Scale-up of severe wasting management within the health system

A stakeholder perspective on current progress

Eleanor Crook Foundation

ENN

Irish Aid
Rialtas na hÉireann
Government of Ireland

Contents

Acronyms

CHV	community health volunteer
CHW	community health worker
C-IMCI	community integrated management of childhood illnesses
CMAM	community-based management of acute malnutrition
CTC	Country Nutrition Action Plan
DHIS2	District Health Information System 2
EML	essential medicines list
ENN	Emergency Nutrition Network
EPI	expanded programme of immunisation
GAP	Global Action Plan
GFF	Global Financing Facility
ICCM	integrated community case management
IMAM	integrated management of acute malnutrition
IYCF	infant and young child feeding
LBW	low birth weight
LHW	lady health worker
LMIC	low- and middle-income country
MUAC	mid-upper arm circumference
NGO	non-governmental organisation
RUTF	ready-to-use therapeutic food
SUN	Scaling Up Nutrition
UHC	Universal Health Coverage
UN	United Nations
UNICEF	United Nations Children's Fund
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization

Acknowledgements

This work was conducted by Brenda Akwanyi (ENN Senior Nutritionist) and written up with the support of other members of the ENN team – Dr Philip James (Senior Technical Associate), Dr Natasha Lelijveld (Senior Nutritionist) and Emily Mates (Technical Director).

We are grateful to the many individuals who generously gave their time to participate in the key informant interviews. The authors would like to thank the Eleanor Crook Foundation and Ireland's Department for Foreign Affairs for generously funding this work.

Recommended citation: Akwanyi, B., James, P., Lelijveld, N., and Mates, E. Scale up of severe wasting within the health system: A stakeholder perspective on current progress. ENN March 2021

Executive summary

Introduction

Wasting is a critical issue for child survival and development, with therapeutic treatment of severe cases recognised as an essential intervention for achieving global wasting and mortality targets. There have been many efforts to scale up severe wasting treatment over the past 10 years with the ultimate aim of achieving national and international coverage of a sustainable, quality service provided as an integral part of the health system and supported by a strong community base. However, progress is slow and only up to 25% of children who need treatment are currently accessing it.

After completing a comprehensive scoping study on ready-to-use therapeutic food (RUTF) in 2020 and in preparation for the 'CMAM 20 Years On' conference, Emergency Nutrition Network (ENN) considered that the time was right to synthesise reflections on the past decade of experiences of scaling up severe wasting treatment into routine primary health services. This report summarises key informant perspectives, supported by a literature review, to highlight the current state of the scale-up of severe wasting services while drawing out some of the key barriers and enablers of this process. This report does not aim to describe ENN's perspective, but rather it offers a qualitative synthesis of the perspectives of key informants to provide an up-to-date snapshot of how people are thinking and acting on the topic of severe wasting treatment scale-up.

Methodology

ENN conducted the research for this report between September 2020 and February 2021, completing 25 in-depth key informant interviews, to obtain perspectives on the progress of the scale-up of severe wasting treatment within national health systems. Key informants were drawn from a range of national and regional government

institutions, non-governmental organisations (NGOs), United Nations (UN) agencies and academia. A semi-structured questionnaire guided the interviews with questions based around the six pillars of the World Health Organisation (WHO) health system strengthening framework. While the prevention and treatment of all forms of malnutrition are critical, we restricted the scope of this report to the treatment of severe wasting. We also conducted a narrative literature review to supplement the findings.

Findings: Key barriers and enablers to scaling up severe wasting treatment

A wide range of potential enablers and barriers were identified for influencing progress for the scale-up of severe wasting services within national health systems. Findings were categorised according to the six pillars of WHO's health system strengthening framework.

Service delivery

Key informants focused on four main themes within service delivery: the importance of severe wasting programme coverage, understanding barriers to coverage, the role of community health platforms and anticipating caseload through the year.

While there has been progress on increasing the geographic coverage of severe wasting services, actual programme coverage remains low. Key enablers centre around understanding the importance of programme coverage as a critical indicator of severe wasting treatment success, alongside a commitment to understanding context-specific bottlenecks around limited programme coverage. Prioritising community outreach remains an integral part of severe wasting management along with creating demand for services yet, in some countries, severe wasting has dropped off the agenda of routine community healthcare activities. It is therefore vital to maximise opportunities to utilise existing healthcare entry points wherever possible and to examine why severe wasting has often been omitted from the community healthcare agenda.

Key informants emphasised the role of community health workers (CHWs) and family members in the early detection of children with severe wasting and provided examples of various adaptations for the detection of cases and service delivery that have been developed to facilitate this such as the 'Family MUAC' (mid-upper arm circumference) approach. The health sector now needs to drive innovation, experience sharing and the scale-up of successful pilots of such programme adaptations.

Better use of nutrition surveillance data is required to anticipate and accommodate seasonal fluctuations in severe wasting incidence. The ability of the health system to surge capacity in times of increased demand has been demonstrated in the response to diseases such as cholera, Ebola and COVID-19. Key informants felt there was an opportunity to consider successful examples of surge capacity within infectious disease management and to apply some of the lessons learnt about planning and resourcing to improve the scale-up of severe wasting services. An important component of this involves the recognition of severe wasting as an urgent health condition.

Health workforce

To integrate severe wasting treatment within the health workforce, key informants felt that a dual approach is needed: a) training health staff on severe wasting programming and b) ensuring all staff working on severe wasting programmes know how best to support the health system integration process. To support this process there needs to be strong collaboration between academic and healthcare institutions to provide up-to-date, evidence-based nutrition training at all levels – for pre-service, in-service and as part of continuing professional development. Innovative training initiatives, such as open-source e-learning courses, can be helpful in both improving knowledge and enabling the regular revision of teaching content. Such digital learning platforms are particularly important for frontline workers placed in remote or insecure areas without easy access to up-to-date information.

The community aspect of health systems was identified by key informants as the most neglected component in terms of both funding and institutionalisation. CHWs were identified as an essential component of the health workforce to invest in if severe wasting treatment is to be delivered at scale. This requires active government budgeting of CHW networks, securing the required finances and CHWs being adequately remunerated for their work. Alongside this is a need to simplify CHW work schedules where possible, strengthen the training of CHWs on how to identify households at highest risk and ensure that the work of the CHWs is supported with strong referral systems.

Supplies

Challenges to a sustainable supply of RUTF hamper the continuity of care and quality of services. There are barriers associated with the formulation, production, regulation, cost and supply of RUTF. While progress has been made in including RUTF as part of essential medical supplies, allowing it to be better integrated into health system supply chains, many countries still have parallel supply chains managed by UN and non-government partners. The COVID-19 pandemic has added further strain on the global supply chain, highlighting the continued need for the development of more local RUTF production, to shorten and potentially simplify the supply chain.

RUTF costs remain a stubborn barrier to severe wasting scale-up but can potentially be reduced by a number of adaptations, for example, adaptation of dosage regimes for treating severe wasting, reducing logistics costs through local production, controlling misuse or 'leakage', improving supply chain efficiencies and/or developing new, cheaper formulations.

Health information systems

Key enablers under this pillar include ensuring that parallel severe wasting reporting systems can be avoided and making sure sufficient technical expertise is available to interpret the data on severe wasting and translate this into programmatic action. Severe wasting data needs to be regularly reported as part of routine health information, for example in the District Health Information System 2 (DHIS2). Strengthening the DHIS2 system with a nutrition lens can support health workers to better anticipate and manage fluctuations in demand for severe wasting services. Another enabler is to ensure there is sufficient technical expertise in the interpretation of severe wasting data within strategic national and regional government institutional departments.

Key informants described how governments with established e-health platforms could feasibly integrate nutrition data at scale using existing infrastructure. Investment in digital data collection by CHWs provides a key opportunity for feeding timely nutrition information into the health information system. Indeed, there have been successful pilots of using digital platforms to integrate severe wasting data. Digital initiatives within health need to fully integrate nutrition information and thus facilitate health system ownership and ensure meaningful scale-up.

Financing

Full and accurate budgeting at the national and subnational level is required for severe wasting treatment to be implemented at scale. Yet the allocations for severe wasting treatment in some national and subnational budgets is insufficient to ensure funding is secured and managed within robust government systems. A helpful strategy to address this has been to ensure full involvement of health specialists in national costing exercises.

Currently, most severe wasting treatment services are largely funded through international humanitarian or emergency financing mechanisms which can be unpredictable and inefficient and tend to use parallel systems that do not build national capacity. Achieving, and then sustaining, the services for severe wasting at scale requires the ability to access longer-term funding streams. Potential solutions include expanding innovative regional multilateral development finance initiatives, such as the Global Financing Facility, and exploring pooled procurement services at the regional level to reduce costs of essential supplies.

Leadership/Governance

Continued efforts are required to ensure severe wasting treatment at scale remains a priority on international and national health agendas, for example through harnessing the momentum to achieve universal health coverage (UHC). There are many examples of health services that achieve impressive coverage, such as the community integrated management of childhood illnesses (C-IMCI) and expanded programme on immunisation (EPI), within which components of severe wasting services should be integrated to maximise coverage. Key informants suggested that it is not just governments' prioritisation of wasting that needs to be maintained but also the supporting infrastructure from other agencies. This involves consistent messaging about the importance of severe wasting scale-up from all stakeholders who influence government policy and funding.

Conclusion

At the 20th anniversary of the first community-based management of acute malnutrition (CMAM) pilot study, we take stock of the many successes in the global scale-up of severe wasting treatment, yet also acknowledge that there is still a long way to go. Key informants affirmed that there had indeed been considerable global progress towards the integration of severe wasting management into national health systems. However, there was consensus that this remains a slow and difficult task, especially in the many countries with persistently high caseloads of wasted children and overburdened health systems. Many successful examples from pilot studies and case studies exist but the need to achieve these best practices at scale remains. Sustained advocacy, funding and political will is required from governments, donors and implementing agencies to continue the progress, including maximising opportunities that present themselves such as current efforts towards UHC.

Using the interview findings, we conclude the report with 28 recommendations from key informants directed to policy makers, practitioners, researchers and donors for enhancing the scale-up of severe wasting services. These may not all be universally agreed upon but they represent current issues that still need to be addressed to maintain and further accelerate progress on the scale-up of severe wasting treatment. They cover all six of the WHO pillars of health system strengthening and we trust they serve as an informative guide to help sustain and build upon the momentum that has been generated on this important topic.

1 Introduction

Wasting is a critical issue for child survival and child development. It has the highest short-term case fatality rate among all the forms of malnutrition (Hossain *et al*., 2017). This is especially true in its most severe form or when combined with stunting (Myatt *et al*., 2018). Children with severe wasting are nine to 12 times more likely to die than healthy, well-nourished children at any point in time (Olofin *et al*., 2013). It is vitally important to provide quality treatment to all malnourished children at the highest risk of death, disease or poor developmental outcomes such as those with severe wasting or wasting combined with other risk factors. Please see Box 1 for details about how the term 'wasting' is used throughout this report.

Wasting is a complex condition with a wide variety of possible interlinking underlying causal drivers. Its management, therefore, necessarily overlaps with other health and nutrition services delivered through health systems and within other government sectors. There have been many efforts to scale up severe wasting treatment over the past 10 years with the ultimate aim of achieving national and international coverage of a sustainable, quality service provided as an integral part of the health system and supported by a strong community base. However, progress has been mixed, with the greatest scale-up and coverage observed in Africa, despite the highest burden of severe wasting being found in the Asia and Pacific region which hosts two thirds of the world's wasted children (UNICEF, WHO & World Bank, 2020).

Globally, efforts have been made over the past decade to integrate the nutrition services into the existing health system with the intention of systematising the delivery of services and enhancing government ownership as well as ensuring scale and sustainability. Despite all these initiatives, progress towards achieving the World Health Assembly (WHA) wasting target (to less than 5% by 2025 and to less than 3% by 2030) is slow and is currently off-track in many countries (Global Nutrition Report, 2021). In addition, after seeing steady improvement since the turn of the century, the global prevalence of wasted children has plateaued in the past five years at approximately 7% (UNICEF, WHO & World Bank, 2020). Furthermore, this prevalence may increase significantly over the next year due to the direct and indirect impacts of COVID-19 (Headey *et al*., 2020; Roberton *et al*., 2020)

After completing a comprehensive scoping study on ready-to-use therapeutic food (RUTF) in 2020 (Mates & Sadler, 2020) and in preparation for the 'CMAM 20 Years On' conference,[1] the Emergency Nutrition Network (ENN) felt that it would be an appropriate time to synthesise reflections on the past decade of experiences of scaling up severe wasting treatment into routine primary health services. This report summarises key informant perspectives, supported by a literature review, to highlight the current state of the scale-up of severe wasting services and draw out some of the key barriers and enablers of this process.

Box 1 A note on terminology and scope of the report

- Historically, the term 'wasting' was more specifically used for 'marasmus', a condition characterised by rapid weight loss and visible thinness resulting from inadequate nutrient intake. In recent years, 'wasting' has tended to be used by United Nations agencies and implementing partners as a more accessible term to include all forms of severe and moderate acute malnutrition, identified by anthropometric indicators such as low mid-upper-arm circumference, low weight-for-height z-score and/or the presence of nutritional oedema (Schaefer *et al*., 2020).
- Our report predominantly focuses on the enablers and barriers to the scale-up of severe wasting services as those with severe wasting are at a high risk of mortality when untreated.
- Our definition of 'scaling up' severe wasting treatment is achieving national and international coverage of a sustainable, high quality service, provided as an integral part of the health system and supported by a strong community base.

[1] 'CMAM 20 Years On: Going to Scale in Fragile Contexts A Practitioners' Conference', organised by Concern Worldwide in partnership with Irish Aid. https://www.acutemalnutrition.org/en/events/16VqYCymtZ683YtZmEunpo

2 Background

2.1 A Brief history of severe wasting treatment

The years 2020/21 mark the 20th anniversary since the community management of acute malnutrition (CMAM) approach was first piloted in Ethiopia. This pilot was followed by a three-year research and development programme between Concern Worldwide and Valid International, funded by the Irish Government, which took place in Malawi, Ethiopia and South Sudan. The studies collectively demonstrated the overwhelming efficacy and effectiveness of the CMAM approach (Collins *et al*., 2006). This evidence led to the World Health Organization (WHO), the World Food Programme (WFP) and United Nations Children's Fund (UNICEF) issuing a joint statement in 2007 endorsing CMAM as the recommended global approach for the management of acute malnutrition (WHO *et al*., 2007). Global interest and investment in CMAM was further accelerated by the publication of the 2008 and 2013 Lancet series on evidence-based interventions for improving maternal and child nutrition status (Bhutta *et al*., 2008, 2013) which highlighted the treatment of severe wasting with RUTFs as a cost-effective intervention.

Since the 2007 endorsement of CMAM as an approach for treating wasting, considerable improvements have been made at national and subnational levels. For example, 11 million children under five years received treatment for severe wasting in 2019 compared to 1.1 million in 2009 and 5.2 million in 2018. This signifies a 10-fold increase over the last 10 years. Regional differences exist, however, with the largest treatment coverage increase found in Africa despite the majority of the wasting burden residing in Asia (No Wasted Lives, 2018).

In 2015, the WHA agreed to a global target to reduce and maintain childhood wasting to a prevalence of less than 5% by 2025 and this target was incorporated into Sustainable Development

Table 1 Key dates in the history of severe wasting treatment

Late 1990s	Severe wasting treatment through inpatient therapeutic feeding centres. Characterised by low recovery rates, high mortality rates and limited coverage (less than 5% coverage; mortality often in excess of 30%).
2000	CMAM approach first piloted in Ethiopia.
2001-2005	Research and development programme between Concern Worldwide and Valid International (funded by Irish Aid) across Malawi, Ethiopia and South Sudan to demonstrate the safety and efficacy of the CMAM approach. At the time this was called the community-based therapeutic care (CTC) approach.
2006	WHO published child growth standards for attained weight and height to replace the previously recommended 1977 NCHS/WHO child growth reference.
2007	UN Joint Statement on endorsing the CMAM approach.
2008	First Lancet nutrition series recommends global scale-up of 13 high-impact nutrition interventions.
2010	The Scaling Up Nutrition (SUN) Movement was established. The World Bank cost-effectiveness report listed severe wasting treatment as a key intervention.
2011	First formal meeting about scaling up CMAM. Hosted by ENN and the Government of Ethiopia, government representatives from 22 countries in Africa and Asia, NGOs, UN agencies, the private sector, academic institutions and donor agencies came together to share experiences and to identify lessons for future CMAM scale up.
2012	WHA set a target to reduce and maintain childhood wasting to less than 5% by 2025.
2015	The world committed to 'zero hunger' by 2030 in Sustainable Development Goal no. 2. As part of this, one target is to end all forms of malnutrition, including achieving the above WHA target on childhood wasting.
2016	The UN Decade of Action on Nutrition was declared.
2020	The UN-endorsed Global Action Plan (GAP) on Child Wasting was launched focusing on the scale-up of wasting treatment and identifying specific effective and cost-effective pathways to achieve prevention and treatment of wasting through a systems-wide approach.
2020/2021	Development of country roadmaps to facilitate the operationalisation of the first-ever GAP on Child Wasting. 20th anniversary of the first CMAM pilot.

Goal (SDG) 2 of 'Zero Hunger'. More recently, this target has been extended to less than 3% by 2030 (WHO & UNICEF, 2018). The 62 countries that have joined the Scaling Up Nutrition (SUN) Movement (Scaling Up Nutrition, 2021) have demonstrated progressive improvement in their commitments to uphold the WHA nutrition targets. Many of these improvements are attributable to years of sustained advocacy for enhanced investments in nutrition, particularly within the health sector.

However, the prevalence of wasting has only slightly reduced from 7.4% in 2015 to 6.9% in 2019 (UNICEF, WHO & World Bank, 2020). For infants under six months of age, wasting treatment coverage is likely to be even lower (ENN, 2016). To combat the slow progress made in scaling up services for wasting, the United Nations (UN) agencies[2] launched a Framework for Action for the UN Global Action Plan on Child Wasting ('GAP Framework') in 2020 (WHO *et al.*, 2020). The launch aimed to galvanise a coalition of partners to work closely with national governments with the ultimate goal of reducing the global burden of child wasting. The GAP Framework outlined four main pathways to achieve this, focusing on reducing the incidence of low birth weight (LBW), improving child health, improving infant and young child feeding (IYCF) and scaling up the treatment of children with wasting. Currently 23 GAP frontrunner countries[3] across the regions of Africa, the Middle East, and Asia and Pacific have committed to implement the 'GAP Operational Roadmaps' which are more detailed action plans to achieving the overall GAP Framework. Table 1 offers a summary of some of the key milestones in the history of CMAM.

[2] UNICEF, WHO, WFP, the United Nations High Commissioner for Refugees (UNHCR) and the Food and Agriculture Organization (FAO).

[3] The countries include Afghanistan, Bangladesh, Burkina Faso, Burundi, Cambodia, Democratic Republic of the Congo, Ethiopia, Haiti, India, Indonesia, Kenya, Madagascar, Malawi, Mali, Niger, Nigeria, Pakistan, Papua New Guinea, the Philippines, South Sudan, Sudan, Timor-Leste and Yemen.

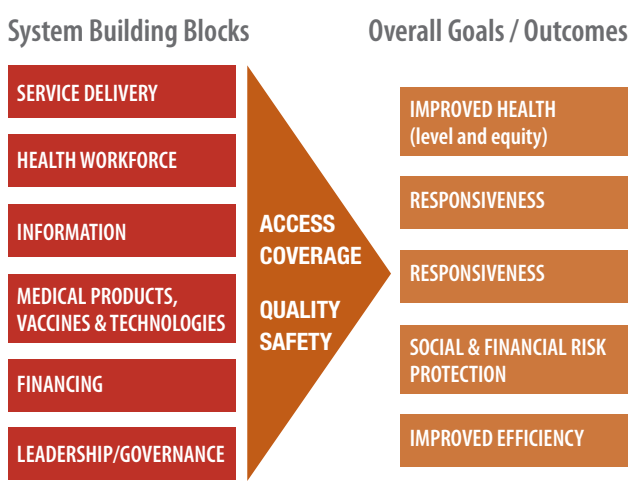
2.2 Integration of severe wasting management into national health systems

The extent of the integration of severe wasting management within national health systems spans the continuum from no integration through to partial integration and, finally, full integration. The degree of integration is influenced by several factors including how governments view the problem of severe wasting, how compatible treatment is with existing health interventions, how receptive governments are to novel approaches and what the existing infrastructure is to support such integration (Deconinck, 2017). There are many models of health system strengthening and Figure 1 describes WHO's framework that is based on 'building blocks' comprising (i) service delivery, (ii) health workforce, (iii) health information systems, (iv) supplies and technology, (v) financing and (vi) leadership/governance (WHO, 2007, 2010). These building blocks offer a useful framework for appraising which areas need support during the transition from zero to full integration.

There has been a significant increase in the number of countries providing severe wasting treatment within their national health systems, now standing at over 70 countries and covering more than 18,500 health facilities (No Wasted Lives, 2019; UNICEF, WHO & World Bank, 2020). This has contributed towards a substantial increase in the geographical coverage of severe wasting treatment since the endorsement of the CMAM approach. At the end of January 2020, nine out of the 23 GAP frontrunner countries had drafted their GAP country operational roadmaps (WHO *et al.*, 2020). This is an important step for the implementation of the recommended country-specific commitments to meet the global SDG target on child wasting.

In 2019, the Maternal and Child Nutrition journal published a special issue titled 'How to Strengthen Nutrition into the

Figure 1 WHO health system strengthening framework



Source: WHO, 2007

Health Platform: Programmatic Evidence and Experience from Low- and Middle-Income Countries' (commissioned by the United States Agency for International Development's Maternal and Child Survival Programme) (Pérez-Escamilla & Engmann, 2019). Here, articles described the progress on integrating nutrition services into health systems including the integration of severe wasting treatment. As part of this series, the authors describe what a fully integrated health system would look like according to WHO's building block framework (Salam, Das & Bhutta, 2019). These points can equally be applied to the management of severe wasting within health systems and the key characteristics of a fully integrated system described in that article are summarised in Table 2.

Table 2 Full integration of nutrition services into health systems, by WHO building block

Building block	Characteristics of full integration
Governance	Complete governance of the nutrition-specific interventions is under the primary programme
Financing	All the financial requirements are met through the primary programme
Information systems	Data collection for the nutrition-specific interventions is through existing primary programme mechanisms
Health workforce	The existing staff of the primary programme perform the entire duties of the nutrition-specific interventions
Supplies and technology	Existing distribution channels are used for the delivery of the nutrition-specific interventions
Service delivery	All the nutrition-specific interventions are delivered through the primary programme channel

Source: Salam, Das & Bhutta, 2019

2.3 The wider context of malnutrition

As well as wasting, there is a growing recognition that health systems should aim to tackle all forms of malnutrition. Multiple forms of malnutrition are found concurrently within countries, communities, households and individuals (Gómez *et al*., 2013; Development Initiatives, 2018). Undernutrition and overnutrition share many causal factors including maternal nutrition, infant feeding practices, quality of diets and social economic deprivation. There are efforts being made by some national health systems to not only consider severe wasting treatment but to also consider moderate wasting, stunting, micronutrient deficiencies and overweight across the preventative and treatment spectrum (WHO *et al*., 2020). Examples of some of the other common nutrition services implemented through health systems include mother, infant and child feeding programmes, infant feeding in emergencies, vitamin A and zinc supplementation, deworming for children and iron-folic acid supplementation for pregnant women. There are several entry points for the integration of such nutrition services within existing health programmes and these include the community integrated management of childhood illness (C-IMCI) and the expanded programme on immunisation (EPI) (Pérez-Escamilla & Engmann, 2019; Salam, Das & Bhutta, 2019).

There are also innovations within the field of severe wasting treatment itself including the testing of alternative approaches that simplify admission and discharge criteria, treat children with moderate and severe wasting in the same programme and reduce the amount of RUTF being used (Bailey *et al*., 2020; Daures *et al*., 2020; ENN, 2020a).

Other innovations include expanding severe wasting treatment services to mothers and at-risk infants under six months within the health system, detecting wasting early within the community by family members and equipping healthcare services to 'surge' when needed to accommodate peaks of wasting incidence throughout the year (ENN, 2020b).

The ability of governments to offer services that span the continuum of care and to incorporate aspects of the innovations described above will depend on their resourcing, infrastructure and political will. It is widely acknowledged that severe wasting treatment alone is not enough to reverse undernutrition trends and a comprehensive package of interventions is required (ENN, 2020b). These include interventions to improve maternal health and nutrition, strategies to improve the nutritional status of adolescent girls, targeting infants under six months of age at highest risk of death, acknowledging that wasting and stunting co-exist and mutually increase the risk of each other and a focus on addressing the underlying causes of undernutrition. What is needed within health systems strengthening, therefore, is to assess how those most at risk of severe outcomes can be best targeted with the available resources (ENN, 2020b; Kerac *et al*., 2020). For this report, we focus on the integration of severe wasting management within health systems as a starting point to target those at highest risk of mortality. However, from the outset, we acknowledge that although this is an important action that urgently requires continued global scale-up, it is only one part of a package of interventions that need to be integrated into health systems to achieve lasting change.


© UNICEF/South Sudan/Christine Nesbitt

3 Methodology

This work was conducted by ENN between September 2020 and February 2021. We conducted 25 in-depth key informant interviews to obtain their perspectives on the progress of the scale-up of severe wasting treatment within health systems. Key informants were drawn from a range of national and regional government institutions, NGOs, UN agencies and academia and many had experiences across multiple contexts. Most informants voiced their personal opinions and therefore did not necessarily present a formal organisational stance. The key informants outlined their understanding and perspectives on supporting national efforts to scale-up severe wasting treatment through the health system including the enablers and barriers for scaling up. We used purposive sampling of key informants, dependent on their involvement in the development of nutrition policies and the implementation of programmes on child wasting. A semi-structured questionnaire guided the interviews (see Annex 1) with questions based around the six pillars of the WHO health system strengthening framework (Figure 1). Informed consent was obtained before the interview sessions, see Annex 2 for a full list of organisations represented.

We also conducted a narrative literature review to supplement the findings. We considered articles on child wasting and scaling up severe wasting treatment within health systems, relevant reports and other grey literature provided by the key informants. Online search engines included PubMed, Google Scholar and Google Search using search terms that included ‘scaling severe wasting’, ‘scaling up treatment for acute malnutrition’ and ‘integrating severe acute malnutrition interventions into health systems’.

This report does not, therefore, necessarily capture the entire spectrum of opinions held on this rapidly evolving field. However, we offer a qualitative synthesis of the perspectives from the key informants and we trust this report can be used as an informative guide to help maintain the momentum that has been gained on this important topic.

4 Findings: key barriers and enablers to scaling up severe wasting treatment

The key informant interviews and literature search identified a wide range of potential enablers and barriers for influencing progress for the scale-up of severe wasting services within national health systems. Many of these build on themes that have been articulated over the last decade and we restrict our narrative to the topics that surfaced most prominently in the key informant interviews to present an up-to-date snapshot of how people are thinking and acting on these issues to date.

We point readers to other key resources to complement the thoughts and ideas expressed below. Between 2017 and 2019, government and non-government representatives from over 60 countries collectively identified practical and evidence-based solutions to the barriers preventing the effective integration and scale-up of wasting management. These have been documented in UNICEF's severe wasting deep dive presentations and reports.[4] Within ENN's Field Exchange publications,[5] several articles have also highlighted the barriers to scaling up wasting (ENN, 2019; Achakzai *et al*., 2020; Torlesse & Le, 2020).

We have categorised the findings into the key themes of the WHO health system strengthening framework (Figure 1). For each theme, we start with a summary table of the key enablers and barriers identified by the key informants before going into more detail in the subsequent narrative sections.

[4] See for example the Deep Dive report from UNICEF Eastern and Southern African region 2017 (https://www.unicef.org/esa/reports/sam-deep-dive-workshop-report),

[5] Field Exchange is ENN's established online and printed technical publication on nutrition and food security in emergencies and high burden contexts https://www.ennonline.net/fex

4.1 Service delivery

Topic	Key enablers	Key barriers
Importance of severe wasting programme coverage	Understanding the importance of programme coverage as a critical indicator of severe wasting treatment success	Low programme coverage of severe wasting treatment
Understanding barriers to programme coverage	A commitment to understanding context-specific bottlenecks around limited programme coverage of severe wasting programmes	Limited attention on context-specific barriers and boosters to severe wasting programme coverage
Community health platforms and community outreach	Prioritising community outreach as an integral part of severe wasting management and maximising chances to do so through existing healthcare entry points (e.g., child health days, vaccination programmes etc.)	Overlooking community outreach as severe wasting services become integrated into health systems Allowing severe wasting to drop off the agenda of routine community healthcare activities
	Using community health workers and family members in early detection of children with severe wasting	Underestimating the impact that routine mid-upper arm circumference (MUAC) screening in the community has for improving early detection of severe wasting
	Advocating for the health sector to drive innovation and scale-up of successful pilots of severe wasting programme adaptations	Keeping best practices and lessons learnt at the agency or localised level with insufficient advocacy for health sector adoption and scale-up
	A commitment to listening to community perceptions of relevant problems and solutions Strong referral mechanisms from the community to health facilities	Maintaining top-down, inflexible approaches that overlook local context Inadequate provision of health facilities and/or weak referral mechanisms
Anticipating caseload throughout the year	Better use of nutrition surveillance and facility data to anticipate seasonal fluctuations in severe wasting incidence and the ability to treat severe wasting caseload throughout the year	Inadequate planning to meet the fluctuating caseload of severe wasting throughout the year

The role of the community in coverage and the delivery of severe wasting services

While there has been progress on increasing the geographic coverage of severe wasting services, actual programme coverage remains low (Rogers *et al*., 2015). Observations from grey literature and key informant interviews suggest that even though the importance of severe wasting coverage is acknowledged in theory at the programme planning stage, in practice a lot of energy is spent on focusing on the quality of existing case management, sometimes at the expense of increased coverage. Limited attention is put on researching and understanding the locally-specific barriers and boosters of achieving coverage. Lessons learnt on how to scale up coverage effectively are still very much needed (Becquey *et al*., 2019).

Key informants noted that efforts to improve severe wasting management need to adequately acknowledge households and individuals, not only as recipients of health services but also as key actors in health services implementation and particularly for their role in community detection of severe wasting cases. Indeed, there is existing literature underscoring the importance of community outreach in increasing the coverage of severe wasting services, both involving community health workers (CHWs) and care givers (Gray *et al*., 2014; Burtscher & Burza, 2015; Alvarez Morán et al., 2018; Bliss *et al*., 2018). There was a concern expressed during the interviews that the importance of community engagement and involvement might not be valued and maintained by government health systems as the process of severe wasting treatment integration proceeds.

To further enhance community involvement and improve the coverage of services, various programme adaptations are being considered. For example, an approach gaining momentum is the 'Family MUAC approach' (The State of Acute Malnutrition, 2020). This approach equips caregivers to use MUAC tapes as a quick and simple way of identifying whether their children are at risk of severe wasting (Blackwell *et al*., 2015). Fast referral to severe wasting services, in turn, can improve recovery rates, reduce the risk of progression to inpatient care, reduce overall costs and boost community confidence in the services being offered (Alé *et al*., 2016). The Family MUAC approach is currently being explored in over 20 countries in the Eastern and Southern Africa region and the West and Central Africa region[6] to enhance active case finding at the household level. What is needed next, as with all programmatic adaptations, is for the health sector to drive the adaptations and integrate them at scale. During the interviews, there was a concern expressed that the successful approaches have been piloted in several locations for several years but that the scale-up of best practices is not yet gathering sufficient pace.

Another example of novel community engagement comes from the implementation of the 'Community Conversation' approach in Kenya by Concern Worldwide (Concern Worldwide, 2012). Key aspects of this approach include in-depth training for facilitators to properly listen to community perspectives on undernutrition using highly interactive participatory methods to build up a picture of the context, what the problems are, what the community identifies as solutions and pathways to impact and what the future would look like if these steps to change were taken. Whilst this toolbox of community participatory approaches is not new and has been used by Concern Worldwide and others for decades in different sectors, it is the focus on nutrition and the weight placed on this approach within the overall strategy of nutrition programming that is gaining momentum. Impact assessments are keenly awaited to quantify what impact these participatory approaches have in health-seeking behaviour for services for severe wasting. Again, any success must be scaled up within the health system rather than remain as a localised pilot.

The ability to adapt to fluctuations in service demand

In many countries, there is a pronounced seasonal pattern to peaks in wasting and stunting (Schoenbuchner *et al*., 2019; Mertens *et al*., 2020) meaning that timely interventions to prevent these peaks of undernutrition are needed. Several initiatives aimed at illuminating the drivers of wasting to inform responsive programming have been explored for at least a decade (Action Contre la Faim, 2015; Wells *et al*., 2019; Young, 2020). Key informants pointed to approaches in recent years designed to strengthen health systems to adapt to fluctuations in demand for severe wasting treatment. These approaches focus on improving the capacity of staff to use surveillance and facility data to better anticipate seasonal peaks. Concern Worldwide's 'CMAM Surge' approach was given as an example of this (Concern Worldwide, 2020) and ENN's Field Exchange 64 provided many case studies of CMAM surge capacity being strengthened within government health systems (ENN Network, 2021). However, key informants also stressed the need for these approaches to be adopted at scale by the health sector. The ability of the health system to surge capacity in times of increased demand has been demonstrated in the response to diseases such as cholera, Ebola and COVID-19. Key informants felt there was an opportunity to consider successful examples of surge capacity within infectious disease management and to apply some of the lessons learnt about planning and resourcing to improve the scale-up of severe wasting services. An important component of this involves the recognition of severe wasting as an urgent health condition.

[6] Regions as defined by UNICEF

4.2 Health workforce

Topic	Key enablers	Key barriers
Integrating nutrition within health systems at the workforce level	Taking a dual approach of a) training health staff on severe wasting protocols and programmatic considerations, and b) training all staff working on severe wasting programmes about how best to support the health system integration process	Training, where it exists, restricted to separate teams of nutrition staff rather than integrating knowledge within the wider healthcare team. Similarly, nutrition staff not fully understanding their role within health systems strengthening
Ongoing training	Strong collaboration between academic and healthcare institutions to provide up-to-date, evidence-based nutrition training for pre-service, in-service and as part of continuing professional development	Using outdated training materials that do not incorporate the latest evidence in a timely way
	Use of digital learning platforms to improve accessibility of training for frontline workers especially in remote and/or insecure areas	Lack of financing and technical knowledge in the set-up, training and maintenance of digital learning platforms
Community health workers (CHWs)	Active government budgeting of CHW networks, securing required finances and full usage of CHWs	Community platforms, including CHW structure and work force, do not have their own WHO health systems pillar and are often overlooked
	CHWs adequately valued and remunerated for their work	CHW workforces where their contributions are undervalued and there is a lack of adequate remuneration
	Functioning and extensive referral systems to facilitate early detection and rapid treatment of cases of severe wasting	Poor referral systems to support CHW roles in the community detection of cases

Increasing technical capacity within the workforce

The past two decades has seen heightened advocacy for positioning the prevention and treatment of malnutrition within international and national agendas. This has contributed to expanded capacity for nutrition within the health workforce including enhanced technical leadership and skills in the quality management of severe wasting. Integrating activities of severe wasting treatment planning and related supervisory roles within health management teams is vital to ensure that health workers at facility and community level routinely integrate nutrition assessment, counselling and treatment. However, key informants also explained this is a two-way process. While frontline healthcare workers must be trained on severe wasting treatment procedures, so too must staff be trained on how to integrate their activities within the health system including effective advocacy and support for integrated planning and implementation processes.

Key informants from academia described how the strengthening of collaboration between academic institutions and health professionals is a necessity as it is a vital enabler for the capacity of health systems to deliver wasting treatment services. This involves the sustainable funding of training and ensuring such training includes evidence-based content on essential nutrition actions in the pre-service, in-service and continuing professional development training of healthcare professionals. Regular review of training curricula is required to ensure the latest evidence is incorporated in a timely fashion. Innovative training initiatives, such as open-source e-learning courses, can be helpful in improving knowledge and enabling regular revision of teaching content. Such digital learning platforms are particularly important for frontline workers placed in remote or insecure areas without easy access to up-to-date information.

Community health workers

The role of CHWs and appropriate community outreach strategies was identified by key informants as being critical to the success of severe wasting treatment at scale. However, the community aspect of health systems was identified by respondents as the most neglected component in terms of funding and institutionalisation. Indeed, some have argued that community health, and the workforce and strategies that underpin its implementation, are not explicitly focused on in the WHO health system building blocks framework and need to be (Sacks *et al*., 2019). It was felt that the lack of prominence of the community health work at both theoretical and implementation levels has limited the prioritisation of adequate investment for CHWs and their service provision.

There is known evidence of the effectiveness of community health service delivery and the use of CHWs in the timely detection and referral of children for treatment of severe wasting (Alvarez Morán *et al*., 2018). Several NGOs have also sought to strengthen the role of CHWs within government health systems by building their capacity and aiming to help to streamline high workloads through the provision of training on simple protocols to identify households at the highest risk of adverse health outcomes

(including severe wasting) (Walker, 2016). Expanding the role of CHWs beyond the detection and referral of children with severe wasting to include treating cases of uncomplicated wasting at the community level has also been advocated as part of harnessing community platforms during the COVID-19 pandemic (UNICEF Eastern and Southern Africa Regional Office, 2020).

However, key informants noted that the focus in the reviewed literature on the importance of CHWs has generally not yet translated to increased country investments in community platforms. In the majority of contexts where severe wasting levels are high, CHW structures are part-time or voluntary and financing is predominantly donor dependent. There are exceptions where the national health budget has heavily invested in their CHW systems, with key informants mentioning Ethiopia as a particularly strong example of a national health system that has recognised the value of its community health workforce by formalising and institutionalising it into its primary health system, including the payment of monthly salaries. Pakistan has also been cited as an illustration of government investment in CHWs (**Box 2**).

National investment in community health structures is therefore a key enabler to severe wasting scale-up including the adequate remuneration of CHWs and volunteers. WHO recommend remunerating practising CHWs with a financial package that is commensurate with the complex job demands (WHO, 2018). This offers an opportunity for governments and their partners to provide an appropriate remuneration package that recognises the importance of their critical work and contributes to a decent standard of living for CHWs. Key informants also identified the provision of support to national community health programmes as important enablers to scale-up. Informants highlighted the role of simplifying CHW work schedules where possible, strengthening the training of CHWs on how to identify households at highest risk and ensuring that the work of the CHWs is equipped with strong referral systems. The latter point was particularly emphasised by key informants working amongst pastoralist communities where many families have no fixed residence.

Box 2 An example of community health worker strategy in Pakistan

Until recently, severe wasting services in Pakistan had been delivered by nutrition assistants at health facility level – a special cadre of staff not on government payroll, recruited as and when needed. Over recent years, much progress has been made on utilising Pakistan's impressive team of community lady health workers (LHWs) to boost the nutrition workforce. This approach has been evolving over the last seven years and has now been integrated into the formal federal strategies and budgets to increase service coverage. Training to support this is currently being cascaded from district-level managers to facility-based nutrition assistants and then on to LHWs. In the context of COVID-19, online training modalities are being used. Pre-service training for different health cadres is also being explored.

4.3 Supplies

Topic	Key enablers	Key barriers
Formulation of RUTF	New formulations that use alternative protein sources and locally available ingredients can reduce costs	Clarity required on acceptable protein sources for RUTF
Production of RUTF	Local production of RUTF increases availability of supply, decreases transport costs and decreases delays by and costs of customs clearance	Local production still requires importation of certain ingredients and there are high costs related to necessary quality control (e.g., heat-treatment processes)
Regulation of RUTF	Codex regulation of RUTF will improve confidence in, and quality of, local RUTF when reference standards are met	Concerns about transparency and communication frequency on review of Codex guidelines for RUTF
Cost of RUTF	Early identification of children with severe wasting and reduced dosage protocols can decrease RUTF quantities needed	High cost of RUTF can inhibit coverage of severe wasting programmes especially where investment is not made in the early detection of cases
Supply of RUTF	Inclusion of RUTF in essential medicines lists (EMLs) can facilitate a more secure national supply chain Better forecasting of demand can improve supply chain logistics	The inclusion of RUTF in EMLs could also increase administrative burdens in some countries Poor planning, financial constraints and misuse of RUTF can lead to breaks in the supply chain. Restrictions due to the COVID-19 pandemic have also interrupted supply chains

Ready-to-use therapeutic food supply, cost and local production

Challenges to a sustainable supply of RUTF hamper the continuity of care and quality of services. There are barriers associated with the formulation, production, regulation, cost and supply of RUTF, each of which contribute to the bottleneck in scaling up treatment. We direct readers to a recent RUTF scoping review for a more detailed exploration of these issues (Mates & Sadler, 2020). Key informants explained that, while progress has been made in including RUTF as part of essential medical supplies and therefore better integrated into health system supply chains, many countries still have parallel supply chains managed by UN and non-government partners. Sometimes these parallel logistics systems may be donor-driven in the interest of efficient delivery and, while there are pressing needs to meet, this approach does not build the capacity of existing health systems to plan for, and respond to, emergencies. Furthermore, sometimes these parallel systems exist in non-emergency times and are slow to be phased out in favour of government systems.

Other outstanding barriers are around the regulation and specifications for RUTF which directly affect the scale-up of local production and a competitive market environment to drive down costs (Mates & Sadler, 2020). A new Codex guideline on RUTF production is currently reviewing existing requirements that limit the range of acceptable protein ingredients and that involve restrictive quality and verification processes. However, a lack of transparency and the need for improved communication around this process was noted as an ongoing concern during the work conducted for the RUTF scoping study (Mates & Sadler, 2020).

Key informants highlighted that the disruption to international supply chains caused by the COVID-19 pandemic has compounded the existing problem of RUTF availability. Even before COVID-19, shortfalls in RUTF supply were a regular problem due to its limited availability internationally, as well national-level issues with supply chains, stock management and disruptions due to conflict. The COVID-19 pandemic has added greater strain to the international aspects of supply, further highlighting the need for governments and the private sector to explore, expand and optimise expertise in local production.

Given the above, key enablers to achieving universal coverage of treatment for severe wasting therefore centre around addressing issues of RUTF cost, availability and reliable supply. While the cost of standard, peanut-based RUTF has decreased by around 23% in the last 10 years, with many of the producers reporting that there are limited options for reducing the cost further due to the price of ingredients, its relatively high cost remains a barrier for scaling up treatment to the required numbers (Mates & Sadler, 2020). RUTF costs can potentially be reduced by

© UNICEF/ South Sudan; Helene Sandbu Ryeng

decreasing the dosage to successfully treat severe wasting, reducing logistics costs through local production, controlling misuse or 'leakage', improved supply-chain efficiencies and/or developing new, cheaper formulations.

One area that has seen recent progress is improving supply chain efficiencies through integration into national systems (du Châtelet, Webb & Israël, 2019; Eby *et al*., 2019). The inclusion of RUTF on the EML of 43 countries, compared with 35 in 2017 (UNICEF, 2020), has facilitated the integration of its supply logistics into those of other essential medicines, rather than depending on separate, duplicative supply systems, largely operated by NGOs or UN agencies. Key informants explained how the transition from parallel supply chain systems towards integrated government supply chain systems creates several opportunities when the system works. These include enabling greater ownership by national local governance bodies, strengthening logistics systems, increasing reliability in forecasting and reporting and therefore reducing potential national and regional commodity stock-outs. In some countries, however, unintended consequences of inclusion into the EML could potentially increase the administrative and regulatory burden for importing, producing and using RUTF.

Progress has also been made with local production with some informants mentioning the potential impact this can have on incentivising domestic resource allocation and developing local industry. The exploration of alternative formulations of RUTF which rely less on imported ingredients, as well as the expiration of the Nutriset patent by 2021, provide opportunities to expand local production and ultimately contribute to a decrease in the cost and inefficiencies of production in countries with high levels of severe wasting. Local production at scale, using locally grown ingredients, can also help to drive agricultural diversity and resilience to changing climates. There are already 17 RUTF producers located in high-burden countries and there are also some successful examples of RUTF formulations using locally available ingredients such as the rice/lentil/chickpeas formulation in Bangladesh (Choudhury *et al*., 2018).

4.4 Health information systems

Topic	Key enablers	Key barriers
Reporting nutrition indicators	Use of existing health information systems, including e-health platforms, to better integrate nutrition indicators at scale	Parallel severe wasting reporting systems that are not integrated into government health information systems
Using data to prompt action	Ensuring sufficient technical expertise on how to manage severe wasting data within the health information system for tracking progress and better planning of programmes	Lack of technical expertise to interpret data on severe wasting and translate it into programmatic action

Key informants highlighted several barriers related to health information management to support severe wasting scale-up. These included anecdotes of incomplete data capture on severe wasting indicators, poor quality data, delayed reporting, the lack of a management system to support real-time data collection and parallel reporting systems. Some informants described how the lack of integration of severe wasting data into government health systems reflected, in some cases, the lack of interest by some governments to fully integrate and maintain information systems once non-government partners cease their support; a somewhat unsurprising consequence of the set-up of external parallel systems.

The District Health Information System 2 (DHIS2), available in 73 low- and middle- income countries (LMICs), is a common health information management system that tracks healthcare provided to the community. However, key informants explained there were aspects of this system that represented both barriers and enablers for severe wasting scale-up. Enablers include ensuring that severe wasting data is regularly reported as part of routine health information. However, an example of a barrier was the reality of the limited integration of nutrition indicators, including for severe wasting, within the information system. Furthermore, some informants reported that there was limited access to the DHIS2 platform by all stakeholders who need it. They also stated that improving the platform to allow for real-time data monitoring would better enable nutrition programming to be tailored to local contexts. Strengthening the DHIS2 system with a nutrition lens can support health workers to better anticipate and manage fluctuations in demand for essential nutrition and child health services, thus complementing ongoing health surveillance mechanisms.

Going beyond the data collection platform alone, key informants also highlighted the importance of ensuring there is sufficient technical expertise within strategic national and regional government institutional departments such as health management information systems units and national statistics agencies. This would require investment in employing specialists and training up existing staff in nutrition information system management at national, regional and local levels. This requires specific technical expertise in the interpretation of severe wasting data and knowledge of how such data can be translated into programmatic action.

Investment in digital data collection by CHWs provides a key opportunity for feeding timely nutrition information into the health information system. There are already existing detailed guidelines that describe how best to integrate nutrition information into routine reporting systems (UNICEF Eastern and Southern Africa, 2020). For example, the United States Agency for International Development (USAID)'s Advancing Nutrition programme has documented some of the ways digital technology is regularly undergoing innovation to improve the user-friendliness of data collecting platforms for integrating nutrition information into health systems, improving the security and confidentiality of data transfer, enabling better longitudinal tracking, aiding referral of patients, the monitoring of data quality before submission and communicating performance indicators to the users (USAID Advancing Nutrition, 2020). Indeed, with continued investment and training, key informants described how governments with established e-health platforms could feasibly integrate nutrition data at scale within the existing infrastructure. Furthermore, the COVID-19 pandemic continues to force countries to further explore sustainable digital data collection solutions. For example, USD3 million has been provided by UNICEF to support 11 countries[7] initially to help plan, test and scale-up national real-time digital monitoring systems using the open-source platform RapidPro.[8] Such initiatives need to be owned by the health sectors of national governments to ensure best practices are then rolled out at scale and do not remain as isolated case studies.

[7] Bangladesh, India, Jordan, Malawi, Nepal, Pakistan, State of Palestine, Sudan, Swaziland, Uganda and Zimbabwe

[8] For more details on RapidPro see https://community.rapidpro.io/

4.5 Financing

Topic	Key enablers	Key barriers
Accurate forecasting	Involvement of health specialists in national costing exercises to produce well-planned budget forecasts for severe wasting treatment at scale	Insufficient planning of realistic costs for severe wasting treatment at scale within national budgets
Long-term funding	Increased opportunities to receive multi-year funding to support severe wasting integration into health systems	Over-reliance on emergency funding for severe wasting treatment. Assumption by government leaders that other funding streams and agencies will continue to fill the gap on severe wasting treatment, especially in emergencies
Innovative funding mechanisms	Expanding Global Financing Facility partnerships and other innovative regional multilateral development finance initiatives Exploring pooled procurement services at the regional level to reduce costs of essential supplies for severe wasting treatment	Parallel systems of funding acquisition and management that do not result in government ownership and capacity development

Full and accurate budgeting at the national and subnational level is required for severe wasting treatment to be implemented at scale. Yet allocation for severe wasting treatment in some national and subnational budgets is insufficient to ensure funding is secured and managed within robust government systems. Key informants described how sometimes a national budget line for severe wasting treatment can exist but the expectation is still for a donor to provide that funding. Instead, this funding stream needs to be properly 'owned' by the government.

Respondents explained how, currently, most severe wasting treatment services are funded largely through international humanitarian or emergency financing mechanisms which can be unpredictable and inefficient as they tend to be 'stop/start' and use parallel systems without building national capacity. Achieving, and then sustaining, the services for severe wasting at scale requires the ability to access longer-term funding streams. Sustained government financing for nutrition services within health systems is critical for services to be integrated and effective. However, financing decisions are often made at high levels of government that are prone to be changed at the end of each political term.

However, over the past five years in particular, there have been concerted efforts to improve the breadth and efficiency of funding mechanisms for humanitarian action. This commitment was expressed in the 'Grand Bargain', an agreement between major donors and humanitarian organisations to improve the effectiveness of humanitarian aid (Inter-Agency Standing Committee, 2020). Despite this progress, key informants, particularly those located in high burden/fragile contexts, agreed that public financing is still unlikely to allow self-reliance in the short term, describing how there is a lack of sufficient funding for short-term emergency needs as well as longer-term initiatives. Hence, there remains a need for supplemental assistance from international and local NGOs with the aim of strengthening government systems for service delivery. Several concerns, however, were raised from key informants that non-government management of donor resources for severe wasting through partners in high burden countries could potentially limit the development of government national and subnational financial systems.

Successful advocacy by agencies, including the SUN Movement and some NGO-led strategies at sub-national/district levels, have engaged elected representatives to make sustainable investment in the nutrition sector thereby increasing the share of government financing for severe wasting treatment in some countries. Encouragingly, all the key informants working at country-level reported having been engaged in the costing exercises for severe wasting treatment within their national nutrition action plans. In order to foster sustainable government financing for severe wasting services within national health budgets, better data and transparency on the cost of nutrition programmes for governments is required. International NGO and UN key informants involved with country-level nutrition programming described how their organisations are supporting national and subnational government bodies to ensure that domestic health budgets account for severe wasting services and that related expenditure is tracked in the respective ministerial plans.

While financing for severe wasting treatment transitions to being fully met by national government budgets, there is still a need for supplemental assistance from international and

regional agencies. Positive recent examples include increased funding from development donors such as the European Commission and the Global Fund that aims to build sustainable systems for the purchase and supply of RUTF or to develop the CHW network (Mates & Sadler, 2020). In addition, in 2020, UNICEF with the support of their donors, set up the first ever multi-donor "match fund" focused solely on RUTF and expanded the UNICEF Bridge Fund[9] for RUTF. Furthermore, the Southern African Development Community (SADC) is exploring an opportunity of using 'SADC pooled procurement services', based in Tanzania, to facilitate the procurement of supplies at reduced costs.

Key informants also highlighted the possibilities of exploring existing Global Financing Facility (GFF) partnerships in Africa, the Middle East and Asia. These partnerships are designed to provide catalytic financing and technical assistance to develop and implement national health plans to secure predictable funding for the prevention and treatment of severe wasting. The African Development Bank, through its 2018-2025 Multi-Sectoral Nutrition Action Plan, provides an example of a continental multilateral development finance institution that has committed to scaling up the proportion of investments that are nutrition-smart especially in the health, agriculture, Water, sanitation and hygiene (WASH) and social protection sectors. These sectors account for over 30% of government spending in Africa (African Development Bank Group, 2018) and need to be engaged to address the underlying causes of malnutrition.

[9] UNICEF Bridge Fund is an innovative, impact investment tool that addresses the timing gaps that emerge between the commitment of a donor's support to UNICEF and the actual receipt of the pledged cash by UNICEF.

4.6 Leadership/governance

Topic	Key enablers	Key barriers
Positioning of severe wasting within national agendas	Maximising momentum for Universal Health Coverage (UHC) by ensuring that severe wasting treatment is considered within the UHC agenda Integration of severe wasting activities into routine health activities such as expanded programmes of immunisation (EPI) and C-IMCI Senior government leadership having ownership of the process of integrating severe wasting services into national health systems and being accountable for severe wasting outcomes in health programming	Severe wasting being perceived and funded as a separate nutrition issue and not as an important child health issue
Realistic and sustained planning	Consistent messaging from donors, advocacy partners and technical specialists on what is required for scale-up of severe wasting services and its importance within national agendas	Underestimate of the time taken to plan and implement the scale-up of wasting services at leadership level Insufficient emphasis on the importance of achieving severe wasting treatment at scale by some donors, agencies and advocacy groups
Adoption of key policies and procedures	Conviction from those in senior leadership positions on the effectiveness of severe wasting treatment when properly implemented	Lack of implementation of protocols for severe wasting involving RUTF in some countries

Now that many countries have started to integrate wasting within routine health services (see section 2.2), continued efforts are required to ensure severe wasting treatment at scale remains a priority. This includes the maximising of opportunities to keep severe wasting at the top of international and national health agendas. Harnessing the momentum to achieve UHC is one such example where the health sector should continue to advocate for the high priority of severe wasting treatment. There are many examples of health services that achieve impressive coverage such as EPI and C-IMCI. Components of severe wasting services should be integrated into these existing health platforms in order to maximise coverage.

In addition, although it is broadly known what is required for the successful strengthening of health systems (Barker, Reid & Schall, 2016), the length of time and planning to do this properly is often underestimated. Key informants with programmatic experience at country level mentioned that government action plans for integrating nutrition into health

systems require more realistic detail on how to make this sustainable as well as within appropriate timeframes.

With so many countries making strides in integrating and scaling up severe wasting treatment, it cannot be overlooked that some countries are lagging behind. For example, neither India nor Bangladesh, countries with a very high burden of wasting, have formally adopted the use of RUTF for treating severe wasting at the national level. Key informants familiar with the context described how barriers to adopting the approach, let alone integrating it into health systems, revolve around questions on the suitability of RUTF for the local population, concerns that the use of RUTF will displace breastfeeding and doubts about the sustainability of RUTF given its high cost. However, some states in India are implementing community-based management of severe wasting using nutritional products financed by the government and, in some cases, philanthropic foundations.

Key informants suggested that it is not just governments' prioritisation of wasting that needs to be maintained but also the supporting infrastructure from other agencies. For example, some key informants suggested that the SUN Movement strategy from 2016-2020 (Scaling Up Nutrition, 2020) had a significant focus on developing government-led multi-sector coordination for nutrition but was often interpreted as prioritising a focus on stunting over other forms of malnutrition, including wasting. Others felt that UN agencies needed to provide more active support to governments to reverse the historic reliance on parallel systems in the funding, implementing and monitoring of severe wasting treatment and to further their support for the integration of severe wasting services within routine health systems.

Key informants were quick to stress, however, that there were examples of progress in the prioritisation of wasting treatment within national health systems, especially under the global commitment to UHC. The World Bank, The Power of Nutrition and the GFF were just some examples cited of organisations directing significant funding towards UHC and health systems strengthening (Tichenor & Sridhar, 2017; Nimako *et al*., 2020; The Power of Nutrition, 2020). Encouraging examples to date include countries such as Democratic Republic of Congo trialling the incorporation of nutrition services into their integrated community case management (ICCM) programmes (Kavle *et al*., 2019). The addition of severe wasting diagnosis and treatment to this package is a reassuring example of the possibility to scale up severe wasting services within existing health systems. **Box 3** provides some examples from key informant accounts of success stories from Pakistan and Kenya. They illustrate examples of good governance alongside topics covered in previous sections.

Box 3 An example of community health worker strategy in Pakistan

Pakistan:
An important political impetus for the initial scale-up of CMAM services from 2012 was the development of national CMAM guidelines in 2010. This was driven by the Government of Pakistan with support from UNICEF, WFP, WHO and NGOs. This provided a much-needed framework to guide future scale-up. The integration of CMAM into provincial level plans (PC1s) covering the years 2015-2020 enabled leadership and the rollout of CMAM services at the provincial level which was important in the context of the devolved government. The inclusion of severe wasting management within the Pakistan Multisectoral Nutrition Strategy 2018-2025 has been critical in recent years to place wasting treatment at the heart of the government's stunting reduction strategy. Inclusion of wasting treatment in the federal plans for 2020-2025 (targeted to the poorest sections of the population; 35% of the population overall) has also been important in accelerating the potential for higher coverage of treatment services.

Kenya:
Marsabit county government (in the north of Kenya) has made significant progress in ensuring services for the treatment of severe wasting are integrated into the primary healthcare system. The programme is anchored within the Maternal and Child Health (MCH) programme and hence leverages MCH financing and human resources. This includes using nurses, clinical officers and community health volunteers (CHVs) for delivery of severe wasting services, termed integrated management of acute malnutrition (IMAM) in Kenya. IMAM is provided by most of the health facilities in line with the public health services' charter on basic service delivery and the Country Nutrition Action Plan (CNAP). The process of cost allocation within the CNAP has provided an important opportunity for the nutrition sector to negotiate for increased nutrition financing within the county government budget. Having a dedicated county Nutrition Officer as a member of the county health management team has reinforced the capacity for negotiation for nutrition actions at the county level. The community health strategy has been operationalised with the recruitment of community health assistants (CHAs) who are partly remunerated by the county government and CHVs. CHAs and CHVs play a critical role in supporting screening, referral and follow up of wasted children. Furthermore, community health structures are being optimised for the delivery of community-based nutrition education and counselling in support of prevention of wasting efforts. Adoption of the online government supplies management system to enhance forecasting, requisition and reporting for nutrition commodities has ensured a consistent supply of nutrition commodities. While procurement of essential commodities is mainly by UNICEF and WFP, the Kenya Medical Supplies Agency (KEMSA) is responsible for their delivery, thereby enhancing government ownership. With support from UNICEF and WFP, efforts are ongoing to institutionalise social accountability through end-user monitoring of nutrition supplies.

© UNICEF South Sudan/Helene Sandbakken

© WFP/Niger/Simon Pierre Diouf

5 Conclusion

At the 20th anniversary mark of the first CMAM pilot, while we take stock of the many successes in the global scale-up of severe wasting treatment, this is also an opportunity to acknowledge that there is still a long way to go. Key informants affirmed that there had indeed been considerable global progress towards the integration of severe wasting management into national health systems. However, there was a general consensus that this was a slow and difficult task, especially in the many countries that have persistently high caseloads of wasted children and overburdened health systems. Many successful examples from pilot studies and case studies exist but the need to achieve these best practices at scale remains. Sustained advocacy, funding and political will is needed from governments, donors and implementing agencies to continue the prioritisation of integrating severe wasting services into national health systems. While at times it may seem more efficient and logistically easier to run parallel systems for severe wasting treatment, ultimately everyone interviewed recognised that the national integration of these services is the only way to achieve true sustainability and high coverage.

6 Recommendations from key informants

A number of recommendations were suggested, as described in section 4 and summarised below. Key informants addressed these recommendations to policy makers, practitioners, researchers and donors across the nutrition and health spheres. It is important to note that, while there is not universal agreement on all of the recommendations outlined here and that some may be more contentious than others, all were put forward by the key informants as current issues that still need to be addressed to maintain and further accelerate progress on the scale-up of severe wasting treatment.

6.1 Service delivery

1. Improve training to government health frontline workers on the integral component of ***severe wasting programme coverage*** as an essential part of quantifying success. Encourage regular coverage surveys to identify programme strategies that relieve bottlenecks and expand coverage.
2. Integrate severe wasting treatment programming within existing successful ***child health platforms*** such as child health days, vaccination outreach and C-IMCI.
3. Understand that full integration of severe wasting services into routine health systems takes time and may even result in a drop in either quality and/or coverage of services while more sustainable systems are put in place.
4. Harness the potential of the local community in improving ***referrals to wasting services*** through approaches such as ***Family MUAC*** and other participatory approaches. This will empower community members to identify severe wasting risk and take rapid action.
5. Ensure programme adaptations, such as Family MUAC and simplified severe wasting treatment approaches, do not remain in the realm of localised pilot studies. Successful evidence-based approaches need to be shared and, once tested for scalability, should be taken up by the health sector in order for such approaches to be delivered ***at scale***.
6. Equip healthcare frontline workers to collect ***timely data on severe wasting*** from surveillance systems and facilities to interpret ***seasonal trends*** in severe wasting incidence and plan surge capacities at certain times of year to meet peak demands.
7. Improve the ***targeting*** of interventions so that a greater proportion of the limited resources that are available reach those at ***highest risk*** of severe wasting. As part of this, aim to better understand the ***contextual drivers*** for persistent malnutrition to guide priority areas for intervention.

6.2 Health workforce

8. Ensure that ***two-way training processes*** are happening with healthcare professionals being trained in severe wasting programming and ensuring all staff working on severe wasting programmes know how best to support the health system integration process.
9. Facilitate ***coordination between academic institutions*** and the health sector to ensure up-to-date, evidence-based training is adequately given at the pre-service stage. Ensure that appropriate training and ongoing professional development is then sustained in-service.
10. Expand the development of open-source, accessible ***e-learning platforms*** for healthcare professionals to engage in training (including refresher training) regardless of the remoteness of their location.
11. Equip CHWs to accomplish the early detection of severe wasting in the community through ***adequate resourcing and remuneration*** starting with appropriate planning at the national budget level.
12. Continue to strengthen ***referral systems*** at the community level to support the work of CHWs.

6.3 Supplies

13. Continue the ***integration of RUTF procurement*** into government health system supply chains.
14. Where parallel supply chains temporarily need to be maintained for short-term emergency response, include a plan for how to ultimately transfer the supply chain system to the national health system.
15. Encourage countries who have not yet done so to include RUTF on the ***essential medicine list*** (where appropriate) to facilitate the integration of its supply into national health supply chains.
16. Invest in ***local production of RUTF*** to decrease prices, shorten and simplify supply chain, and promote income generating opportunities.
17. Build the ***capacity of local producers*** to scale up production while maintaining the appropriate requirements of nutrient composition and food safety.
18. Continue research and encourage innovation into **alternative recipes for RUTF** that consider the preference of local communities and locally available ingredients.

6.4 Health information systems

19. Integrate ***nutrition indicators*** into government health information systems ensuring that indicators for severe wasting are captured.
20. Provide training for the health workforce to provide ***complete and timely data*** on severe wasting and continue investment in ***digital platforms*** to facilitate this. Where digital platforms are shown to work, scale up their usage through the health sector.
21. Ensure there is sufficient technical expertise in ***nutrition data interpretation*** within key government departments to enable government health professionals to perform data quality checks, analyse trends, interpret results and initiate evidence-based action plans in regard to severe wasting treatment.

6.5 Financing

22. Ensure national budgets are ***adequately costed*** and secured in order that severe wasting treatment at scale can be delivered; where resources are limited, prioritise those children most at risk of death.
23. Advocate for funding for severe wasting treatment to be provided through ***longer-term health system strengthening grants*** particularly leveraging innovative global and regional funding such as the GFF.

6.6 Leadership/governance

24. Maintain the momentum that has been achieved by continuing to advocate for severe wasting treatment to be high on the agenda of discussions, action plans and commitments on ***universal health coverage***.
25. Use every opportunity to integrate severe wasting within existing successful community health initiatives.
26. Ensure leadership in the health sector is ***accountable for severe wasting outcomes*** to close the divide between management of nutrition and health activities.
27. Ensure ***realistic expectations*** for health systems strengthening are set in terms of adequate financial resourcing and realistic timeframes.
28. Ensure that government representatives are receiving ***consistent messages*** on the importance of integration of severe wasting services from donors, UN agencies and NGOs.

References

Achakzai, B. *et al*. (2020) 'Integration of essential nutrition interventions into primary healthcare in Pakistan to prevent and treat wasting: A story of change', *Field Exchange, 63*, p. 13. Available at: **www.ennonline.net/fex/63/pakistanintegrationstoryofchange**.

Action Contre la Faim (2015) *Linknca nutrition causal analysis*. Available at: **https://www.linknca.org/?lng=en** (Accessed: 2 March 2021).

African Development Bank Group (2018) *Multi-Sectoral Nutrition Action Plan 2018-2025*. Available at: **https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Banking_on_Nutrition_ActionPlan_A4_V1d_single.pdf**.

Alé, F. G. B. *et al*. (2016) 'Mothers screening for malnutrition by mid-upper arm circumference is non-inferior to community health workers: Results from a large-scale pragmatic trial in rural Niger', *Archives of Public Health*, 74(1), p. 38. doi: 10.1186/s13690-016-0149-5.

Alvarez Morán, J. L. *et al*. (2018) 'The effectiveness of treatment for Severe Acute Malnutrition (SAM) delivered by community health workers compared to a traditional facility based model', *BMC Health Services Research*, 18(1), pp. 1–10. doi: 10.1186/s12913-018-2987-z.

Bailey, J. *et al*. (2020) 'A simplified, combined protocol versus standard treatment for acute malnutrition in children 6–59 months (ComPAS trial): A cluster-randomized controlled non-inferiority trial in Kenya and South Sudan', *PLOS Medicine*, 17(7), p. e1003192. doi: 10.1371/journal.pmed.1003192.

Barker, P. M., Reid, A. and Schall, M. W. (2016) 'A framework for scaling up health interventions: Lessons from large-scale improvement initiatives in Africa', *Implementation Science*, 11(1). doi: 10.1186/s13012-016-0374-x.

Becquey, E. *et al*. (2019) 'Impact on child acute malnutrition of integrating a preventive nutrition package into facility-based screening for acute malnutrition during well-baby consultation: A cluster-randomized controlled trial in Burkina Faso', *PLOS Medicine*, 16(8), p. e1002877. doi: 10.1371/journal.pmed.1002877.

Bhutta, Z. A. *et al*. (2008) 'What works? Interventions for maternal and child undernutrition and survival', *The Lancet*, 371(9610), pp. 417–440. doi: 10.1016/S0140-6736(07)61693-6.

Bhutta, Z. A. *et al*. (2013) 'Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?', *The Lancet*, 382(9890), pp. 452–477. doi: 10.1016/S0140-6736(13)60996-4.

Blackwell, N. *et al*. (2015) 'Mothers Understand And Can do it (MUAC): A comparison of mothers and community health workers determining mid-upper arm circumference in 103 children aged from 6 months to 5 years', *Archives of Public Health*, 73(1), p. 26. doi: 10.1186/s13690-015-0074-z.

Bliss, J. *et al*. (2018) 'Use of Mid-Upper Arm Circumference by Novel Community Platforms to Detect, Diagnose, and Treat Severe Acute Malnutrition in Children: A Systematic Review.', *Global health, science and practice*, 6(3), pp. 552–564. doi: 10.9745/GHSP-D-18-00105.

Burtscher, D. and Burza, S. (2015) 'Health-seeking behaviour and community perceptions of childhood undernutrition and a community management of acute malnutrition (CMAM) programme in rural Bihar, India: A qualitative study', *Public Health Nutrition,* 18(17), pp. 3234–3243. doi: 10.1017/S1368980015000440.

du Châtelet, A., Webb, M. and Israël, A. (2019) *Process and impact of integration of ready-to-use therapeutic foods in national essential medicines lists. In: WHO technical consultation: Nutrition-related health products and the World Health Organization Model List of Essential Medicines*. Geneva: World Health Organization. Available at: **https://www.who.int/docs/default-source/nutritionlibrary/publications/nutrition-related-health-products-and-the-world-health-organization-model-list-of-essential-medicines-practical-considerations-and-feasibility/lem-du-chatelet-et-al-2019.pdf?sfvrsn=46b0**

Choudhury, N. *et al*. (2018) 'Ready-to-Use Therapeutic Food Made From Locally Available Food Ingredients Is Well Accepted by Children Having Severe Acute Malnutrition in Bangladesh', *Food and Nutrition Bulletin*, 39(1), pp. 116–126. doi: 10.1177/0379572117743929.

Collins, S. *et al*. (2006) 'Key issues in the success of community-based management of severe malnutrition.', *Food and nutrition bulletin*, 27(3 Suppl), pp. S49-82. Available at: **http://www.ncbi.nlm.nih.gov/pubmed/17076213** (Accessed: 31 January 2015).

Concern Worldwide (2012) *Community conversations: Trainer of trainers manual*. Available at: **https://www.concern.net/insights/community-conversationstrainer-trainers-manual** (Accessed: 2 March 2021).

Daures, M. *et al*. (2020) 'New approach to simplifying and optimising acute malnutrition treatment in children aged 6-59 months: The OptiMA single-arm proof-of-concept trial in Burkina Faso', *British Journal of Nutrition*, 123(7), pp. 756–767. doi: 10.1017/S0007114519003258.

Deconinck, H. (2017) *Understanding pathways of integrating severe acute malnutrition interventions into national health systems in low-income countries: Applying systems thinking to study the complexity of health systems*. Université catholique de Louvain. Available at: **https://dial.uclouvain.be/pr/boreal/object/boreal%3A183112/datastream/PDF_02/view**

Development Initiatives (2018) *Global Nutrition Report: Shining a light to spur action on nutrition. Bristol, UK*. Available at: **https://globalnutritionreport.org/reports/global-nutrition-report-2018/**

Eby, E. *et al*. (2019) 'Integration of the UNICEF nutrition supply chain: A cost analysis in Kenya', *Health Policy and Planning*, 34(3), pp. 188–196. doi: 10.1093/heapol/czz007.

Emergency Nutrition Network (2016) *Management of Acute Malnutrition in Infants under 6 months (MAMI) Interest Group Meeting Report*. Oxford: ENN. Available at: **https://www.ennonline.net/attachments/2482/MAMI-Meeting-Report-Jan-2016.pdf**

Emergency Nutrition Network (2019) 'Continuity of care in acute malnutrition treatment in East Africa and West and Central Africa: a mapping exercise.', *Field Exchange, (61),* p. 10. Available at: **www.ennonline.net/fex/61/continuityofcare**

Emergency Nutrition Network (2020a) *Simplified approaches to the treatment of wasting: technical brief*. Oxford: ENN. Available at: **https://www.ennonline.net/attachments/3621/Tech-Brief-31Aug2020_Simplified-approach.pdf**

Emergency Nutrition Network (2020b) *Wasting in the wider context of undernutrition: An ENN position paper*. Oxford: ENN. Available at: **https://www.ennonline.net/attachments/3595/ENN-Wasting-Position-Paper_FINAL.pdf**

Emergency Nutrition Network (2021) *Field Exchange Issue 64*. Available at: **https://www.ennonline.net/fex/64/en** (Accessed: 2 March 2021).

Global Nutrition Report (2021) *Global Nutrition Report: Country Nutrition Profiles*. Available at: **https://globalnutritionreport.org/resources/nutrition-profiles/** (Accessed: 8 March 2021).

Gómez, M. I. *et al*. (2013) '*Post-green revolution food systems and the triple burden of malnutrition'*, Food Policy, 42, pp. 129–138. doi: 10.1016/j.foodpol.2013.06.009.

Gray, N. *et al*. (2014) *Community Engagement: the 'C' at the heart of CMAM*. CMAM Technical Forum. Available at: **https://www.ennonline.net/attachments/2181/Community-Engagement-Technical-Brief-August-2014.pdf**

Headey, D. *et al*. (2020) 'Impacts of COVID-19 on childhood malnutrition and nutrition-related mortality', *The Lancet*, 396(10250), pp. 519–521. doi: 10.1016/S0140-6736(20)31647-0.

Hossain, M. *et al*. (2017) '*Efficacy of World Health Organization guideline in facility-based reduction of mortality in severely malnourished children from low and middle income countries: A systematic review and meta-analysis*', Journal of Paediatrics and Child Health, 53(5), pp. 474–479. doi: 10.1111/jpc.13443.

Inter-Agency Standing Committee (2020) *About the Grand Bargain*. Available at: **https://interagencystandingcommittee.org/about-the-grand-bargain** (Accessed: 2 March 2021).

Kavle, J. A. *et al*. (2019) 'Strengthening nutrition services within integrated community case management (iCCM) of childhood illnesses in the Democratic Republic of Congo: Evidence to guide implementation', *Maternal & Child Nutrition*, 15(S1), p. e12725. doi: 10.1111/mcn.12725.

Kerac, M. *et al*. (2020) '"Severe malnutrition": thinking deeply, communicating simply', *BMJ Global Health*, 5(11), p. e003023. doi: 10.1136/bmjgh-2020-003023.

Mates, E. and Sadler, K. (2020) R*eady-to-use Therapeutic Food (RUTF) Scoping Study*. Oxford: ENN. Available at: **https://www.ennonline.net/attachments/3543/RUTF_2020.pdf**

Mertens, A. *et al*. (2020) 'Child wasting and concurrent stunting in low- and middle-income countries', *medRxiv*, p. 2020.06.09.20126979. doi: 10.1101/2020.06.09.20126979.

Myatt, M. *et al*. (2018) 'Children who are both wasted and stunted are also underweight and have a high risk of death: a descriptive epidemiology of multiple anthropometric deficits using data from 51 countries', Archives of Public Health, 76(1), p. 28. doi: 10.1186/s13690-018-0277-1.

Nimako, K. *et al*. (2020) *Maternal and Newborn Health Service Delivery Redesign: Planning Package*. Available at: **https://www.globalfinancingfacility.org/sites/gff_new/files/documents/Maternal-and-Newborn-Health-Service-Delivery-Redesign-Package.pdf**

No Wasted Lives (2018) *A research agenda for acute malnutrition: A statement from the Council of Research & Technical Advice on Acute Malnutrition (CORTASAM)*. Available at: **https://www.nowastedlives.org/documents-research-agenda**

No Wasted Lives (2019) *The State of Acute Malnutrition, A Platform for Communication.* Available at: **https://www.nowastedlives.org/state-of-acute-malnutrition** (Accessed: 2 March 2021).

Olofin, I. *et al*. (2013) 'Associations of suboptimal growth with all-cause and cause-specific mortality in children under five years: a pooled analysis of ten prospective studies.', *PloS one*, 8(5), p. e64636. doi: 10.1371/journal.pone.0064636.

Pérez-Escamilla, R. and Engmann, C. (2019) 'Integrating nutrition services into health care systems platforms: Where are we and where do we go from here', *Maternal & Child Nutrition*, 15, p. e12743. doi: 10.1111/mcn.12743.

Roberton, T. *et al*. (2020) 'Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study', *The Lancet Global Health*, 8(7), pp. e901–e908. doi: 10.1016/S2214-109X(20)30229-1.

Rogers, E. *et al*. (2015) 'Coverage of Community-Based Management of Severe Acute Malnutrition Programmes in Twenty-One Countries, 2012-2013', *PLOS ONE*, 10(6), p. e0128666. doi: 10.1371/journal.pone.0128666.

Sacks, E. *et al*. (2019) 'Beyond the building blocks: integrating community roles into health systems frameworks to achieve health for all', *BMJ Global Health*, 3(Suppl 3), p. e001384. doi: 10.1136/bmjgh-2018-001384.

Salam, R. A., Das, J. K. and Bhutta, Z. A. (2019) 'Integrating nutrition into health systems: What the evidence advocates', *Maternal & Child Nutrition*, 15(S1), p. e12738. doi: 10.1111/mcn.12738.

Scaling Up Nutrition (2020) *SUN Movement Strategy and Roadmap.* Available at: **https://scalingupnutrition.org/about-sun/the-sun-movement-strategy/** (Accessed: 2 March 2021).

Scaling Up Nutrition (2021) *Scaling Up Nutrition: About SUN Countries*. Available at: **https://scalingupnutrition.org/sun-countries/about-sun-countries/** (Accessed: 2 March 2021).

Schaefer, R. *et al*. (2020) 'Relapse and regression to severe wasting in children under 5 years: A theoretical framework', *Maternal and Child Nutrition*. doi: 10.1111/mcn.13107.

Schoenbuchner, S. M. *et al*. (2019) 'The relationship between wasting and stunting: a retrospective cohort analysis of longitudinal data in Gambian children from 1976 to 2016.', *The American journal of clinical nutrition*, 110(2), pp. 498–507. doi: 10.1093/ajcn/nqy326.

The Power of Nutrition (2020) *Strengthen national health systems and support preventive and curative care efforts*. Available at: **https://www.powerofnutrition.org/strengthen-national-health-systems-and-support-preventive-and-curative-care-efforts/** (Accessed: 2 March 2021).

The State of Acute Malnutrition (2020) *The Family MUAC Approach*. Available at: **https://www.acutemalnutrition.org/en/Family-MUAC** (Accessed: 2 March 2021)

Tichenor, M. and Sridhar, D. (2017) 'Universal health coverage, health systems strengthening, and the World Bank.', *BMJ*, 358, p. j3347. doi: 10.1136/bmj.j3347.

Torlesse, H. and Le, M. (2020) 'South Asia and child wasting – unravelling the conundrum.', *Field Exchange, 63*, p. 7. Available at: **www.ennonline.net/fex/63/southasiachildwasting**

UNICEF (2020) *NutriDash*. Available at: **https://www.unicefnutridash.org/** (Accessed: 2 March 2021).

UNICEF Eastern and Southern Africa (2020) *Nutrition information in routine reporting systems UNICEF Eastern and Southern Africa: A Landscape Analysis for UNICEF's Eastern and Southern Africa Region*. Geneva: World Health Organization. Available at: **https://www.unicef.org/esa/reports/nutrition-information-routine-reporting-systems** (Accessed: 2 March 2021).

UNICEF Eastern and Southern Africa Regional Office (2020) *Nutrition Response during the COVID-19 Pandemic*. Available at: **https://www.unicef.org/esa/documents/nutrition-response-during-covid-19-pandemic** (Accessed: 2 March 2021).

UNICEF, WHO and World Bank (2020) *UNICEF/WHO/The World Bank Group joint child malnutrition estimates: levels and trends in child malnutrition: key findings of the 2020 edition*. Geneva: World Health Organization. Available at: **https://www.who.int/publications/i/item/jme-2020-edition**

USAID Advancing Nutrition (2020) *Using Digital Tools to Strengthen Nutrition Service Delivery: An Overview*. Arlington, VA: USAID Advancing Nutrition. Available at: **https://www.advancingnutrition.org/sites/default/files/2020-09/tagged_py2_deliverable_11b4_using_digital_tools.pdf**

Walker, P. (2016) *Ghana's 'Paradigm Shift' for CHWs | World Vision International*. Available at: **https://www.wvi.org/stories/health/ghanas-paradigm-shift-chws** (Accessed: 2 March 2021).

Wells, J. C. K. *et al*. (2019) 'Beyond wasted and stunted—a major shift to fight child undernutrition', *The Lancet Child and Adolescent Health*. Elsevier B.V., pp. 831–834. doi: 10.1016/S2352-4642(19)30244-5.

World Health Organization, World Food Programme, The United Nations System Standing Committee on Nutrition and United Nations Children's Fund (2007) *Community-based management of severe acute malnutrition : a joint statement by the World Health Organization, the World Food Programme, the United Nations System Standing Committee on Nutrition and the United Nations Children's Fund. Geneva: World Health Organization*. Available at: **https://apps.who.int/iris/handle/10665/44295**

World Health Organization (2007) *Everybody's Business: Strengthening Health Systems to Improve Health Outcomes*. Geneva: World Health Organization. Available at: **https://www.who.int/healthsystems/strategy/everybodys_business.pdf**

World Health Organization (2010) *Monitoring the Building Blocks of Health Systems: a Handbook of Indicators and Their Measurement Strategies*. Geneva: World Health Organization. Available at: **https://www.who.int/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf**

World Health Organization (2018) WHO guideline on health policy and system support to optimize community health worker programmes. Geneva: World Health Organization. Available at: **https://apps.who.int/iris/bitstream/handle/10665/275474/9789241550369-eng.pdf**

World Health Organization *et al*. (2020) *Global action plan on child wasting: a framework for action to accelerate progress in preventing and managing child wasting and the achievement of the Sustainable Development Goals*. Geneva: World Health Organization. Available at: **https://www.who.int/publications/m/item/global-action-plan-on-child-wasting-a-framework-for-action**

World Health Organization and United Nations Children's Fund (2018) The extension of the 2025 Maternal, Infant and Young Child nutrition targets to 2030. Geneva: World Health Organization. Available at: **https://www.who.int/nutrition/global-target-2025/discussion-paper-extension-targets-2030.pdf**

Young, H. (2020) Nutrition in Africa's drylands: a conceptual framework for addressing acute malnutrition. Boston. Available at: **https://fic.tufts.edu/publication-item/nutrition-in-africas-drylands-a-conceptual-framework-for-addressing-acute-malnutrition/**

Annex 1

Semi-structured questionnaire for key informant interviews

1. What does scaling-up treatment for severe wasting mean for you in your context (and your current role)?
2. What factors have enabled high-level 'buy-in' for severe wasting treatment within the health systems and other government/organisation leaders?
3. In your opinion, is there a demand for a context-specific and regionally evidenced approach to treatment of severe wasting? If yes, why and in what areas?
4. Are you trying to reach targets for severe wasting and if so, how do you communicate progress towards them? Are your targets aligned with international ones e.g. WHA?
5. Are the current human resources models and actors that you use to deliver treatment to wasted children fit for purpose? If not, can you describe the various issues?
6. What are the main challenges and opportunities for collaboration between nutrition decision makers and health systems decision makers to advance treatment of severe wasting?
7. What, in your experience, would a fully integrated severe wasting treatment programme cost in your context and what share of the domestic health budget is required?
8. What work has been done on reducing the cost of products and supplies for severe wasting in your context?
9. What is your take on some recent innovations/models that could help overcome barriers to access and participation, i.e. use of simplified approaches to treatment of wasting, family MUAC etc.?
10. Are there targets for treatment coverage in your area (geographical or programmatic), and what is required to achieve the coverage target in your context?
11. Have there been any lessons learned from the COVID-19 pandemic implementation that will support quality service delivery of severe wasting treatment in the future?
12. Are information systems efficient for wasting treatment in your context? Are there key facilitators and barriers to digital solutions? Can you describe any specific examples of digital solutions that have supported reliable, timely information for treatment scale up?
13. What examples in your present role can you share that demonstrate linking of prevention of undernutrition to severe wasting treatment or vice versa?
14. What would you like to see achieved in the next decade in terms of severe wasting prevention and treatment?
15. Any other comments or feedback?

Annex 2

List of organisations represented

Country and regional level roles	
1	Ministry of Health (MOH) (Nutrition), Pakistan
2	PRONAUT, Tanganyika Province, Democratic Republic of the Congo
3	UNICEF Middle East & North Africa Region (Health and Nutrition)
4	MOH (Nutrition), Marsabit County Kenya
5	Nutrition International, Kenya
6	Centre for Humanitarian Change, Kenya
7	UNICEF (Nutrition), Angola
8	Southern African Development Community region (Nutrition)
9	East, Central and Southern African Health Community (ECSA) non-communicable diseases, food security and nutrition programmes
10	Clinical Epidemiology Unit, Makerere University, Kampala, Uganda
Global roles and headquarter advisory roles	
11	The Eleanor Crook Foundation
12	Global Nutrition Cluster
13	No Wasted Lives
14	World Vision
15	Concern Worldwide
16	Hellen Keller

Interview with key informants covered a variety of job roles with the organisations, including:

- Directors
- Nutrition coordinators
- Nutrition specialists
- Health and Nutrition programme managers
- Food security programme managers
- Regional Advisors
- Academics and Researchers
- Nutrition Information Systems specialists
- Health surveillance experts
- Technical advisors

© WFP/Niger, Simon Pierre Diouf

ENN
2nd Floor, Marlborough House, 69 High Street,
Kidlington, Oxfordshire, OX5 2DN
Tel: +44 (0)1 865 372340
Email: office@ennonline.net
Charity registration no: 1115156. Company registration no: 4889844