World Vision

WORLD VISION'S JOURNEY TO END
WASTING:
MOVING FORWARD WITH CAPACITY

ACKNOWLEDGEMENTS

LIST OF ACRONYMS

CHW   Community Health Worker

CMAM   Community-based Management of Acute Malnutrition

CTC   Community-based Therapeutic Care

CVA   Citizen Voice and Action (WV social accountability and local advocacy approach)

DALY   Disability adjusted life year

GBG   Go Baby Go (WV early childhood development model)

GIK   Gift-In-Kind

IMAM   Integrated Management of Acute Malnutrition

IMCI   Integrated Management of Childhood Illness

MAM   Moderate acute malnutrition

MUAC   Mid-Upper Arm Circumference

NGO   Non-governmental Organisation

RUTF   Ready-to-Use Therapeutic Food

SAM   Severe acute malnutrition

SMS-RUTF Sorghum, Maize and Soya Ready-to-Use Therapeutic Food

UNICEF   United Nations Children Fund

USAID   U.S. Agency for International Development

WHA   World Health Assembly

WHO   World Health Organization

WV   World Vision

FOREWORD

Reading like a failing report card, three Cs (Conflict, Climate, and COVID-19) and three Fs (food, fuel, and fertilizer price increases) underly the current devastating and growing hunger crisis globally, which will disproportionately affect women and children. The Food and Agriculture Organization projected in March 2022 that between 8 and 13 million more people could become undernourished in 2022 and 2023. Acute malnutrition – wasting – is not just a condition. It's a marker for death since wasted children are at a much higher risk of death from infectious diseases.[1] If wasting remains under-addressed, we will continue to see sharp increases in child deaths after decades of steady and laudable progress in child survival. Well before this spike in acute malnutrition, back in 2013, one in ten deaths among preschool children in low- and middle-income countries was attributable to severe wasting.[2]

It is not that we do not have affordable and scalable solutions. For children who become wasted, *Community-based Management of Acute Malnutrition* (CMAM) is highly cost-effective. While we know that only one in three severely wasted children receive treatment, and that the global supply of ready-to-use therapeutic food (RUTF) will not meet demand during this hunger crisis, we have simplified approaches to CMAM to greatly extend this reach, such as provision of treatment by Community Health Workers and Family MUAC, which teaches caregivers to screen for acute malnutrition. We need simplified approaches to CMAM to become routine and scaled.

Our solutions are not limited to treatment: Recent (2021) high-quality research has shown that an intervention package including food rations, social and behavioural change through the Care Group approach, and health systems strengthening not only prevented 50 per cent of acute malnutrition cases at low cost (~$153 per beneficiary per year) in an environment of increasing food insecurity,[3] but reduced stunting[4] and maternal and child anaemia,[5] and increased household food security, diets, and attainment of language and motor milestones by children[6] at the same time. Providing nutrition interventions in early life leads to extremely high estimated returns on investment – up to US$35 for every $1 spent.[7] This exceeds the returns on investment for other important global health initiatives that have been scaled more widely, including childhood vaccinations, which have been estimated to save $21 for every $1 spent.[8]

Take hope. While we have seen inaction in the past around other problems affecting children (diarrhoea, pneumonia, and vaccine-preventable diseases), we have made huge strides in reducing them through global effort and collaboration. James Grant, UNICEF visionary, rallied the world around child survival with the cry, "Morality must march with capacity." The child survival revolution is not over until undernutrition is vanquished. Let's keep marching.

Tom Davis, MPH
Partnership Lead for Health and Nutrition, World Vision International

EXECUTIVE SUMMARY

In 2020, wasting affected an estimated 45 million children. In these times of COVID-19, conflict, and climate change, the situation has worsened. The pandemic alone is predicted to add an additional 13.6 million wasted children to the global burden. This matters because wasting is deadly, and the majority of children who require wasting treatment are unable to access it, despite the fact that Community-Based Management of Acute Malnutrition (CMAM) is highly cost-effective compared to other public health interventions.[i] The world is off-track to meeting global wasting targets, and more must be done.

World Vision (WV) has a long history of preventing and treating wasted children through therapeutic and supplementary feeding programmes and behaviour change promotion, and was an early adopter of the CMAM approach, first in Niger in 2005. World Vision began consolidated tracking of CMAM programming data in 2010. Since that time, more than 1.8 million children under five years of age and over 500,000 pregnant and lactating women have been treated through WV's CMAM programmes in 31 countries.[ii] Of the over 648,000 children treated for severe wasting, 89 per cent recovered, greatly exceeding the Global Sphere Standard of >75 per cent. Through conducting lives saved analysis, we **estimate that 91,885 to 103,958 lives of children under 5 were saved through WV's CMAM programming from 2010 to 2021**.[iii]

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[i] A 2020 review of five CMAM cost-effectiveness studies suggests that CMAM is highly cost-effective with a cost per disability adjusted life year (DALY) averted by the five CMAM programmes assessed ranging from USD23 to USD53. Cited in: **https://www.ennonline.net/fex/64/cmamsurgecosteffectiveness**
[ii] This is an underestimation of the caseload of WV supported CMAM programmes, as not all programmes used the database.
[iii] An estimated 91,885 lives saved using a cure rate of 75%. Using the actual annual cure rate from routine data, 103,958 estimated lives saved. Refer to Annex 2.

This report provides a look back at how we got here, reflecting on the investments made by WV in CMAM programming since 2005, and reflects upon what is needed for the future. Areas of investment include establishing a partnership with Valid International for capacity development, recruitment of dedicated CMAM technical staff, development of internal programmatic guidance, quality assurance frameworks, innovations and research, and creating and scaling the WV CMAM database as a consolidated platform for reporting. Alongside internal investments, WV contributed to the global discourse on wasting through engagement in various external technical fora.

World Vision's 17-year history of CMAM implementation provides many rich learnings. Intensive and sustained, multi-year investments in capacity building were essential for the initial adoption and scale-up of CMAM in WV. Today, there is a reasonable depth of technical expertise in CMAM throughout the WV Partnership and the necessary implementation guidance and quality assurance tools to support programming. Quality assurance must remain a central focus in CMAM programmes, as we know that wasted children die when treatment protocols are not followed.

World Vision has been at the forefront of piloting new innovations within CMAM. Community health worker (CHW)-led treatment, digital health, integration of early child development with CMAM through WV's Go Baby Go early child development model, Family MUAC, and local advocacy through WV's Citizen Voice and Action (CVA) model to increase uptake and quality of nutrition services are some examples.

Looking forward, in response to the worsening global burden of wasting, WV and other agencies should:

1. Build upon past investments and leverage their current assets to expand the scale and reach of CMAM programming in both fragile and stable contexts, along with integrating CMAM with local level advocacy and allocating additional resources to build the evidence around approaches that are most effective to prevent and treat wasting.
2. We must renew our efforts to ensure high-quality implementation of CMAM by routinely using quality assurance tools and monitoring CMAM outcomes.
3. World Vision and other agencies should deepen their engagements with external advocacy adding our voices to the growing global and national efforts to mobilize greater investment in wasting prevention and treatment.
4. World Vision and other agencies should ensure that CMAM programmes are implemented alongside interventions to prevent malnutrition, supporting a continuum of care for the prevention, early detection and referral to treatment for wasting.

INTRODUCTION

Acute Malnutrition, also referred to as Wasting,[iv] is a life-threatening condition, increasing the risk of serious illness and death. Wasting occurs as a result of recent rapid weight loss or a failure to gain weight, most often caused by insufficient food intake and/or disease. An estimated 45 million children suffer from wasting,[9] with more than half of the children with wasting living in Asia, followed by Africa. While wasting is often perceived as a humanitarian concern, three-quarters of wasted children do not live in humanitarian contexts. The world is off-track to meet the global wasting targets,[v] with 43 per cent of countries showing insufficient progress, no improvement or worsening trends.[10] In fact, the global COVID-19 pandemic has made the situation much worse, resulting in an estimated 13.6 million more wasted children.[11] Compounding this crisis is worsening food security with forty-five million people in 43 countries experiencing severe food insecurity.[12] In Angola, the nutrition situation continues to deteriorate as staple cereal prices increased up to 200 per cent in the past two years, and insufficient rainfall puts future harvests at risk.

West Africa is facing its worst food crisis in a decade with an estimated 27 million people experiencing hunger and a 28 per cent increase in wasting compared to 2021, and the situation is equally dire in East Africa.[13] More recently, reductions in production of key grains such as wheat, and rising prices in wheat, cooking oil, fuel and fertilizer due to the Russian-Ukraine crisis may severely impact children's growth, especially in Egypt, Lebanon, Libya, Sudan, Syria and Yemen.[14] Russian and Ukraine provide at least 25 per cent of the world's wheat, around 14 per cent of corn, and over 60 per cent of the world's sunflower, safflower and cotton seed oil.[15] In addition, Russia is a leading global supplier of fertilizer.

This greatly matters because wasting is deadly. Children with severe forms of wasting are nearly 12 times more likely to die than well-nourished children.[16] Severe wasting accounts for more than 1 million child deaths each year. And while coverage of treatment services for wasting have increased from 2.6 million children annually to over 5 million in 2020, still **only 1 in 3 children receive the treatment they require**.[17] More must be done.

How does CMAM work? Community volunteers are trained to regularly screen and monitor all young children so cases of malnutrition can be identified early and treated immediately. This leads to more children being treated, faster rehabilitation and fewer deaths. Malnourished children are assessed and placed into one of three types of treatment.

A **Supplementary Feeding Programme (SFP)** targets families of children with moderate wasting but no medical complications. They are provided with take-home food rations such as oil, cereal flour, rice, bulgur, sugar and iodized salt plus routine basic treatment. Other groups with special nutrient requirements, including pregnant women and new mothers are also included.

An **Outpatient Therapeutic Programme (OTP)** provides homebased treatment and rehabilitation for children with severe wasting and no medical complications. Approximately 85 per cent of wasted children can be treated at home without the need for inpatient care at a health facility. This has the advantage of protecting them from exposure to infections and allows mothers to attend to the rest of the family while receiving care for their malnourished child. OTP provides ready-to-use-therapeutic foods (RUTF), routine medical care, food rations for the entire family and careful monitoring of children's progress through regular outpatient clinics.

Stabilisation Centres (SC) receive severely wasted children with serious medical complications. These centres are typically established by local health institutions or medical non-governmental organizations (NGOs) to provide specialized, intensive treatment. World Vision works closely with – and provides support to – these centres. Children receive specialized medical and nutritional care for seven to ten days and are discharged back to the community for follow-up by the OTP as soon as possible. This reduces mortality and is more cost-effective compared to in-patient care.

[iv] In this document the term 'wasting' includes severe acute malnutrition (SAM, which includes severe wasting, also known as marasmus, kwashiorkor, marasmus kwashiorkor both with and without oedema) and moderate acute malnutrition (MAM).
[v] WHA assembly targets: to reduce the proportion to children suffering from wasting to <5% by 2025 and to <3% by 2030.

HISTORY OF WORLD VISION'S CMAM CAPACITY DEVELOPMENT AND INVESTMENT

World Vision (WV) first implemented a CMAM programme, then known as Community-based Therapeutic Care or CTC, in Niger in 2005. Although the international endorsement of CMAM by UN agencies did not come until 2007, WV's work with CMAM in Niger helped pave the way for acceptance and adoption of CMAM there.

Following the Niger experience, WV nutrition leadership recognized that the organization needed external support to build capacity in CMAM programming in order to scale up the approach. In 2006, WV signed an agreement with Valid International to meet this objective. Under this agreement, field-based capacity building was provided to WV staff in three countries (South Sudan, Niger and Ethiopia), alongside the implementation of CMAM programmes in these countries. This field-based method of learning was considered essential for the transfer of skills and expertise to WV staff. Building on the successes of the three-country roll-out and training, subsequent agreements were signed with Valid International between 2008 and 2015 to provide tailored technical support based on WV's needs.

World Vision made several strategic investments to strengthen internal capacity for CMAM programming at that time. These included:

- **Hiring of regional CMAM experts.** WV recruited two CMAM advisors to support WV programming and reduced WV's reliance on external technical support from Valid International. Technical advisors with CMAM expertise were recruited for West and East Africa Regions.
- **Development of programming guidance for CMAM.** WV's Global Centre Nutrition Centre of Expertise (NCOE) developed various pieces of programming guidance to support the implementation of CMAM in WV. This included CMAM capacity-building standards and competencies, quality assurance tools, and guidance on the development and use of new RUTF products.
- **Creation of centralized online database for CMAM reporting.** In 2009, following four years of CMAM implementation, it was clear that an internal data management system for CMAM programming was required. The loss of data due to staff turnovers, the inability to respond in a timely manner to information requests on CMAM, and inability to track programme outcomes across multiple countries made it necessary to create an online database for CMAM programming. This database has been used in 24 countries for CMAM reporting.

- **Global coordination and administrative support to CMAM implementers.** The NCOE served as the main coordinating entity for CMAM programming in WV until 2017. Tailored technical support was provided to WV Field Offices that were undertaking CMAM programming through coordination of technical support from Valid International, or internal advisors. The NCOE also tracked CMAM funding commitments and needs, including RUTF, and coordinated lessons learned and experience sharing between CMAM implementers.

Since 2005, WV has implemented CMAM in 31 countries, with a financial investment of $79,532,196 between 2006 and 2017.[vi]

COUNTRIES WHERE WV HAS SUPPORTED CMAM PROGRAMMING 2005–2021
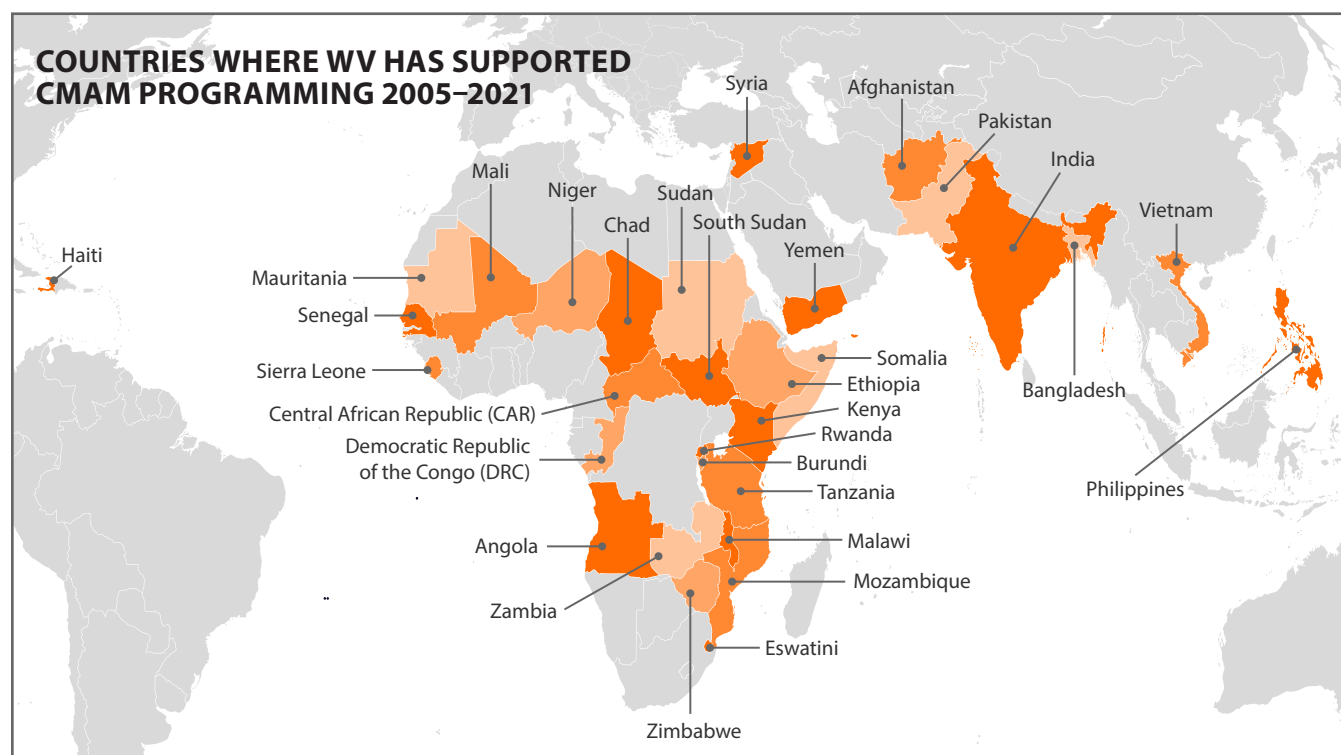
Ready-to-use therapeutic foods (RUTF) are a key input for CMAM. While the majority of RUTF for WV-supported CMAM programmes has been provided by UNICEF, WV's procurement of Gift-In-Kind (GIK) RUTF and medical supplies has helped to mitigate supply chain disruptions. For example, World Vision Canada and Food for Famine formed a partnership in 2010, leading to shipment of 126,000 cartons (or 18,900,000 sachets) of RUTF to 12 countries between 2010 and 2021, including Afghanistan, Angola, Burundi, Chad, Democratic Republic of the Congo, Ethiopia, Malawi, Mali, Sierra Leone, Somalia, South Sudan and Uganda. An additional 1,800 cartons (270,000 sachets) were provided to Mali and Angola through Active for Good. World Vision US has shipped over 3 million sachets, with Mana Nutrition donating the majority of the product, while Stop SAM and Good Spread each donated around 100,000 sachets. Combined, these GIK shipments provided enough RUTF to treat over 149,000 children with severe wasting.

As WV's experience in treatment of acute malnutrition has increased over the last 17 years, WV has contributed to various external technical and advocacy fora on CMAM and Wasting, including global research projects on wasting[vii] and through sharing of data from our CMAM database. Recent engagements include WV executive leadership (represented by WV's CEO, Andrew Morley) on the UNICEF-led Action Review Panel on Child Wasting. In addition, WV joined with partners to advocate for global action and accountability on wasting through the Global Action Plan on Wasting, and the Wasting Reset ahead of the UN Food Systems Summit and Nutrition for Growth Summit.An ambitious target of treating over 120,000 children with wasting per year[viii] was among WV's commitments at the 2021 Nutrition for Growth Summit.

[vi] Includes funding from all source: grant, multi-lateral and private funds. Does not include value of RUF commodities.

[vii] Kwashiorkor mapping project, SAM Incidence Project

[viii] Reaching over 120,000 children suffering from wasting, per year, with Community Management of Acute Malnutrition, and ensuring a minimum threshold of 85% rehabilitation success. We will also scale implementation of Family MUAC (Mid-Upper Arm Circumference measurement) within our operational areas in 20 countries; Support supplementary feeding for over 50,000 pregnant and lactating women per year

RESULTS AND IMPACT
(INCLUDING LIVES SAVED ANALYSIS/ESTIMATION)

Since 2010, more than 1.8 million children under 5 have been treated through WV's CMAM programmes (See Table 1 in Annex 1). This represents data from 23 countries who used the CMAM database during the 2010 to 2021 period. However, as WV has supported CMAM in 31 countries, it is an underestimation of the number of children actually reached. World Vision-supported CMAM programmes have consistently exceeded Sphere standards for treatment outcomes. Between 2010 and 2021, 89 per cent of the 648,904 severely wasted children treated by WV recovered, greatly exceeding the Global Sphere Standard of >75 per cent. (See Table 2 in Annex 1). The death rate for SAM and MAM found in WV's CMAM programmes (0.9% and 0.1% respectively) are also a fraction of the Sphere standards (<10% and <5% respectively), as well.

It is estimated that WV CMAM programmes saved 103,958 lives of children under five years of age between 2010 and 2021.[ix] This is based on the annual cure rates from routine data. Using the more conservative estimate of a 75 per cent cure rate, an estimated 91,885 lives were saved. (See Annex 2 for a description of the analysis.)

[ix] An estimated 103,958 lives saved using the annual cure rate from routine data from WV programmes. An estimated 91,885 lives saved using a cure rate of 75%.

INNOVATIONS

COMMUNITY HEALTH WORKER LED TREATMENT

Treatment for wasting in a CMAM programme is typically provided by health care workers, usually a nurse at a health facility, where the caregiver and child come for weekly follow-up. Driven by the need to rapidly scale up wasting treatment in response to drought in 2012, World Vision Angola implemented the first large scale implementation of wasting treatment by CHWs in a programmatic setting. Working in partnership with UNICEF, Ministry of Health, Africare, and People in Need, the project recruited and trained community health activists to screen children for wasting, provide treatment and referrals and deliver nutrition education following a community case management model. The intervention achieved high coverage (82.1%) and high recovery rates (93.8%), demonstrating the potential of the approach on a large scale, and provided treatment far beyond the footprint of the formal health services. Following on this first programming experience with CHW-led CMAM, an ambitious research agenda has been led by global nutrition partners to establish the evidence for expanded use of CHWs in CMAM programming globally.

DIGITAL HEALTH

Between 2013 and 2016, World Vision, Save the Children and International Medical Corps collaborated in the development and piloting of an mHealth application, or app, to improve CMAM treatment, reporting, monitoring and supply management in Afghanistan, Chad, Kenya, Mali and Niger. The mHealth app provides health workers with simple, step-by-step guidance to help them assess, treat or refer children enrolled in the CMAM programme.[19] Following on from the CMAM app, WV engaged in a consortium, known as the Alliance for Integrated e-DIAgnostic (AleDia) with Terre des Hommes and Action Against Hunger to apply digital technologies to the Integrated Management of Childhood Illness (IMCI) and CMAM. The first product currently under development is a digital solution combining a decision-support job aid for IMCI and the management of Severe Acute Malnutrition (SAM) at the primary health care facility level in Mali.

EARLY CHILD DEVELOPMENT

In Sudan, WV's early childhood development model, known as Go Baby Go (GBG), was implemented within a WV and World Food Programme supported supplementary feeding programme for the prevention and treatment of moderate wasting. Alongside the usual MAM treatment, eleven caregiver sessions were provided, focused primarily on enhancing child development through positive caregiver/child interactions, learning through play and age-appropriate activities.

Treatment outcomes were significantly better in the GBG intervention group as compared with the standard intervention group, with a higher percentage of children cured, and lower rates of defaulting and non-recovery. The pilot project found that combining psychosocial stimulation and care within the CMAM programme was feasible, with the potential to improve nutrition rehabilitation and child development outcomes.

FAMILY MUAC

Family MUAC,[x] also known as Mother-led MUAC, provides caregivers with MUAC tapes and training so they can directly monitor the nutritional status of their children. World Vision Mauritania was an early adopter of this approach in 2016, being the first agency to use the approach in the country. In 2018, WV Mauritania was requested to take on the role of training other partners on Family MUAC across five regions. A shift to minimal-touch protocols due to the COVID-19 pandemic resulted in a rapid expansion of the use of this approach globally. Family MUAC has been implemented by WV in 13 countries: Mauritania, DRC, Sierra Leone, Burundi, Niger, Philippines, Zambia, South Sudan, Bangladesh, Kenya, Tanzania, Niger, and Indonesia. In addition, WV is collaborating with the Centers for Disease Control and Prevention and Johns Hopkins University to implement a research project on Family MUAC in South Sudan.

NOVEL RUTF FORMULATIONS

With RUTF accounting for up to half of the overall cost of a CMAM programme, and local production reliant on imported ingredients, efforts are on-going to develop alternative RUTF formulations that are effective, lower cost, safe, and can be produced from staple crops that can be grown in most African countries. One such product is an RUTF made with Sorghum, Maize and Soya, with added amino acids (SMS-RUTF). Valid Nutrition and Ajinomoto Co Inc. developed and demonstrated the efficacy of this product through a randomised control trial conducted in a day-care setting; however, further research was needed to test its effectiveness in a routine CMAM programme.[20] In Malawi, WV partnered with the Ministry of Health to conduct a pilot project using SMS-RUTF within the government-led CMAM programme. Treatment outcomes among children receiving SMS-RUTF exceeded Sphere standards, demonstrating its effectiveness in a routine programme setting.[21]

LOCAL-LEVEL ADVOCACY: CITIZEN VOICE AND ACTION

Citizen Voice and Action (CVA) is WV's social accountability and local advocacy approach that aims to address inadequate and inequitable essential services by improving the relationship between community and government, and empowering communities to hold government to account. In Turkana County Kenya, community groups were trained on their health and nutrition rights, as outlined in the Kenyan constitution. Over the course of the project, CVA activities influenced government decisions to increase health worker staffing levels, invest in community health services and improve health facility infrastructure. Raising awareness on health and nutrition rights contributed to an increase in demand for and uptake of nutrition services, with admissions for SAM treatment increasing by 72 per cent over the four-year project period.[22]

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[x] This approach was first conceptualized and researched by the Alliance for International Medical Action (ALIMA) in Niger.

LEARNING REFLECTION

World Vision's history of CMAM implementation over 17 years provides many rich learnings. This section highlights key learnings with respect to capacity strengthening, innovation, quality assurance, integration and geographic coverage.

Intensive and sustained, multi-year investments in capacity building were essential for the initial adoption and scale-up for CMAM in WV. Today, WV has a reasonable depth of technical expertise in CMAM throughout the WV Partnership. While WV was often on the forefront of piloting new innovations, there has been insufficient uptake of these innovations to WV's routine CMAM programming or sustained investments to build evidence and operational learnings.

During the early years of WV CMAM implementation, emphasis was placed on ensuring close technical support to programmes to support high implementation fidelity, given that children with wasting are at a high risk of mortality. While capacity-strengthening guidance and quality assurance frameworks for CMAM have been developed, the extent to which quality assurance metrics are routinely monitored across WV CMAM programmes is not entirely known.

While the CMAM database has been successful in providing a consolidated platform for WV's CMAM data allowing WV to make impact statements on the effectiveness of programming, contribute to external research and monitor treatment outcomes, it remains underutilized within the organization. Despite being the mandatory reporting tool for CMAM programming, database use remains sub-optimal despite some increases, with only 67 per cent of WV Field Offices with CMAM programming using the database in 2021, 68 per cent in 2020, and 60 per cent in 2019. Insufficient awareness about the database and its required use, loss of database expertise due to staff transitions, and lack of oversight for usage by Field and Regional Office are some of the barriers to database use. As a result of this issue, WV is underreporting the reach and impact of our CMAM programming.

An effective approach to address wasting requires investment in prevention, and when that fails, ensuring access to effective treatment. While treatment of wasting should be addressed routinely through health systems, CMAM programmes should be situated within multi-sectoral programmes that are addressing the causes of malnutrition in a

given context. However, given that most CMAM programmes are funded through humanitarian resources, with short-funding cycles, WV's CMAM programmes are often not well integrated with preventative activities despite the fact that research has shown that some factors associated with wasting can be addressed in the home through behaviour promotion and improved care seeking (e.g. reduction of prelacteal feeding, vitamin A supplementation, and hand washing with soap).[23] We remain at risk of rehabilitating children and then returning them to the same environment which led to malnutrition in the first place, especially given that the proportion of children who relapse after SAM treatment can be as high as 37 per cent.[24] Combining CMAM with highly-effective behaviour change models (e.g. Nurturing Care Groups, Positive Deviance/Hearth) is one way that WV plans to address this.

Finally, WV needs to consider its investments in CMAM programming with respect to the global burden of wasting. The majority (74%) of WV's CMAM programmes have been in Africa. While Asia has the largest burden of wasted children globally, this issue remains largely unaddressed. The reasons for this are many. As the initial research and evidence for CMAM was generated in Africa, there was earlier adoption by African Ministries of Health and a conducive policy environment for use of RUTF compared to Asia. In addition, there have been more opportunities to access humanitarian funding for CMAM programming in Africa. However, in recent years, governments across Asia have updated their national protocols for management of wasting, shifting from in-patient care models to CMAM. In addition, several countries in Asia are frontrunner countries for implementation of the Global Action Plan on Wasting. Given this, WV plans to expand its wasting prevention and treatment efforts in this region.

RECOMMENDATIONS

1. Expanding the scale and reach of CMAM programming
At a time when progress towards global targets has stagnated, and annual caseloads are rising due to the impacts of COVID-19, climate-related emergencies, and conflict, WV and other agencies should build on our collective historical investments and capitalize upon current assets to expand the scale and reach of CMAM programming, in both humanitarian and stable contexts where the burden of wasting is high.

2. Ensure high quality implementation
Children die when CMAM programmes are poorly implemented. World Vision and other agencies have developed practices and tools to support the implementation of a high-quality CMAM programme. However, adoption of these practices is inconsistent. As such, implementers need to prioritize the use of quality assurance standards and tools for CMAM programming. In addition, there is a need to improve the uptake of CMAM innovations and cross-learning between countries and programmes. As noted, there are many examples of where high-impact interventions are not being implemented more broadly.

3. Advocacy and technical engagement
The time is ripe for deeper collective engagement on wasting. Nutrition stakeholders at national, regional and global levels have united around several major policy and programmatic initiatives to address wasting. These include: the Global Action Plan on Wasting, UN Strategy for Food Security, World Health Assembly (WHA) Resolution on eliminating all forms of malnutrition, and the Sustainable Development Goals. World Vision and other agencies should leverage their participation in these and other relevant external fora to call for greater attention to the issue of wasting, as it remains a neglected issue among the broader global development dialogue. In addition, through collaboration in global and national technical working groups, CMAM implementers should contribute their programmatic expertise to shape wasting programming guidance, and in turn, learn from the implementation experience of other partners to improve the effectiveness of programming.

4. Support the continuum of care for prevention, early detection and treatment of wasting

The CMAM model provides wasting treatment. However, focusing solely upon treatment without considering prevention and early detection of wasting is insufficient. Children who recover from wasting only to return to the same environment are at high risk of developing another episode of wasting. Governments and implementing partners should ensure that wasting treatment is available routinely within health services, that all caregivers can screen for wasting, that all caregivers receive behaviour promotion that can prevent wasting, and that CMAM programmes are implemented alongside interventions to prevent malnutrition. Low-cost, evidence-based packages of interventions[25] should be considered for scale-up (e.g. food rations, the Care Group approach and health system strengthening) to prevent wasting where funding permits. In addition, there is a need to leverage existing community platforms so that wasted children are identified and referred for treatment earlier, which improves their likelihood of recovery and reduces the cost of treatment.

The time is right for nutrition actors to prioritize prevention and treatment of wasting so that millions of children's lives can be saved, and that children can experience life in all its fullness, free from the devastating consequences of malnutrition.

ANNEX 1

CMAM ADMISSIONS AND TREATMENT OUTCOMES (2010 TO 2021)

Table 1: CMAM Admissions and Treatment Outcomes (2010 to 2021)

Fiscal Year (FY)*	Inpatient treatment of SAM	Outpatient treatment of SAM	Treatment of MAM: Children <5 yrs	Treatment of MAM: Pregnant and Lactating Women
2021	7,240	99,084	142,457	46,230
2020	7,073	61,662	64,366	32,644
2019	3,126	41,674	93,574	48,512
2018	1,129	27,084	85,049	44,670
2017	1,238	42,751	74,343	32,272
2016	1,306	37,825	85,274	41,487
2015	1,209	53,734	105,764	61,270
2014	795	59,908	124,678	55,316
2013	830	67,050	143,748	41,536
2012	2,432	60,855	136,651	67,835
2011	1,844	52,593	118,484	34,062
2010	738	15,724	33,092	4,567
Total	**28,960**	**619,944**	**1,207,480**	**510,401**
Countries of implementation reporting in CMAM database	Afghanistan, Angola, Central African Republic (CAR), Chad, Democratic Republic of the Congo (DRC), Ethiopia, Kenya, Mauritania, Mozambique, Pakistan, Somalia, South Sudan, Sudan, Zambia, Zimbabwe	Afghanistan, Angola, Burundi, CAR, Chad, DRC, Eswatini, Ethiopia, India, Kenya, Mali, Mauritania, Niger, Pakistan, Somalia, South Sudan, Sudan, Zambia, Zimbabwe	Angola, Bangladesh, CAR, Chad, DRC, Ethiopia, Kenya, Mali, Mauritania, Niger, Pakistan, Senegal, Somalia, South Sudan, Sudan, Tanzania, Zambia, Zimbabwe	Bangladesh, Chad, DRC, Ethiopia, Kenya, Mali, Mauritania, Niger, Pakistan, Somalia, South Sudan, Sudan, Tanzania

*Note: World Vision's Fiscal Year runs from October 1 to September 30, so FY 2021 covers the period of October 1, 2020 to September 30, 2021.

Table 2: CMAM Treatment Outcomes 2010–2021

	Recovered	Death	Default	Non-recovered
SAM (inpatient + outpatient)	88.6%	0.9%	7.9%	2.5%
MAM	91.7%	0.1%	5.7%	2.5%
Sphere Standard	<75%	<10% (SAM) <5% (MAM)	<15%	

ANNEX 2

DESCRIPTION OF LIVES SAVED ANALYSIS

Key Terms:

BM	Background Mortality
BMR	Background mortality rate
CFR	Case fatality rate
CFRMAM	Case Fatality Rate from Untreated MAM
CFRSAM	Case Fatality Rate from Untreated SAM
EM	Excess mortality
LS	Lives saved
MAM	Moderate acute malnutrition
NT	Number of patients treated
PC	Patients cured of SAM or MAM
SAM	Severe acute malnutrition
U5MR	Under 5 Mortality Rate

Background Mortality (BM)

Background mortality was estimated annually using the U5MR World Bank database for each of the countries with data in the WV CMAM database in a given year, and the average U5MR was calculated for each year. As no U5MR estimates were available in the World Bank database for 2021, the average from countries where WV supported CMAM from 2018 to 2020 was used for that year. The U5MR was expressed as the individual annual mortality risk, by first dividing the U5MR by 5, then by 1000.

	U5MR/1000 live births	% death/year
2010	92.80	1.86%
2011	98.74	1.97%
2012	98.85	1.98%
2013	94.18	1.88%
2014	90.06	1.80%
2015	92.35	1.85%
2016	86.46	1.73%
2017	79.95	1.60%
2018	64.94	1.30%
2019	63.06	1.26%
2020	67.79	1.36%
2021	Average of 2018–2020 1.31%	

Case Fatality Rate from Untreated SAM (CFRSAM): 227.15 deaths per 1000 children per year (22.72%)

Case Fatality Rate (CFR) from untreated SAM was estimated using historical cohort data of case fatality rates for MUAC values at 110mm or less from table below and calculating the harmonic mean. A threshold of 110 mm was chosen as admission threshold for treatment is MUAC <115mm and mean MUAC at admission from routine data was not available.

Case fatality rates for different levels of MUAC reported by four historical cohort studies in deaths/1000 cases/year for different levels of MUAC less than or equal to 125 mm[26]

Country	Study	MUAC (mm)					
		100	105	110	115	120	125
Bangladesh	Briend & Zimicki	304		178		54	
Malawi	Briend, et al (1987)	593		199		70	
Uganda	Vella et al (1994)		366	55		53	

Case Fatality Rate from Untreated MAM (CFRMAM): 54.30 deaths per 1000 children per year (5.43%)

Case fatality rate from untreated MAM was estimated using historical cohort data of case fatality rates for MUAC values at 115–125 mm and calculating the harmonic mean.

Steps in calculation

The estimate for lives saved (LS) from SAM in CMAM each year is determined by number of SAM cases treated by the programme (NT) x the proportion of SAM cases treated that were cured (PC) x the expected excess mortality (EM) in untreated SAM (SAM cases with a similar severity of wasting but not treated by the programme.

Therefore, the lives saved formula for SAM is:
- LS = NT x PC x EM
  - o Lives saved = the number of patients treated x % of SAM cases cured x the excess mortality that would have occurred in untreated cases of SAM

- NT= total discharged

- PC = The PC is the percentage cured of those discharged (cured/total discharged) + the percentage defaulted of those discharged (Defaulted/total discharged x .125). The assumption, in multiplying the number defaulted by .125 is that approximately 12.5% of those who defaulted did so because they were cured or would be cured regardless of defaulting.

- EMR= CFR-BMR
  - o The Excess Mortality Rate (EMR) is determined by subtracting the background mortality rate (BMR) (those children that would have died from another cause)

LS for SAM = NT x PC x EMR

Likewise, the estimate for lives saved (LS) from MAM in CMAM each year is determined by number of MAM cases treated by the programme (NT) x the proportion of MAM cases treated that were cured (PC), x the expected excess mortality (EM) in untreated MAM cases with similar severity of wasting as those treated by the programme.

The LS formula for MAM is:

- LS = NT x PC x EM
  Lives saved = the number of patients treated x % of MAM cases cured x the excess mortality that would have occurred in untreated cases of MAM

- NT= total discharged

- PC = The PC is the percentage cured of those discharged (cured/total discharged) + the percentage defaulted of those discharged (Defaulted/total discharged x .125). The assumption in multiplying the number defaulted by .125 is that approximately 12.5% of those who defaulted did so because they were cured or would be cured regardless of defaulting.

- EM= CFR-BMR

LS for MAM = NT x PC x EM

Data sources:

Routine programming data from WV's CMAM database from 2010 to 2021 were used for Total Discharged and Percentage Cured. We performed two calculations, one using the actual cure rate from the routine programme data for each year, and the second one using an annual cure rate of 75%, the Sphere standard, as it is generally accepted that cure rates are inflated in routine data.

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REFERENCES

[1] Headey D, Heidkamp R, Osendarp S, Ruel M, Scott N, Black R, Shekar M, Bouis H, Flory A, Haddad L, Walker N; Standing Together for Nutrition consortium. Impacts of COVID-19 on childhood malnutrition and nutrition-related mortality. *Lancet*. 2020 Aug 22;396(10250):519–521. doi: 10.1016/S0140-6736(20)31647-0. Epub 2020 Jul 27.

[2] Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, Ezzati M, Grantham-McGregor S, Katz J, Martorell R, Uauy R; Maternal and Child Nutrition Study Group. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet. 2013 Aug 3;382(9890):427-451. doi: 10.1016/S0140-6736(13)60937-X. Epub 2013 Jun 6.

[3] Leroy JL, Olney DK, Nduwabike N, Ruel MT. Tubaramure, a food-assisted integrated health and nutrition program, reduces child wasting in Burundi: A cluster-randomized controlled intervention trial. J Nutrition. 2021 Jan;151(1):197–205. https://doi.org/10.1093/jn/nxaa330

[4] Leroy JL, Olney D, Ruel M. Tubaramure, a food-assisted integrated health and nutrition program, reduces child stunting in Burundi: A cluster-randomized controlled intervention trial. J Nutrition. 2018 March;148(3):445–452. https://doi.org/10.1093/jn/nxx063

[5] Leroy JL, Olney D, Ruel M. Tubaramure, a food-assisted integrated health and nutrition program in Burundi, increases maternal and child hemoglobin concentrations and reduces anemia: A theory-based cluster-randomized controlled intervention trial. J Nutrition. 2016 Aug;146(8):1601–1608. https://doi.org/10.3945/jn.115.227462

[6] Olney DK, Leroy JL, Bliznashka L, Ruel MT. A multisectoral food-assisted maternal and child health and nutrition program targeted to women and children in the first 1000 days increases attainment of language and motor milestones among young Burundian children. J Nutrition. 2019 Oct;149(10):1833–1842. https://doi.org/10.1093/jn/nxz133 https://academic.oup.com/jn/article/149/10/1833/5527775

[7] Shekar M, Kakietek J, Dayton Eberwein J, Walters D (2017). An Investment Framework for Nutrition: Reaching the Global Targets for Stunting, Anemia, Breastfeeding, and Wasting. Directions in Development. Washington, DC: World Bank. doi:10.1596/978-1-4648-1010-7. https://www.worldbank.org/en/topic/nutrition/publication/an-investment-framework-for-nutrition-reaching-the-global-targets-for-stunting-anemia-breastfeeding-wasting

[8] Berkley S. The power of vaccines and how Gavi has helped make the world healthier: 2019 Lasker-Bloomberg Public Service Award. JAMA. 2019;322(13):1251–1252. doi:10.1001/jama.2019.13190

[9] UNICEF/WHO/World Bank Group. UNICEF-WHO-The World Bank: Joint Child Malnutrition Estimates - Levels and Trends - 2021 Edition. https://data.unicef.org/resources/jme-report-2021/

[10] WHO. Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition: Biennial Report. World Health Organization. 2021. https://apps.who.int/gb/ebwha/pdf_files/EB150/B150_23-en.pdf

[11] Osendarp S, Akuoku JK, Black RE, et al. The COVID-19 crisis will exacerbate maternal and child undernutrition and child mortality in low- and middle-income countries. Nat Food. 2021;2(7):476-484. doi:10.1038/s43016-021-00319-4

[12] *Global Hunger Initiative Sit Rep* Feb. 2022. (2022, Apr 1). World Vision International. https://www.wvi.org/publications/hunger-crisis/global-hunger-initiative-sit-rep-feb-2022

[13] *West Africa faces its worst food crisis in ten years, with over 27 million people already suffering from hunger.* (2022, Apr 5). World Vision International. https://www.wvi.org/newsroom/world-vision-european-union/west-africa-faces-its-worst-food-crisis-ten-years-over-27

[14] *Ukraine war linked to 'massive malnutrition crisis' affecting millions in other emergencies.* (2022, Apr 7). UN News. https://news.un.org/en/story/2022/04/1115762

[15] Trade Map - Trade statistics for international business development. (n.d.) International Trade Centre. https://www.trademap.org/Index.aspx

[16] Bhutta ZA, Berkley JA, Bandsma RHJ, Kerac M, Trehan I, Briend A. Severe childhood malnutrition. *Nat Rev Dis Primer.* 2017;3(1):1-18. doi:10.1038/nrdp.2017.67

[17] United Nations Children's Fund (UNICEF). No Time to waste: Improving diets, services and practices for the prevention, early detection and treatment of wasting in early childhood. New York: UNICEF, 2021. https://www.unicef.org/media/109716/file/No%20time%20to%20waste.pdf

[18] Morgan S, Bulten R, Jalipa H. Community case management approach to SAM treatment in Angola. Field Exch. 2015, June 16;49:3. https://www.ennonline.net/fex/49/angolat

[19] Frank T, Keane E, Roschnik N, Emary C, Snyder MO and L. Developing a mobile health app to manage acute malnutrition: a five-country experience. Field Exch. 2017, Feb 21;54:7-10. https://www.ennonline.net/fex/54/mobilehealthapp

[20] Bahwere P, Akomo P, Mwale M, et al. Soya, maize, and sorghum-based ready-to-use therapeutic food with amino acid is as efficacious as the standard milk and peanut paste-based formulation for the treatment of severe acute malnutrition in children: a noninferiority individually randomized controlled efficacy clinical trial in Malawi. *Am J Clin Nutr.* 2017;106(4):1100-1112. doi:10.3945/ajcn.117.156653

[21] Banda T, Chawanda K, Tsuchida W, Kathumba S. Report of a Pilot Program Using a Milk-Free Ready-to-Use Therapeutic Food Made From Soya, Maize, and Sorghum to Treat Severe Acute Malnutrition. *Food Nutr Bull.* 2021;42(1):91-103. doi:10.1177/0379572120968703

[22] *Citizens Voice and Influence for Nutrition Service Delivery in Turkana Kenya.* (2018, Oct 4). World Vision International. https://www.wvi.org/health/publication/citizens-voice-and-influence-nutrition-service-delivery-turkana-kenya

[23] Abitew DB, Yalew AW, Bezabih AM, Bazzano AN. Predictors of relapse of acute malnutrition following exit from community-based management program in Amhara region, Northwest Ethiopia: An unmatched case-control study. PLOS ONE. 2020;15(4):e0231524. doi:10.1371/journal.pone.0231524

[24] Stobaugh HC, Mayberry A, McGrath M, et al. Relapse after severe acute malnutrition: A systematic literature review and secondary data analysis. *Matern Child Nutr.* 2018;15(2):e12702. doi:10.1111/mcn.12702

[25] Leroy JL, et al. *Tubaramure*, a food-assisted integrated health and nutrition program, reduces child wasting in Burundi: A cluster-randomized controlled intervention trial. *J Nutrition. 2021 Jan;151(1)*:197–205. https://doi.org/10.1093/jn/nxaa330

[26] Bulti A, Chitekwe S, Puett C, Myatt M. How many lives do our CMAM programmes save? A sampling-based approach to estimating the number of deaths averted by the Nigerian CMAM programme. *Field Exch.* 2015 Aug; 50:38 www.ennonline.net/fex/50/deathsavertedcmamnigeria

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