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MINISTRY OF HEALTH, ETHIOPIA

Integrated management of newborn and childhood illness implementation in Ethiopia, with special emphasis on pneumonia case management

FORMATIVE ASSESSMENT 2022



Established in 2003, Malaria Consortium is one of the world's leading non-profit organisations specialising in the prevention, control and treatment of malaria and other communicable diseases among vulnerable populations. Our mission is to save lives and improve health in Africa and Asia through evidence-based programmes that combat targeted diseases and promote universal health coverage.

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Abbreviations

CHAI	Clinton Health Access Initiative
CIFF	Children’s Investment Fund Foundation
DHIS	District Health Information System
ECD	early childhood development
eCHIS	Electronic Community Health Information System
EDHS	Ethiopian Demographic and Health Survey
EPI	Expanded Program on Immunization
FGD	focus group discussion
FMoH	Federal Ministry of Health
GAPPD	Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea
HW	health worker
HEW	health extension worker
HMIS	health management information system
IMNCI	Integrated Management of Newborn and Childhood Illness
ICMNCI	Integrated Community Management of Newborn and Childhood Illness
KII	key informant interview
MDG	Millennium Development Goal
NGO	non-governmental organisation
NICU	neonatal intensive care unit
NMR	neonatal mortality rate
OPD	out-patient department
ORS	oral rehydration solution
RHB	regional health bureau
SDG	Sustainable Development Goal
SNNPR	Southern Nations, Nationalities, and Peoples’ Region

THDR	Transform Health in Developing Regional States
UNICEF	United Nations Children’s Fund
UN	United Nations
WHO	World Health Organization

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Abstract

Background: In 1990, the world made a commitment to protect and fulfil children’s rights as preserved in the Convention on the Rights of the Child. Among the most fundamental of these rights is the right of every child to survive. This is now reflected in the Sustainable Development Goal 3.2 target to end preventable deaths among newborns and children under five by 2030. Since 1990, the total number of deaths in children under five worldwide has declined from 12.6 million to 5.0 million. In 2020, sub-Saharan Africa had an average under-five mortality rate of 72 deaths per 1,000 live births. In Ethiopia, this was 48.7 deaths per 1,000 live births. Pneumonia is the leading infectious cause of death among children under five. Nigeria, India, Pakistan, Ethiopia and Niger account for over half of all deaths attributable to pneumonia in children under five. In Ethiopia alone, pneumonia accounts for 17 percent of deaths in children under five. To address the problem, multidimensional activities have been implemented, including an integrated approach to the management of newborn and childhood illness. However, a greater understanding of these activities and existing gaps is needed.

Objective: To assess the gaps in the protection, promotion, prevention, diagnosis and treatment of childhood illnesses, with a focus on pneumonia and diarrhoea case control, and to develop an action plan to enhance pneumonia and diarrhoea control in Ethiopia.

Methods: A qualitative approach using desk review, in-depth interviews and focus group discussions was taken. The interviews and focus group discussions used semi-structured guides and were conducted with government and non-governmental organisations working in child health programmes. All interviews were recorded, transcribed verbatim and thematically analysed. The themes are illustrated using participants’ quotes.

Results: The formative assessment findings demonstrated critical weaknesses in the health system that affected service supplies. Issues included a shortage of drugs, medical supplies and resources for health workers; poor training and supportive supervision of health workers and extension workers; high attrition and turnover of health workers and extension workers, resulting in poor service quality and limited health education; and poor support for carer health education and capacity to complete the required treatment and give additional supportive care. Several reasons were provided for the closure of health posts, including delayed referrals due to weak referral pathways. The formative assessment also found challenges on the demand side. These included low utilisation of child health services; low awareness on the warning signs of childhood illness by carers and the wider community; delayed healthcare-seeking behaviour; and weak adherence to treatment amongst caregivers. In-depth interview participants reported declining budget support from partners, as well as weak community mobilisation and ownership.

Conclusion: The combined weaknesses and challenges associated with both the demand and supply of health services identified in this formative assessment are believed to be key contributing factors for high child mortality and morbidity. The formative assessment identified issues from both the supply and demand side that reduced service uptake at the community and health facility levels. Through various social mobilisation techniques, the community’s awareness towards service utilisation must be addressed. Additionally, supply-side issues necessitate improving the healthcare system to close the gaps that have been found. Overall, the government and stakeholders should collaborate to improve and maintain service quality while mobilising sufficient resources to handle supply and demand challenges. The findings of this formative assessment will go on to facilitate the creation of a national action plan for pneumonia and diarrhoea in the context of the county’s Integrated Management of Newborn and Childhood Illness approach.

1 Introduction

Globally, mortality in children under five fell from 12.6 million in 1990 to 5.0 million in 2020; however, sub-Saharan Africa remains the region with the highest under-five mortality rate, and severe pneumonia and diarrhoea are among the most common reasons for hospital admission and death.^[1] Among the countries with the highest burden is Ethiopia, where pneumonia is responsible for around 17 percent of all deaths in children under five.^[2] To address high child and newborn mortalities, Ethiopia has developed and implemented several strategies and roadmaps, including the National Strategy for Newborn and Child Survival that was first introduced in 2005. Central to this approach is the Integrated Management of Newborn and Childhood Illness (IMNCI) strategy and the Integrated Community Management of Newborn Childhood Illness (ICMNCI) approach.

While Ethiopia has made significant progress in addressing the burden of under-five mortality and morbidity, cases and deaths attributable to pneumonia and diarrhoea remains high. A detailed plan is required to implement integrated approaches to reduce under-five deaths attributable to pneumonia and diarrhoea. This formative assessment explores the strengths and weaknesses of the existing strategies, the quality and utilisation of services, and the related issues critical for the enhancement of child health services, to inform the development of an IMNCI action plan for pneumonia and diarrhoea.

2 Background and literature review

2.1 Global burden of under-five morbidity and mortality

In 1990, the world made a commitment to protect and fulfil children's rights as preserved in the Convention on the Rights of the Child. Among the most fundamental of these rights is the right of every child to survive.^[3] Significant global progress has been made in decreasing under-five morbidity and mortality since the declaration was put into force. Since 1990, the total number of deaths in children under five worldwide has seen a 60 percent drop, from 93 deaths per 1,000 live births to 37 deaths per 1,000 live births.^[1]

Building on the commitment made in the Convention on the Rights of the Child towards children's survival, the Sustainable Development Goals (SDGs) — set in 2015 — seek to reduce childhood morbidity and mortality. If every country met or exceeded the SDG 3.2 target to end preventable deaths of newborns and children under five, eight million under-five deaths could be averted between 2021 and 2030.^[4] However, according to the United Nations (UN) 2021 Inter-agency Group for Child Mortality Estimation, more than 50 countries will not meet the under-five mortality target by 2030, and more than 60 countries will miss the neonatal mortality target without immediate action.^[4]

Children continue to face widespread regional disparities in their chances of survival, with 66 deaths per 1,000 live births in low-income countries — this is 14 times higher than the average in high-income countries.^[4] Sub-Saharan Africa remains the region with the highest under-five mortality rate in the world. In 2020, the region had an average under-five mortality rate of 74 deaths per 1,000 live births.^[5] Acute diarrhoeal and respiratory infections are the most frequent childhood illnesses and causes of attendance at health services in low- and middle-income countries, and severe pneumonia and diarrhoea are among the most common reasons for hospital admission.^[6]

Globally, pneumonia and diarrhoea account for 23 percent of all deaths in children under five (14 percent and nine percent, respectively) and result in the loss of two million lives each year.^[7, 8] Although the implementation of safe, effective and affordable interventions has reduced child deaths, reductions in pneumonia mortality have been relatively lower than other causes of death, and pneumonia remains the leading infectious cause of death in children under five worldwide.^[9] Nigeria, India, Pakistan, Ethiopia and Niger alone account for over half of all deaths in children under five due to pneumonia.^[10]

2.2 Burden of under-five morbidity and mortality in Ethiopia

Ethiopia has made impressive progress towards achieving many of the national and global health indicators related to child morbidity and mortality. This has been attributed to strong leadership from the Federal Ministry of Health (FMOH), work with stakeholders, intensive investment in health facility expansion and the health system strengthening that has been championed by the government and partners. The country achieved Millennium Development Goal (MDG) 4 (reducing under-five mortality by two-thirds) in 2012, three years ahead of the 2015 target.^[11] This, in part, has been driven by the government's National Child Survival Strategy. However, while celebrating the achievements made through the successful implementation of the strategy, the FMOH has recognised that current under-five child, infant and neonatal mortality rates are unacceptably high. The Ethiopian under-five mortality estimates for 2020 were 48.7 deaths per 1,000 live births.^[12]

Ethiopia's National Newborn and Child Development Strategy found that 56 percent of under-five mortality in the country can be attributed to neonatal causes.^[11] This is followed by pneumonia (17 percent) and diarrhoeal diseases (eight percent).^[11] Additionally, the strategy shows that there is regional disparity in under-five mortality with 101, 90 and 86 deaths per 1,000 live births occurring in the Somale, Beni Shangul Gmuz and Gambela regions, respectively.^[11, 13] This indicates the need for contextualised implementation approaches for pastoralist regions and the need to understand the context of childhood illnesses across the country.

2.2.1 Healthcare-seeking behaviour of caregivers for childhood illnesses in Ethiopia

Understanding caregivers' healthcare-seeking behaviour is an important factor in addressing child mortality and morbidity resulting from childhood illnesses. According to the 2016 Ethiopian Demographic and Health Survey (EDHS), among children with symptoms of acute respiratory infection (ARI), only 32 percent sought treatment; among children with diarrhoea, only 29.5 percent received an oral rehydration solution (ORS).^[14]

A 2020 community-based study conducted in Ethiopia's capital, Addis Ababa, reported that more than two-thirds (71 percent) of children had more than one symptom of illness in the two weeks prior to the data collection.^[15] The three most common symptoms were fever (86.8 percent), cough (66.4 percent) and diarrhoea (35.7 percent).^[15] Only 6.6 percent of caregivers were found to have taken their children to a point of care within 24 hours after recognition of common childhood illness symptoms. However, 52.4 percent of caregivers took their child to a health facility after the second day of illness.^[15] Care was more commonly sought at a health facility when multiple symptoms presented, rather than a single symptom. Thirty percent of caregivers did not seek care from health facilities; five percent purchased medicine from pharmacies; 11 percent gave home treatments; and eight percent sought no care at all.^[15]

Another community-based cross-sectional study conducted in Woldia town showed that 60.2 percent of children were taken to health facilities or providers for medical care after the onset of symptoms.^[16] Among these, diarrhoea (44.3 percent), fever (34.1 percent) and a cough (21.6 percent) were documented as the most common symptoms. The reasons that caregivers gave for not taking a child to the health facility included the belief that children would recover without treatment (34.6 percent); financial issues (14.4 percent); lack of time (20.2 percent); or caregivers' feeling that the health services were inadequate (29.3 percent).^[16] Another study found that mothers who had been exposed to mass media and who noticed signs of severe illness were 5.6 and 4.2 times more likely to seek healthcare compared to their counterparts.^[17]

A study conducted in rural northeast Ethiopia found that only 49 percent of mothers sought healthcare at health institutions during the course of their child's illness, and only 27 percent of mothers sought healthcare within a day of observing signs of childhood illness.^[18] Of those that did seek care, health posts and health centres were the most common sources of services. Seventy-three percent of mothers said their main reason for not seeking care was the assumption that the disease was self-limiting.^[18]

2.2.2 Integrated management of newborn and childhood illness programmatic strategy in Ethiopia

To target child survival at the community and health facility level, Ethiopia adopted several programmatic strategies, including the IMNCI in 1996. IMNCI has been a key strategy to reduce deaths from common childhood illness in many low- and middle-income countries since 1990, with 22 countries implementing the strategy in Africa in 2019.^[19] As children commonly present with symptoms of more than one preventable disease, the need for an integrated approach to manage child health was recognised. The strategy offers an integrated package of child health services at facility level that aims to promote growth and development, and reduce levels of illness, disability and death in children under five by taking a holistic approach to childhood illness. It seeks to improve case management skills of healthcare staff, improve the health system and improve communities' health practices.

Ethiopia's FMOH adopted the IMNCI training package to build health workers' (HWs) knowledge and skills at health centres and primary hospitals to provide evidence-based care for children, strengthen the health system, and promote key family and community practices. The IMNCI is central for the achievement of Ethiopia's National Strategy for Newborn and Child Survival.^[20] The strategy has been successfully implemented in two completed rounds (2005–2015 and 2015–2020), with a third round currently being developed. It aims to ensure universal coverage of high-quality, high-impact newborn and child health interventions alongside community empowerment to generate service demand. The strategy's implementation and management are led by the FMOH, regional health bureaus (RHBs), zonal health districts, *woreda* health offices and public health facilities. This is supported by many key stakeholders, including development partners, non-governmental organisations (NGOs), professional societies and the private sector.

Since its development in 2005, several additional evidence-based intervention platforms have been incorporated into the original National Strategy for Newborn and Child Survival. These include community management of pneumonia through integrated community case management (iCCM), established in 2010, and community-based newborn sepsis and severe disease management through the Community Based Newborn Care (CBNC) approach, launched in 2013. These interventions were combined to form the ICMNCI in 2016. The ICMNCI seeks to bring the treatment of sick newborns

and children closer to the community through the assessment and treatment of pneumonia, diarrhoea, malaria, malnutrition and neonatal conditions by community-based health extension workers (HEWs) deployed at health posts. These services are available for children in rural communities that do not have access to curative healthcare within a five-kilometre distance. Delivery of care through community health workers has been proved to increase coverage of specific treatments and lead to substantial reductions in child mortality.^[21]

Ethiopia began implementing the iCCM programme through the Health Extension Program (HEP) in 2010 and has since scaled it up to all regions. The programme is provided by an estimated 32,000 HEWs.^[23] As of June 2020, the FMoH estimated that iCCM coverage was more than 98.5 percent.^[22] Despite this high coverage, quality remains a concern and several studies have cited challenges with staff attrition, supply shortages, limited support for HEWs and limited demand for services.^[23, 24] These challenges are thought to limit the impact of iCCM, and now the IMNCI, on child mortality.

In 2018, a survey was conducted in the Gedeo zone of southern Ethiopia as part of a community-based management study on severe pneumonia. The survey found that, among the 907 HWs deployed at health facilities, only 16 percent of the staff trained in IMNCI/iCCM were present on the day of data collection (77 percent at health posts, 11 percent at health centres and zero percent at hospital level).^[25] In addition, the survey revealed that only four percent of the health centres and 29 percent of the health posts received a minimum of one supervisory visit in the six months preceding the survey.^[25] Only one out of seven (14 percent) health facilities had the required supply of antibiotics and only four percent of the facilities had the job aids and general supplies needed for the programmes. No pulse oximeters, oxygen cylinders or concentrators were present at any of the health facilities except for the hospital.^[25] The authors concluded that the existing support for managing childhood pneumonia in the context of IMNCI/iCCM in Ethiopia is weak.

2.3 Global response to pneumonia prevention and control

Globally, there are examples of strategies that seek to improve disease specific control for pneumonia within an integrated child health approach to address existing gaps — as have been highlighted in Ethiopia — and to strengthen the response to pneumonia in resource-limited countries.

2.3.1 The Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea

The global burden of childhood mortality due to pneumonia and diarrhoea led the World Health Organization (WHO) to develop a pneumonia control strategy suitable for countries with limited resources — this is the integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea (GAPPD). Management of pneumonia and diarrhoea cases forms the cornerstone of this strategy. The plan identifies simple signs and symptoms to classify varying severities of pneumonia and diarrhoea in settings with little or no access to diagnostic technology, and lays out various interventions.^[9]

The GAPPD aims to address the challenge of tackling pneumonia and diarrhoea. This action is critical in meeting the SDG target to ending preventable newborn and child deaths by 2030. The GAPPD brings together essential services and interventions to promote practices to protect children from disease, to create healthy environments, and to ensure that every child has access to appropriate preventive and treatment measures.^[26]

One of the key recommendations made in the GAPPD strategy is the use of simple, standardised guidelines for the identification and treatment of pneumonia and diarrhoea in the community, at first-level health facilities and at referral hospitals, such as those used for the integrated management of childhood illness. The GAPPD calls on national governments and their partners to work together, demonstrate their commitment and allocate the necessary resources to prevent child deaths due to pneumonia and diarrhoea.

2.3.2 Strategic approaches to childhood pneumonia prevention and control in African countries: The case of Nigeria

In line with the GAPPD, Nigeria developed the first-ever national pneumonia control strategy and implementation plan to alleviate pneumonia within a national agenda for the integrated treatment of common childhood illness.^[27]

The strategy provides clear priorities and recommendations, as well as coordination and accountability mechanisms to strengthen pneumonia control in a manner that is integrated into existing policies and strategies. It calls for the mobilisation of a strong coalition of partners to ensure that funding and progress are in line with the disease burden, in order to reduce newborn and child pneumonia deaths to less than three per 1,000 live births by 2030, as per GAPPD targets.

The strategy presents six priorities to achieve the vision of reducing newborn and child morbidity and mortality caused by pneumonia in an integrated manner^[27]:

- Strengthen coordination mechanisms to push action and accountability within integrated programming priorities
- Drive political commitment and action, with a focus on the subnational level, while mobilising sector-wide sustainable financing
- Include pneumonia-relevant metrics in health information systems to allow for the collection and use of high-quality data on disease burden and interventions
- Change caregiver behaviour and improve caregiver awareness to better prevent and respond to pneumonia
- Increase the coverage and quality of pneumonia control interventions within integrated service delivery across public and private points of care
- Strengthen supply chains to scale up products required for pneumonia control.

3 Situational analysis

This section provides an analysis of the newborn and child health offering in Ethiopia to present a rationale for a national pneumonia control strategy and implementation plan in this context. The situational analysis included a desk review of relevant global and national strategy documents, guidelines and research to inform a SWOT (strengths, weaknesses, opportunities, threats) analysis of the current state of newborn and child health in Ethiopia.

3.1 SWOT analysis of newborn and child health in Ethiopia

Strengths	Weaknesses
<ul style="list-style-type: none"> • Development of the five-year National Newborn and Child Health Development Strategic Plan (2021–2025)^[11] • Development of a roadmap towards maximising newborn and child survival and wellbeing by 2030 • Availability of a national integrated approach for common childhood illness (IMNCI and ICMNCI) • Revision of IMNCI training materials to include recent global and national recommendations • Integration of early childhood development (ECD) in IMNCI, and ECD messages integrated in mobile health platforms • Orientation on major changes of the revised IMNCI guide given to child health officers from all regions • Launch of the revision and harmonisation of the ICMNCI programme • Contextualisation and launch of ICMNCI guideline for pastoralist regions • Dissemination of performance review and clinical mentoring meeting (PRCMM) trainings to developing regions (Afar, Benishangul-Gumuz, Gambella and Somali) • Programme-based supportive supervision on IMNCI and ICMNCI to regions • Planning of critical supplies for health facilities (pulse oximetry, oxygen concentrator, infusion pumper, digitised weighing scale)^[28] • Good vaccination coverage at national level for pentavalent-3, measles and full vaccination (100, 97 and 93 percent, respectively)^[28] • Development of National Food and Nutrition Strategy (2021–2030) and endorsement by the National Nutrition Coordination Body • Celebration of World Breastfeeding Week at national and regional level through panel discussions and message dissemination via TV/radio spots • Development of a comprehensive and integrated nutrition service package and its implementation guideline for pastoralist and agro-pastoralist areas^[28] • Development of the Water, Sanitation, Hygiene and Environmental Health Guideline. 	<ul style="list-style-type: none"> • Weak governance evidenced by low commitment and ownership of newborn and child health programmes at lower levels of the health system • Inadequate government budget allocation for immunisation at service delivery points • No exemption for childhood services • Weak sectoral and multi-sectoral collaborations and coordination • Poor vaccination services: <ul style="list-style-type: none"> ○ High dropout rate between pentavalent-1 vaccination and pentavalent-3, except in Addis Ababa^[28] ○ Disparity of meningococcal vaccine-2 coverage in the developing regions (Benishangul, Gumuze, Gambella and Somlaia Afar, 46, 52, 48 and 60 percent, respectively)^[28] ○ Marked difference in vaccination coverage rate among urban and rural areas^[28] • Weak curative services: <ul style="list-style-type: none"> ○ Low level of oxygen forecasting and low utilisation and management of oxygen at health centres (11 percent); low cylinder/concentrator functionality (two percent); no oxygen supplies supported with pulse oximeters (zero percent) and no training for staff on the management of oxygen therapy (zero percent)^[29] ○ Key gaps include poor quality service, as well as caseload, training and supportive supervision gaps and high turnover of previously trained HWs^[30] ○ Limited resources, including medical equipment, drugs and basic infrastructures for health posts ○ Irrational use of treatment for pneumonia and self-medication^[31] ○ Absence of a well-established referral system ○ A high turnover of HEWs^[32] • Poor demand for services: <ul style="list-style-type: none"> ○ Delayed healthcare-seeking behaviour for common childhood illnesses (64 percent for rural mothers and 44.7 percent urban).^[31] Low-level healthcare-seeking behaviour for common childhood illness.^[33] Low perception of caregivers to seek care from health facilities for their child.^[18]

Opportunities	Threats
<ul style="list-style-type: none"> • New vaccine introduction for different disease entities (especially pneumococcal conjugate, pentavalent, rotavirus and meningococcal vaccines) • Expansion of health facilities • World Pneumonia Day and SDG target focus attention on pneumonia as a leading cause of child mortality and remind governments of their responsibilities and commitments • The GAPPD global target to reduce pneumonia mortality to less than three per 1,000 live births by 2025^[11] • Availability of financial support to regions for the implementation of periodic intensification of routine immunisation health system strengthening activities • World Breastfeeding Week was celebrated at national and regional level through panel discussions, raising awareness on the importance of early and exclusive breastfeeding and the support needed to raise coverage. 	<ul style="list-style-type: none"> • Disruption associated with the global COVID-19 pandemic • Inadequate oxygen production and inequitable and insufficient oxygen plant distribution^[29] • Lack of amoxicillin dispersible tablets and ORS zinc co-pack from market/supplies • Delay of SDG budget release^[15] • Insecurity/local unrest in some parts of the country • Shortage of cold chain equipment and vaccination medical supplies.

3.2 Rationale

Ethiopia developed the National Newborn and Child Survival and Development Strategy 2021–2025 with the overall goal of reducing the under-five mortality rate from 59 to 43 deaths per 1,000 live births, the infant mortality rate from 47 to 35 deaths per 1,000 live births, and the neonatal mortality rate from 33 to 21 deaths per 1,000 live births by 2025 compared to 2019 levels.^[11] The National Newborn and Child Survival and Development Strategy describes strategic objectives, high-impact interventions, activities and targets to be achieved by 2025. The strategy requires a detailed plan to implement the integrated approaches, which aim to reduce under-five deaths from pneumonia and diarrhoea. As outlined by the GAPPD and the work in Nigeria, special attention is required to enhance the management of pneumonia and diarrhoea to realise the goals, objectives and targets of the National Newborn and Child Survival Strategy towards these diseases.^[7, 27] Malaria Consortium has given emphasis to IMNCI as a critical intervention platform for reducing child morbidity and mortality, particularly as a result of pneumonia and diarrhoea. Formative research will explore the strengths and weaknesses of the existing strategies, quality of child health services and related issues that are critical for enhancing child health services and their use.

4 Objectives

4.1 General objective

To assess the gaps in the protection, promotion, prevention, diagnosis and treatment of childhood illnesses, with a focus on pneumonia and diarrhoea case control, and to develop an action plan to enhance pneumonia and diarrhoea control in Ethiopia.

4.2 Specific objectives

- To assess the challenges facing the IMNCI platform in the prevention, diagnosis and treatment of pneumonia and diarrhoea in Ethiopia
- To collate information on specific indicators that can be used to inform the development of an IMNCI action plan for pneumonia and diarrhoea
- To assess existing opportunities that can be used to improve pneumonia case management
- To assess the contribution of stakeholders for improving IMNCI services, with a focus on pneumonia and diarrhoea.

5 Methods

The following section outlines the methodology utilised in this formative assessment.

5.1 Formative assessment design

A qualitative approach was employed using a desk review, in-depth key informant interviews (KIIs) and focus group discussions (FGDs), all of which took place from 6th June to 31st July 2022. The formative assessment answers questions on the existing child survival strategy for Ethiopia, as well as the quality of IMNCI delivery and other cross-cutting strategies. The desk review was conducted by reviewing the relevant research and policy documents on prevention, diagnosis and treatment strategies that are important for the management of common childhood illnesses at both a global and country level, with a focus on pneumonia and diarrhoea. KIIs and FGDs were conducted to understand the implementation gaps of both the IMNCI and the ICMNCI, as well as to explore inputs that will be used for action plan development.

5.2 Interview and focus group discussion population

The participants were purposively selected considering their positions within child health services in Ethiopia and their knowledge of the subject area under research. All participants were experts working in the child health programme. The participants for the KIIs were selected and categorised as government health officials from the FMOH, regional health offices, primary healthcare units and other relevant FMOH departments and organisations. The key informants drawn from partners were members of the National Child Survival Technical Working Group and those actively involved in child health programmes.

In total, the participants for interview included three FMOH officials, four regional child health experts, five health centre directors and 10 partners representing academia and leading NGOs. Eight FGDs were held with HEWs (four FGDs) and HWs (four FGDs) in Oromia and Southern Nations, Nationalities, and Peoples' Region (SNNPR) (see Tables 1 and 2).

Table 1: Health extension workers' focus group discussion, data collection and session per *woreda*, July 2022

Region	Zone	Woreda	No. of FGDs*	No. of participants	Level of education		Years of service		
					Level III**	Level IV**	1-5	6-10	>10
SNNPR*	Gurage	Mesken	1	6	1	5	1	0	5
	Silite	Siliti	1	9	2	7	1	3	5
Oromia	East Shewa	Adea	1	6	4	2	0	0	6
	Arsi	Dera	1	8	1	7	1	3	4
Total	4	4	4	29	8	21	3	6	20

*SNNPR= Southern Nations, Nationalities, and Peoples' Region; FGD= focus group discussion

** Level III=HEWs who complete grade 10 or 12 and take one year of HEP training and graduate; Level IV=graduated HEWs who have worked as an HEW for several years before upgrading by taking the level four HEP training

Table 2: Health workers' focus group discussion, data collection and session per *woreda*, July 2022

Region	Zone	Woreda	No. of FGDs	No. of participants	Assignment area					
					PHCU* director	U5 OPD*	EPI*	Adult OPD*	MCH*	Pharmacy
SNNPR*	Gurage	Mesken	1	6	1	2	0	1	1	1
	Silite	Wulbareg	1	6	1	1	1	1	1	1
Oromia	East Shewa	Adea	1	6	1	1	1	1	1	1
	Arsi	Dera	1	6	1	1	1	1	1	1
Total	4	4	4	24	4	5	3	4	4	4

*SNNPR= Southern Nations, Nationalities, and Peoples' Region; FGD= focus group discussion; PHCU= primary healthcare unit; U5= under five; OPD= out-patient department; EPI= Expanded Program on Immunization; MCH= maternal and child health

5.3 Data collection and tools

A desk review was conducted, referring to different documents. These included, but were not limited to, global and national strategy documents, guidelines and research. For the KIIs, a semi-structured in-depth interview and FGD guides were prepared to assist in the interview process. The assessment focused on programmatic areas and explored the existing challenges of community- and facility-based child health interventions. Individual perceptions and attitudes were not surveyed in the research.

In-depth KIIs and FGDs were held and recorded after receiving verbal informed consent from the participants. The KIIs were conducted in a private room arranged in consultation with the participants. The interview process was recorded through note-taking and the use of a digital voice recorder. The interviews lasted between 30 and 40 minutes. The interviews were conducted in Amharic language (Federal, Amhara, Afar and SNNPR) and Afaan Oromo (in the Oromia region). All

records were subsequently transcribed into English by the same team member who conducted the interviews. These were cross-checked for consistency. The translated texts were subsequently thematically analysed. The transcribed data were reviewed and arranged into different key thematic areas according to the FGD guide and probing question guide. Similar responses from the interviewees were grouped under the identified codes, and manual thematic analysis was done using Microsoft Excel. To ensure confidentiality, all transcripts were stored and managed privately by a limited group of specified individuals working on the project.

5.4 Ethical considerations

A support letter was received from the FMoH and dispatched to all prospective participants. Participants were requested to declare their willingness to participate in the assessment. Consent of participants was requested before the interview could be conducted. Participants were informed of their right to decline to respond to any questions or withdraw from the discussion at any time during the interview. All data collected are owned by Malaria Consortium and the FMoH in Ethiopia.

6 Results

One-to-one in-depth KIIs were conducted with 12 government health officials (three from the FMoH, four from the RHB for child health, five primary healthcare unit directors) and 10 partners from academia and leading NGOs (one from each of the following organisations: Ethiopian Paediatric Society, WHO, Transform Primary Health Care, Transform Health in Developing Regional States [THDR], Emory University, HaSET, PATH, Clinton Health Access Initiative [CHAI], Children Investment Fund Foundation [CIFF] and Save the Children) who were working in child health programmes. In-depth discussion was encouraged through probing.

6.1 Theme 1: The existing strengths of the child health approach in Ethiopia and the opportunities to reduce child morbidity and mortality

Participants listed factors that could contribute to a reduction in child morbidity and mortality in Ethiopia. The following opportunities to reduce morbidity and mortality in children under five in Ethiopia were listed by most participants: expanding health service delivery points to the nearest community; task-shifting activities from the facility to the community; introducing community-based health insurance; expanding infrastructure; increasing the number and range of human resources that are available to the health task force; improving the availability of data modernisation; increasing access to the ICMNCI and IMNCI platforms; introducing new vaccines; introducing global and national guidelines; utilising a world pneumonia declaration; and increasing support from partners in child health programmes.

The existing strengths of the child health approach in Ethiopia were identified as: capacity enhancement to fill identified gaps; the existence of a strong national child survival coordination technical working group; a research advisory committee (RAC) at national level; revision of the IMNCI and ICMNCI training protocols; the development of a national newborn and child health strategy; and a roadmap towards maximising newborn and child survival and wellbeing.

6.2 Theme 2: Weaknesses and threats for child health services

From the supply side, the participants identified several weaknesses in Ethiopia's child health services. These weaknesses included: poor mentorship; a deterioration in the quality of child health services at health posts, and health post closures; a shortage of essential drugs; and a dependence on partners and weak public-private partnerships. From the demand side, the majority of participants described the weaknesses as poor community engagement and low child health service uptake. In addition, participants highlighted low uptake of the amoxicillin dispersible tablet treatment and attributed this to a preference for suspension treatments over tablets.

High turnover of trained human resource; service interruption due to conflict; budget shortages and inflation; weak pre-service training at teaching institutions; and the COVID-19 pandemic were all cited as threats by the majority of participants. Participants described infrastructure problems including water and electricity, as well as delays in importing supplies and essential drugs, as key threats to child health service interventions in Ethiopia.

6.3 Theme 3: Factors contributing to child morbidity and mortality

Participants reported a range of caregiver behaviours as possible factors that might contribute to increased levels of child morbidity and mortality. These factors included: caregivers' low awareness of the danger signs in children; delayed healthcare-seeking behaviours by caregivers; and poor adherence to treatment. Other contributing factors identified were linked to the health system, including weak referral systems for severe cases, delays in treatment for severe pneumonia and a shortage of supplies. Participants also cited the community undermining health post services in response to unfavourable/non-conducive health post environments and poor service quality as a factor contributing to high child morbidity and mortality in Ethiopia.

“Support provided from the woreda health offices and primary healthcare units to health posts was not consistent. Most support was provided by untrained health workers and the support was not task oriented as per the previous iCCM/CBNC implementation period.”

HW, FGD, SNNPR

6.4 Theme 4: Quality of care

Quality of care was a topic frequently referenced by the key informants interviewed in this formative assessment. The majority of key informants stated that the lack of capacity enhancement and supportive supervision on both the IMNCI and ICMNCI for HWs and HEWs impacted on the quality of the services provided to children under five in Ethiopia.

“From our last couple of years of experience, service quality has decreased due to challenges with trained human power, supportive supervision and availability of essential supplies. The consequences of all these factor[s] affect child survival.”

Regional health office, KII

Additional factors affecting the quality of care were identified as a high turnover of trained human resources, a lack of diagnostic supplies including pulse oximeters, and a lack of updated materials such as the IMNCI chart booklet and registration books.

Key informant participants reported that the main challenges to the provision of quality IMNCI and ICMNCI services included a lack of trained HWs and HEWs trained in these services; low service utilisation; and inadequate task-oriented supportive supervision at different levels of the healthcare system. Key informants representing the health centre cited improved supportive supervision, increased capacity for care providers, and improved essential drugs and medical supplies as the priority tools needed to support the improvement of service quality.

6.5 Theme 5: Supply system and supply shortages

Issues with the supply system and supply shortages emerged from both the FGDs and KIIs and were identified as a particular challenge for health posts. Participants cited health post closures and health post supply shortages as major bottlenecks in access to treatment. HWs and HEWs during the FGDs, as well key informants during the KIIs, described how community members bypass the health post and seek care directly in the higher-level health facility or elsewhere. This was attributed to supply shortages at health posts, health post closures for a range of reasons during the campaign, and the community perception that health posts cannot provide curative services.

“When we go for supportive supervision and coaching to health posts, unless we communicate with HEWs through the mobile phone ahead of the supervision date, it is difficult to get them at health posts. In the same way, mothers encounter closed health posts looking for service for their severely sick children. This has a negative impact on caregivers for subsequent visits to health posts.”

NGO partner, KII

“We have been working in prevention and curative services for the last couple of years. Now, because of a shortage of drugs, we only provide vaccination services and refer sick children to health centres for treatment. As a result, the community perceives that HEWs provide only vaccination services.”

HEW, FGD, Oromia

FGD participants described how improvements had been made to health posts to encourage community use through a “health post open-house strategy”, but that these had been short-term improvements due to supply challenges.

“To improve service uptake, a health post open-house strategy was designed. This involved renovating the health posts, availing essential supplies and making the health post environment conducive to clients. Community members were mobilised to visit health posts, and services to be provided at health posts were explained to the community [...] Subsequently, communities trusted the service provided and service uptake was improved. Unfortunately, this improvement was temporary; the supply chain could not continue or be maintained. When the service was interrupted because of supply problems, the community started blaming us. We HEWs are ready to serve the community, but because of supply shortage we cannot provide the service.”

HEW, FGD, Oromia

All participants reported that shortages of essential drugs like amoxicillin dispersible tablets, zinc and ORS co-packs were critical problems, especially at health posts. Other shortages identified included a shortage of job aids, including printed guidelines and education and communication materials. The key informants representing the FMOH reported that more than 80 percent of the child health budget was utilised for supply procurement, but that this still did not match the level of demand.

6.6 Theme 6: Partner support

Partner key informants working in child programmes stated that their main areas of support to the public health sector were capacity strengthening for IMNCI, ECD and newborn intensive care unit (NICU) training. This included updating and revising the IMNCI, ECD, EPI and nutrition training materials; preparing different strategic documents; supporting data digitalisation; providing supportive supervision of their respective project areas; and supporting the provision of supplies including amoxicillin dispersible tablets. A small proportion of partners was found to provide technical assistance by recruiting staff to the FMOH to strengthen child health programmes. However, the majority of participants reported that the support received from partners had declined in all areas in periodic episodes, while the cost of services and supplies continued to rise.

“During the iCCM/CBNC implementation phase, child health support was on good momentum in achieving child survival strategy as the whole. Since iCCM/CBNC phase out, all support (training, supervision, supplies) has decreased, nearly all child health programme developing partners have not earmarked a child health budget and the child health programme has no attention, unlike other programmes such as EPI and nutrition.”

MoH, KII

6.7 Theme 7: Community mobilisation and empowerment toward pneumonia and diarrhoea prevention

The majority of participants stated that activities associated with community mobilisation and engagement were not satisfactory to avert the existing demand-side problems. Participants reported that the previous momentum of community mobilisation platforms such as the Women’s Health Development Army, which was designed to work in collaboration with HEWs to support community mobilisation and address demand-side problems, was diminishing. Partners reported that this was associated with a failure to fully implement HEP in most areas.

Participants stated that religious leaders and male engagement were critical to addressing the challenge of delayed healthcare-seeking through their influence on cultural norms. In addition, it was identified that factors that increase the incidence of pneumonia and diarrhoea, such as indoor air pollution, poor environmental hygiene and low coverage of vaccination, require multi-sectoral collaboration. To improve community mobilisation and avert existing problems, suggestions were made to utilise the credibility and trust attributed to religious organisations and community dialogues with indigenous structures that are connected to the community, such as the *Gada* system, *Iddir*, *Equb*, *Dabo (Jigi)*. The newly designed community engagement structure, involving volunteer health leaders, was also raised as a tool to avert problems related to community mobilisation.

“We are closely working with kebele people on community mobilisation. For successful community mobilisation to make a difference, the health agenda should be given priority by higher officials at different levels.”

HEW, FGD SNNPR

In addition, HW and HEW FGD participants reported that coordinated community mobilisation, improving housing conditions through model family graduation, caregivers’ counselling and improving immunisation coverage are priority interventions to reduce morbidity and mortality of children under five.

6.8 Theme 8: Health management information system and the electronic community health information system

Government health officials described how data modernisation through the Electronic Community Health Information System (eCHIS) at health post level started as a pilot in selected *woredas*. Key informants stated that they found eCHIS advantageous in saving time, enabling a greater quality of care and informing more rapid decision-making.

“In our catchment, in the places where selected health posts started to implement eCHIS, the performance monitoring activities were found to be easier, allowing decisions to be made earlier than previous traditional monthly hard copy reports.”

Health centre, KII

The FMOH key informants reported that there are plans to scale up eCHIS and that these are progressing. Additionally, basic pneumonia and diarrhoea data have been tracked for evaluation and decision-making through the routine health management information system (HMIS)/District Health Information System (DHIS2). Key informants representing the health centres also reported that data modernisation had been initiated at all levels and that facility-based pneumonia and diarrhoea data were being captured through HMIS/DHIS2 and used for evaluation, timely feedback and decision-making. Some stakeholders reported that they have been supporting the FMOH on eCHIS and HMIS/DHIS2 data quality training, as well as providing coaching and mentorship on data quality and innovative data visualisation. This includes promoting the use of DHIS2 data to inform decision-making and to strengthen surveillance activities.

6.9 Theme 9: Targeted research plans in assessing the quality of pneumonia and diarrhoea case management

Stakeholders working on child health programmes were found to have experience in conducting research and were asked to describe their previous, current and future research plans. Participants described how, in recent years, research studies have been undertaken on the quality of ICMNCI/IMNCI, possible serious bacterial infections, and service utilisation and referral links. The results of these studies were used to inform planning.

“As per our strategy document, when the MoH raises the need for a research question, our project will support implementation research which can then address improvement in child survival.”

NGO partner, KII

“Population-based data and verbal autopsy collected from the community have helped to identify causes of death and care pathways for children (outcome) to support planning.”

Academic partner, KII

Community mobilisation by social workers, asset tracking on essential commodities, assessment of the national immunisation strategy at pastoralist areas and pneumonia implementation research have also been conducted and were described by partners. An incidence estimation of pneumonia has been converted from the 2016 Ethiopian Demographic and Health Survey report by the FMOH RAC. Participants described how, three years ago, to estimate the pneumonia incidence rate, the RAC prepared a longitudinal study proposal (with a cost breakdown) that was waiting for budget support.

6.10 Theme 10: Resource mobilisation

Key informants from the FMOH reported that there is a budget increment for the child health programme. This was described as being allocated periodically (not regularly), from the treasury and SDG budget. However, key informants expressed that the allocated budget did not match the demand side of the child health programme.

“Even though the government treasury budget has been increasing from time to time, donor support for child health programmes are decreasing and from the total budget required we have been getting less than 50 percent of the plan.”

FMOH, KII

In addition to the government budget, the resource mobilisation directorate was found to be looking for various alternatives for domestic financing. Partners stated that budget was allocated for World Pneumonia Day, supplies, integrated training programmes, supportive supervision, performance review, clinical mentoring meetings and the restoration of routine services. Looking ahead, several partners reported that resource mobilisation would continue for supervision, IMNCI, ECD and NICU, as well as for medical oxygen training and the installation and maintenance of pulse oximeters, oxygen concentrators and oxygen plants.

6.11 Theme 11: Partnerships

The majority of participants described a positive working relationship with different private partners and the public sector in addressing child health programmes in Ethiopia. However, they raised challenges associated with the difference between the approach used by private and public sector facilities. All participants stated the importance of public-private partnerships to harmonise and standardise the services provided in both the private and public sector for child health. The role of the FMOH in aligning the approach between the public and private sector was raised by participants, who proposed IMNCI as a tool for this. Antibiotic use between these two sectors was identified as a key discrepancy, and participants raised the need to consider antibiotic resistance protocols across both sectors.

“There is big gap between the public and private sector in managing common childhood illness. Public sector health facilities are guided by standardised policies and procedures, including first- and second-line treatment. Private services do not follow standardised guidelines, often selecting to hasten recovery by initiating treatment with the highest antibiotic (third generation) and selecting injectable regimens where oral are sufficient. This double standard procedure must be harmonised by the public sector regulatory body.”

HW, FDG, Oromia

“Private health facilities have no equal chance in getting training and updated training manuals, but they are treating a huge number of children without standardised protocols. We try to reinforce to have equal standardised care in public and private sectors for children to be managed as per the IMNCI algorithm, which needs special support and direction from the FMOH and professionals.”

NGO partner, KII

“Ideally the FMOH has to support and guide private health facilities to adhere to the national standards for diagnosis and treatment to provide quality health services and to avoid irrational use of drugs, a potential cause of drug resistance. Some drugs which are limited to the public sector, like amoxicillin dispersible tablets, need a strategy to support their availability at private facilities.”

NGO partner, KII

6.12 Theme 12: Working with teaching institutes

The majority of federal regional public sector participants and partners reported that they were working collaboratively with regional health science colleges. Participants described how universities have been participating in the development and revision of IMNCI training materials in collaboration with the FMOH, RHB and partners. IMNCI training was incorporated in the curriculum of teaching institutions, and new updates have been communicated to strengthen pre-service IMNCI training to all teaching institutions. Participants representing regional health science college tutors were cited as having been trained on the new 2021 IMNCI protocol. The same experts and partners described using continuous consultation with the Federal Examination Agency to reach consensus to include IMNCI on the centre of competency for students to ensure quality IMNCI training.

The majority of participants reflected their concerns relating to private colleges. Participants expressed that the private sector has a large health task force, but that it does not receive the same capacity strengthening support provided to public universities and colleges.

“In public teaching institution[s], IMNCI training is incorporated in the curriculum and practised in pre-service training, and the same scenario must be implemented in the private teaching institution for the success of universal IMNCI implementation with close support and mentoring.”

Academic partner, KII

7 Discussion

This formative assessment identified a range of key supply and demand factors that contribute to the levels of child morbidity and mortality in Ethiopia. The combined weaknesses and challenges for the demand and supply of health services identified in this formative assessment are believed to be key contributing factors to high child mortality and morbidity. The specific supply challenges include: critical supply shortages; poor service quality; limited capacity strengthening for healthcare providers; weak task-oriented supportive supervision; and a weak referral system for severe cases. The key demand weaknesses identified in this formative assessment include: caregivers' low level of awareness of danger signs in children; low service utilisation; delays in healthcare-seeking behaviour and adherence to treatment; and weak community engagement. This formative assessment revealed several areas of opportunity to address both the supply and demand factors identified and to enhance the use of existing tools. These target areas included utilising partner support, data management, research and teaching institutes, and addressing the cohesion between all levels of the health system, including the partnerships between the private and public sector.

7.1 Supply factors in child morbidity and mortality

Supply shortages were cited as a critical problem for child morbidity and mortality in Ethiopia in this formative assessment. This finding is consistent with that of a previous study conducted in the Gedeo zone, southern Ethiopia, in 2019.^[25] The study found that only 14 percent of health facilities surveyed had all the essential antibiotics for pneumonia, and only four percent of the health facilities had the relevant job aids and medical, diagnostic and information supplies for pneumonia services.^[25]

An additional key finding related to supply factors that was identified in this formative assessment was poor service quality accompanied by limited capacity strengthening for healthcare providers. Similarly, this finding was consistent with that of the 2019 Gedeo zone study, where only 16 percent of staff were found to be trained in IMNCI/iCCM and 84 percent of health workers were untrained, but managing sick children.^[25]

Weak task-oriented supportive supervision was quoted as a major problem by the participants in this formative assessment. This has been found by other research into the management of childhood illnesses in Ethiopia, more specifically pneumonia. The 2019 Gedeo zone study found that only 34 percent of health centres and 29 percent of health posts received a supervisory visit in the six months preceding the survey, despite the belief that supportive supervision may have a positive effect on HW and HEW performance.^[25]

7.2 Demand factors in child morbidity and mortality

This formative assessment found low levels of service utilisation by caregivers of children with common childhood illness, both at health facility and community level, including in rural areas. In line with this, a 2014 study reported that only 27 percent of children with ARI, and 32 percent with diarrhoea, were taken to a health facility.^[17] A cross-sectional study in the northeast of Ethiopia found that only 49 percent of caregivers sought healthcare at health institutions for their children; while another conducted in Addis Ababa found that 52 percent of caregivers took their child to health facilities after the second day from the onset of illness, but only seven percent sought care within 24 hours of symptom recognition.^[15, 16, 34]

A Woldia community-based cross-sectional study revealed that the reason for delayed healthcare-seeking in 34.6 percent of caregivers was the belief that the child would recover from their symptoms without treatment; while 14.4 percent attributed it to a shortage of money, 20.2 percent to a lack of time and 29.3 percent to the a belief that the service was inadequate.^[16] Another study found that 73 percent of caregivers assumed the disease would be self-limiting and only perceived a child to be severely ill when they were unable to eat or breastfeed.^[18]

8 Conclusion

IMNCI and ICMNCI are key high-impact child survival policies that reduce morbidity and mortality of children under five in resource-limited countries. However, this formative assessment has identified key weaknesses that impact on their effectiveness and must be addressed for Ethiopia to make progress in reducing childhood morbidity and mortality. In this formative assessment, supply system weaknesses were identified as critical supply shortages, poor service quality, limited capacity strengthening of healthcare providers, high turnover of HWs and HEWs, health post closures and weak task-oriented supportive supervision.

The demand weaknesses were low service utilisation, low level of awareness from caregivers on the danger signs of childhood illness, delayed healthcare-seeking behaviour and poor treatment adherence. A weak referral system for severe cases, lack of financing, limited community support, declining budget support from partners and weak community mobilisation were also found to adversely affect the health of children under five in Ethiopia. The findings of this formative assessment will go on to facilitate the creation of a national action plan for pneumonia and diarrhoea in the context of the IMNCI.

9 Recommendations

Based on the findings of this formative assessment, the following recommendations are made:

Recommendation	Target level			
	Community	Facility	FMoH/RHB	Partners
Work at grassroots level on community dialogue to improve awareness	✓		✓	✓
Organise and carry out targeted community awareness and mobilisation activities that use all available community structures/platforms	✓		✓	✓
Present consistent messaging on transmission using a variety of channels to increase community awareness on common childhood illnesses	✓		✓	
Strengthen the capacity of healthcare providers to improve quality of care			✓	✓
Build a robust supply system that ensures essential supplies (drugs, oxygen and diagnostic materials) at community and facility level			✓	
Ensure resource mobilisation for capacity strengthening including training, mentoring and coaching, and supplies		✓	✓	✓
Reinforce multi-sectoral collaboration between all key partners			✓	✓
Work with public and private teaching institutions to include IMNCI and ICMNCI training in their pre-service training, as per national standards			✓	✓
Strengthen public-private sector partnerships to adhere to the standardised diagnostic and treatment algorithm of IMNCI		✓	✓	✓
Strengthen commitment, ownership and accountability at all levels to maximise the utilisation of limited resources			✓	
Contextualise service provision to meet specific needs of agrarian and pastoralist communities			✓	✓
Capitalise on experience-sharing activities based on the identified best practices			✓	✓
Provide different point-of-care testing activities near the community to increase community trust, save costs and improve service uptake	✓		✓	

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