have contributed a lot to strengthen

the immunization program and the health system as a whole. SDG pool fund is a fund where different sources of budget support are managed to achieve the SDG goals.

2.9.5 Community participation

Effective community participation requires partnership with communities through supportive and coordinated actions. When communities are involved as allies in planning, promoting, implementing and monitoring services, they develop a stronger trust and ownership in the health service. They can be owners, users, financiers, and partners in health services. In Ethiopia, community participation was shown in many ways, for instance, during the expansion of health facilities some of the communities have contributed over 50% of the cost of constructing health posts.

EPI COMPONENT

Strengths

Immunization Service Delivery

- Coverage of antigens is increasing over time
- Immunization System/structure available to service delivery and the community level
- The immunization service was provided amid of COVID-19 pandemic and the impact of pandemic was not significant
- HPV introduced expanding age groups to immunization.
- Successful switch of vaccines PCV 10 to PCV 13 and TT to TD
- Post Introduction Evaluation for newly introduced vaccines
- Conducting successful SIAs
- Implementing cVDPV2 outbreak response SIAs
- Conducted many follow up and catch-up measles SIAs with coverage of above 95%

Weaknesses

- Coverage is not at optimal level.
- High dropouts and disparity persists among regions and Woredas (wide equity gap by administrative localities, residence, education, and wealth).
- Weak integration of Immunization services with other Maternal, Neonatal and Child health and nutrition services leading to missed opportunities
- Interruption of vaccination sessions both in outreach and static
- Interruptions of PIRI service due to funding gaps
- Some Health facilities not providing vaccination service
- Lack of strategies to track and vaccinate mobile community
- Sub-optimal quality of EPI service provision, including age invalid doses, particularly for MCV.
- Delayed new vaccines introduction (Men A, YF, Hep BBD, MR).
- Poor private health facility engagement
- Persistently missed children in hard to reach, pastoralist and urban settings
- Inconsistency in immunization coverage data across different data sources and poor use of data for decision making

EPI COMPONENT

Strengths

Surveillance

- Established strong Case and lab-based AFP surveillance since the adoption of the GPEI.
- Achieved and sustained interruption of WPV transmission since January 2014 and certified as WPV free country since 2017.
- Achieved majority of the Measles surveillance performance indicators.
- Validated for elimination of MNT
- Existing PHEM structure and availability of national disease specific guidelines.
- Rapid detection, investigation and response for VPD outbreaks, (conducting local outbreak response vaccination campaigns, and preventive SIAs, and case management

Weaknesses

- Sub-national AFP and measles surveillance gaps.
- Persistently low detection of EIV in national polio lab.
- Measles elimination targets not on track.
- Unable to achieve adequate population immunity for Measles. .
- Delayed outbreak notification in some cases leading to delayed responses.
- Weak VPD risk assessment, EPRP process and implementation.
- Performance of the surveillance sentinel sites not as expected
- Weak monitoring and support

Immunization Supply chain management

- Adequate dry store for dry materials/ consumables.
- The cold rooms are in good condition with functional standby generator, voltage regulator and alarm systems and safety cloths for central and most of the hubs.
- Availability of continuous temperature monitoring system (central and hubs).
- Availability of distribution plan and a monitoring mechanism at the vaccine storage facilities at national level.

- Shortage of transport vehicle.
- Delay of newly procured cold rooms installation,
- Lack of follow-up and monitoring of the written maintenance plan implementation for cold chain equipment.
- Weak support (transport, budget, tool kits & monitoring) utilization of the trained technicians (senior & mid-level)
- Lack of recording and reporting system for maintenance (CCE, including refrigerated trucks) activities

EPI COMPONENT**Strengths****Immunization Supply chain management**

- Stock records designed to register wastage, expire and heat exposure (VVM). (center and hub)
- Existence of legal framework, regulation and guidelines to monitor safety of medicines and AEFI surveillances in the country
- Existence of national AEFI causality assessment committee

Weaknesses

- Poor spare parts management (planning, requesting, issuing and Stock management) - (Availability, storage and distribution).
- There is no up-to-date/regular cold chain equipment inventory system
- Irregularity in providing formal or on the job training for vaccine supply chain
- Poor data quality and visibility at the lower level
- Absence / turnover of trained cold chain technicians for cold room maintenance and vaccine management at national & EPSA at all levels
- Poor implementation of annual work plan at all level
- Poor vaccine stock management, no adherence to stock level policy especially at woreda & health facility level
- Absence of job aids (VVM& other CC PPM) & other training manual related to vaccine supply chain management at health facility level.
- Lack of temperature monitoring/hot using fridge tags/ freeze tag during transportation (if conditioning icepack used).

EPI COMPONENT

Strengths

Advocacy, communication & Social mobilization and Risk communication

- Revitalized the CTWG at National level
- High level Advocacies conducted at national and regional levels
- Averted disinformation, misconceptions and rumours on HPV through extensive social mobilization and community conversations.
- Availability of IEC materials, Brochures, job aids with different languages
- Developed HPV risk/crises Communication guideline and rolled out
- Annual EPI Communication planning at national level
- Use of various social media outlets for social mobilization during HPV Vaccination, NIDs and SIAs.
- High Mainstream media engagement during social mobilization of HPV vaccinations, NIDs and SIAs

Weaknesses

- Poor leadership commitment at lower levels
- Inadequate Inter Personal Communication (IPC) skill among HCWs
- Limited stakeholders engagement including CSOs at lower level
- Extent of Immunization IEC materials utilization unknown
- No dedicated Communication HR structure at Subnational level
- Social mobilization & demand generation activities are limited to risk/crises communication, NVI and SIAs
- Community engagement and demand generation to immunization are not optimal especially in remote areas
- Weak monitoring and evaluation for communication activities
- Inadequate budget allocation for EPI Communication activities
- Absence of demand generation on immunization plan of action, tailored demand generation strategies and comprehensive risk communication plan
- Limited research on vaccine acceptance and hesitancy
- Lack of tailored demand generation strategy among the special populations such as IDP, refugees and peri-urban communities
- Limited interventions addressing gender related barriers around immunization practices
- Lack of integration with other critical interventions such as Early Childhood Development (ECD), nutrition, and maternal and child health
- Absence of EPI CTWG at regional and lower levels

EPI COMPONENT**Strengths****Program Management**

- Strong EPI Coordination mechanism at FMOH level (Existence of functional ICC, NITAG, EPI Taskforce & TWGs providing oversight and technical guidance to EPI).
- Dedicated EPI unit at MOH level
- Existence and the practice of having cMYP, EPI Annual Work Plan and Woreda Based Plan.
- Presence of functional DHIS tool

Weaknesses

- Low quality micro-planning, RED/C implementations: (missing minorities, remote areas, slum areas, urban periphery).
- Poor EPI data quality management as evidenced by huge discrepancies between admin coverage and conventional estimates like WUENIC estimates, EPI coverage survey and EDHS survey results.
- No well-structured, data pool and proper documentation as data repository/storehouse
- Absence of use of process monitoring indicators (quality services delivery, coverage triangulation, data quality varication session interruptions)
- Limited technology assisted data management, monitoring, supervision (geocoding, data collection and analytical software)

Strengthening human and institutional resources

- Posting EPI focal persons at regional and zonal levels
- Conduct Training to build the capacities and skills of EPI service providers Various TAs have posted to strengthen HR in different regions
- Inadequate human resources for EPI
- There is no platform to track trained HWs
- Trainings were conducted without need assessment
- High staff turn overs
- Lack of incentives and motivation
- No functional posts for e EPI coordinators at regional, zonal levels
- Pre service Curricula lacks basic immunization education.
- Inadequate capacity of institutions to conduct operational research to generate evidences

EPI COMPONENT	Strengths	Weaknesses
Partnership and financial Sustainable	<ul style="list-style-type: none"> ■ Government commitment ■ MOH has a dedicated directorate to handle partnership ■ Good relationship and coordination with existing EPI partners such as GAVI, WHO, UNICEF etc. ■ CSO proclamation is revised opening rooms for increased CSO participation - 1113/2019 	<ul style="list-style-type: none"> ■ Limited to bring onboard new partners ■ Lack of consistent mapping of international, national, or local partners of EPI ■ Suboptimal engagement of Public-Private Partnership

Opportunities	Threats
<ul style="list-style-type: none"> ■ Existence of community platform(HEWS and HDA) ■ Accessible mainstream as well as social media networks ■ Immunization a priority agenda by the government ■ Improving health care seeking behavior ■ Sustained national economic development ■ Improving basic infrastructure ■ Improved literacy rate particularly for female. ■ Expansion of Health Sciences Colleges ■ Existence of multi-EPI partners at national and lower level ■ Availability of new technologies such as SDD refrigerators, temperature monitoring Devices internet and electronic services in the global and national levels which support quality and safety of the vaccines. 	<ul style="list-style-type: none"> ■ Rumors and misconceptions towards immunization program and vaccines by the community / anti vaccine activism / ■ Presence of mobile community, lack of access to health services in remote areas and difficult topography in some communities. ■ Computer literacy and reluctant to use digital technologies among the community ■ No access to mobile network (for some area) ■ Inadequate funding for Advocacy, social mobilization and Crisis communication ■ Dissatisfied public servant (Health workforce) ■ Inadequate pre service education quality ■ External pull factor for health workers ■ Lack of access to health services in remote areas and difficult topography in some communities. ■ Political un stability /conflicts Security problems in many areas ■ Natural disasters and health emergencies (drought, flooding, locust infestation,Covid-19. etc). ■ Limited or Low predictability of donor funding

Vision, Mission, Goals, Programme Objectives, Strategic Approaches, Key Activities, Indicators And Milestones

3.1. Introduction

The National Immunization Program is one of the most successful and cost effective programs implemented in Ethiopia. The uniqueness of the NIP has been the innovativeness and adaptation it has gone through with the support of national and international partners. This comprehensive Multi-Year Plan (cMYP) for immunization covers the years 2021-2025. The objectives and activities set forth in this plan provide the framework required to meet the goals of reducing infant and child as well as adult morbidity and mortality associated with vaccine -preventable diseases (VPD). While setting vision, mission, goals, program objectives, targets, strategic approaches, key activities, indicators and milestones; key considerations are made on the plan development to be in line with country needs and plans as well as with the regional and global plans. Ethiopia plans to introduce new vaccines into the routine immunization schedule including Measles–Rubella vaccine, birth dose hepatitis B vaccine, IPV second dose, Men A vaccine, Yellow Fever vaccine, nOPV2 vaccine, COVID19 vaccine, and other new and/or underused vaccines to be determined in during cMYP (2021-2025).

3.2. Vision

A country where every eligible, everywhere, at every age, will be fully benefits from vaccines for good health and well-being.

3.3. Mission

To save lives and protect people’s health by increasing equitable and sustainable use of vaccines.

3.4. Goals of the cMYP (2021- 2025)

The following four goals of cMYP of Ethiopia are set:

- Reduce morbidity and mortality from vaccine-preventable diseases for every one through the life course.
- Leave no one behind, by increasing universal and equitable access and use of new and existing vaccines.
- Achieve vaccine-preventable diseases elimination and eradication goals.
- Ensure good health and wellbeing for everyone by strengthening immunization with in primary health care and contribute to universal health coverage and sustainable development.

3.5 Program Objectives

Objective 1: Increase and sustain high vaccination coverage

- Pentavalent 1 coverage 100% nationally and 98% in every district by 2025.
- Reach Pentavalent 3 coverage 98% nationally and 95% and above in every district by 2025.
- Reduce number of unimmunized children by 75% by 2025 from the 2020 baseline
- Reach MCV1 coverage 98% nationally and 95 % and above in every district.
- Reach MCV2 coverage 93% nationally and 88% and above in every district.
- Reach fully vaccination 90% national level and 85% in every district with full vaccination coverage by 2025.

- Reduce DTP-HepB-Hib1(Penta 1)- DTP-HepB-Hib3 (Penta 3) dropout rate to 2% nationally and less than 5% in all districts by 2025.
- Reduce DTP-HepB-Hib1(Penta 1)- MCV1 dropout rate dropout rate to 2% nationally and less than 5% in all districts by 2025.
- Reduce MCV1- MCV2 dropout rate dropout rate to 5% nationally and less than 10% in all districts by 2025.
- Ensure availability of immunization service in all HF (Hospitals, Health centres and Health posts) by 2025.
- Introduce COVID 19 Vaccine, nOPV2 and piloting of Hepatitis B birth dose by 2021, scale introduction Hepatitis B birth, and introduce MR, IPV2, Yellow fever, Men A vaccines by 2022.

Objective 2: Maintain polio free status, achieve polio eradication, and fulfil the recommend standard

- Maintain the quality of AFP surveillance at national and subnational levels for national polio eradication.
- Achieve 95% coverage routine bOPV annually in high risk Zones/Districts by 2023.
- Achieve 95% coverage two rounds bOPV SIAs annually in high risk Zones/Districts.
- Introduce second dose of IPV in routine immunization program
- Achieve 95% coverage mOPV2/nOPV2 SIAs in cVDPV2 outbreak in high risk areas
- Achieve and maintain all AFP surveillance standard indicators minimum requirements by 2023 at nation and subnational levels.

- All polioviruses are laboratory-contained nationally by 2023
- Achieve and maintain the function and polio free status mis termed in to national immunization and surveillance system

Objective 3: Achieve and maintain Measles, Rubella, and congenital rubella syndrome goals by 2025.

- Conduct two Measles follow up SIAs and achieve $\geq 95\%$ coverage by 2025.
- Achieve and maintain measles incidence < 1 cases per million populations
- Achieve surveillance performance targets: ≥ 2 suspected measles case per 100,000 and non-measles febrile rash illness rate $\geq 2/100,000$ population per year.

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

MNT elimination

Maintain maternal and neonatal tetanus elimination with NT less one per 1,000 live births.

Meningococcal meningitis Epidemics elimination:

- Conduct catch up Men A mass vaccination campaign to close immunity gaps for the age cohorts born after the Mena vaccination campaigns and achieve $\geq 95\%$ by 2022.
- Introduce case based Meningococcal meningitis surveillance in all woredas by 2023.

Elimination yellow Fever Epidemics

- Achieve yellow fever epidemics elimination by 2025.
- Conduct yellow fever preventive mass vaccination campaigns (phase by phase) and achieve $\geq 95\%$ by 2025,
- Introduce case based yellow fever surveillance in all woredas in 2022.
- Introduce routine/Phased mass vaccination campaign of Yellow Fever vaccine by 2022.

Hepatitis B Control and elimination

- Reduce chronic HBV infection prevalence to < 0.5 percent in children aged five years old by 2025.
- Introduce Hep B birth dose in the routine immunization system by 2022

Objective 5: Expand cold storage capacity in line with introduction of new vaccines, population growth and coverage expansion plan and campaigns at all levels by 2025

- Increase the cold storage capacity to reach 90% of demand by procuring appropriate cold chain equipment and introducing new technologies by 2025.
- Attain EVMA score of at least 80% by 2025 and beyond at all level.
- Realize on time and in full vaccine delivery (OTIF) at all woreda health office and health facilities through implementation of last mile delivery by 2025.

Objective 6: Improve immunization supply chain performance in line with introduction of new vaccines, population growth and coverage expansion plan and campaigns and integration of other temperature sensitive products like Oxytocin at all levels by 2025

- Increase the cold storage capacity to reach 90% of demand by procuring appropriate cold chain equipment and introducing new technologies by 2025.
- Attain EVMA score of at least 80% by 2025 and beyond at all level.
- Realize on time and in full vaccine delivery (OTIF) at 90% of health facilities through implementation of last mile delivery by 2025.

Objective 7: Improve institutional and human capacity

Human resource capacity buildings related interventions to be conducted by the end of 2025

- Conduct training based on need assessment tool findings
- Link in service training (CPD) with promotion and licensure
- Assessing the existing curriculum of pre service immunization education
- Assessing the existing pre-school curriculum to include in service immunization education
- Establish and fully implement HIRIS data base.

Institutional capacity buildings for researches and development related interventions to be conducted by the end of 2025

- Plan full advanced research methodology studies to increase the capacity
- Conduct EPI related training impact assessment at all levels
- Strengthen mentorship of health workers assigned for EPI.
- Conduct two EPI SARA
- Conduct ten operational research

Objective 8: Strengthen program monitoring and evaluation

- Improve EPI data quality and attain the acceptable level (within +10%) of data discrepancies on immunization in all health facilities and local use of immunization data for quality improvement.
- Improve routine admin data quality with internal and external verification methods
- Introduce technology/application assisted and immunization focused supportive supervision on regular bases.
- Conduct EPI related assessment, evaluations and operational researches
- Develop regional and woreda level implementation/operational plan aligned with cMYP
- Develop context specific bottom-up EPI micro-plan at woreda and health facility level
- Establish a system for data triangulation and quality monitoring quarterly at national and sub national levels by 2021 and beyond.

Objective 9: Improve partnership and financial sustainability for immunization

- Implement one plan, one budget and one report approach on EPI program
- Increase financial contributions of regional and global partners for the EPI program
- Secure 100% of the required budget for EPI program
- Steadily increase domestic financial contribution for EPI program

Objective 10: 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.
- Strengthen coordination platforms for immunization at all level
- Develop EPI related trainings database and repository at all level
- Develop regional and woreda level implementation/operational plan aligned with cMYP
- Introduce competency-based framework tool to improve EPI managers management capacity at all level

Objective 11: Strengthen communication, advocacy, and demand generation for immunization at all levels.

- Increase awareness of the community on immunization practices to 95% by 2025.
- Significant increase of demand, trust and confidence in the immunization services among the communities by 2025.
- Communities with high number of zero-dosed and under-immunized children from geographically or socially hard to reach areas, conflict affected areas, and urban-poor areas are reached with tailored immunization strategies for by using people centred design approach by 2025.
- Engage Civil Society Organizations in the immunization demand generation activities
- Design, implement, monitor and evaluate
- Train all national and sub-national level program managers in the planning, implementation and monitoring and evaluation of immunization communication activities by 2025.
- Build interpersonal communication skills of health workers in all health facilities by 2025 with a focus on integrated The First 1000 Days (immunization, ECD, nutrition, maternal and child health) approach.
- Conduct at least two research to assess, monitor and evaluate the utilization of immunization communication interventions including behaviour and social drivers of immunization practices by 2025.
- Reduce gender related barriers around immunization practices by applying gender-sensitive demand generation activities at all levels by the end of 2025
- Integrate with other critical social and behaviour change interventions on ECD, nutrition, maternal and child health with immunization demand generation activities by end of 2022.

3.6 Strategic Approaches

The key approaches for implementation are described below.

Immunization for primary healthcare and universal health coverage: To build effective, efficient and resilient immunization program that deliver high-quality immunization services as a part of national primary healthcare systems aimed at achieving universal and equitable health coverage.

Outbreaks and Emergencies: Maintain and strengthen capacity to prepare for, prevent and respond to vaccine-preventable disease outbreaks.

Reach Every District (RED)/ Reach Every Child/ Community (REC) approach: Ensure all Woredas and health facilities developed bottom up micro plans, conduct supportive supervision and review meeting, locally used data for decision making and action, reach target with appropriate strategy and engaging with the community.

Integrating maternal, adolescent, child health and nutrition services to immunization program

Immunization services often provide the only reliable routine contacts with health services for mothers and their infants. The importance of integration, both in health systems in general and within immunization programs more specifically, has been growing, and this is reflected in a broad range of global policies and strategies. Immunization service delivery serve as a platform for providing other priority public health interventions; other priority programs, in turn, serve as a platform for delivering immunization service as well. Routine immunization has a long history of integration several services such as vitamin A supplementation, growth monitoring, deworming or insecticide-treated bed nets. There is also considerable evidence of positive health and nutrition outcomes resulting from integrating nutrition services into other health interventions. Thus, nutrition specific interventions

like Growth monitoring and promotion, Vitamin Supplementation, deworming, screening, IYCF counselling and maternal nutrition counselling need to be integrated with routine immunization services; supplementary immunization events, such as national immunization days (NIDs), measles, tetanus toxoid (TT) and yellow fever campaigns; For example, WHO recommends that if routine coverage with vitamin A supplements is less than 80%, then vitamin A supplements should be included with supplementary immunization activities and it supports to reach high proportion of children that are not reached by routine services and they reach children above one year of age.

Integration avoids missed opportunities of maternal, adolescents and youth health services. Integration of maternal, adolescent and nutrition services with immunization program has paramount importance in establishing and sustaining effective service provision through integration. With this regard, the following maternal, adolescent and youth, child health and nutrition services are recommended to be integrated with immunization services.

Life-course approach: Consider Vaccination beyond infancy, with a life course approach for target groups of population.

Leave no one behind: Leave no one behind by increasing equitable access of new and existing vaccines.

Equity and Access: Focus will be given to identify and address low levels of coverage among the poorest and most disadvantaged individuals; and actively seeking out zero dose and under-immunized target population and develop locally tailored and context-specific interventions and strategies to address inequalities.

Improving immunization services in urban areas: Developing innovative strategies for urban vaccination will be one important focus areas in the country, along with devising strategies to specific populations like slum areas, outskirts, big buildings, urban migrants, street populations.

Reducing Missed Opportunities for Vaccination (MOV): Reducing missed opportunities for vaccination (MOV) is a strategy to increase immunization coverage by making better use of existing vaccination sites. Efforts will be done to reduce the MOV through designing tailored strategies.

Population movements: Migration, pastoralist communities, and cross-border population movements can result in large communities of unprotected individuals at risk of infection. It is vital to design tailored strategies to address these populations.

Conflict and instability: Civil conflict, resulting in IPDs and refugees, can rapidly lead to loss of health service infrastructure and shortages of trained health workers, often for extended periods, thereby disrupting delivery of immunization services. It is vital to design tailored strategies to address these populations.

Improving vaccine supply, safety and regulation: Efforts will be undertaken to improve vaccine supply, safety, regulation and sustainability of vaccines functional cold chain system.

Sustainable immunization financing: Sustainable immunization financing mechanisms will be sought from government, domestic, and external resources. The country will ensure a clear pathway to programmatic and financial self-sustainability for immunization service and program

with increasing efforts to establish national budget lines, allocation, and disbursing funds.

Strengthen institutional and human capacity:

The EPI structure and function need to revisit its structure and capacity based on the current and future country context on immunization evolving context. As one critical action, pre-service and in-service vaccinology training/capacity building activities will be in place based on need.

Planning and coordination: The forward ambitious immunization strategic plan, the existing and new coordination mechanisms like the ICC, the taskforce, the technical working groups, and the NITAG need to be strengthened at all levels.

Enhancing partnership and collaboration for immunization: Partnership and collaboration for immunization will be expanded within the country, continental and international immunization partners.

Create demand, and gain/Sustain trust: Development and implementation of integrated communication plan for immunization and address any mistrust among different interest group and maintain the trust of the community.

Accelerating innovation and research: Robust research agenda offers new opportunities to meet future challenges on immunization.

Improve monitoring and data quality: The quality of immunization, vaccine and surveillance data will be regularly monitored and used for action. Process indicators like different strategies, micro plan availability, session implementation, vaccine wastage and related indicators will be monitored.

Public private partnership: The MOH will work with private facilities that provide immunization by capacity building, ensuring quality of immunization, cold chain standardization and reporting.

COVID19 precaution and infection prevention: While planning, implementing and close out of vaccination sessions; ensure COVID19 prevention precautions (physical distancing, one-way client flow, ventilation, handwashing washing/sanitizer, wear facemask and properly contain vaccine wastes).

3.7 Anticipated Coverage Targets

Indicators	Base year coverage m-EDHS 2019	Expected coverage	Targets				
			2020	2021	2022	2023	2024
Total Population	99,603,376	101,767,684	102,193,064	104,850,083	107,576,186	110,373,166	113,242,869
Live Births (3.36%)	3,346,673	3,419,394	3,433,687	3,522,963	3,614,560	3,708,538	3,804,960
Infants' deaths (43/1000 in mini EDHS 2019)	4,282,945	4,274,243	4,189,916	4,194,003	4,195,471	4,194,180	4,076,743.28
Surviving infants (3.16%)	3,147,467	3,215,859	3,229,301	3,313,263	3,399,407	3,487,792	3,578,475
12-23 months old (2.5%)	2,490,084	2,544,192	2,554,827	2,621,252	2,689,405	2,759,329	2,831,072
9-13 old female pop (7%)	6,972,236	7,123,738	7,153,514	7,339,506	7,530,333	7,726,122	7,927,001
Pregnant women (3.36%)	3,346,673	3,419,394	3,433,687	3,522,963	3,614,560	3,708,538	3,804,960
Target population BCG	2,443,072	2,667,127.46	3,055,981.38	3,205,896.15	3,397,686.25	3,560,196.86	3,728,861.18
BCG coverage	73%	78%	89%	91%	94%	96%	98%
Target population OPV3	1,888,480.01	2,154,625.41	2,615,733.66	2,816,273.24	3,025,472.64	3,208,768.69	3,399,550.92
OPV3 coverage	60%	67%	81%	85%	89%	92%	95%
Target IPV vaccinated	2,041,471	2,154,625.41	2,615,733.66	2,816,273.24	3,025,472.64	3,208,768.69	3,327,981.43
IPV Coverage	61.0%	67.0%	81%	85%	89%	92%	93%
Target population	1,919,955	2,154,625.41	2,615,733.66	2,816,273.24	3,025,472.64	3,208,768.69	3,399,550.92
Penta 3							
Penta 3 coverage	61.0%	67.0%	81%	85%	89%	92%	95%
Target population (Penta 1)	2392075	257268705	2874078	3015069	3195443	3348280	3506905
Penta 1 coverage	76	80	89%	91%	94%	96%	98%

Indicators	Base year coverage m-EDHS 2019	Expected coverage		Targets				
		2020	2021	2022	2023	2024	2025	
Target population 3rd dose of PCV	1,490,274	2,154,625.41	2,615,733.66	2,816,273.24	3,025,472.64	3,208,768.69	3,399,550.92	
3rd dose PCV Coverage	61.0%	67.0%	81%	85%	89%	92%	95%	
Target population 1st dose of PCV	1856734	257268705	2874078	3015069	3195443	3348280	3506905	
1st dose PCV Coverage	76	80	89%	91%	94%	96%	98%	
Target pop vaccinated with 2nd dose of MCV vaccinated	1,384,885.34	1,768,722	2,260,511	2,518,080	2,753,520	2,929,745	3,113,273	
Coverage 2nd dose of MCV	44%	55%	70%	76%	81%	84%	87%	
Target pop vaccinated with 1st dose of MCV	1,857,005	2,090,308	2,583,441	2,783,141	2,991,479	3,139,013	3,327,981	
1st dose of MCV coverage	59%	65%	80%	84%	88%	90%	93%	
Target pop for 2nd dose of Rota vaccinated	909,067	2,379,736	2,874,078	3,015,069	3,195,443	3,348,280	3,506,905	
Coverage 2nd dose of Rota	61.0%	74.0%	81%	85%	89%	92%	95%	
Target pop for 1st dose of Rota vaccine	1132608	257,268,705	2,874,078	3,015,069	3,195,443	3,348,280	3,506,905	
1st dose of Rota vaccine coverage	76	80	89%	91%	94%	96%	98%	
Pregnant women vaccinated with TT+(PAB)/Td	-	2,735,515	3,055,981	3,205,896	3,397,686	3,560,197	3,728,861	
TT+ coverage (PAB)/Td		80%	89%	91%	94%	96%	98%	

Indicators	Base year coverage m-EDHS 2019	Expected coverage			Targets				
		2020	2021	2022	2023	2024	2025		
Annual Penta Dropout rate	20.2	16	8	6	5	4	3		
Annual Measles Dropout rate 1	23.2	19	9	7	7	6	5		
Annual MCV1-MCV2 Dropout rate 1		15	10	8	7	6	6		
Men A	0	0	-	2,991,479	3,139,013	3,327,981			
Men A Coverage	0	0	0%	88%	90%	93%			
Yellow Fever	0	0	2,650,610	2,889,496	3,139,013	3,327,981			
Yellow Fever Coverage	0	0	80%	85%	90%	93%			
HPV1 Performance	1,147,431	1,172,364	1,177,264	1,220,455	1,252,187	1,297,988	1,331,736		
HPV1 Coverage		96%	96%	97%	97%	98%	98%		
HPV2 Performance	-	1,013,606	1,071,801	1,117,282	1,164,405	1,207,924	1,304,558		
HPV2 Coverage		83%	87%	89%	90%	91%	96%		
Target Hep B Birth dose Coverage			14621	2924059	3108521	3300599	3500564		
			80%	83%	86%	89%	92%		
Target COVID 19 vaccine	0	0	20,438,613	52,425,042	16,136,428	11,037,317	5,662,143		
Coverage from total population	0	0	20%	50%	15%	10%	5%		
Coverage from target	0	0	80%	85%	90%	93%	95%		
Target fully Vaccinated	1,353,411	1,607,929	1,776,115	2,153,621	2,549,556	2,790,234	3,041,703		
Fully vaccinated	43.0%	50.0%	55.0%	65.0%	75.0%	80.0%	85.0%		

National priority, Objectives and Milestones, AFRO Regional and Global Goals

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	Global/AFRO REGIONAL GOALS	ORDER OF PRIORITY
Routine Immunization Coverage and equity	<ul style="list-style-type: none"> To achieve 98% Penta 1 coverage nationally and 98% in every district by 2025. To achieve 95% Penta 3 coverage nationally and 95% and above in every district by 2025. To achieve 93% MCV 1 coverage nationally and 88% and above in every district by 2025. To achieve 87% MCV 2 coverage nationally and 86% and above in every district by 2025. Reduce DTP-HepB-Hib1(Penta-1)- DTP-HepB-Hib3 (Penta-3) dropout rate to 3% nationally and less than 5% in all districts by 2025. Reduce DTP-HepB-Hib1(Penta-1)- MCV1 dropout rate to 5% nationally and less than 7% in all districts by 2025. Reduce MCV1-MCV2 dropout rate to 6% nationally and less than 10% in all districts by 2025. Reduce proportion of woredas with less than 80% penta 3 coverage to zero Ensure availability of immunization service in all HF (Hospitals, Health centres and Health posts) by 2025. To introduce Men A, YF, Hep BBD, MR vaccines 	<ul style="list-style-type: none"> To vaccinate 89% of children with Penta 1 in 2021; 91% in 2022; 94% in 2023; 96% in 2024 and 98% in 2025 To vaccinate 81% of children with Penta 3 in 2021; 85% of children in 2022; 89% in 2023; 92% in 2024 and 95% in 2025. To reduce Penta 1 to Penta 3 DoR to 8% in 2021; to 6% in 2022; to 5% in 2023; to 4% in 2024 and to 3% in 2025 To reduce Penta 1 to MCV1 DoR to 9% in 2021; to 7% in 2022; to 7% in 2023; to 6% in 2024 and to 5% in 2025 To introduce MR vaccine in 2024; Men A in 2024; YF in 2024 and Hep BBD in 2022 	<p>HSTP targets</p> <ul style="list-style-type: none"> Increase pentavalent 3 coverage from 61% to 85% Increase MCV1 coverage from 59% to 83% 	
Low coverage with high disparity among regions and Woredas. (Penta 1=76%; Penta 3=61%; MCV1=59% and MCV2=50%)				
High dropouts of RI (Penta 1 to Penta3=20.2% and Penta 1 to MCV1=23.2%)				
Some public Hospitals and HCs do not provide EPI service.				
Delayed new vaccines introduction (Men A, YF, Hep BBD, MR).				

SIA and Surveillance	NIP OBJECTIVES	NIP MILESTONES	Global/ AFRO REGIONAL GOALS	ORDER OF PRIORITY
Polio Preventive and outbreak response SIAs	<ul style="list-style-type: none"> Achieve >95% SIAs coverage in all districts all through 2024 Achieve and maintain the function and polio free status misreported in to national immunization system 	<ul style="list-style-type: none"> Two rounds SIA annually with coverage >95%. Mobilize additional funds to bridge funding gaps Monitor quality of SIAs Receive polio funded assets phase by phase, Incept Polio lab in the national health system 	<ul style="list-style-type: none"> Interrupt transmission of all wild polioviruses (WPV). Ensure sensitive poliovirus surveillance through integration with comprehensive vaccinepreventable diseases (VPD) ad communicable diseases surveillance system Certify eradication of WPV Contain all polioviruses 	One
Measles SIAs	<ul style="list-style-type: none"> Conduct two Measles follow up SIAs and achieve ≥95% coverage by 2025. Sustain MNT road map 	<ul style="list-style-type: none"> Conduct follow up measles SIA Improve quality of measles SIAs and monitor performance Considering school Td 	<ul style="list-style-type: none"> Eliminate measles 	One
Maternal and Neonatal Tetanus SIAs	<ul style="list-style-type: none"> Sustain MNT road map 	<ul style="list-style-type: none"> Considering school Td 	<ul style="list-style-type: none"> Maintain MNT elimination (<1/1,000LB it is also proxy indicator of MT) 	One
Meningitis A vaccination campaign	<ul style="list-style-type: none"> Prevent Meningococcal Meningitis epidemic till 2025 and beyond 	<ul style="list-style-type: none"> Conduct catch up Men A mass vaccination campaign by 2022 Men A introduced into routine immunization 	<ul style="list-style-type: none"> Eliminate Meningococcal Meningitis by 2030 (global Target) 	One
Polio	<ul style="list-style-type: none"> Achieve AFP surveillance performance indicator targets in all Woredas and environmental surveillance in select areas. Expand the environmental sites to be collected twice per month for a period of 6 months after the last OPV campaign. 	<ul style="list-style-type: none"> AFP surveillance maintained in all Woredas with government ownership, AFP surveillance indicators achieved. Expand the environmental sites to be collected twice per month for a period of 6 months after the last OPV campaign. 	<ul style="list-style-type: none"> Sustain polio free (both W and vDPV) Support the polio eradication program 	Two

SIA and Surveillance	NIP OBJECTIVES	NIP MILESTONES	Global/ AFRO REGIONAL GOALS	ORDER OF PRIORITY
Measles and Rubella	<ul style="list-style-type: none"> Attain measles incidence <5 cases per million population Achieve measles surveillance performance indicator targets in all Woredas. Strengthen the national polio and measles laboratory in molecular techniques strengthen the CRS Sentinel sites 	<ul style="list-style-type: none"> Conduct measles outbreak response among vulnerable population and in affected areas Improve quality of measles SIAs and monitor performance communicated with surveillance staffs to notify the outbreaks Initiated the CRS surveillance 	<ul style="list-style-type: none"> Eliminate Measles by 2023 The key global objective of CRS surveillance is to provide data in support of rubella elimination in five of six WHO regions 	Two
Maternal and Neonatal Tetanus Surveillance	<ul style="list-style-type: none"> Achieve MNT surveillance performance indicator targets in all Woredas. 	<ul style="list-style-type: none"> MNT surveillance maintained in all Woredas with government ownership, measles MNT indicators achieved. 	<ul style="list-style-type: none"> MNT surveillance maintained in all Woredas with government ownership, Measles MNT indicators achieved. MNT case management improved HWs sensitized/trained on MNT 	Two
Bacterial Men A	<ul style="list-style-type: none"> Establish casebased meningitis A surveillance by 2022 	<ul style="list-style-type: none"> Men A introduced into routine immunization 	<ul style="list-style-type: none"> Eliminate Meningococcal Meningitis by 2030 (global Target) 	Two
New Vaccines surveillance	<ul style="list-style-type: none"> Monitor new vaccines introduction 	<ul style="list-style-type: none"> Case based surveillance established 		

NATIONAL PRIORITIES Immunization Supply chain	NIP OBJECTIVES	NIP MILESTONES	Global/AFRO goals	Order of priority
<p>Inadequate capacity and weak cold chain maintenance, Sub optimal CCE</p> <p>Poor temperature monitoring system</p>	<p>Improve optimal CC capacity through deployment& installation of CCE.</p> <p>Establish cold chain maintenance system.</p> <p>Establish temperature monitoring at storage and transportation</p>	<p>By 2025 all planned CCE installed</p> <p>By 2023 CCE maintenance system established.</p> <p>By 2023 Temperature monitoring system established and implemented in all vaccine storage & transportation sites</p>		
<p>Poor cold chain inventory and maintenance management system</p>	<p>Establish Data base for CCEI</p>	<p>By 2025, national automated CCEI management system established</p>		
<p>Low EVMA score nationally</p>	<p>Capacity building of focal persons</p> <p>Conduct periodic EVMA</p> <p>Develop improvement plan</p> <p>Strengthen Regular performance monitoring</p>	<p>2023 EVM score achieved >80%</p>	<p>EVM score >80%</p>	
<p>Low EVM score at lower distribution and health facility level</p>	<p>Capacity building of focal persons</p> <p>Regular performance monitoring</p>	<p>2023, 90% of HFs scored>80% EVM score</p>	<p>EVM score >80%</p>	
<p>Poor vaccine stock monitoring</p>	<p>Revitalize real time stock monitoring system and Enhance end to end vaccine data visibility</p>	<p>By 2025, 100% of vaccine storage sites order/ monitor stock status electronically.</p>		
<p>Incomplete last mile vaccine delivery</p>	<p>Conduct last mile vaccine delivery</p>	<p>By 2023, 95% of sites no vaccine stock outs</p> <p>By 2025, 90% of HC& Hosp received vaccine from EPSA hub</p>		
<p>Vaccine Supply weak vaccine stock management and distribution system</p>	<p>Computerized vaccine stock management in all districts and direct delivery of vaccines to HFs by 2025</p>	<p>Computerized stock mx established on 2022</p>		

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	Global/AFRO REGIONAL GOALS	ORDER
Demand generation, communication, advocacy, social mobilization and program communications				
Inadequate sub-national level capacity on communication for immunization	To build the capacity of sub-national level in the planning, implementation and monitoring and evaluation of communication for immunization activities by 2022	By 2022, communication focal person at regional level and/or EPI focal person at all level are trained on communication for immunization to improve their capacity in the planning and coordination of demand generation and communication for immunization activities.		3
Low level of commitment or support of political and decision makers as well as other important stakeholders in immunization at all level	To increase the involvement of political and decision makers as well as other important stakeholders including CSOs in immunization program at all level by 2022	Through 2021 to 2025, a series of advocacy meetings, workshops and visits are conducted to ensure the commitment, engagement and support by political leaders, heads of sector offices, CSOs and community leaders for the immunization program		3
Poor social mobilization and community engagement on immunization demand activities at grass root level	To improve the participation of HDA/WDA and social mobilization committees by 2022	By 2022, the HDA/WDA and social mobilization committees are established and/or revitalized for social mobilization and community engagement on immunization demand generation activities at the community level		3
Inadequate interpersonal communication skills for vaccine communication among health workers	To improve the interpersonal communication skills, particularly on vaccine communication, of health workers including HEW by 2023	By 2023, at least one health worker or HEW per one health facility is trained on interpersonal communication skills with a focus on vaccine communication		3

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	Global/AFRO REGIONAL GOALS	ORDER
Lack of immunization demand generation plan of action at the national and sub-national level	To develop a budgeted National Immunization Demand Generation Plan of Action by 2022	By 2022, National Immunization Demand Generation Plan of Action developed and implementation initiated		3
Limited strategies which are tailored for the communities with high number of zero-dosed and under-immunized children	To develop, implement, monitor and evaluate tailored immunization demand strategies by 2024	By 2025, at least five tailored immunization demand strategies have been developed, implemented, monitored and evaluated for the socially/geographically hard to reach communities by using people-centered approach		3
Lack of specific interventions addressing gender related barriers to seek immunization services	To mainstream gender-sensitiveness in every immunization messages and activities by 2025	By 2025, communication materials, messages and activities developed for the immunization practices are gender-sensitive		3
Lack of awareness on the importance of immunization and the schedule among the community members which result from the shortage of job aids and other IEC materials on immunization for awareness raising	To increase awareness of the community on the importance of immunization to 95% by 2025	By 2023, standardized, produced and disseminated communication materials on immunization in at least five local languages		3
Weak involvement of media in immunization messages dissemination	To strengthen relationship, engagement, capacity and involvement of different media agencies in immunization program by 2022	By 2022, national, regional and community media agencies sustain their engagement in the immunization demand generation activities with a high media coverage around immunization activities/events such as African Vaccination Week, World Polio Day, etc. and support dissemination of immunization messages to the community via their media channels		3

NATIONAL PRIORITIES	NIP OBJECTIVES	NIP MILESTONES	Global/AFRO REGIONAL GOALS	ORDER
Limited monitoring activities on immunization demand generation activities at the national and sub-national levels	To conduct regular monitoring communication activities throughout 2021 to 2025	Regular monitoring of immunization demand generation activities is conducted throughout 2021-2025 at all levels		3
Limited availability of evidence, research and assessment on immunization practices	To undertake assessment and/or research around behavior and social drivers of immunization practices by using qualitative and quantitative methodologies by 2023	By 2023, at least one research or assessment around behavior and social drivers of immunization practices is conducted		3
Lack of integration of other critical interventions such as ECD, nutrition, maternal and child health	To integrate key behaviors around ECD, nutrition, maternal and child health messages into immunization demand generation interventions by 2022.	By 2022, key behaviors and messages around ECD, nutrition, maternal and child health are integrated into the immunization demand generation activities		

NATIONAL PRIORITIES Program management	OBJECTIVES	MILESTONES	Global/ AFRO REGIONAL GOALS	ORDER OF PRIORITY
Immunization data quality and use at all level	<p>Improve EPI data quality and attain the acceptable level (within +10%) of data discrepancies on immunization in all health facilities and local use of immunization data for quality improvement.</p> <p>Improve routine admin data quality with internal and external verification methods</p>	<p>90% HF's attain Penta 3 data discrepancy of +10% between registration book and data on DHIS2 by 2025</p> <p>Routine data quality verified at all level with internal mechanisms (eg. though quality improvement team, performance monitoring team, etc monthly at PHCU and quarterly at woredas) and use of local coverage validation tools</p>	<p>all countries collect quality immunization data through building local capacity to use innovation</p>	1
Technology-assisted program supervision, regular program monitoring and evaluation at lower level	<p>Introduce technology/application assisted and immunization focused supportive supervision on regular bases.</p>	<p>Routine data from various sources verified and triangulated including convenience coverage assessment</p> <p>Immunization focused program focused Supportive supervision done by user friendly apps in all woredas regularly at all level</p>		2
EPI coordination at all level	<p>Strengthen coordination platforms for immunization at all level</p>	<p>EPI coordination platform established/revitalized in all zones and woredas</p> <p>Institutionalize EPI TOR by 2022</p> <p>All countries have a functional NITAG or are part of a local regional functional NITAG (GVAP)</p> <p>All woredas have EPI coordination platform</p>		2

NATIONAL PRIORITIES Program management	OBJECTIVES	MILESTONES	Global/ AFRO REGIONAL GOALS	ORDER OF PRIORITY
Systematic program monitoring and evaluation (cMYP review, coverage survey, sero-survey, and other operational research)	Conduct EPI related assessment, evaluations and operational researches	Midterm review done by 2023 and terminal evaluation of cMYP 2025 One immunization coverage survey Two operational researches done		2
Document capacity building activities in immunization program	Develop EPI related trainings database and repository at all level	Consolidated EPI related training database developed BY 2022 The databased used at regional, zonal and woreda level - PI/health related training consolidating and monitoring databases developed by		1
Context specific operational plan/micro plan at lower level and regional and woreda operational plan	Develop regional and woreda level implementation/operational plan aligned with cMYP	All regions and woredas have regional implementation plan aligned with cMYP All woredas and PHUs have context specific bottom-up micro plan		3
Management, accountability and operational capacity of the EPI program	Introduce competency-based framework tool to improve EPI managers management capacity at all level	Competency-based management capacity building to EPI managers introduced at all level		

NATIONAL PRIORITIES (Strengthening human and institutional resources)	OBJECTIVES	MILESTONES	Global/AFRO REGIONAL GOALS	ORDER OF PRIORITY
Absence posts in the structure for EPI coordinators at national, regional and zonal levels	Improve staffing pattern to include EPI managers and coordinators post at national and regional levels	Review the exiting EPI structure by 2021 Advocacy for senior management of the ministry by 2022 Create EPI manger post at Federal level and regional coordinators by 2023 and zonal coordinators by 2024		
There is no platform to track trained HWs	Improve Health sector human resource information system Establish data base system to track trainees	Launch iHRIS by the end of 2021, scale up 2022 Establish and fully implement HRIS data base by the end of 2023.		

NATIONAL PRIORITIES (Strengthening human and institutional resources)	OBJECTIVES	MILESTONES	Global/AFRO REGIONAL GOALS	ORDER OF PRIORITY
Inadequate health work force Capacity	Improve health workers capacity by conducting need based trainings	Conduct training based on need assessment tool findings by end of 2021		
	Improve health work staffs turnover through incentives and motivations	Link in service training(CPD) with promotion and licensure from 2021-2025		
	Revise pre service curricula to include immunization education	Assessing the existing curricula of pre service immunization education by 2021		
		Curricula revision plan alignment with stakeholders by 2022 ,finalize by end of 2022 and revise curricula by the end of 2023		
		Increase training access for frontline health workers, health managers and focal persons by the end of 2025		
		Incorporate EPI program in Pre-service education curricula by the end of 2025		
		Conduct two training impact assessment by the end of 2025		
		Revise the existing EPI Health workforce structure by the end of 2022		
		Establish mentorship system to immunization service by the end of 2022		
		Conduct full implementation of mentorship activities by the end of 2025		

NATIONAL PRIORITIES (Strengthening human and institutional resources)	OBJECTIVES	MILESTONES	Global/AFRO REGIONAL GOALS	ORDER OF PRIORITY
Inadequate capacity of institutions to conduct operational research on EPI	Enhance the capacity of institutions to conduct research through training and financial support	Plan full advanced research methodology studies to increase the capacity in 2021-2022 Build partnership with donors to mobilize technical and financial supports from 2022-2023		
Establish EPI training center of excellence	Initiate discussion with WHO Afro IST/inter country support by 2022	Advocate with government to establish the excellency centers by 2022		
initiate discussion for local vaccine production capacity in Ethiopia.	Conduct feasibility studies to assess local production of the country by 2021-2022	Sharing the findings with appropriate Authorities		

National priority (Partnership and financial sustainability)	NIP Objectives	NIP Milestones	Afro /regional/global	ORDER OF PRIORITIES
Enhance local and global partnership in EPI program	<ul style="list-style-type: none"> ■ Engage and sustain EPI partners throughout program planning, implementation and monitoring 	<ul style="list-style-type: none"> ■ One plan, one budget and one report on EPI program ■ Standardized, comprehensive and accessible immunization ■ Increase financial contributions of local, regional and global for the EPI program 	<ul style="list-style-type: none"> ■ Aligned plans, integrated implementation and joint monitoring and supervision. ■ Regionally, globally, Standardized, comprehensive acceptable up to date immunization ■ Regionally, globally, Regionally, globally, vaccination 	
Secure the required resources to implement the cMYP	<ul style="list-style-type: none"> ■ Secure the required funds for EPI program 	<ul style="list-style-type: none"> ■ Mobilize 100% of the required costs for the EPI program ■ Steadily increase domestic financial contribution for EPI program 	<ul style="list-style-type: none"> ■ Equitable, accessible, and effective vaccine at all level. 	

3.8 Planning by immunization system component

Service Delivery and New Vaccine Introduction

NATIONAL OBJECTIVE		STRATEGY		KEY ACTIVITIES					2021	2022	2023	2024	2025
■	To achieve 98% Penta 1 coverage nationally and at least 95% in every district by 2025.	■	RED/REC approach implementation in every district and kebeles	Conduct bottleneck assessment and context specific micro planning workshops in all districts and PHCUs with the involvement of community.	X	X	X	X	X	X	X	X	
■	To achieve 95% Penta 3 coverage nationally and 95% and above in every district by 2025.	■		Conduct house to house registration of target groups	X	X	X	X	X	X	X	X	
■	To achieve 93% MCV 1 coverage nationally and 90% and above in every district by 2025.	■		Conduct RED/C strategy evaluation				X					
■	To achieve 87% MCV 2 coverage nationally and 85% and above in every district by 2025.	■	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 HWs and HEWS	Implement routine immunization improvement roadmap in zones with large number of unimmunized children and regions require special support	X	X	X	X	X	X	X	X	
■	To achieve 85% fully immunization coverage nationally and 80% in every district by 2025.	■											
■	Reduce DTP-HepB-Hib1(Penta 1)- DTP-HepB-Hib3 (Penta 3) dropout rate to 3% nationally and less than 5% in all districts by 2025.	■	Capacity building for EPI managers and health workers	Training of HWs and EPI managers on RED/C strategy, MLM, IIP, and IRT	X	X	X	X	X	X	X	X	
■	Reduce DTP-HepB-Hib1(Penta 1)- MCV1 dropout rate to 5% nationally and less than 7% in all districts by 2025.	■	Design and implement context specific and appropriate strategy for pastoralist and urban areas	Organize and deploy mobile health teams for pastoralist and other hard to reach populations	X	X	X	X	X	X	X	X	
■	Reduce MCV1-MCV2 dropout rate to 6% nationally and less than 10% in all districts by 2025.	■		PIRI implementation in hard to reach districts (training, service delivery, supportive supervision, and review meeting)	X	X	X	X	X	X	X	X	
■	Reduce proportion of woredas with less than 80% Penta 3 coverage to zero	■		Conduct assessment on implementation status and outcome of PIRI				X					
■	Ensure availability of immunization service in all HF (Hospitals, Health centers and Health posts) by 2025.	■		Implementation of tailored strategy to address unreached segments of urban community	X	X	X	X	X	X	X	X	
■		■	Intensify defaulter tracing through strengthening available community platforms and structures	Defaulter tracing using HDAs/Community volunteers	X	X	X	X	X	X	X	X	

NATIONAL OBJECTIVE		KEY ACTIVITIES					2021	2022	2023	2024	2025
STRATEGY											
■	Regular supportive supervision and program monitoring	Conduct supportive supervision at all level	X	X	X	X	X	X	X	X	X
		Conduct performance review meeting at all level	X	X	X	X	X	X	X	X	X
■	Learn, document and share experience	Documentation of lessons and best practices and share through different platforms	X	X	X	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	X	X	X	X	X	X	
■	Prepare and implement catch-up plan to address population in areas with prolonged interruption of immunization service due to conflict, IDP, drought and other emergency affected areas.	Develop catch up vaccination implementation guideline	X								
		Conduct catch up vaccination	X	X	X	X	X	X	X	X	
■	Utilization of second year platform to improve MCV1 and MCV2 coverages	Sensitization of HWs and EPI program managers on second year of life platform for RI strengthening	X								
■	Integration of EPI with other services to reduce missed opportunity	Circular for all regions to monitor integration of immunization service with other Maternal, Neonatal and Child health services	X	X	X	X	X	X	X	X	
		Integration of immunization service with other Maternal, Neonatal and Child health services	X	X	X	X	X	X	X	X	
■	Avail vaccination service whenever and wherever needed	Delivery of vaccination service on daily basis by all health facilities	X	X	X	X	X	X	X	X	
		Monitor outreach sessions are conducted as per the plan	X	X	X	X	X	X	X	X	
■	Private HF engagement in RI service	Sensitization of private HF (HWs and Managers) on engagement of PHFs on EPI service delivery.	X								

Supplementary Immunization Activities (SIAs) and Surveillance

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2021	2022	2023	2024	2025
Supplementary Immunization Activities (SIAs)							
Polio Achieve >95% SIAs coverage in all districts through 2024 and sustain polio free status.	<ul style="list-style-type: none"> Improve quality of polio SIAs and monitor performance 	Conduct two rounds bOPV SIAs annually in selected risk areas.	X	X	X	X	X
	<ul style="list-style-type: none"> Integrate polio functions and assets in to the national health system phase by phase 	Conduct mOPV2 SIA as outbreak response in cVDPV2 affected and high risk areas.	X	X	X	X	X
		Map and Mobilize additional funds to bridge funding gaps.	X	X	X	X	X
		Obtain polio vehicle and transition fund from partner	X	X	X	X	X
Mainstream polio functions in health system							
Measles							
Achieve >95% Measles coverage in the follow-up SIAs and outbreak response, 2021 all through 2025	<ul style="list-style-type: none"> Improve implementation capacity 	Revise the m-easles elimination document	X				
	<ul style="list-style-type: none"> Improve quality SIAs 	Conduct follow up measles SIA for 6-59 months age children and monitor performance.	X	X	X	X	X
		Conduct measles reactive vaccination for vulnerability reduction in affected population and areas	X	X	X	X	X
MTN							
Maintain MNT elimination	Consider school Td vaccination	<ul style="list-style-type: none"> Microplanning 	X	X	X	X	X
(<1/1,000LB it is also proxy indicator for MT elimination)		<ul style="list-style-type: none"> resource mobilization for operation logistic and supply coordination and partnership with partners with education sectors 					
	Men A						
Prevent meningococcal meningitis outbreaks all through , 2021 to 025	Catch-up Men A vaccine	Catch-up Men A SIA by 2022 in susceptible population			X	X	X

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES					2021	2022	2023	2024	2025
Measles: Achieve measles surveillance performance indicator targets in all Woredas	<ul style="list-style-type: none"> Strengthen case and lab-based measles surveillance integrated with rubella to achieve performance indicators in all Woredas, with emphasis to enhancing government ownership. 	<ul style="list-style-type: none"> Follow up assessment and Regular Supervision 	X	X	X	X	X	X	X		
	<ul style="list-style-type: none"> Mobilize additional funds to bridge funding gaps to sustain measles case-based surveillance. 	<ul style="list-style-type: none"> Monitoring and data harmonization with measles surveillance indicator. 	X	X	X	X	X	X	X		
MNT surveillance:											
Achieve MNT surveillance performance indicator targets in all Woredas	<ul style="list-style-type: none"> Ensure continuity of measles case-based surveillance during the COVID 19 Pandemic. 	<ul style="list-style-type: none"> Regions and partners orientation and training health workers regarding AFP surveillance in the context of COVID-19 	X	X	X	X	X	X	X		
	<ul style="list-style-type: none"> Ensure continuity of Td vaccination and MNT surveillance during the COVID 19 Pandemic 	<ul style="list-style-type: none"> Revise the MNT sustainability roadmap/ plan Strengthen MNT surveillance 	X					X			
Capacity building to improve MNT performance	<ul style="list-style-type: none"> Consider school Td vaccination 	<ul style="list-style-type: none"> through universal sensitization of health workers and community awareness creation 	X	X	X	X	X	X	X		
	<ul style="list-style-type: none"> Program mainstreaming 	<ul style="list-style-type: none"> Ensure continuity of Td vaccination and MNT surveillance during the COVID 19 Pandemic 	X	X	X	X	X	X	X		

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2021	2022	2023	2024	2025
Pediatrics bacterial meningitis: Establish case-based Meningitis A surveillance by 2022	Upgrade/strengthen the coordination between Men A case based & lab-based surveillance system with Central /Regional laboratories	<ul style="list-style-type: none"> ■ Arrange regular forum between two parties ■ Conduct joint supportive supervision ■ Create Orientation/training opportunities 	X	X	X	X	X
Laboratory							
Polio Lab: Expand environmental sampling sites of AFP	<ul style="list-style-type: none"> ■ Sewage samples collected twice per month for a period of 6 months after the last OPV campaign. ■ Initiation of molecular test for measles and Strengthen the CRS sentinel sites 	<ul style="list-style-type: none"> ■ Coordination meeting with the site coordinators ■ Capacity building of surveillance officers and subnational lab team member about CRS 	X	X	X	X	X

Immunization Supply Chain

Objectives	Strategies	Activities	2021	2022	2023	2024	2025
Computerized vaccine stock and inventory management in all districts and direct delivery of vaccines to HFs by 2025	Pilot test third party logistics, outsourcing of vaccine distribution to the last mile and bimonthly vaccine distribution by integrating with the IPLS.	<ul style="list-style-type: none"> Assess availability of third party logistics who can be able to provide the service. Advocate and discuss the possibility of outsourcing. Implement outsourcing on last mile delivery for pilot sites Review the cold chain capacity of health facilities and select those who have sufficient storage capacity to stock for two months of stock 	X	X	X	X	X
	Integrating the management of non-EPI keep cool items with EPI	<ul style="list-style-type: none"> Assess the feasibility of integrating the management (storage and distribution) non-EPI Keep cool items at all levels Piloting the integration non EPI keep cool items management with EPI from national to the service delivery point. 	X	X	X	X	X
	Conduct operational research on selected iSCM elements.	<ul style="list-style-type: none"> Mobilize resource to conduct operational research on actual vaccine wastages rates Conduct operational research to underhand the actual wastage rates (Opened and unopened vial wastages) of vaccines at all levels Advocate logistics data use for decision making at all levels 	X	X	X	X	X

Objectives	Strategies	Activities	2021	2022	2023	2024	2025		
Improve the Cold chain management	<ul style="list-style-type: none"> ■ Conduct capacity building activities. ■ Maintain temp monitoring devices and formats availability and quality. ■ Make temperature monitoring components a performance indicator 	<ul style="list-style-type: none"> ■ Establish state of the art cold chain maintenance workshops/ facilities and training centers at new and existing institutions, (such as in Debremarkos, Jimma, Gondor and Addis Ababa university, Tegbareid TVET, etc) and others. 		X	X	X	X		
			<ul style="list-style-type: none"> ■ Conducting periodic temperature monitoring studies and conduct calibration: ■ Map the cold rooms and refrigerated vehicles temp /new and existing ■ Conduct calibration periodically /for new and after repair works for cold rooms and refrigerated vehicles. 		X			X	
			<ul style="list-style-type: none"> ■ Establish mechanisms to monitor temperature during transport by procuring and installing of RTMDs 			X	X	X	X
	Establish mechanisms to maintain temperature record traces and reviewed	<ul style="list-style-type: none"> ■ Establish formal temperature reviewing team ■ Establish reporting and feedback system in hard/soft copy on temperature monitoring and schedule periodic temperature review exercise (at least once per month) at all level 	<ul style="list-style-type: none"> ■ Establish recording and reporting system for maintenance (CCE, including refrigerated trucks) activities ■ Establish spare parts inventory management system ■ Establish updatable cold chain equipment inventory system using web based inventory tools, at levels. 						
				<ul style="list-style-type: none"> ■ Improve data generation and utilization for cold chain and maintenance activities 			X	X	X

Objectives	Strategies	Activities	2021	2022	2023	2024	2025
Improve last mile vaccine delivery	Monitoring and fulfilling backorders hold appropriate stock at each level according to min-max level	Prepare schedule for distribution of vaccine from the issuing store to the each receiving store Record the number of deliveries. collection by issuing and receiving stores	X	X	X	X	X
	Ensure implementation of SOPs	Prepare JOBAID illustrating packages	X	X	X	X	X
Revitalize real time stock monitoring system	Temperature monitoring and recording	Advocate to use cool/chill water pack Monitor the recording of VVM status during delivery to different levels	X	X	X	X	X
	Revitalize VITAS/mBrana to incorporate the necessary supply chain parameter	<ul style="list-style-type: none"> ■ Estimate non EPI keep cool items cold chain space needed ■ Exercise logistics data triangulation with other program data sources 	X	X	X	X	X
	Conduct operational research	Develop transition of governance on mBrana and VITAS from JSI to EPSA and MOH.					
		Conduct data triangulation and operational research on selected iSCM elements such as vaccine wastage rate					

Advocacy, social mobilization and program communication

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2021	2022	2023	2024	2025
Increase demand, knowledge, attitude and practices of the community on immunization services utilization at least 5% from the baseline by 2025.	<ul style="list-style-type: none"> Multi-faceted demand generation strategies including advocacy, social mobilization, community engagement, tailored interventions and risk communication to eliminate rumours and misconceptions around vaccination and to build trust in the immunization services 	Update, print and distribute communication materials and tool for HEW by 2022.	X	X	X	X	X
		Develop National Demand Generation on Immunization Plan of Action and Comprehensive immunization risk communication guideline	X	X			
		Ensure HEW have planned community dialogue on immunization annually	X	X	X	X	X
		Establish social media pages for immunization communication by 2021	X	x	x	x	x
		Four TV and Radio spots on routine immunization annually.	X	X	X	X	X
		TV and radio dialogs on immunization annually	X	X	X	X	X
		Hotline services on immunization communication	X	X	X	X	X
		Short SMS messages 2X annually	X	X	X	X	X
		Sensitize and Utilize town criers and social mobilizers for immunization communication	X	X	X	X	x
		Develop messages on AEFI communication	X	X			
		Harmonize, develop and distribute messages(TV spot, radio spot, IEC/BCC materials etc) for new vaccine introductions, SIAs and routine immunizations	X	X	X	X	X
		Develop SMS messages and communicate on vaccine-preventable diseases surveillance annually.	X	X	X	X	X

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2021	2022	2023	2024	2025
		Conduct baseline immunization communication survey	X	X			
		end line immunization communication survey					X
Train all Sub-national level immunization program experts in the planning, implementation and monitoring and evaluation of immunization communication activities by 2025.	Improve the monitoring and evaluation practice of subnational level EPI program experts	Develop immunization communication planning, monitoring and evaluation training material for EPI program experts			X	X	
		Train immunization program experts on planning, monitoring and evaluation of immunization communication.		X	X		
Promote and advocate for multisectoral involvement in immunization Communication	<ul style="list-style-type: none"> Promote partnership and conduct high level advocacy meetings particularly in poor performing regions 	Develop manual for immunization advocacy	X	x			
		National and subnational immunization advocacy workshops	X	X	X	X	X
		Sensitize and engage mainstream media community on immunization communication.	X	X			
	<ul style="list-style-type: none"> Establish regional immunization CTWG 	Draft regional immunization CTWG TOR and support regions to establish the TWG	X	X	X	X	X

NATIONAL OBJECTIVE		STRATEGY		KEY ACTIVITIES					2021	2022	2023	2024	2025
Improve IPC skills of health workers in 75% of health facilities by 2025.	<ul style="list-style-type: none"> Improve health workers' interpersonal communication capacity Monitor and evaluate utilization of immunization communication interventions 	Develop IPC training manual for health workers	Conduct IPC skills trainings for health workers	Conduct baseline assessment on immunization communication outcomes by using Behavior and Social Drivers (BeSD) tools for immunization	Conduct IEC/BCC material distribution auditing	Conduct end line assessment on immunization communication intervention	Conduct rapid inquiry around behavior and social drivers of immunization practices among the marginalized communities	Develop tailored immunization demand strategies for the marginalized communities including activities addressing gender related barriers	Implementation, monitoring, documenting and evaluation of tailored immunization demand generation strategies	X	X	X	X
										X	X	X	X
Conduct two Researches to assess immunization communication intervention outcomes	<ul style="list-style-type: none"> Improve health workers' interpersonal communication capacity Monitor and evaluate utilization of immunization communication interventions 	Develop IPC training manual for health workers	Conduct IPC skills trainings for health workers	Conduct baseline assessment on immunization communication outcomes by using Behavior and Social Drivers (BeSD) tools for immunization	Conduct IEC/BCC material distribution auditing	Conduct end line assessment on immunization communication intervention	Conduct rapid inquiry around behavior and social drivers of immunization practices among the marginalized communities	Develop tailored immunization demand strategies for the marginalized communities including activities addressing gender related barriers	Implementation, monitoring, documenting and evaluation of tailored immunization demand generation strategies	X	X	X	X
										X	X	X	X
Develop, implement, monitor and evaluate tailored immunization demand strategies for urban-poor and marginalized communities by 2024	<ul style="list-style-type: none"> Improve health workers' interpersonal communication capacity Monitor and evaluate utilization of immunization communication interventions 	Develop IPC training manual for health workers	Conduct IPC skills trainings for health workers	Conduct baseline assessment on immunization communication outcomes by using Behavior and Social Drivers (BeSD) tools for immunization	Conduct IEC/BCC material distribution auditing	Conduct end line assessment on immunization communication intervention	Conduct rapid inquiry around behavior and social drivers of immunization practices among the marginalized communities	Develop tailored immunization demand strategies for the marginalized communities including activities addressing gender related barriers	Implementation, monitoring, documenting and evaluation of tailored immunization demand generation strategies	X	X	X	X
										X	X	X	X

Program management

NATIONAL OBJECTIVE	STRATEGY	KEY ACTIVITIES	2021	2022	2023	2024	2025
Improve EPI data quality and attain the acceptable level (within $\pm 10\%$) of data discrepancies on immunization in all health facilities and local use of immunization data for quality improvement.	Intensify data quality improvement tools and technics through addressing technical, behavioral and organizational barriers	Ensure/secure recording tools (immunization register, cards...)	X	X	X	X	X
■ Improve routine admin data quality with internal and external verification methods	Build a body of evidence around successful data quality, data use, and digitization interventions (e-CHIS, EIR, Data Entry Level Validations, Data Quality Apps....)	Provide data Analysis, DHIS2 application and data quality assessment (DOA) trainings	X	X	X	X	X
Introduce technology/application assisted and immunization focused supportive supervision on regular bases.	Ensure availability and access to ODK and other similar applications for supervisory visit	Advocate standardized immunization registration book into part of CHIS tools to use at HP levels and use	X	X	X	X	X
		Support e-CHIS implementation including in developing regional states	X	X	X	X	X
		Conduct data quality and use improvement TWG regular meetings at all level including QJT	X	X	X	X	X
		Pilot electronic immunization register (EIR), identify lesson learned and scale up	X	X	X	X	X
		Introduce locally applicable coverage validation tools	X	X	X	X	X
		Introduce data triangulation method to ensure data quality (eg. from supply and program data)	X	X	X	X	X
		EPI monthly reviews and EPI performance monitoring in all PHCUs and quarterly in all districts using DHIS2II.	X	X	X	X	X
		Setup the ODK infrastructure and conduct training on ODK use	X	X	X	X	X
		Conduct integrated and/or EPI specific systematic supervision using ODK or other similar applications	X	X	X	X	X

NATIONAL OBJECTIVE		STRATEGY	KEY ACTIVITIES	2021	2022	2023	2024	2025
Develop regional and woreda level implementation/operational plan aligned with cMYP	Ensure cMYP is availability and used at all level	Distribute cMYP to all regions (in soft or hardcopy as needed)						
		All regions develop EPI operational/implementation plan in alignment with cMYP and national operational plan	X					
Develop context specific bottom-up EPI micro-plan at woreda and health facility level	Training/orientation on bottom up microplanning	Share developed EPI operational/implementation plan to the next higher level for verification, follow up and feedback	X	X	X	X	X	X
		All woredas and PHUCs develop context specific bottom-up microplan	X	X	X	X	X	
	Collect and collect MP developed at woreda level to regional level	All RHBs compile microplans developed by woredas/zones and provide feedback and support to the woredas/zones	X	X	X	X	X	
		At woreda level, during development of woreda base planning ensure to align with MP	X	X	X	X	X	
Introduce competency-based framework tool to improve EPI managers management capacity at all level	Assign responsible to rollout competency framework	Introduce WHO/CDC competency-based training for regional and national level EPI program managers/personnel		X				
		Monitor the progress of implementation on based on competency-based framework for EPI			X	X	X	
	Introduce e-learning platform in immunization program for capacity building activities		X	X	X	X	X	

Strengthening human and institutional resources

Human Resource for immunization		2021	2022	2023	2024	2025
Objectives	Strategies	Core Activities				
Improve health workers capacity	<ul style="list-style-type: none"> conducting need based trainings, 	50	60	65	70	51%to 80%
		<ul style="list-style-type: none"> Conduct training based on need assessment tool findings by end of 2021 Conduct two training impact assessment by the end of 2025 Increase training access for frontline health workers, health managers and focal persons by the end of 2025 Improve skills and practice of Health workers on EPI; Increase vaccine management knowledge among health workers from current score of 51%to 80% as measured by EVMA by 2025 Achieve MLM training in 80% of districts by 2025 To achieve IIP training for >90% of front line HWs who are providing immunization services Achieve RED/REC training for > 90% HWs working in EPI Achieve data management training (EDQS) for 80% HWs working in EPI Achieve training on VPD surveillance for 80% HWs working in vaccine-preventable disease surveillance. Strengthen EPI program training in pre-service education to 50% of health teaching colleges. Increase training access for frontline health workers, health managers and focal persons by the end of 2025 Initiate vaccinology course training 				
Improve health work staffs turnover	<ul style="list-style-type: none"> incentives and motivations and include pre service curricula for 		X			x

Human Resource for immunization		2021	2022	2023	2024	2025
Objectives	Strategies	Core Activities				
		X	X	X	X	X
		X	X			
		X	X			
Improve Health sector human resource information system	Implement integrated health information system(IHRIS)	X	X	X	X	X
Improve staffing pattern to include EPI managers and coordinators post at national and regional levels	Review the exiting EPI structure by 2021 structure of EPI senior management of the ministry by 2022 Create EPI manger post at Federal level and regional coordinators by 2023 and zonal coordinators by 2024	X	Xx	X	X	X
		X	X	X	X	X
Enhance the capacity of institutions to conduct research	Plan full advanced research methodology studies to increase the capacity in 2021-2022 Build partnership with donors to mobilize technical and financial supports from 2022-2023		X	X	X	X
Establish EPI training center of excellency	Cooperation Strengthen	X	X	X	X	X
	Advocate with government to establish the excellency centers by 2022	X	X	X	X	X

Human Resource for immunization		2021	2022	2023	2024	2025
Objectives	Strategies	Core Activities				
Initiate discussion for local vaccine production capacity in Ethiopia.	Strengthen partnership and cooperation	Conduct feasibility studies to assess local production of the country by 2021-2022				
	Strengthen mentorship	Sharing the findings with appropriate Authorities Conducting mentorship to training centers of excellency				
	Develop improvement plan	X				
	Strengthen Regular performance monitoring	Advocate with partners to conduct EVMA at regional and zonal levels to develop continues improvement plan following EVMA				

Partnership and financial Sustainable

National Objective	Strategy	Key Activities	Year				
			2021	2022	2023	2024	2025
Engage and sustain EPI partners throughout the program planning, implementation and monitoring	Develop and strengthen joint annual planning, implementation, monitoring and evaluation	<ul style="list-style-type: none"> Facilitate joint planning meeting and share the plan with government, partners and stakeholders 	X	X	X	X	X
		<ul style="list-style-type: none"> Conduct joint supervision at all levels (National, Regional, and zonal) 	X	X	X	X	X
		<ul style="list-style-type: none"> Advocating and sharing the CMYP for potential donors 	X	X	X	X	X
		<ul style="list-style-type: none"> Regular follow-up on the progress of the CMYP implementation 	X	X	X	X	X
Secure the required funds for EPI program	Engage the community members, partners, officials, and other stakeholders in facilitation, administration and coordination of the vaccines delivery.	<ul style="list-style-type: none"> Create flexible and open platform to different partners to take part in the CMYP activities/objectives. 	X	X	X	X	X
		<ul style="list-style-type: none"> Mobilize community 	X	X	X	X	X
		<ul style="list-style-type: none"> Map available resource mapping within the community, partners and stakeholders 	X	X	X	X	X
		<ul style="list-style-type: none"> Increase local authorities' participation 	X	X	X	X	X

4.1 Macroeconomic Information

The macroeconomic information was included for the purposes of placing the costing and financing information in to context.

The 2020 GDP per capita, 1,116 USD taken from cMYP 2016 to 2020 as baseline and assumed to increase by a minimum of 9.1% annually.

Macroeconomic information, current and projected, Ethiopia

MACROECONOMIC INDICATORS	2020	2021	2022	2023	2024	2025
GDP per capita	1116	1218	1328	1449	1581	1725
Total Health Expenditures per capita (THE per capita) in USD	9.46	11.04	12.87	15.02	17.52	20.44
Government Health Expenditures (GHE %)	11.6	12.1	12.7	13.2	13.8	14.5

Data extrapolated from cMYP 2016 to 2020 with similar assumption

4.2 Methodology for costing the cMYP

The cMYP 2021-2025 costed using OneHealth Tool (OHT). This tool is built on six health system building blocks, drawing upon the WHO framework on health systems that include health workforce, infrastructure, logistics and supply chain, health information system, health systems financing, leadership and governance. OHT is a policy projection-modeling tool that allows users to create short- and medium-term plans for scaling up health services. It is used for health planning, costing and budgeting with a focus on integrating planning and financial space analysis. The tool is also organized into three components: health systems, health services delivery, and impact module. The tool comprises different country specific default data like; Baseline situation analysis (Epidemiology, Demography, current coverage, etc...); Intervention standards (drug and supply cost per average case based on WHO treatment guidelines + international Vaccine prices from UNICEF, MSH and IDA, estimated personnel type & time required); Expenditures &

GDP growth based on WHO/NHA database; and Disease Programme activity standards.

4.2.1: Costing Assumptions

Targets were set using the available evidences from the EPI surveys such as EDHS, WUNIC estimates, routine DHIS_2 administrative data and expert opinions. Inputs for the tool were completed through series of consultative workshops with EPI partners, program experts and stakeholders. List of priority Immunization interventions were identifies and prioritized prior to entry to OneHealth Tool for costing and Target setting. Then the tool generated overall program cost and Targets considering existing interventions and no additional investments such as infrastructure expansion. The costing and Target assumptions are designed to be linked to cv000 live births, Infant Mortality from 47 to 36/1000 live births and Under Five Mortality from 59 to 44/1000 live births in line with the HSTP II.

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. Implementing this multiyear plan will require increasing costs over the cMYP 2021-2025 periods. The major increases in program costs are driven mainly by:

- New Vaccine Introduction
- Supplemental Immunization activities and VPD outbreak response Vaccinations
- Increase in target population and age group
- Need to expand cold chain capacity and rehabilitation

4.3 Costing of cMYP 2021-2025

The overall EPI Program cost for the cMYP 2021-2025 including NVIs and SIAs is estimated to be 1,165,091,340. The cost by intervention types are narrated section by section and indicated in the table as follows.

4.3.1 Vaccines and Injection Equipment

The costs are function of the unit prices for individual vaccines, with quantities determined by the target population, which is adjusted for by coverage and wastage objectives. The prices based on information from GAVI/UNICEF supply division. For the period of five years a total of 300,590,940.44 USD will be needed for the routine vaccines and injection materials. For this cMYP period, new vaccine introduction plan includes HepB birth dose, Men A, COVID-19 Vaccine, Yellow fever and IPV2 with the total vaccine and supplies estimated cost of 496,415,192.99 USD required for the cMYP period.

4.3.2 Personnel Costs (EPI specific and shared)

Over the period of 2021 to 2025, the total programme cost is 167,355,728.7USD and this cost includes costs of program specific HR, capacity building, supportive supervision, communication and community engagement, operational cost to reach HTR, transportation cost, CCE and spare part costs. 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 based on Government gross wages. The quantities available and needed for the duration of the cMYP were included. Time spent on EPI estimated by input of the different level of staff at different levels.

4.3.3 Cold Chain Equipment Procurement and Maintenance

Ethiopia developed a multi-year cold chain rehabilitation plan and the requirements of the cold chain equipment considered the current gap, replacement of the over aged cold chain equipment and the new health facilities to be constructed, construction of additional cold rooms at national and sub-national level, and procurement of spare parts, refrigerated trucks and cold chain monitoring tools. To replace old equipment, furnish all new health facilities, fill the current gap and procure spare parts and cover the maintenance, procure additional cold rooms a total of 28,678,667.30 USD will be needed for the period of five years.

4.3.4 Operational Costs for Campaigns

Polio supplementary immunization activities will be conducted twice a year at national level. Ethiopia is also a priority country for measles control and neonatal tetanus elimination. Measles follow-up through supplementary immunization will be conducted every 2 to 3 years covering children 9 to 59months and bOPV preventive campaign every year, Men A catch up campaign once, COVID-19 response vaccination, nOPV2 response campaign every year and Yellow fever reactive vaccination phase by phase. The total cost estimated to conduct the planned supplemental immunization activities is 166,228,917.84USD

Costs for the different cMYP components (shared and EPI specific)

COST CATEGORY	FUTURE BUDGET REQUIREMENTS						TOTAL 2021-2025
	EXPENDITURES IN 2020	2021	2022	2023	2024	2025	
Vaccines (routine only)	71,132,478.60	49,073,644.4	53,612,482.75	58,482,660.03	63,349,704.08	68,300,685.21	292,819,176.5
Injection supplies	3,656,140.30	1,284,061.9	1,412,596.8	1,557,331.7	1,689,290.1	1,828,483.5	7,771,763.9
Program Specific HR	36,000.00	36,000.00	36,000.00	36,000.00	36,000.00	36,000.00	180,000.00
Training	433,126.08	4,719,628	6,912,203.00	4,710,713.00	6,802,713.00	0	23,145,257
General Programme management	12,000.00	32,310.00	12,000.00	12,000.00	12,000.00	0	68,310.00
Supervision	2,925,982.00	3,069,382.00	3,165,382.00	3,165,382.00	3,165,382.00	0	12,565,528.00
Communication, IEC/social mobilization	970,067.50	2,575,968.50	6,542,657.86	2,574,968.50	5,689,657.86	50,000.00	17,433,252.72
Operational Cost to reach							
HTR, Transport, CCE, Spare part	28,031,749.00	28,274,165.00	28,417,481.00	28,543,393.00	28,728,342.00	0	113,963,381.00
VPD Surveillance	689,954.30	832,816.57	981,292.39	1,135,142.39	1,294,067.14	1,458,573.88	5,701,892.37
Supply Chain		375,946.30	7,440,654.00	6,365,753.00	6,571,570.00	7,924,744.00	28,678,667.30
NVI with Injection Supplies		65,492,828.65	210,087,610.35	89,446,087.7	75,346,354.94	56,042,311.3	496,415,192.99
Campaigns with Injection Supplies		482,862.1	40548544.59	56,790,621.57	36,412,207.03	31,994,682.54	166,228,917.83
EPI Operational Research		-	-	120,000.00		-	120,000.00
Total	107,887,497.78	156,249,613.429	359,168,904.716	252,940,052.895	229,097,288.165	167,635,480.4528	1,165,091,339.659

4.3.5. Financial Sustainability

According to the National Health Accounts 2016/17, the Government contribution to the Total Health Expenditure has increased from 30% to 32%. Ethiopia has been covering the cost of traditional Vaccines and sharing the cost of NVIs in the past cMYP period. The MOH is committed

to increase Immunization financing both for routine immunization and New Vaccine Introductions in the next five years strategic cMYP (2021-2025). The increase in the share of the government contribution to Health is encouraging, as this pushes the Health Sector towards more financial sustainability

Implementation, Monitoring and Evaluation

5.1 Implementation

The cMYP, once developed and approved by all ICC members, will need to be printed and largely disseminated to national and sub national government bodies, development partners and implementers at district level. The cMYP will serve both as a management and advocacy tool for the MOH /EPI and development partners to better understand their involvement while making decision to support the immunization program. To operationalize the cMYP, an operational plan needs to be developed. This will be done every year, with much attention focused on the year's objectives and strategies as indicated in cMYP. Each year's operational plan will have detail activities with required resources and indicators to monitor and evaluate the implementation status and output/ outcome of the intervention. It also supports districts to develop RED micro-plan.

5.2 Monitoring and Evaluation

To properly monitor the implementation of cMYP and evaluate the output/outcome, a robust M&E plan will be developed and used. Regular monitoring and periodic evaluation will be carried out using different mechanisms. Annual and mid-year reviews will be planned and carried-out as main mechanism to monitor progress made toward the planned objectives, identify the strengthen and weaknesses and update the plan as needed. A feedback will always be provided to EPI focal points at all levels.

Immunization System Subcomponent	Suggested Indicators	Frequency of reporting	Source of data	Baseline Targets					
				EDHS 2019/2020	2021	2022	2023	2024	2025
Access	Penta 1 immunization coverage	Monthly	DHIS-2 and Survey	76%	89%	91%	94%	96%	98%
	Percent of public health facilities providing routine immunization service	Annually	DHIS-2 and SARA	81%	100%	100%	100%	100%	100%
	Penta 3 immunization coverage	Monthly	DHIS-2 and Survey	61%	81%	85%	89%	92%	95%
	MCV1 immunization coverage	Monthly	DHIS-2 and Survey	59%	80%	84%	88%	90%	93%
	MCV2 immunization coverage	Monthly	DHIS-2 and Survey	55%	70%	76%	81%	84%	87%
	Proportion of Woredas with $\geq 95\%$ of Penta 3 coverage	Monthly	DHIS-2 and Survey	81%	85%	90%	92%	94%	95%
Utilization	National Penta 1–Penta 3 drop-out rate	Monthly	DHIS-2 and Survey	20%	8%	6%	5%	4%	3%
	National Penta 1–MCV1 drop-out rate	Monthly	DHIS-2 and Survey	23%	9%	7%	7%	6%	5%
	Percentage of districts with drop-out rate Penta 1–Penta 3 = $< 5\%$	Monthly	DHIS-2 and Survey	70%	77%	82%	86%	89%	90%
	Penta 1 Percentage gap between lowest–highest socio-economic quintile	Annually	EDHS vaccination coverage and inequality trend analysis	36%	38%	40%	43%	46%	50%
Equity	Penta 3 Percentage gap between lowest–highest socio-economic quintile	Annually	EDHS vaccination coverage and inequality trend analysis	34%	36%	38%	41%	44%	48%
	Proportion of children screened for vaccination status at under five OPD and linked for immunization service	Monthly	DHIS-2	NA	50%	65%	70%	76%	80%
Integration	Percentage of new vaccines introduced from targeted new vaccine for introduction (Men A, Yellow fever, MR, HeB birth dose, IPV 2, COVID 19)	Annually	Vaccine introduction report	NA	33	67	0	0	0

Immunization System Subcomponent	Suggested Indicators	Frequency of reporting	Source of data	Baseline Targets					
				EDHS 2019/2020	2021	2022	2023	2024	2025
Measles	Number of Measles SIAs conducted from targeted catch-up measles vaccination camping in the 5 year.	every two year	SIAs admin and survey report	NA	0	1	0	1	0
	Percentage of children vaccinated during the Measles SIAs	every two year	SIAs admin and survey report	NA	0	95%	0	95%	0
	Number of bOPV SIAs conducted from targeted preventive vaccination campaign in the 5 year.	Bi-Annually	SIAs admin and survey report	NA	2	2	2	2	2
	Percentage of children vaccinated during the bOPV preventive SIAs	Bi-Annually	SIAs admin and survey report	NA	95%	95%	95%	95%	95%
Men A	Number of Men A catchup SIAs conducted from targeted vaccination campaign in the 5 year.	Annually	SIAs admin and survey report	NA	0	1	0	0	0
	Percentage of children vaccinated during the Men A catch-up SIAs	Annually	SIAs admin and survey report	NA	0	95%	0	0	0
	Number of yellow fever catch-up SIAs conducted from targeted vaccination campaign in the 5 year.	Annually	SIAs admin and survey report	NA	0	1	0	0	0
Yellow fever	Percentage of children vaccinated during the yellow fever catch-up SIAs	Annually	SIAs admin and survey report	NA	0	95%	0	0	0

SIAs

Immunization System Subcomponent		Suggested Indicators	Frequency of reporting	Source of data	Baseline EDHS 2019/2020	Targets				
						2021	2022	2023	2024	2025
		Availability of communication plan	Annually	Annual plan document	NA	1	1	1	1	1
Communication and demand generation	Knowledge	Percent of mother/caretaker who knows about vaccination services	once in the 5 years	KAP report	76.7%					85%
	Attitude	Percent of mother/caretaker who perceive immunization protects a child from disease	once in the 5 years	KAP report	72.3%					83%
	Practice	Percent of mothers/caretakers who have received timely vaccination for their child or willing to take their child for vaccination	once in the 5 years	KAP report	67.6%					80%
Immunization supply chain	Availability	Proportion of health facilities without stockout of any vaccine	Monthly	VRF/mBrana		90%	92%	94%	95%	
	Quality	Proportion of vaccine storage points with EVM score >80%	Annually	EVM self-assessment	70%	72%	75%	80%	80%	80%
	Efficiency	Proportion of vaccine storage points with adequate cold chain capacity	Annually	Web based/ Physical annual inventory	50%	55%	80%	83%	85%	86%

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