Integrated Community Case Management (iCCM) in Kenya

Gap Analysis and Investment Case

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and

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List of acronyms

ACT	Artemisinin Combination Therapy
iCCM	Integrated Community Case Management
CHCPT	UNICEF-MSH Community Health Costing and Planning Tool
CHC	Community Health Committee
CHS	Community Health Services
CHV	Community Health Volunteer
COVID-19	Coronavirus-19
DHIS	District Health Information System
DT	Dispersible Tablets
GDP	Gross Domestic Product
KES	Kenyan Shilling
KII	Key Informant Interview
LiST	Lives Saved Tool
MDGs	Millennium Development Goals
MoH	Ministry of Health
mRDT	Malaria Rapid Diagnostic Test
MSH	Management Sciences for Health
MTEF	Medium-Term Expenditure Framework
MUAC	Mid-Upper Arm Circumference
ORS	Oral Rehydration Solution
PPB	Pharmacy and Poisons Board
PMI	President's Malaria Initiative
ROI	Return on Investment
SDG	Sustainable Development Goals
TA	Technical Assistance
THE	Total Health Expenditure
UHC	Universal Health Coverage
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

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Executive Summary

In 2004, the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) issued a joint statement recommending the implementation and scale-up of Integrated Community Case Management (iCCM), with the aim of accelerating the decline in childhood mortality. iCCM is an equity-focused strategy that complements and extends the reach of public health services by providing timely and effective treatment and/or referral to a health facility for malaria, pneumonia, diarrhoea, malnutrition, and causes of newborn illness to populations with limited access to facility-based health care providers and especially to children under five. Evidence shows that community health volunteers (CHVs)—appropriately trained, supervised, and supported and with an uninterrupted supply of medicines and equipment—can identify and correctly treat most children who have diarrhoea, pneumonia, and malaria.

However, inadequate comprehensive support for iCCM persists, slowing the expansion of iCCM coverage. There is currently no single national document outlining the current status of and gaps in iCCM investment in Kenya to inform future direction. In the absence of country-level data, iCCM has yet to attract adequate attention and priority in healthcare financing and budgetary processes from national and county governments. This document therefore articulates the bottlenecks and opportunities for iCCM scale-up at county and national levels, provides costing estimates, and presents an investment case to facilitate future funding opportunities for iCCM across the country.

The gap analysis report is anchored on experiences and investments made in three of Kenya's 47 counties, Turkana, Kisumu, and Busia, which adopted and prioritized iCCM as part of their package of community-based health interventions. This document provides a succinct analysis of the programmatic and resource gaps which need to be addressed to achieve scale-up and implementation of iCCM by the year 2024. We used the UNICEF-Management Sciences for Health (MSH) Community Health Costing and Planning Tool (CHCPT 2.0) to collect costing data from the three counties. We collected additional qualitative data through key informant interviews to contextualize costs and benefits of iCCM and identify enablers and constraints facing iCCM.

This investment case estimates that implementation of iCCM across all 47 counties in Kenya, with a five percent annual increase in coverage over the period from 2019 to 2024, would cost approximately KES 49B (USD 450M). The cost of implementing iCCM in Kisumu, Busia, and Turkana counties is estimated at KES 1B (USD 9.15M), KES 1.1B (USD 10M), and KES 0.9B (USD 8.2M), respectively. The main cost drivers are human resources-related, including stipends for CHVs, salaries for supervisors, and training. The programme would require strengthening in the areas of quality management, commodity security, and data for decision-making and use. We estimate that with a five percent annual increase in iCCM programme coverage between 2019 and 2024, Kenya would achieve a six percent reduction in its under-five mortality rate. Notably, the greatest mortality benefit (deaths averted) would be achieved in counties with very high under-five mortality rates, such as Busia.[1]

These data suggest that iCCM has the potential to advance Kenya's development goals, such as Vision 2030 and universal health coverage (UHC). In Kenya, government spending on health care is estimated at ten percent of the overall budget, significantly less than the Abuja declaration's target of 15%. This, along with competing health priorities, poses a serious challenge to the expansion of iCCM. iCCM's potential may not be harnessed if programmatic gaps are not adequately addressed. Significant gaps include unclear commodity management procedures, low capacity among CHVs, and insufficient investment in demand creation for iCCM.

Our analysis found that the highest return on investment (ROI) would be attained if scale-up of iCCM prioritized counties with the highest child mortality rates. ROI may also be enhanced by reducing the cost of delivering community health services, e.g., through development of cheaper training methodologies. Since

[1] Ordinarily, the under-five mortality rate (UFMR) should be greater than the infant mortality rate (IMR), which should be greater than the neonatal mortality rate (NMR). Notably, the recorded UFMR for Turkana county, 74, does not reflect this as it is lower than the infant mortality rate, 80. To remedy the challenge this poses to modelling for potential lives saved, we use 80 as the UFMR and 74 as the IMR. We arrived at this correction after consultations with the LiST modelling team from Avenir Health, USA.

iCCM is predicated on a functional primary health system, implementation and scale-up must therefore be coupled with concurrent investments in primary health system strengthening. Ongoing advocacy efforts for legal and policy mechanisms which facilitate mainstreaming, recruitment, and remuneration of CHVs and community health committees (CHCs) will be crucial to harnessing the potential benefits of community-based health services such as iCCM.

We believe this document will revitalize conversations, facilitate resource mobilization efforts, and galvanize stakeholder commitment towards iCCM scale-up in Kenya.

Introduction

This report provides an account of the status of the iCCM strategy in Kenya, the gaps in its delivery system, and the case for investment. It is based on research undertaken in the first half of 2021 using data from desk reviews, key informant interviews, and case studies from Busia, Turkana, and Kisumu counties in Kenya. This task was commissioned by the Division of Neonatal and Child Health at the Ministry of Health (MoH) headquarters in Nairobi, Kenya. It was funded by USAID Advancing Nutrition Project (hereafter referred to as Advancing Nutrition or 'the project') and was facilitated by Save the Children International in Kenya in collaboration with the global Child Health Task Force.

Our task is motivated by the five-year National Framework and Plan of Action for Implementation of iCCM in Kenya (2013), which recognized the potential impact of iCCM in promoting child survival and development. It also identified a gap in public financing from Kenya's national treasury and an overreliance on donor funding. The lack of adequate and sustained public financing is a threat to the sufficient implementation of the framework and limits its impact.

The gap analysis and accompanying investment case are therefore expected to facilitate a realistic costing of iCCM resource needs in the country for the purposes of planning and budget allocation. The gap analysis will also serve as an important tool to develop mini investment cases for the counties where this work will be conducted and to leverage domestic and external resources in strengthening and scaling up the iCCM strategy, especially for non-malaria inputs.

This document is organized in four parts: 1) Global and local context of iCCM; 2) Methods used in gathering and analysing data; 3) Gap analysis; and 4) Investment case for iCCM in Kenya.

Global context

Sub-Saharan Africa contributed to more than half of global under-five deaths in 2019 and had the highest under-five mortality rate in the world with 76 deaths per 1,000 live births (1), most of which are preventable. Infectious diseases, including pneumonia, diarrhoea, and malaria, remain a leading cause of under-five deaths. In addition, nearly half of all deaths in children under five are attributable to undernutrition. Undernutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections, and delays recovery (2). Correct treatment within the first 24 hours of identifying the symptoms of these conditions among under-five children is crucial. However, this is a challenge in resource-constrained countries that have limited access to health facilities (3). In sub-Saharan Africa an acute shortage of health workers continues to impede improvements in child survival (3).

iCCM of childhood illness is a strategy to reduce morbidity and mortality in the under-five population by delivering high-quality services to hard-to-reach populations (4) through paid and/or volunteer CHVs. Overall, iCCM has achieved a 70 percent reduction in mortality from pneumonia, 53 percent reduction in morbidity from severe malaria, and 70 – 90 percent prevention of deaths from acute watery diarrhoea through provision of oral rehydration salts (ORS) (3). Despite these promising results, there is a lack of comprehensive support for iCCM, which has slowed the expansion of iCCM coverage in African countries. Common barriers to iCCM implementation are limitations in drug supplies, quality of care, and CHV incentives, training, mentorship (5), and supervision (6).

Kenya situation

Kenya has made tremendous progress in the reduction of its under-five mortality rate, from approximately 102 per 1,000 live births in 1999 to 43.2 per 1,000 live births in 2019 (1). Despite this progress, Kenya did not achieve maternal and child health targets under the Millennium Development Goals (MDGs). The under-five mortality rate will require accelerated efforts to reach the Sustainable Development Goals (SDG) target of 25 deaths per 1,000 live births by the year 2030 (7).

The government of Kenya has launched an ambitious drive to attain UHC for key services, including maternal, neonatal, and child health (8), by strengthening health service delivery at all levels. The health system in Kenya is stratified into six levels of care: Level one, community services; level two, dispensaries and clinics; level three, health centres and maternity and nursing homes; level four, sub-county hospitals and medium-sized private hospitals; level five, county referral hospitals and large private hospitals; and level six, national referral hospitals and large private teaching hospitals. Primary health care is provided at levels one to three (8).

In Kenya, health care is allocated ten percent of the government budget, significantly less than the Abuja declaration's target of 15 percent (9). Currently, a huge chunk of Kenya's health finances are used for curative services, with primary health care allocated less than ten percent of the total health budget (9). This is despite evidence showing that community health is one of the best investments in Kenya (10).

The implementation of iCCM in Kenya is guided by the National Framework and Plan of Action 2013-2018 and its monitoring and evaluation (M&E) plan, the national iCCM training guidelines, and service delivery tools. This report presents the results of a gap analysis conducted in 2021 to inform the revision of these key national iCCM policy documents and facilitate the development of an iCCM investment case. The investment case can be used to further support resource mobilization for iCCM implementation and scale-up. The gap analysis report and investment case fit into a broader national effort to ensure that iCCM is institutionalized, implemented to scale, and sustained at all levels in Kenya.

In accordance with the constitution of Kenya, this gap analysis report recognizes that counties are mandated with health service delivery. The gap analysis report is therefore anchored on the experiences and investments made in three counties, Turkana, Kisumu, and Busia, that have made substantial progress towards implementing community health interventions, including iCCM. This document provides a succinct analysis of programmatic and resource gaps to be addressed in order to achieve scale-up implementation of iCCM by the year 2024.

iCCM in the context of the primary health care system

Kenya's primary health care system aims to provide essential health care based on practical, scientifically-sound, and socially acceptable methods and technologies, made universally accessible to individuals and families in the community through their full participation, and at a cost that the community and country can afford (11). iCCM services are layered upon a functional community health system which in turn leverages and links with the network of primary health care facilities. The success of iCCM, therefore, hinges upon a robust primary health care system. Efforts to strengthen iCCM should be implemented in tandem with strengthening of the primary health care system.

Scope of iCCM in Kenya

The scope of iCCM in Kenya (in Table 1, below) is defined in the National Framework and Plan of Action for Implementation of iCCM in Kenya 2013–2018. This scope of interventions was informed by the country situation, lessons learned from existing community-based interventions, and global recommendations. Following evidence synthesis by a child health panel of experts, recommendations for community case management of uncomplicated pneumonia was provided in 2019.

Table 1: Scope of iCCM in Kenya

Conditions	Interventions	Comments
Diarrhoea	ORS; Zinc	• Need to procure ORS / Zinc
Malaria	Artemisinin-based combination therapy (ACT); Rapid diagnostic test (RDT)	• Diagnosis and treatment of malaria based on existing evidence • Continuing rigorous evaluation of RDT rollout • Use of RDT by CHVs is an ongoing legal and policy discussion in Kenya
Pneumonia	Current implementation situation is that CHVs assess, classify, and refer children with signs and symptoms of pneumonia	• Implementation research ongoing to document delivery strategies and lessons learned to inform scale-up • Ongoing implementation of the November 2019 recommendation by child health panel of experts has been detailed in the revised documents, will include assessment, classification, and treatment by CHVs using Amoxicillin Dispersible tablets for a child with fast breathing, no danger sign/s, and no severe malnutrition
Malnutrition	Screening with MUAC tapes; Use of Ready-to-Use Therapeutic Foods (RUTF)	• Implementation of RUTF will be informed by the research studies in Turkana and Isiolo counties aimed at linking management of Severe Acute Malnutrition (SAM) / Moderate Acute Malnutrition (MAM) to the existing iCCM implementation • Referral of acute malnutrition and community-level follow up to be ensured
Newborn health	Referral of sick newborns with danger signs, newborns born at home, and mothers	Implementation strategies include: • Home visit by CHVs within 48 hrs to assess for danger signs for the newborn and the mother • Visits on day one, three and seven following birth • For newborns referred to health facility, on return home, CHV to make follow-up visit under possible bacterial infection (PSBI)
Positive health behaviours and practices	Long-lasting insecticidal net use; Handwashing; Household water treatment; Safe disposal of infant faecal matter; Exclusive breastfeeding in households and communities	• Focus on community dialogue, interpersonal communication and use of social channels

Rationale for gap analysis and investment case

In Kenya there is currently no single national report which documents the status of iCCM investment and informs future direction. In the absence of country-level evidence, iCCM has yet to attract optimal attention and prioritization from national and county governments in terms of healthcare financing and budgetary processes.

The specific objectives of the project's gap analysis and investment case are:

1. Identify bottlenecks and opportunities for iCCM scale-up
2. Determine costs and potential impact of iCCM scale-up
3. Develop a document to mobilize sufficient domestic or external financing for iCCM scale-up in Kenya

Therefore, this document is intended to act as a reference point for iCCM in Kenya, sharing illustrative experiences from the selected counties and reinvigorating conversations and investments in iCCM across the

country. We envisage that this investment case will act as an advocacy tool for the increased prioritization of and sustainable financing for iCCM in Kenya.

Methodology

We took a participatory approach towards developing a gap analysis and investment case for iCCM in Kenya, taking into account perspectives from a wide range of stakeholders, including policy makers, implementing partners, donors, and academics. We collected demographic, epidemiologic, cost, and experiential data in three counties and applied them to the modelling of costs for iCCM implementation across the counties. A national steering committee appointed by the MoH's Division of Neonatal and Child Health led the development of this process, undertaken as outlined below.

Selection of counties

With leadership from the MoH Division of Neonatal and Child Health, the steering committee selected three counties: Busia, Kisumu, and Turkana. The criteria for selection included: 1) Counties that had partners supporting iCCM implementation; 2) Counties that had achieved demonstrable coverage in the implementation of iCCM; 3) Counties that had already adopted the iCCM policy and were implementing iCCM strategy, potentially serving as models for institutionalization of iCCM; and 4) Counties that intended to adopt the case management of pneumonia by CHVs as per MoH policy guidance. Annex 8 provides additional contextual information on the three counties selected.

Desk review

We undertook a desk review of key documents, including Kenya national strategies and policies and secondary data, and sought publicly available county-level iCCM policy documents and programme implementation data from each of the counties. Annex 1 of this document provides a summary of the documents reviewed.

Selection and customization of the costing data collection tool

We selected CHCPT 2.0 for this effort because it was specifically developed for community health interventions with a fully customizable input-based model (12). The tool has the potential to generate a comprehensive list of cost items and has been widely endorsed by organizations working in community health. In addition, several African countries have validated the tool, allowing for future comparison across countries (13). We drew demographic data, including baseline populations and projections, from the Kenya National Census Report 2019 and respective county government resource materials and websites (14). We used 2019 as the baseline year as we anticipated significant disruption in programme activities and investments in 2020 due to the COVID-19 pandemic. We drew macro-economic data from the Kenya National Bureau of Statistics (15), the National Treasury (16), and the Central Bank (17) websites and reports. We defined the interventions to be costed using the CHCPT 2.0, in conformity with the scope of iCCM as defined by the existing national framework (18), and customized coverage rates and related information to respective counties with guidance from county and national stakeholders.

Data collection

We collected costing information for the implementation of community health services, including iCCM, from each of the three counties. With support from health financing consultants recruited for this process, national program officers, and county focal persons in charge of community-based health services, we abstracted cost data from budgets, accounting records, and programme reports. We also extracted programme coverage data from community health service databases for each of the three counties. We provided iCCM programme implementation partners for each of the three counties with a Microsoft Excel™ template to collect iCCM financing data. The costs shown were generally total costs incurred by both governments and partners and financed from government and donor sources.

Key informant interviews

We conducted key informant interviews with iCCM focal persons in each of the three counties in order to identify programmatic gaps in iCCM implementation. We selected participants in consultation with the MoH and partners based on the highest potential to yield qualitative data. The interviews also allowed for the contextualization of costs and benefits of iCCM, identification of enablers and constraints facing iCCM, and documentation of 'value' that may not be apparent from the quantitative data. The list of key informants and key informant interview guide are provided as Annexes 5 and 6 below.

Stakeholder consultations

We held three virtual stakeholders' consultative meetings while conducting the gap analysis and developing the investment case. We consulted stakeholders when setting realistic coverage targets for the scenario analyses and stakeholders reviewed and validated the assumptions and data sources used in the analyses and reporting. The review process also enhanced the structure, data synthesis, interpretation of analysis, and proposed recommendations.

Data analysis

Using built-in analytic capabilities, we generated cost data for each of the counties using the CHCPT 2.0. We then put the data into the Lives Saved Tool (LiST) module to compute the benefits and value of iCCM in terms of lives saved. The project subsequently used this to estimate the economic value of iCCM using multiplier effect estimates and labour productivity. A detailed breakdown of the assumptions employed during the analyses are listed in Annex 2 of this document.

Gap Analysis

Leadership, governance, and commitment

National policies guiding the health sector and community health services provided policy support for the implementation and prioritization of community case management of illnesses (11, 19–23). The National Framework and Plan of Action for Implementation of iCCM in Kenya 2013-2018 (18) provides further strategic guidance for implementation and scale-up of iCCM across the country. Recommendations on community case management of non-severe pneumonia for children under-five were made by a panel of experts in November 2019 and approval from the Pharmacy and Poisons Board (PPB) provided guidance on the use of Amoxycillin dispersible tablets (DT) 250mg for community case management of fast-breathing pneumonia in Kenya. However, national documents that guide resource allocation within the health sector made no provision for iCCM (24–28).

We noted that the sampled counties had dedicated focal persons tasked with coordinating partners and stakeholders in the implementation of iCCM and community health services. Each of the three counties had functional technical working groups to ensure coordination and accountability among stakeholders, which are mechanisms established at the national level to cascade national policies to the counties. Reports show them to be under-resourced, however, resulting in the delayed translation of policy to practice, as shown in the low coverage of iCCM implementation in counties, only 30 out of 47, since 2013.

Lack of or inadequate compensation and inadequate capacity of community health committees (CHCs) reportedly deterred community ownership of community health services, including iCCM.

"We are looking at the workforce issues and that will help us move forward. So basically, to mobilize the additional resources … geared towards motivation of CHVs by payment stipends on a regular monthly basis at the rate of 2,000 shillings minimum. Going forward [we may] pay even more [be]cause we know this is an area we need to carefully handle and keep the CHV spirit high and it will boost performance"

- KII 004

Some counties, such as Turkana, have passed a Community Health Services Bill, paving the way for the institutionalization of community health services and facilitating the payment of stipends to CHVs. Reports

note a lack of legal frameworks which acts as a barrier to county allocation of resources for community health services. Additionally, a 2019 court ruling barred CHVs and non-laboratory personnel from using malaria rapid diagnostic tests (mRDTs), which poses a great challenge to the scale-up of evidence-informed community case management of malaria. Stakeholders reported that the ruling not only threatened the overall quality of malaria community case management but also increased consumption of antimalarials due to presumptive treatment (34), further complicating commodity management.

Health information

Each of the three sampled counties have initiated efforts to reform paper-based community health information system through digitalization in order to increase access to community health data for programme reporting and decision-making and optimize health service delivery. However, these systems were not yet integrated into the national reporting system, District Health Information System 2 / Kenya Health Information System 2 (DHIS 2/KHIS 2), resulting in limited access to iCCM data among stakeholders beyond the county level. Counties also reported incomplete and inaccurate data entries, particularly due to inadequate capacity and motivation among CHVs.

"I think the digitization is the best way that we are currently adapting because the other way we've been using the manual and then we enter data into the KHIS app … it's been an expensive affair. I think this is the best way we can be able to improve the indicators at the community level because this is something you can be able to view at the dashboard at whatever point you are. [You are] able to do supervision via phone just looking at the dashboard and you see maybe a CHV is not performing very well and things like that. I think the digitization is also best because we are able to get real time data from the CHVS unlike the old way [when] we were using the tools and the CHV would be able to cook a lot of data but [not] this one because the phones have some, they normally … take the coordinates of the surrounding the CHV is so it's a bit difficult to lie or cook data."

- KII 002

"We recommended the CHAs to work with them in training the illiterate workers [CHVS] so that they [are] familiarize[d] with the system and help in improving their reports. Illiteracy is a gap and the turnover is very high so we need the people in the payroll to help these illiterate workers."

- KII 004

Digitization of community health data faced challenges in some settings where the digital network quality was suboptimal, requiring offline data collection.

"In terms of network quality, especially in the deeper villages, some of the hilly places, some of the valleys, may cause a challenge in terms of real time relay of information. But I think these are things that we can easily overcome if the system can be organized so that it can sync at some point where the CHV can access [the] network."

- KII 001

Service delivery

iCCM programme coverage

The sampled counties had not attained the target iCCM programme targets as envisaged in the National Implementation Framework and Plan of Action, as shown in Table 2 below. We drew denominators for the populations from the Demographic and Health Surveys (DHS), national surveys on malaria, and national census report. Numerators are data from community health information systems.

Table 2: iCCM programme coverage and gaps by county

Indicator	National Targets	Turkana		Kisumu		Busia	
		Achieved	Gap	Achieved	Gap	Achieved	Gap
% of children < 5 yrs. who had diarrhoea who were	80%	1%	79%	4%	76%	68%	12%

given ORS packets and zinc supplements							
% of children < 5yrs with fever who were tested for malaria	80%	2%	78%	43%	37%	19%	61%
% of children < 5yrs with confirmed malaria diagnosis who received treatment with ACT	80%	3%	77%	73%	7%	40%	40%
% of children < 5yrs with symptoms of acute respiratory infection who received antibiotics / referred to health facility	80%	2%	78%	6%	74%	109%	-29%

The huge disparity between CHV coverage and iCCM coverage may imply that very little of the CHVs' and their supervisors' time is dedicated to iCCM. As is seen in other countries in sub-Saharan Africa (SSA), the actual service coverage has been low, as low as 2.7 percent, due to both demand and supply-side factors (1). The actual amounts allocated for demand creation, including community engagement, were generally low across all sampled counties. Notably, as captured by Daviaud et al. (2017), demand-side factors, such as lack of awareness of services among the public, appear to be prominent even in the sampled settings (2). Strong advocacy is required to ensure that iCCM is a priority at county, provider, and community levels.

Quality of iCCM services

Counties report that supportive supervision and quality monitoring of community health services, including iCCM, were limited by lack of adequate staff. High attrition rates among trained CHVs also posed a challenge to continued quality improvement through mentorship and supervision. Counties also reported inadequate resources to conduct regular quality audits for community-based health services.

"In terms of quality control, we have a challenge because that's a huge workforce and we don't have enough supervisors."
- KII 001

Community engagement for iCCM services

KII respondents from the three sampled counties reported that they had adequate support and buy-in from beneficiary communities and gatekeepers for iCCM delivery. They achieved this by leveraging existing platforms for engaging communities and their leaders, such as Chiefs' barazas, religious gatherings, and other regular community meetings.

"We have so many community forums that of course we ride on depending on what is happening in the community…. community dialogues are also driven by the kind of data coming out from the community unit, and once there is a dialogue, we identify the root cause of the problem and then they [take] an action so there are also community actions that are driven depending on different localities of the community unit"
- KII 002

Community-facility linkage

KII respondents expressed the need for stronger linkages and collaboration between iCCM implementing CHVs and health facilities. Some health workers supported iCCM while others were hesitant to support the intervention, particularly the community case management of pneumonia.

"The clinicians and nurses have been trained and we need to train more because we have just done a big recruitment…. those are the ones who do not understand how to work with CHVs…. but these things take time."
- KII 001

"We are reducing visits to the hospitals and reaching the community faster than they could have come to level to and our above facilities, because you understand that there are some simple conditions"
- KII 004

Human resources for health

The three sampled counties reported fewer CHVs than necessary to adequately cover the population, as defined by the national community health strategy, as shown in Table 3 below. While Kisumu had only 12.3% of population coverage by CHVs, and Busia had 85% population covered by CHVs, the ratio of CHVs to supervisors in both these counties was aligned to national target. Turkana was found behind the target for both CHV coverage and CHV-Supervisor ratio.

Table 3: Summary of human resource gaps in the sampled counties

Indicator	National targets	Turkana		Kisumu		Busia	
		Achieved	Gap	Achieved	Gap	Achieved	Gap
% of the population covered by CHV	100%	57%	43%	12%	88%	85%	15%
Ratio of CHVs to supervisors	20:1	8:1		20:1		20:1	

Training and capacity building for iCCM

As recommended by Kenya's PPB (29), CHVs require additional training on proper use of antimicrobial agents (particularly antibiotics), disease surveillance, and pharmacovigilance. In each of the three counties, CHVs required additional training on data collection and reporting using national tools and digital systems.

Commodity management

Supply and distribution of iCCM commodities

In 2019, Kenya's PPB defined supply and distribution channels for Amoxycillin DT with the aim of ensuring integrity of the products. CHVs are required to collect Amoxycillin DT for management of fast-breathing pneumonia from linked health facilities. The linked health facilities are also required to provide training, supervision, and mentorship to CHVs on community case management of pneumonia. At the time of writing, data collection and reporting systems for iCCM commodities had not been deployed and no data were available.

Hesitancy to provide iCCM commodities

We noted that health workers in the sampled counties were hesitant to provide CHVs with Amoxycillin DT for iCCM, possibly due to a lack of awareness of recommended practices with regards to community case management of pneumonia.

"Several challenges [exist] when it comes to professionalism and the use of antibiotics at community level… the systems are not yet established to allow proper management of antibiotics at the community level. You understand that there are issues of antibacterial resistance and so forth."
- KII 003

Financing of iCCM

The national stakeholders' meeting conducted as part of this gap analysis reported that the U.S. President's Malaria Initiative and the Global Fund had allocated resources for the fight against malaria. At the time of development of this report, specific amount of resources allocated for iCCM were unavailable.

National policy-level health financing instruments do not recognize iCCM

While national policy documents recognize and establish iCCM within community health services, the health financing policy instruments, including UHC policy documents and Kenya Health Financing Strategy 2016-2030, neither recognize nor allocate resources to iCCM. iCCM interventions as proposed are considered primary facility-level interventions that are to be covered by the proposed national and county health funds. The Medium-Term Expenditure Framework (MTEF) III identifies iCCM as a community high-impact intervention, however all the funds expended have been sourced from partners.

Delayed disbursement of finances for CHS and payment of CHVs

We noted delays in the disbursement of funds for community health services and payment of CHVs across the sampled counties. In Turkana, the latter was partly attributed to the lack of a payment code in the Integrated Payroll and Personnel Database (IPPD) system for payment of CHVs at the county level.

"There is no payment code on IPPD for payment of CHVs. This has resulted in delayed payments of the allocated stipends."
- KII 004

Donor dependence

Community health services and iCCM interventions in all the counties sampled in this assessment are predominantly donor-funded, with limited government funding. Given the ongoing decline in development assistance for health globally, this threatens local ownership and sustainability of the respective programs.

Value-Add to community health units registered as self-help groups

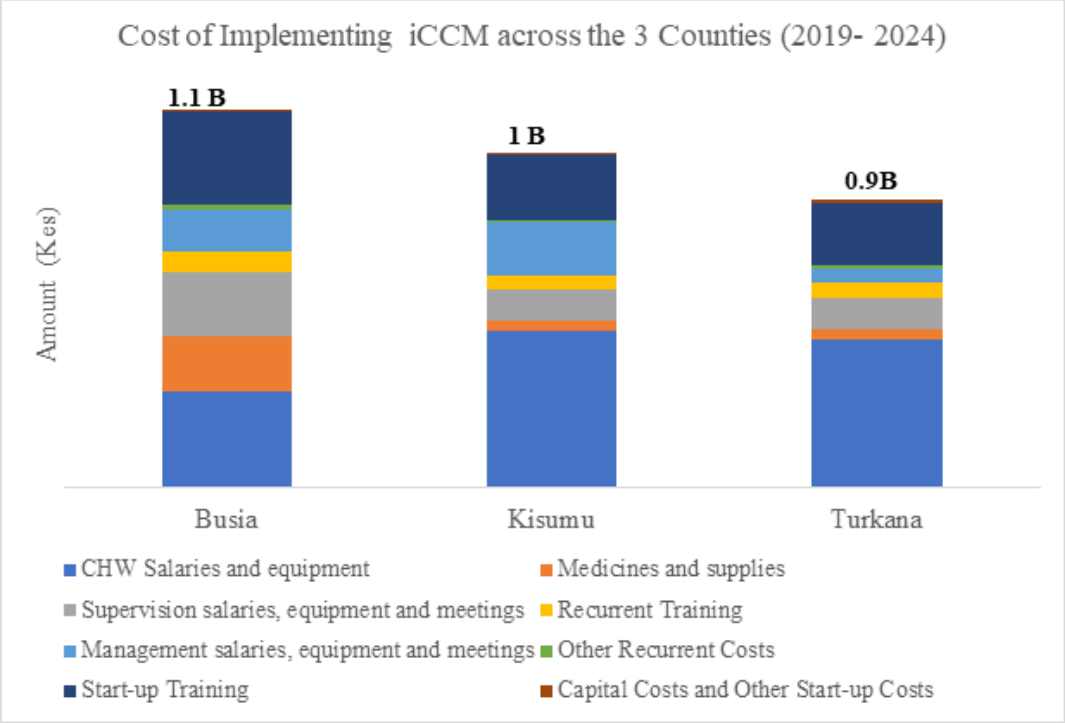
Community health units (CHUs) in Turkana are registered as self-help groups by the recently enacted law and are capable of engaging in income generating activities for the benefit of the respective households. This is essential for the economic empowerment of the communities and addressing social determinants of health beyond the potential health welfare gains.

"Our CHUs are registered and have bank accounts, therefore [they] can get grants and loans from financial institutions to fund community projects."
- KII 003

Cost of implementing iCCM

Presented here are estimates of what it would cost to deliver iCCM, though at the time of writing it was unclear how much funding for iCCM is available from donors and the government. Using data drawn from KIIs and a review of secondary data sources from the respective counties, we estimate that it would cost approximately KES 0.9B, KES 1B, and KES 1.1B to incrementally scale up iCCM coverage in Turkana, Kisumu, and Busia, respectively, by five percent annually from 2019 to 2024. This translates to an average annual cost of KES 0.19B (Busia), KES 0.16B (Kisumu), and KES 0.14B (Turkana) over the six-year implementation period.

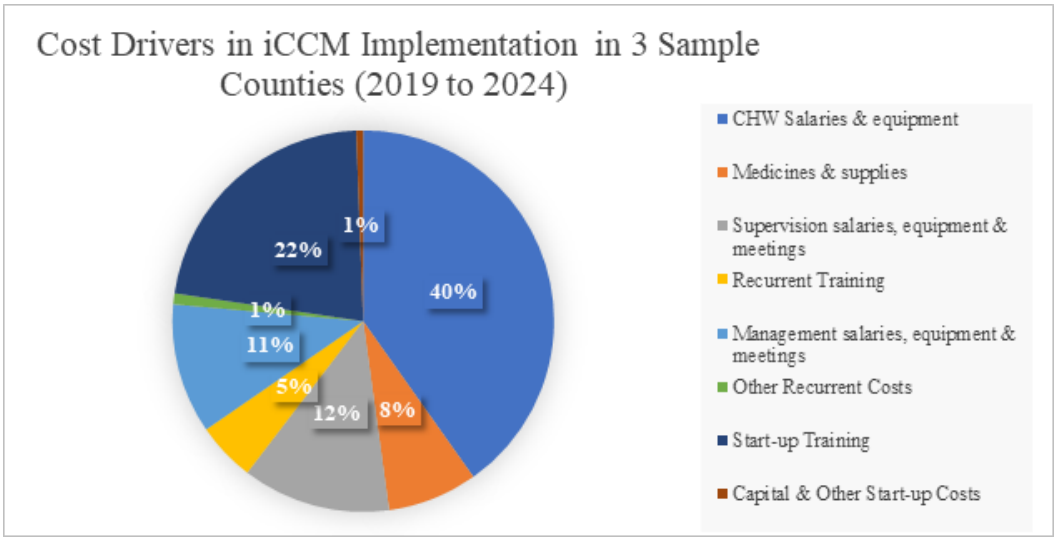
Figure 2: Estimated iCCM implementation costs in Busia, Kisumu, and Turkana counties



Cost drivers for iCCM in Busia, Kisumu, and Turkana counties

As depicted in Figure 3, we project that CHV salaries and equipment (approximately 40% of the costs) and initial training of CHVs (approximately 22% of the costs) are critical cost drivers for the implementation of iCCM between 2019 to 2024 in the sampled counties. Generally, costs related to human resources for health account for the lion's share (more than 90%) of the projected costs.

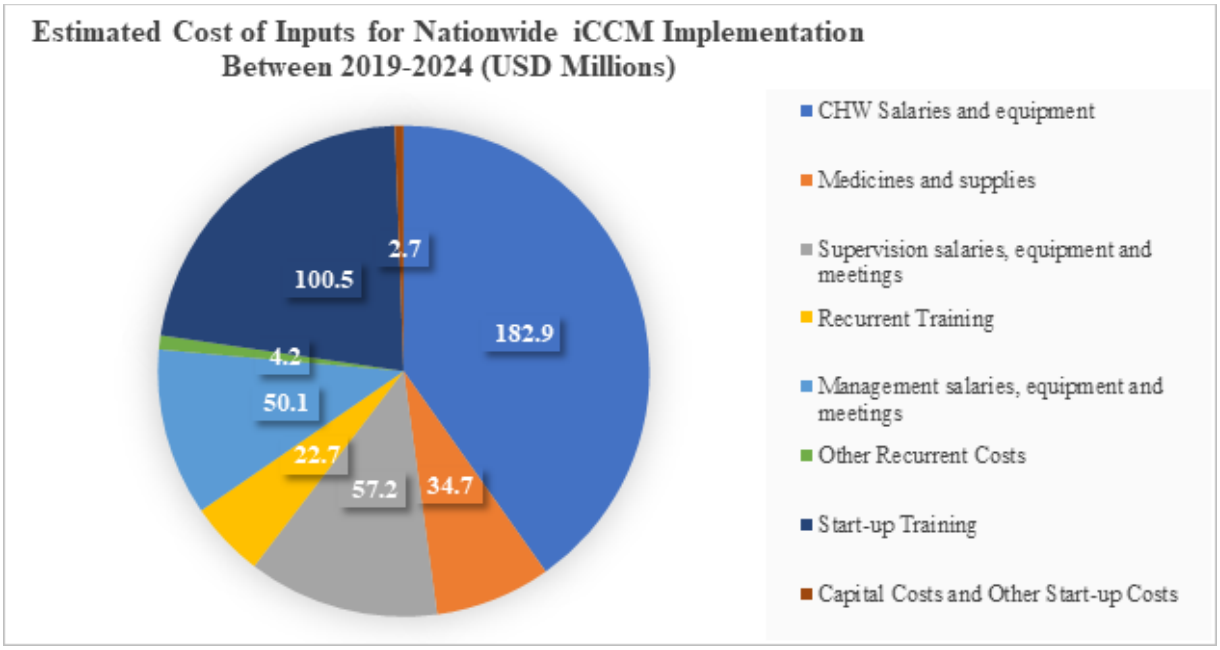
Figure 3: iCCM input cost drivers in Busia, Kisumu, and Turkana counties



Costs of nationwide scale-up of iCCM

Given the estimated costs of implementation across the three sampled counties, we anticipate that a nationwide scale-up, with a five percent annual increase in coverage over the period 2019 to 2024, would cost approximately KES 49B (USD 455M). This translates to an average annual cost of KES 8.2B (USD 75M) over the six-year period. The cost breakdown is shown in Figure 4 below.

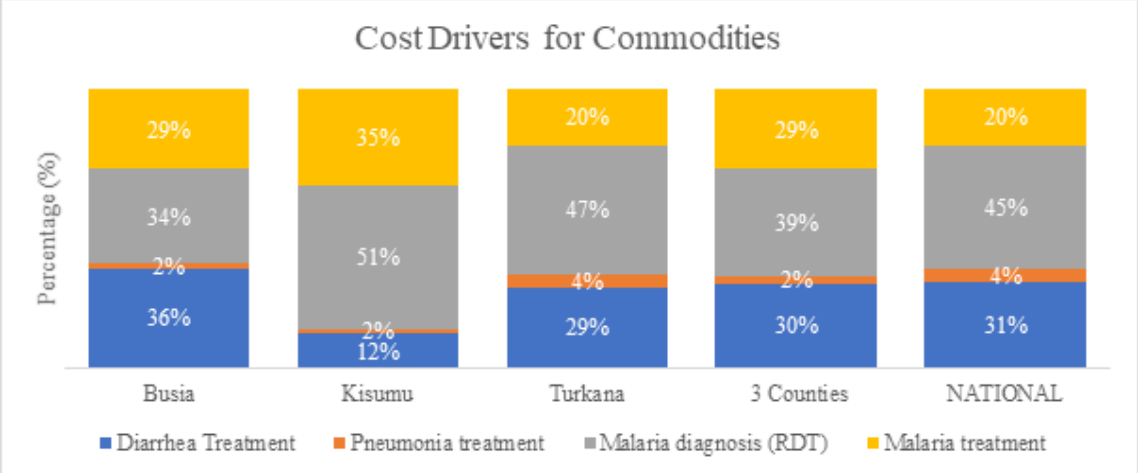
Figure 4: Cost estimates for national scale-up of iCCM



Cost of iCCM commodities

We project malaria-related commodities to be critical drivers of commodity costs, accounting for more than 65 percent of commodity costs at both county and national levels for the 2019 to 2024 period. Notably, malarial inputs are highest in Kisumu County (86 percent), in keeping with the endemicity of disease in the county. Pneumonia related commodities accounted for between two and four percent of the commodity costs. The breakdown is shown in Figure 5 below.

Figure 5: Cost drivers for iCCM commodities



The estimated commodity costs for implementing iCCM in the 3 counties and at national level are shown in table 4 below.

Table 4: iCCM malaria and non-malaria commodity cost (KES)

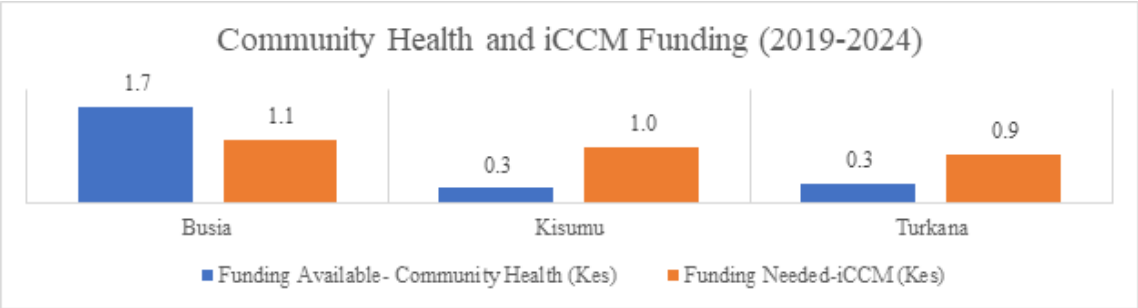
Input Description	Total Commodity Costs (Kes) Six Years				
	Busia	Kisumu	Turkana	Total for 3 Counties	NATIONAL
Non-malaria commodities					
Diarrhea Treatment	57,752,298	5,554,496	9,294,531	72,601,327	129,830,114
Pneumonia treatment	3,288,900	869,386	1,409,478	5,567,765	18,499,412
Total for non-malaria commodities	61,041,198	6,423,882	10,704,009	78,169,092	148,329,526
Malaria commodities					
Malaria diagnosis (RDT)	54,606,349	23,310,077	15,093,146	93,009,574	186,861,994
Malaria treatment	46,750,209	15,882,340	6,442,967	69,075,517	84,573,878
Total for malaria commodities	101,356,558	39,192,417	21,536,113	162,085,091	271,435,872
GRAND TOTAL	162,397,758	45,616,301	32,240,124	240,254,184	419,765,399

The trend in costs of iCCM commodities is comparable to other sub-Saharan African countries in which malaria inputs are the predominant cost drivers, as shown in Annex A 3.2 d.

Funding gaps

Besides the general funding commitments to community health services, none of the counties sampled had financing earmarked for iCCM. Additionally, we found that current funding commitments were inadequate for comprehensive implementation of community health services and iCCM. This is more pronounced in Kisumu and Turkana, where the county's budgetary needs for iCCM exceeded the funding commitments for community health services, as shown in Figure 6 below.

Figure 6: Community health and iCCM funding, 2019-2024



Notably, within the current MTEF FY2021/22 - FY2023/24, community health services are bundled under the primary health care sub-program (Preventive, Promotive, and RMNCAH Program) and the pre-service and in-service training sub-program (Research and Development Program). The specific allocations to community health services and iCCM are not disaggregated and thus we cannot accurately estimate the funding available for these services, hindering a proper estimation of the funding gap.

As a corollary, the lack of disaggregation within budget lines for community health services, and iCCM, in the sector program budgets/ MTEF limits the visibility of these services at the policy level. This highlights the need for improved program-based budgeting for CHS and iCCM.

Investment Case for iCCM in Kenya

We estimated the potential benefits of investing in iCCM using the following:

- Potential lives saved/ Deaths averted using the LiST
- Potential productivity benefits from the lives saved through iCCM interventions
- Potential economic multiplier effects of investing in iCCM interventions

Notably, the realization of these benefits is fully anchored on the existence of a robust and functional health system, without which community health services and iCCM cannot deliver optimal value. Consequently, the estimated benefits are not entirely attributed to iCCM.

Lives saved

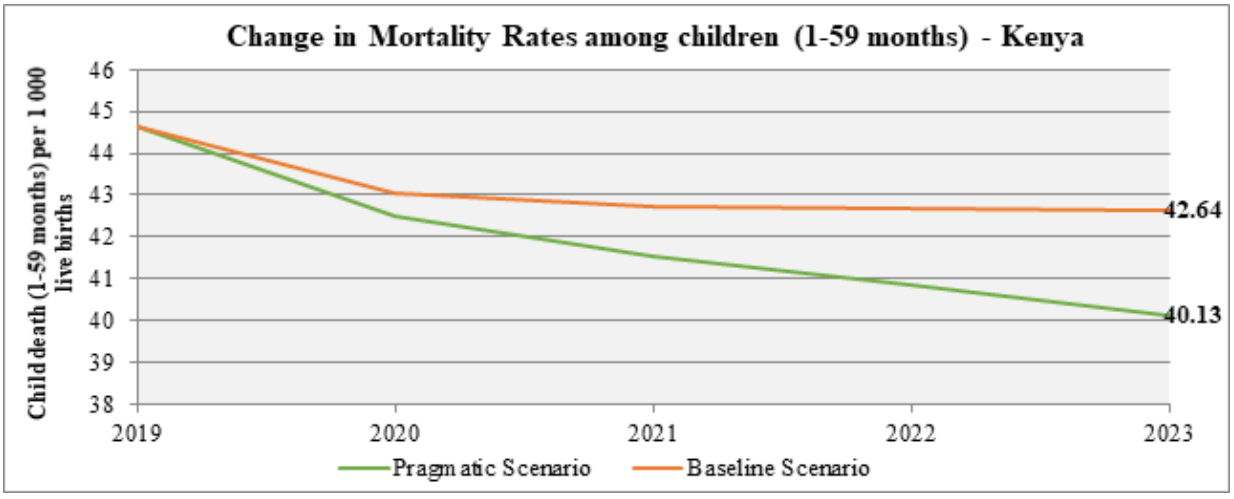
Potential deaths averted / lives saved are estimated using the LiST. We model for a status quo baseline scenario and a pragmatic scale-up of an annual five percent increase in coverage of iCCM interventions.

Potential lives saved in Kenya

In the context of this investment case, the analysis presents the impact of iCCM interventions on mortality rates for children aged one to 59 months, since iCCM interventions in Kenya largely impact this age group relative to neonates (those younger than one month).

The model estimates a six percent reduction in the mortality rate among children aged one to 59 months, from 42.6 deaths per 1,000 live births to 40.1 deaths per 1,000 live births for the projection period. This translates to approximately 9,068 lives saved between 2019 and 2024 through implementation of iCCM.

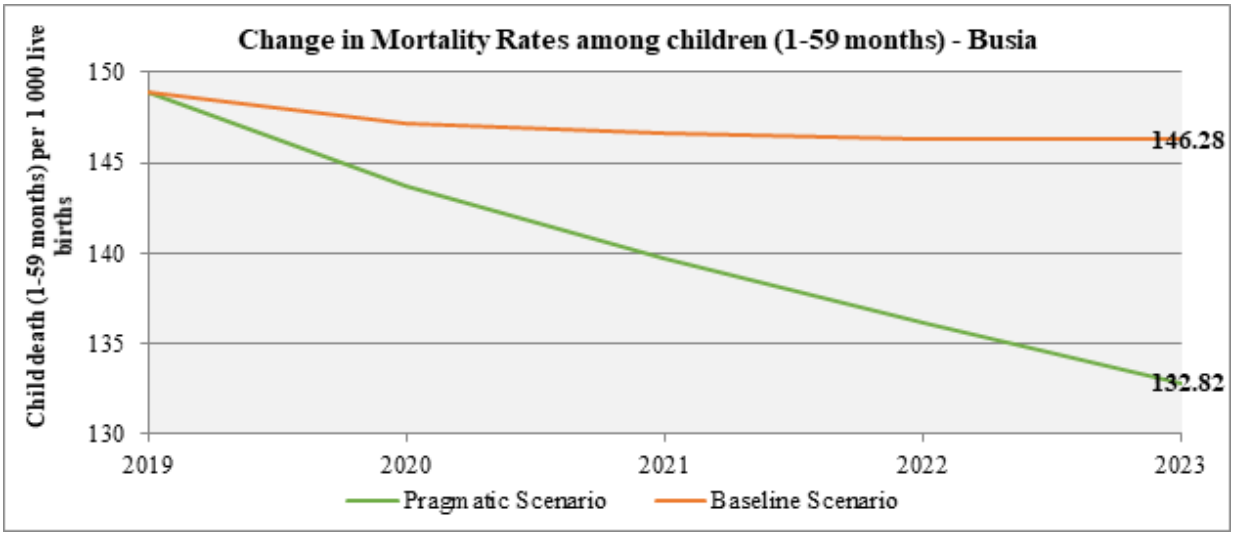
Figure 7: Potential change in child mortality rates in Kenya



Potential lives saved in Busia

The model estimates a ten percent potential decline in the mortality rate for children aged one to 59 months, from 146.3 to 132.8 deaths per 1,000 live births due to iCCM scale-up in Busia. This translates to approximately 1,250 lives saved between 2019 and 2024 through the implementation of iCCM.

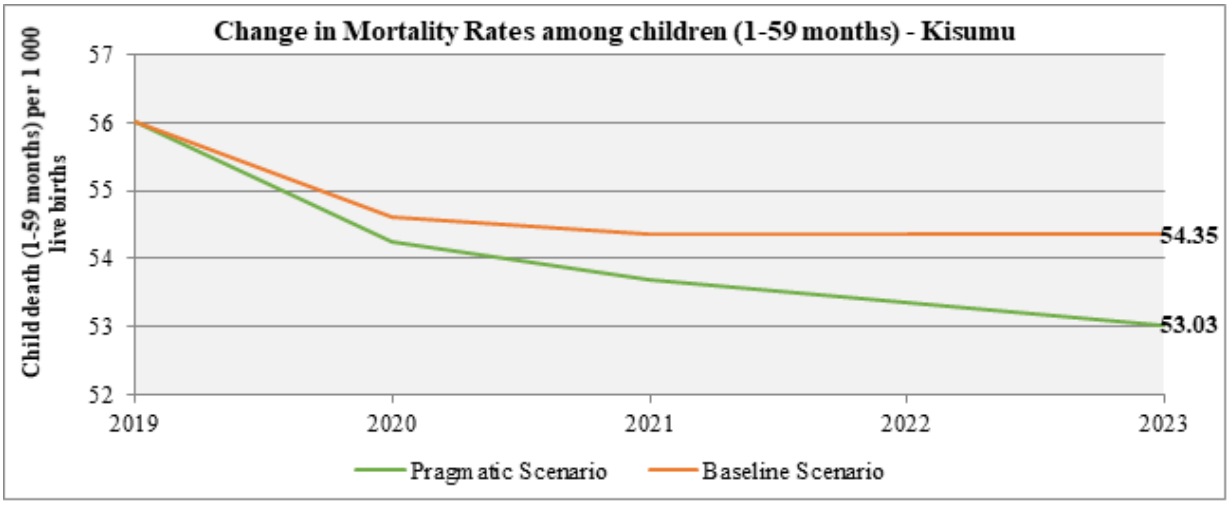
Figure 8: Changes in child mortality rates in Busia



Potential lives saved in Kisumu

The model estimates a three percent potential decline in the mortality rate for children aged one to 59 months, from 54.4 to 53 deaths per 1,000 live births through the scale-up of iCCM in Kisumu. This translates to approximately 201 lives saved between 2019 and 2024 through the implementation of iCCM.

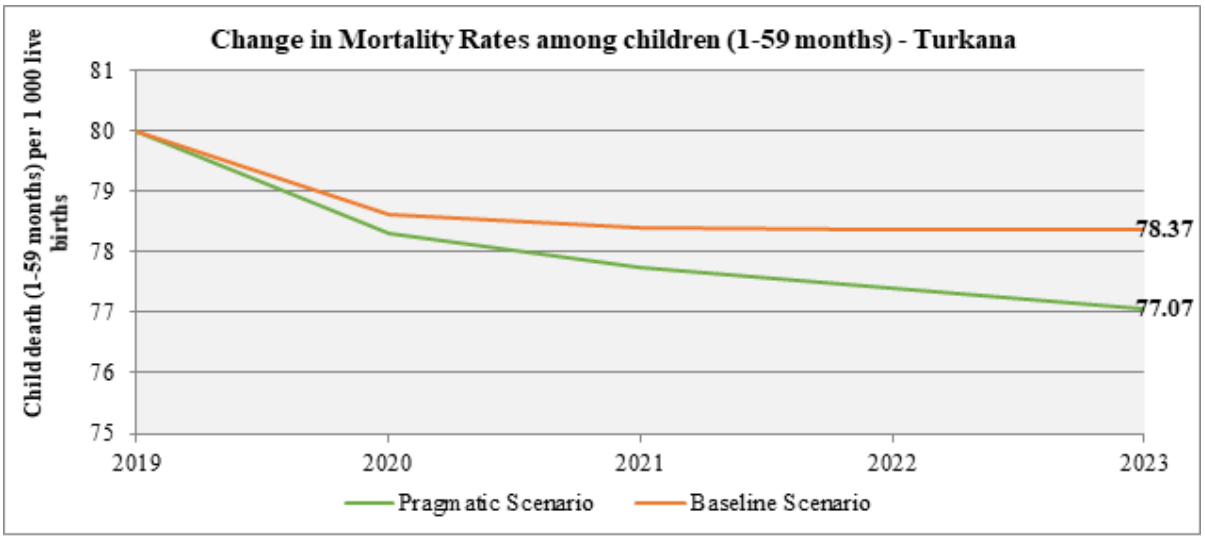
Figure 9: Changes in child mortality rates in Kisumu



Potential lives saved in Turkana

The model estimates a two percent potential decline in the mortality rate for children aged one to 59 months, from 78.4 to 77.1 deaths per 1,000 live births due to iCCM scale-up in Turkana. This translates to approximately 158 lives saved between 2019 and 2024 through the implementation of iCCM.

Figure 10: Changes in child mortality rates in Turkana



Notably, the greatest mortality benefit (deaths averted) is seen in Busia, which has the highest mortality among children aged one to 59 months among the sampled counties. Child mortality rate may therefore be a critical consideration in the selection and targeting of potential scale-up regions.

Productivity benefits

We estimate that each individual child life saved would have contributed approximately KES 7,584,556 in economic activity over his or her lifetime. This estimate is based on the following factors:

- The current GDP per capita of Kenya (2020) of KES 204,783.3
- A projection that GDP per capita will increase by 2.3 percent per year
- An estimate that children in this cohort will enter the workforce at age 18 and exit the workforce at age 60 (average life expectancy in Kenya in 2019 was 66.4 years but retirement age is 60 years)
- An adult survivorship rate of 77 percent
- Labour force participation rate of 67.8 percent
- Utilization of a discount rate of five percent to calculate the net present value of future cashflows from these projected lifetime earnings

Consequently, we estimate that the total present value of productivity benefits for the entire national cohort of 9,068 children over their lifetime would be approximately KES 69B. However, assuming that only 77 percent survive to the age of 60, the estimated total present value of productivity benefits for the survivors would be approximately KES 53B.

Estimated county specific productivity benefits are depicted in Table 5 below.

Table 5: Calculated nominal productivity benefits for the lives saved through iCCM

Calculated Productivity (Nominal)*	Kenya	Busia	Kisumu	Turkana
Children in cohort that participate in labor force	6,148	848	136	107
Cohort in labor force that are employed	5,509	759	122	96
Present value of projected future productivity benefits per child (Kes)	7,584,555	7,584,555	7,584,555	7,584,555
Total present value of future productivity benefits for entire cohort (Kes)	68,776,749,777	9,480,694,444	1,524,495,666	1,198,359,777
Total present value of future productivity benefits for cohort who survive (Kes)	52,958,097,328	7,300,134,722	1,173,861,663	922,737,028

Source: Analysis by Consultant

Multiplier effects

The fiscal multiplier effect refers to the impact of government spending on economic growth, which means that any amount spent by the government or donors contributes to some change in the growth of the economy. A multiplier effect greater than one implies that every shilling spent translates into a more than one shilling growth in the economy (30).

The multiplier effect is not constant but varies under the influence of multiple factors, such as, inter alia, governance, natural disasters, and population size (31). The World Bank estimates the multiplier effect in developing countries to be 0.7, while data estimates Kenya's multiplier effect, within the context of the country's devolution, to be 0.17 (3,32). We therefore use these two multiplier statistics to estimate modest and high multiplier benefits for expenditures on iCCM.

We estimate that the multiplier effect of a national investment of KES 49B over the six-year period would range from KES 8.3 B (modest estimate) to KES 34.5 B (high estimate). The estimated county-specific multiplier benefits are shown in Table 6 below.

Table 6: Multiplier effects of iCCM investment

Multiplier effects (2019-2024)	High (World Bank 0.7) (KES)	Modest (Local 0.17) (KES)
Busia	782,137,912.61	189,947,778.78
Kisumu	691,654,493.57	167,973,234.15
Turkana	596,223,504.60	144,797,136.83
National	34,500,265,179.69	8,378,635,829.35

Return on investment

We estimate the ROI using the formula below:

$$\text{ROI} = \frac{\textit{Sum of productivity benefits and multiplier benefits}}{\textit{Total cost of implementing iCCM between 2019 and 2024}}$$

We estimate that the potential ROI for nationwide scale-up would range from 1.2 to 2.1. At the county level, the ROI was highest in Busia (ranging from 6.7 to 9.2) and modest across Kisumu and Turkana counties, as shown in Table 7 below.

Table 7: Estimated return on investment

	Kenya	Busia	Kisumu	Turkana
a. Entire Cohort				
Modest	1.6	8.7	1.7	1.6
High	2.1	9.2	2.2	2.1
b. Cohort that Survives to Adulthood				
Modest	1.2	6.7	1.4	1.3
High	1.8	7.2	1.9	1.8

Implication

The greatest ROI may derive from regions with high mortality rates among children aged one to 59 months. Consequently, implementation and scale-up should target regions with high child mortality rather than general undifferentiated implementation.

Limitations of Gap Analysis and Investment Case

- Due to resource constraints, this analysis focused on three counties. We may not have considered county-specific nuances that impact the disease patterns and costs of implementation of iCCM in all counties.
- There is a dearth of systematically collected local programmatic and programme finance data to inform the gap analyses and investment cases for iCCM in Kenya. Ongoing digitization efforts are expected to refine these analyses in time.
- We developed this report during the COVID-19 pandemic, whose epidemiology and response continues to evolve. The pandemic is challenging the world's health systems and has triggered a deep global economic downturn, with uncertain outcomes (33). We expect that the pandemic may continue to cause disruptions in service delivery, however, the full impact of the pandemic on iCCM programme implementation and investment remains uncertain.
- The modelling does not control for health system shocks such as natural disasters, political instability, disruptive innovations, etc., which have the potential to influence iCCM implementation, hence estimated benefits may vary in response to these factors.

Conclusions and Recommendations

- Advocacy for iCCM financing should be anchored to Kenya's development goals, including Vision 2030 and UHC, as well as global SDG targets
- Highest return on investment will be attained if scale-up of iCCM prioritizes counties with the highest child mortality rates and those with challenges accessing services
- Advocacy for establishment of robust commodity management that ensures consistent and efficient supply of iCCM commodities in communities
- Return on investment may be enhanced by reducing cost of delivering community health services e.g., development of cheaper training methodologies
- Strengthen data collection and reporting via DHIS 2 for decision-making e.g., through scale-up of ongoing digitalization efforts. These data will enhance efficiency through evidence-informed resource allocation
- Advocacy for legal and policy mechanisms to facilitate mainstreaming, recruitment, and remuneration of CHVs and CHCs
- Since iCCM is predicated on a functional primary health system, implementation and scale-up must therefore be coupled with concurrent investments in strengthening of the primary health system
- Strengthen demand creation for community-based health services, including iCCM, through advocacy for community acceptance, ownership, and utilization

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Annex 1: Summary table of national policies related to iCCM in Kenya

Policy document / Years covered	Provisions for iCCM implementation and scale-up
Kenya Health Policy 2014–2030 (19)	• Provides a roadmap for attainment of UHC and accelerates access to essential health services that contribute to improved health • States that community units should assist individuals, households, and communities to carry out appropriate healthy behaviors, recognize signs and symptoms of conditions which require health care, and facilitate community diagnosis, management, and referral
Kenya Health Sector Strategic Plan 2018–2023 (20)	• Recommends iCCM as a high-impact intervention to be prioritized during this period • Recognizes the role of CHVs in attainment of UHC and commits to providing CHVs with basic kits • Commits to establishing surveillance systems for community health events through the Community-Based Health Information System (CBHIS), aligning the community health strategy and community health scheme of services to health sector strategy, and building capacity of CHVs in partnership with Kenya Medical Training College (KMTC)
Kenya Primary Health Care Strategic Framework 2019– 2024 (11)	• Recognizes the community as key to the attainment of health for all and that community health units are the first level of health care delivery in Kenya • Recommends transformation of the service delivery team by linking all community health units to primary health facilities and introducing facility multi-disciplinary teams which consist of CHVs and focus on preventive health and health promotion
Newborn, Child and Adolescent Health (NCAH) Policy 2018 (21)	• Aims to guide Kenya towards achievement of health-related SDGs through evidence-based newborn, child, and adolescent health interventions • Promotes utilization and scale-up of iCCM as a platform to improve access to prevention and management of childhood illnesses at community level during infancy and childhood period
Kenya Community Health Policy 2020–2030 (22)	• Aims to establish and implement a strong, equitable, holistic, and sustainable community health structure • Policy aims to ensure recruitment and retention of community health workforce, provision of high-quality community health services, support development of community-based health information system (CBHIS), and use of technology to establish strong procurement system and data-informed decision making
Kenya Community Health Strategy 2020–2025 (23)	• Aims to strengthen management and coordination of community health governance structures at all levels • Also aims to build a skilful and equally distributed community health workforce, increase sustainable financing to community health units, increase data utilization in decision-making, ensure availability of high-quality and rotational distribution and supply of commodities, and create platforms for strategic partnerships and accountability among stakeholders at all levels
National Framework and Plan of Action for Implementation of Integrated Community Case Management (iCCM) In Kenya 2013–2018 (18)	• Contributes to the reduction of child morbidity and mortality by providing quality community case management for children stricken with malaria, pneumonia, diarrhoea, and malnutrition and identifying and referring newborns for skilled care services • Defines implementation strategies and sets targets for iCCM, including proportion of counties, health facilities, and community units implementing iCCM (programme coverage), necessary policy actions, training for CHVs, commodity management, and proportion of sick children and newborns receiving iCCM as appropriate (population level outcomes)

	• Defines how resources will be mobilized, progress will be tracked, and how implementation will be coordinated from national to community levels
Kenya Health Financing Strategy 2016–2030	• Aims to ensure adequacy, efficiency, and fairness in financing of health in a manner that guarantees all Kenyans access to the essential health services they require • Establishes a national health fund and county health fund in each county for ringfencing of government and external resources provided to national-level health functions, counties for health management functions and preventive and health promotion activities • Recommends biannual development of investment case for health, based on economic and value for money benefits • Does not recognize or cover iCCM interventions as community-level interventions under the UHC Essential Package of Health Services. These are considered primary facility-level interventions to be covered by the proposed national and county health funds
UHC Roadmap 2018; Implementation Plan 2018; and Universal Health Coverage Health Benefits Package Advisory Panel: Report on The UHC -Essential Benefits 2018	• Developed to guide implementation of UHC agenda in the health sector and the country at-large from pilot to national scale-up • Recognize the role of the community health strategy (CHS) as an anchor for successful implementation of UHC. They further recognize the resource gaps related to CHS and allocate requisite resources (approximately Kes. 5.4 billion) to strengthening CHS during the national UHC scale-up • Do not outline the scope of community health interventions for UHC and do not include iCCM in the services to be covered by the CHVs. They limit the scope to health promotion and preventive services
Health Sector Report: Medium Term Expenditure Framework (MTEF) for the Period 2021/22 – 2023/24	• Aims to guide and provide policy makers, development partners, and other stakeholders with key information on the performance targets, outputs, and funding requirements of the health sector for the framework period to enable them to make appropriate policies and funding decisions • Recognizes the community health strategy as a critical element of primary health care and key to successful implementation of UHC. It highlights the capacity gaps, recognizes the extensive donor dependence on the funding and implementation of CHS, and the disruptive impact of the COVID-19 pandemic to CHS capacity development efforts • Sets national annual capacity development targets specific to CHAs and CHVs over the MTEF tenure (training 400 and 2,400 respectively)

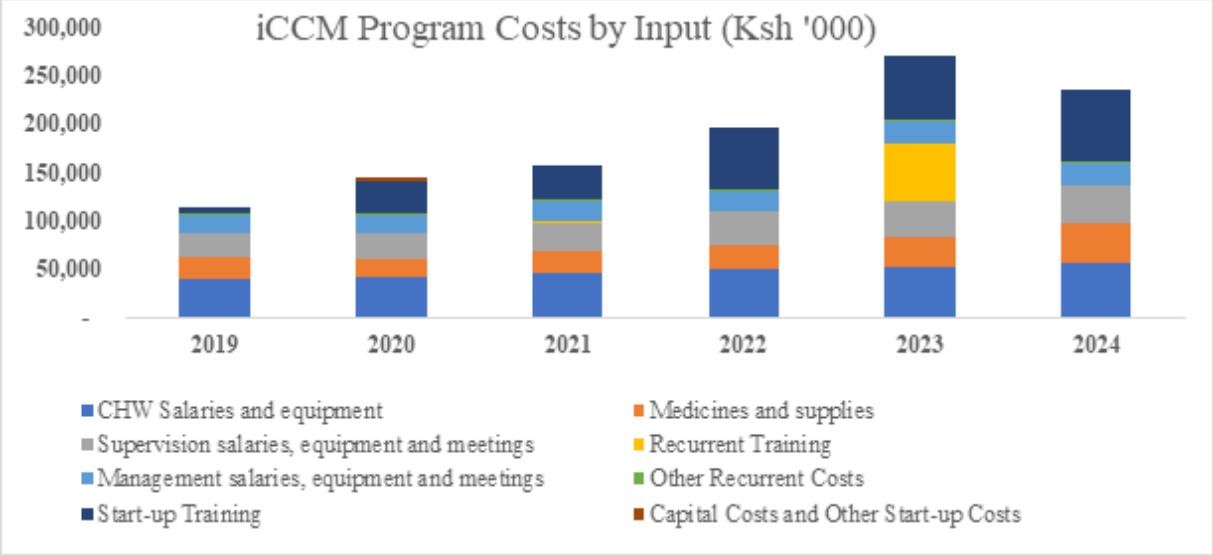
Annex 2: Summary of key assumptions

Data component	Key assumptions / Data Sources
CHCP Tool	
Program data	We set the baseline year at 2019, due to: 1) Availability of data from the 2019 National Census; 2) Continuation of previous implementation framework which spanned 2013-2018; and 3) Anticipated data gaps in 2020 due to disruptions from the pandemic. We utilized an implementation span of 6 calendar years (2019 – 2024) to align with the next national implementation framework and plan of action for iCCM (2021 – 2024)
Program structure	Due to lack of local data, we attribute ten percent of all resources (e.g., time, salaries), the average proportion found by Daviaud, et al. 2017, to iCCM
Program package configuration	We reduced interventions not specific to iCCM yet critical to iCCM implementation to ten percent of actual coverage to reflect iCCM-specific costs
Program scale-up	We assume five percent annual increase in population coverage
Coverage	Interventions that aren't specific to iCCM yet are selected are later reduced to ten percent of actual coverage to reflect iCCM
Training	We focus on courses deemed critical for CHVs to implement iCCM, including the basic CHV course, iCCM initial and refresher courses, and pharmacovigilance, as recommended by the PPB. Ancillary courses include M&E. We derived unit costs from the average costs of mounting respective staff courses
Other recurrent costs and start-up costs	We reduced start-up costs and other recurrent costs, such as supervision and management costs, to ten percent of CHS costs to estimate iCCM-specific costs
LiST	
Scale-up scenarios	We aligned baseline coverage rates with the coverage rates in the CHCP Tool and customized health indicators to the actual rates in the respective counties. We generated baseline and pragmatic scenarios at: a) Status quo for entire period; b) Five percent annual increase in coverage from baseline
Economic Benefits	
	We based multiplier effect estimates on a) World Bank estimates (0.7); b) Recent in-country publications (0.17). Labour productivity data is based on International Labour Organization and GoK data

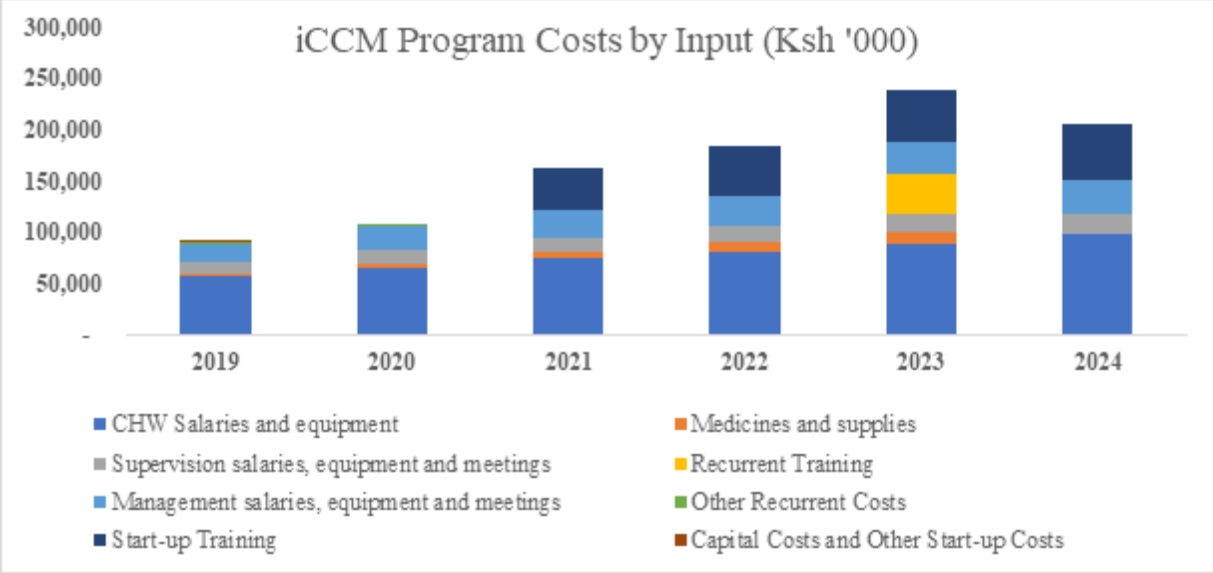
Annex 3 – Supplementary charts and tables

A3.1. iCCM program costs by input (KES '000)

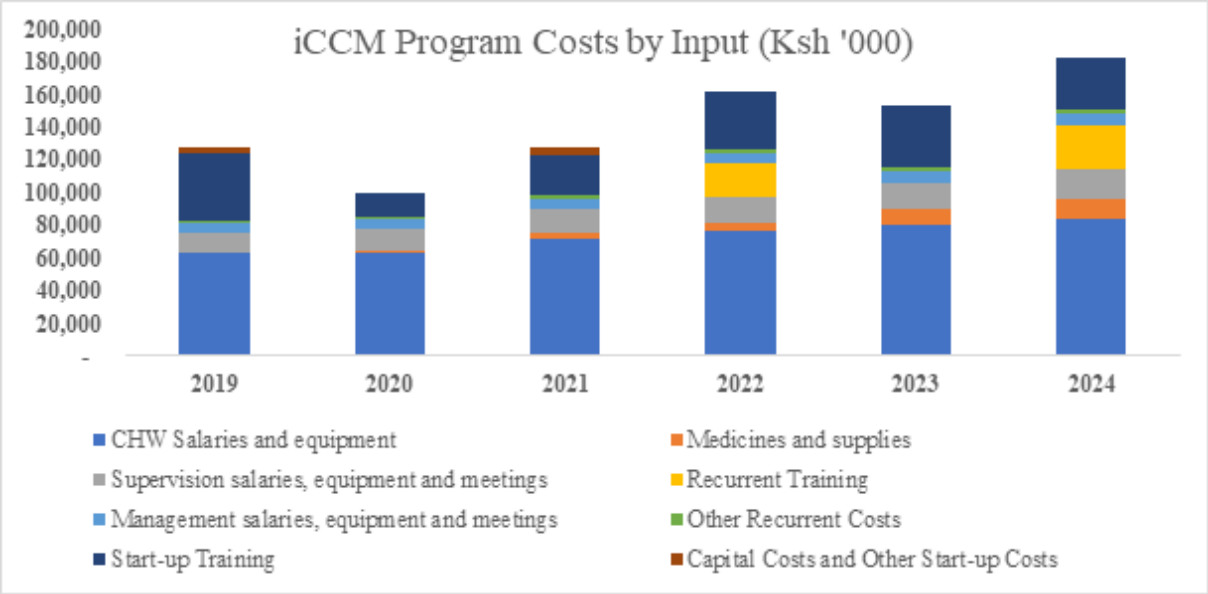
A) Busia county



B) Kisumu county

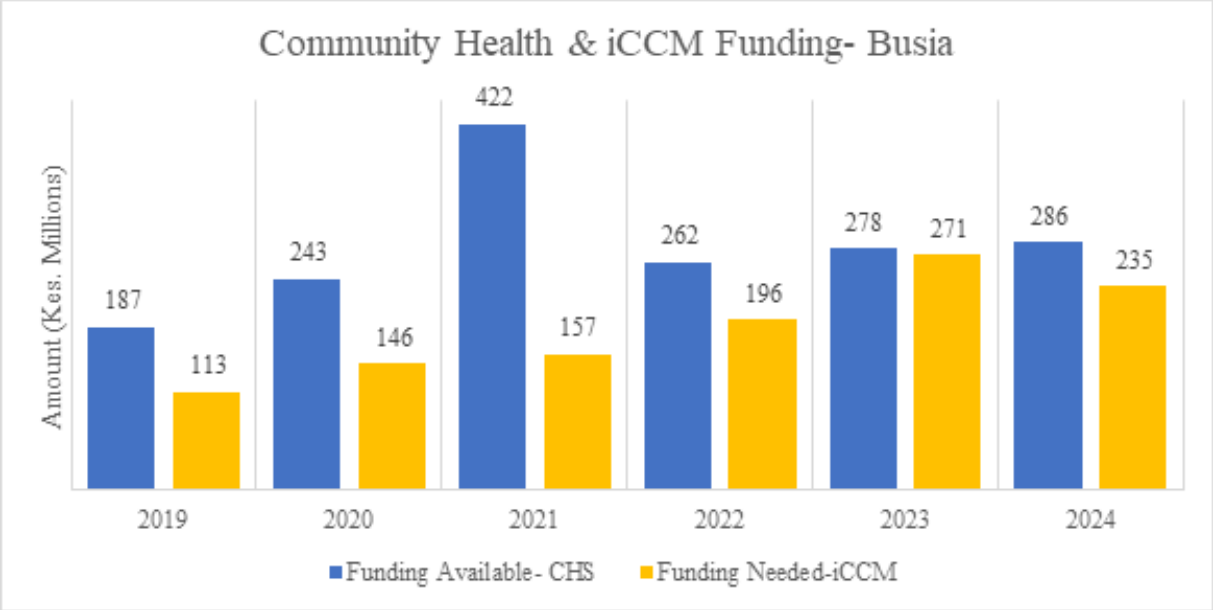


C) Turkana county

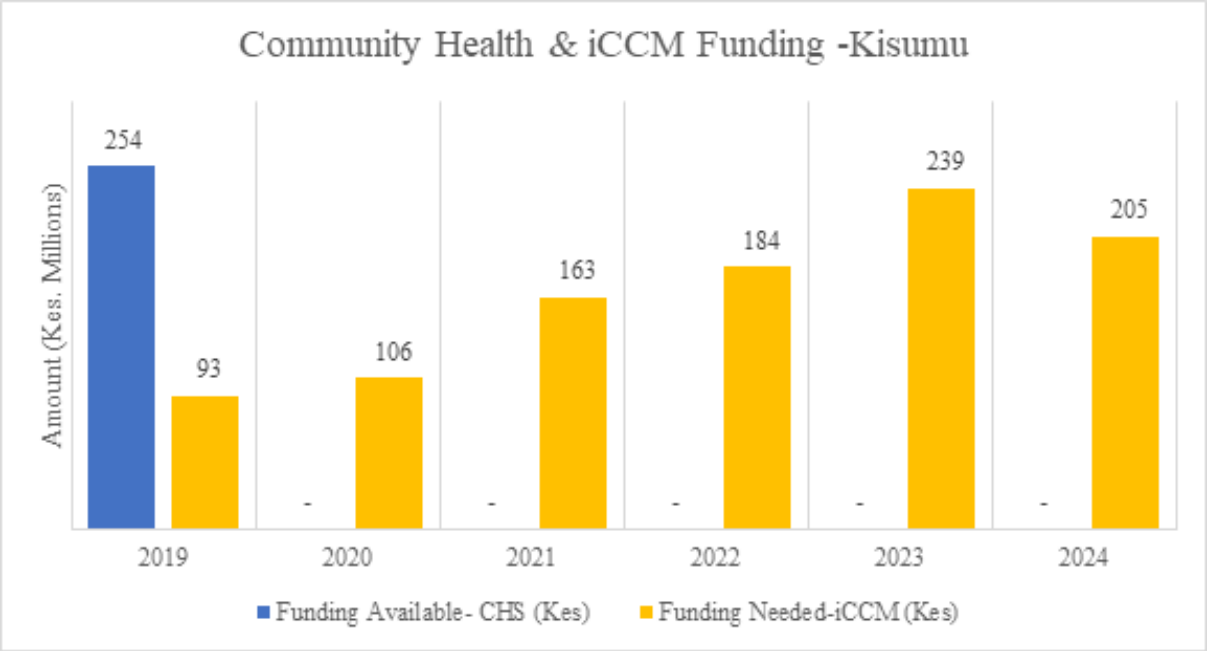


A.3.2 Community health and iCCM funding (2019 to 2024)

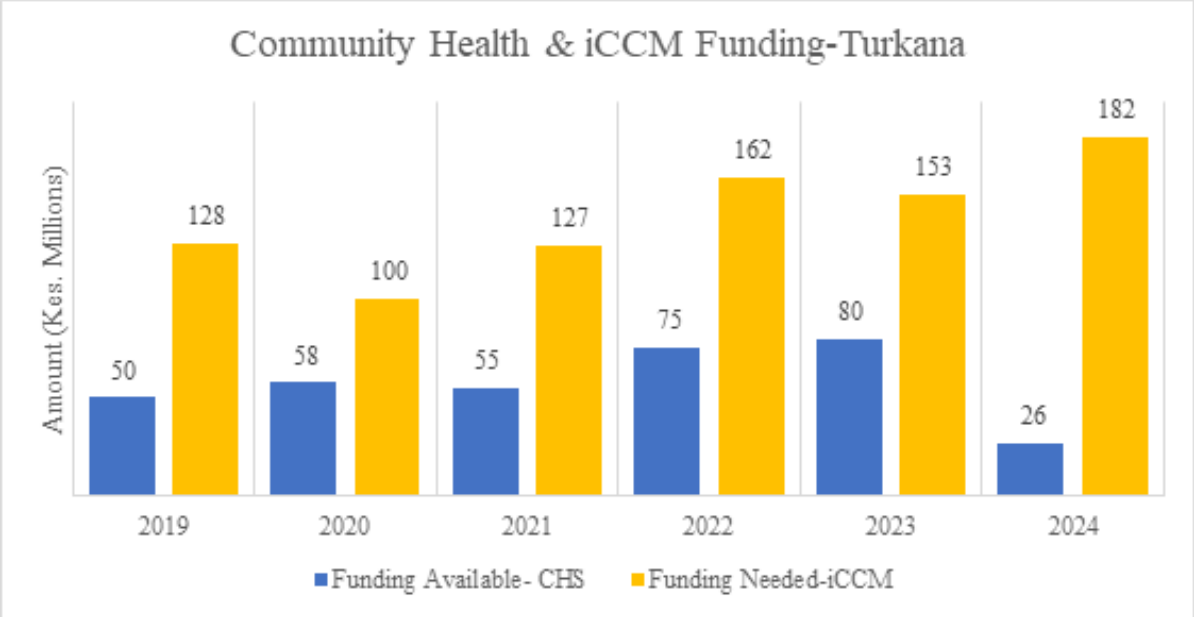
A) Busia county



B) Kisumu county



C) Turkana county



A3.3. Costs per CHW (KES)

A) Kisumu county

Cost per CHW (KES)	2019	2020	2021	2022	2023	2024
Cost per CHW (Total cost / Total CHWs)	41,485	44,006	65,027	70,602	88,415	73,131
Recurrent cost per CHW (Total recurrent cost / Total CHWs)	40,004	44,006	65,027	70,602	88,415	73,131
Training and equipment cost per CHW	22,320	23,176	40,041	42,625	56,734	45,994
Supervision cost per CHW	4,904	5,462	7,531	8,917	10,529	9,680

B) Busia county

Cost per CHW (KES)	2019	2020	2021	2022	2023	2024
Cost per CHW (Total cost / Total CHWs)	51,653	65,099	68,451	83,969	113,444	96,082
Recurrent cost per CHW (Total recurrent cost / Total CHWs)	51,653	62,761	68,451	83,969	113,444	96,082
Training and equipment cost per CHW	15,900	28,924	31,092	42,173	68,212	45,739
Supervision cost per CHW	12,828	13,167	14,813	18,285	18,648	21,308

C) Turkana county

Cost per CHW (KES)	2019	2020	2021	2022	2023	2024
Cost per CHW (Total cost / Total CHWs)	40,416	31,641	38,120	47,560	44,192	52,635
Recurrent cost per CHW (Total recurrent cost / Total CHWs)	39,099	31,641	36,733	47,560	44,192	52,635
Training and equipment cost per CHW	27,786	19,691	23,378	26,803	28,061	28,589
Supervision cost per CHW	3,806	4,026	4,908	7,150	5,964	7,130

D) Comparative costs of iCCM commodities across sub-Saharan countries

Interventions	Kenya	Ethiopia	Ghana	Mali	Malawi	Mozambique	Niger
Malaria, including RDT	65%	65%	68%	71%	76%	71%	72%
Diarrhoea	31%	26%	15%	27%	20%	14%	9%
Pneumonia	4%	10%	17%	2%	4%	15%	19%

Source: Daviaud, Emmanuelle et al. (2017); Analysis by Consultant

A.3.4. Productivity Analysis

A) Busia county

Productivity Report - all CHWs						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Total time needed for all CHWs (minutes)	18,968,644	15,452,605	16,645,335	17,896,410	19,383,865	24,065,340
Number of CHWs	2,190	2,238	2,287	2,338	2,389	2,442
Total time per CHW (minutes)	8,661	6,904	7,277	7,655	8,113	9,856
Total time per CHW (hours)	144	115	121	128	135	164
Total time per CHW per week (hours)	3	2	2	2	3	3
Total service delivery time available per CHW per week (hours)	0.39	0.39	0.39	0.39	0.39	0.39
Percent of time used	718%	572%	603%	635%	673%	817%

B) Kisumu county

Productivity Report - all CHWs						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Total time needed for all CHWs (minutes)	1,847,723	12,360,720	29,069,345	52,361,870	82,648,985	120,358,540
Number of CHWs	2,238	2,400	2,500	2,600	2,700	2,800

Total time per CHW (minutes)	826	5,150	11,628	20,139	30,611	42,985
Total time per CHW (hours)	14	86	194	336	510	716
Total time per CHW per week (hours)	0	2	4	6	10	14
Total service delivery time available per CHW per week (hours)	12	12	12	12	12	12
Percent of time used	2%	13%	30%	53%	80%	112%

C) Turkana county

Productivity Report - all CHWs						
	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Total time needed for all CHWs (minutes)	3,697,042	9,318,405	15,754,830	23,280,410	31,962,605	41,850,975
Number of CHWs	3,160	3,160	3,340	3,400	3,460	3,460
Total time per CHW (minutes)	1,170	2,949	4,717	6,847	9,238	12,096
Total time per CHW (hours)	19	49	79	114	154	202
Total time per CHW per week (hours)	0	1	2	2	3	4
Total service delivery time available per CHW per week (hours)	3	3	3	3	3	3
Percent of time used	12%	30%	48%	70%	95%	124%

A3.5. Funding trends across the three counties

A) Busia county

Busia County (KES Millions)							
Description	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**Total**
Funding Available – CHS[2]	187.02	242.77	422.03	261.99	278.00	285.64	1,677.45
Funding Needed – iCCM	113.12	145.70	156.58	196.30	271.04	234.61	1,117.34
Funding Surplus/Gap – CHS	**73.90**	**97.07**	**265.45**	**65.69**	**6.96**	**51.034**	**560.11**

[2] Funding available CHS refers to funding for entire Community Health Services and therefore not necessarily committed to iCCM

B) Kisumu county

Kisumu County (KES Millions)							
Description	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**Total**
Funding Available – CHS	254.00	-	-	-	-	-	254.00
Funding Needed – iCCM	92.84	105.62	162.57	183.56	238.72	204.77	988.08
Funding Surplus/Gap – CHS	161.15	(105.62)	(162.57)	(183.56)	(238.72)	(204.77)	(734.08)

C) Turkana county

Turkana County (KES Millions)							
Description	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**Total**
Funding Available – CHS	49.85	57.52	54.83	74.90	79.74	26.50	343.33
Funding Needed – iCCM	127.72	99.99	127.32	161.71	152.90	182.12	851.75
Funding Surplus/Gap – CHS	(77.86)	(42.46)	(72.49)	(86.81)	(73.17)	(155.62)	(508.42)

A3.6. Productivity benefits

Estimated iCCM Productivity Benefits					
Description of Assumptions	**Kenya**	**Busia**	**Kisumu**	**Turkana**	**Three counties**
Lives Saved	9,068	1,250	201	158	1609
Labour Force Participation Rate	67.8%	67.8%	67.8%	67.8%	67.8%
Employment Rate (2020)	89.6%	89.6%	89.6%	89.6%	89.6%
Adult Survivorship Rate	77.0%	77.0%	77.0%	77.0%	77.0%
Number of Productive Years in Employment (18-60 Years)	42	42	42	42	42
GDP per Capita (Kes) 2020	204,783	204,783	204,783	204,783	204,784
GDP per Capita Annual Growth Rate	2.30%	2.30%	2.30%	2.30%	2.30%
Discount Rate	5%	5%	5%	5%	5%
Inflation	5.1%	5.1%	5.1%	5.1%	5.1%

Calculated Productivity (Nominal)	Kenya	Busia	Kisumu	Turkana	Three counties
Children in cohort that participate in labor force	6148	848	136	107	1091
Cohort in labor force that are employed	5509	759	122	96	977
Present value of projected future productivity benefits per child (KES)	7,584,555.56	7,584,555.56	7,584,555.56	7,584,555.56	7,584,592.59
Total present value of future productivity benefits for entire cohort (KES)	68,776,749,778	9,480,694,444	1,524,495,667	1,198,359,778	12,203,609,482
Total present value of future productivity benefits for cohort who survive (KES)	52,958,097,329	7,300,134,722	1,173,861,663	922,737,029	9,396,779,301

A3.7. Costs per life saved through iCCM strategy

Description	Busia	Kisumu	Turkana	Three counties	National
Total costs (USD)	10,317,081	9,123,526	7,864,708	27,305,315	455,088,579
Lives saved	1,250	201	158	1,609	9,068
Cost per life saved (USD)	8,253.66	45,390.68	49,776.63	16,970.36	50,186.21

A3.8 Health financing summary in Kenya

	THE as 7.2% of total government expenditure	THE as 9.2% of total government expenditure (2018/19)
Total health expenditure (THE) (Kes) (2018/19)	207B (National)	121B (County)
THE per capita (2015/16)	78.6 USD (KES. 7822)	
County health expenditure as % total county expenditure	25% (2016/17)	27.2% (2018/19)

Source: Dutta A., Maina T., Ginivan M., Koseki S. Kenya Health Financing System Assessment, 2018; National and County Health Budget Analysis FY 2018/19; Kenya National Health Accounts 2015-2019

Annex 4: Economic evaluation summary

Description	Comments
Institution	Save the Children International; Ministry of Health
Intervention	Integrated Community Case Management (iCCM): • Pneumonia • Diarrhoea • Malaria
Target population	Children under-five in: • Busia, Turkana, Kisumu counties • Kenya
Comparator/ Scope	Hospital-based care of diarrhoea, pneumonia, and malaria
Evidence	The quality of evidence evaluated for antibiotic use in case management of pneumonia was low to moderate GRADE, in keeping with the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) criteria due to limitations in sample size, susceptibility to bias, and absence of long-term local / contextual data. There is need for higher GRADE evidence.
Perspectives / Costs	Healthcare payers' perspective
Perspectives / Benefits	Societal perspective: • Lives saved • Productivity benefits • Multiplier effects
Type of economic evaluation	Cost-consequence analysis Cost-benefit analysis
Horizon	Lifetime: Life expectancy at birth 66.7 years • Male – 63 years • Female – 68 years
Discounting	Five percent for costs and benefits

Annex 5: List of respondents

Name	Position and representative organization
Maureen Opiyo	Kisumu County CDH
James Otieno	Kisumu County CHRIO
Elijah Oyolla	Kisumu County CDH
Emmanuel Luvai	Busia County CCHSP
Eric Wamalwa	Busia County Pharmacist
Mr. Samuel Lokemer	Turkana County CHFP/CMCC
Ms. Ruth Areman	Turkana County CHFP
Mr. Calis Elamach	Health Coordinator – Turkana Malnutrition Initiative Project
Mr. Abdirahman	Officer NCDs – CDOH Turkana
Mr. Abraham	Officer Laboratory Services – CDOH Turkana

Annex 6: Key informant interview guide for county iCCM focal person

Development of Integrated Community Case Management (iCCM) Gap Analysis and Investment Case for Kenya

Since 2013, the Ministry of Health, in collaboration with the World Health Organization (WHO), UNICEF, and other partners has been implementing Integrated Community Case Management (iCCM). iCCM is a proven evidence-based strategy that trains, equips, and supports various cadres of community health service providers to deliver high-impact treatment interventions in the community. The implementation of iCCM in Kenya is guided by key documents which include the National Implementation Framework and Plan of Action 2013-2018 and its M&E plan and iCCM guidelines and tools. These documents are currently undergoing revision to be in tandem with current evidence-based policies, including the policy change on management of uncomplicated pneumonia at the community level using Amoxicillin dispersible tablets (DT). As part of the review process, the MoH, with support from Save the Children, is conducting a situation analysis on current iCCM implementation and a gap analysis which will inform costing of the revised iCCM National Implementation Framework and Plan of Action and development of an iCCM investment case.

We are currently collecting data on existing and projected iCCM programme investments from the counties of Kisumu, Turkana, and Busia and their partners. These data will support the estimation of financing requirements for the next phase of iCCM programme implementation. We therefore ask for your participation in this interview that will provide further insights into the implementation of iCCM in Kenya. The interview will last approximately 45 minutes. This is not research. The findings will inform resource mobilization strategies for iCCM.

All data will be anonymous to ensure confidentiality. Your participation is voluntary, and you can choose to stop at any time.

Leadership and governance

1. Are there policies at county level required for Community Health Units (CHUs) and iCCM to be fully supported? If YES, briefly specify the policies.
2. How is iCCM coordinated at county level? Is there an accountability system in place? (Probe: Coordinating structure/ mechanism/ TWG?)
3. Are there dedicated staff coordinating iCCM activities at county and facility levels? What proportion of their time is spent specifically on iCCM activities (probe for estimate percent of daily or monthly activities)?

Health financing

1. Describe county plans to mobilize resources for iCCM. Probe for amounts

Access to essential medicines

1. Describe how iCCM commodities are managed (forecasted, procured, supplied, distributed and reported)
2. Describe any systems in place for monitoring Community Health Volunteers' (CHVs) use of antimicrobial products (antibiotics for pneumonia, AL for Malaria)

Health information systems

1. What data collection tools and reporting systems are you using for monitoring of community health services and iCCM? (Probe: electronic systems etc., benefits and drawbacks of the system)
2. What are the challenges with reporting for iCCM service delivery? (Probe: tools, capacity, integration to CHIS and DHIS)

Health workforce

1. Are CHVs adequately trained in the following areas? (Diarrhoea case management; Malaria case management; Pneumonia case management; Malnutrition case management; Rational use of antimicrobial agents and pharmacovigilance; Reporting and data management systems)

Health service delivery

1. What systems are in pace to monitor quality of iCCM service delivery? E.g., follow up after training, regular scheduled supervision, satisfaction surveys etc.)
2. Do health workers in the link facilities support iCCM? (Please describe)
3. Are link health facilities clinical health workers trained on Integrated Management of Newborn and Childhood Illness (IMNCI)? If yes, how many? (Probe: cadre: Doctors, Nurses, Clinical officers); NB: it is important to ask this coz iCCM is the community component of IMNCI
4. Are link health facilities staff trained on community work; e.g. Community strategy, iCCM, Community Maternal Newborn Care (CMNC), Nutrition, Integrated Management of Severe Malnutrition (IMAM), Community Case Management of malaria (CCM)? (Probe: Types of training, duration and curriculum, training of other cadres of Health Workers on iCCM)?

Community engagement

1. How have communities been engaged for iCCM? (Probe for barazas, religious gatherings, community dialogue). Are communities supportive of iCCM? Please explain your answer.

Innovations

1. Are there any innovative approaches for implementation of iCCM in the county? (Probe: service delivery, data management, commodity management)

Annex 7: List of participants for stakeholder engagement and validation meetings

Lydia Karimurio (MoH)
Dr. Deborah Okumu (MoH)
Dr. Linda Misiko (SCI)
Dr Mike Mulongo (AICS)
Samuel Munyuwiny (AICS)
Osir Omondi (AICS)
Dr Jamlick Karumbi (MoH)
Dr. Michael Kiragu (AICS)
Judith Raburu- (UNICEF KCO)
Dr Caroline Mwangi
Charles Matanda (MoH)
Josephine Ayaga (MoH)
Bernard Wambu (MoH)
Emmanuel Luvai (CHHSFP Busia)
Alice Akalapatan- (Turkana county, Division of Family Health)
Silah Kimanzi- (UNICEF)
Dr. Mildred Shieshia (USAID-PMI)
Priscilla Migiro,
Dr Dyness Kasungami (USA-JohnSnow)
Daniel Wacira (USAID-PMI)
Evans Munuve (MoH)
Catriona Mumuli (PATH)
Sarah M (Living Goods),
Daniel Wacira (Living Goods)
Ken N. Ogendo (Living Goods)
Elsa Akeyo (MoH)
Dr. Abiud Machuki (CP Busia)
Dr Lynn Kanyuru (SCI)
Samuel Lokemer (CHHSFP -Turkana)
Elijah Mbiti (Nutritional International),
Christine Mugambi (PATH)
Dr. Lutomia,
Jael Wachia,
Dr. Ambrose Agweyu (MoH)
Maureen Opiyo (CHHSFP Kisumu)

Annex 8: Summary of key health indicators

Health Indicator	County			National	Data source (reference)
	Turkana	Kisumu	Busia		
Life expectancy at birth in years	62	Male 58 Female 61	62	66.8	(3–5)
Neonatal mortality rate (per 1,000 births)	80	39	39	21.0	(4–6)
Infant mortality rate (per 1,000 births)	66	54	84	39	(4,5,7)
Under-five mortality rate (per 1,000 births)	74	56	149	54	(4,5,8)
HIV prevalence rate	6.8%	17.5%	9.9%	4.9%	(9)
Malaria prevalence	2.3%	22.8%	22.8%	6.8%	(10)
Maternal mortality rate (per 100,000 births)	1594	495	319	362	(4,5,7,11)
Immunization coverage	57%	73%	75%	68%	(7)
Stunting among children below five years	24%	18%	22%	26%	(7)
Underweight among children below five years	34%	7%	9%	11%	(7)