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INTRODUCTION

For almost 40 years, Action Against Hunger has been at the forefront of the fight against hunger worldwide. Our organisation has an established reputation for evidence-based action, with a proven track record of providing high-quality technical and operational support, even in the most challenging contexts.

Research is critical to the organisation in assessing and improving the effectiveness, scalability, and sustainability of our actions; of learning how to respond better and faster to beneficiary needs and vulnerabilities, especially in times of crisis; and of leveraging evidence-based advocacy to produce the change we want to see in the world.

Action Against Hunger’s Research Strategy for 2016–2020 outlines three priority work streams for our organisation’s research activities. This focuses our expertise and capacity to address critical gaps in the evidence base where we expect to contribute to tangible improvements in policy and practice.

These research workstreams are:

1. **PREVENTION OF UNDERNUTRITION:** understanding and addressing the causes of hunger;

2. **TREATMENT OF UNDERNUTRITION:** managing and mitigating the consequences of undernutrition;

3. **EFFECTIVENESS OF HUMANITARIAN ASSISTANCE AND EMERGENCY RESPONSE:** encouraging preparedness, improving reactivity and a higher quality of response.

In 2017, Action Against Hunger published our first ever Research Review to provide an overview of the status of research conducted by our organisation. Not only did this report highlight the breadth of exciting research that we are leading globally but also its strong programmatic and operational links. Last year’s 2018 edition focused on research into the effectiveness of humanitarian assistance, highlighting what had and hadn’t worked, and helping us better understand how we can continue building on this evidence, and ultimately improve programme effectiveness.

Our research is designed as an integral part of our operations and with the explicit aim of generating evidence that will inform programme design and implementation. By focusing on learning and improvement via our research activities, we aim to increase our impact reaching higher numbers of vulnerable people with safer and more effective interventions than we could have done before.

In this year’s annual Research Review, we are bringing you updates on our global research activities in 2019 including trends over time, as well as casting a lens on the second work stream of our research strategy – on how we improve the treatment of undernutrition. Our aim is to highlight where and how Action Against Hunger is driving innovations in the treatment of undernutrition through our research efforts in this work stream, with examples of what we’ve done and what we’ve learned, particularly in those cases where our research results didn’t come out as we had expected.
WHAT YOU’LL FIND IN THIS REPORT:

- A FULL LIST OF ACTION AGAINST HUNGER RESEARCH ACTIVITIES IN 2019.
- AN OVERVIEW OF OUR GLOBAL RESEARCH ACTIVITIES IN 2019: what we did and where, our partners, and how we are tracking critical components of our research such as research uptake, partnerships, and capacity building.
- UPDATES ON THE RESEARCH WE REPORTED ON IN 2018: how some of our efforts progressed since the 2018 Research Review was published.
- THEMATIC DEEP-DIVE: analysis and case studies providing an in-depth look at innovative approaches under our Research Strategy workstream on treatment of acute malnutrition.
- RESOURCES AND CONTACTS: for our research work at Action Against Hunger.
- A FULL LIST OF ACTION AGAINST HUNGER RESEARCH PUBLICATIONS IN 2019.
As you read this 2019 Research Review, we’ve summarised some key findings emerging from our global portfolio of ongoing and recently completed research:

ONGOING RESEARCH: while much of our research is ongoing, there is already much to be learnt from the preliminary phases and emerging findings. In many cases, this can also inform future phases of research. For example:

1. In 2019, the SAM Photo Diagnosis App was tested for the first time in the field in Matam and Louga regions, Senegal. A total sample of 1635 children aged 6-59 months belonging to the four different nutritional status ranges established by WHO (SAM, MAM, risk and optimal) was registered both for their shape and anthropometric components, together with a health and family data survey. Complementarily, a survey on availability and usability of mobiles and Internet was carried out on 1186 community health workers. Preliminary results demonstrate that Geometric Morphometric methods are suitable tools for addressing shape variations due to acute malnutrition, since they allow quantification and visualization of significant differences among different nutritional status groups. Besides, a chatbot technology developed by WFP was satisfactorily integrated in our App and nutritional & health contents regarding CMAM national policies were tested at field. Although the lessons learned from this activity reflect the need to better tailor the content and interface of that tool to the target community, they also show the potential to strengthen CHW’s ability to provide holistic management of acute malnutrition at the community level.

2. The RELAPSE study is a prospective cohort study that aims to better understand issues related to relapse after successful treatment of SAM in a CMAM program. Across 4 contexts - Chad, Mali, Somalia, and South Sudan - Action Against Hunger will follow over 2,400 children (aged 6-59 months) for one-year after recovery from SAM to quantify relapse rates and identify potential risk factors for relapse. Action Against Hunger will also conduct mixed-methods process evaluations on each CMAM programme and costing analyses in order to better understand the programmatic and costing implications of relapse. This study is the first of its kind for Action Against Hunger, as it involves collaboration across four different headquarters offices as well as an additional four country offices.


COMPLETED RESEARCH: Eleven of our research projects came to completion in 2019. What did we learn?

1. The C-MAMI project sought to develop a better understanding of infants under six months suffering from uncomplicated acute malnutrition by screening and managing them in the community as recommended by the World Health Organisation and outlined in the C-MAMI (community management of at risk mothers and infants) tool. This approach has improved the understanding of health personnel about the care of malnourished children under six months without complications or at risk of malnutrition. It has proven that outpatient management of these cases through the C-MAMI tool can be successful and viable. Furthermore, the participation of Groupe Soutien Activités en Nutrition (GSAN) in the screening...
and referral of these children allowed the integration of this approach in the current Infant and Young Child Feeding (IYCF) practices and made it possible to set up breastfeeding counselling support for lactating women.

2. Towards Anticipatory Information Systems and Action”, supported by Action Against Hunger as part of the larger Constraints and Complexities of Information and Analysis project highlights the significant confusion that persists surrounding early warning information, both in terms of what it means and how to use it. Through case studies in East Africa, but with broader implications for early warning more globally, they found that that the link between early warning to early action is not as effective or as clear as it could be; conflict, which is a common driver of humanitarian crisis, is reflected poorly in early warning systems, if at all; political interests play a role in influencing outcomes of humanitarian analysis, including early warning; new technologies, such as remote sensing and computational modelling, bring new challenges and; the role and use of qualitative data in early warning systems is unclear. Based on these observations, the report provides 11 key recommendations, including taking a broader view of crisis and risk and improving collaboration between existing early warning initiatives, on what needs to be done and how to do things differently in the early warning space.

3. The FUSAM (Follow-Up of SAM children) project has run from 2013 to the end of 2019. The objective was to compare the impact of the integrated nutrition and psychosocial programme (NUTPSY group) to a stand-alone nutritional treatment of children with uncomplicated SAM (NUT group) and to non-SAM children. We found that the nutritional status and child development progress of children with SAM did not catch up with non-SAM children. However, some benefits in terms of child development were observed: child development scores were higher in the NUTPSY group compared to the NUT group, with the most notable differences observed at post-test and 5-month follow-up. The level of child stimulation at home was significantly higher in the NUTPSY group compared to the NUT group. These positive effects were observed to be a direct result of caregiver and child interactions in the home, rather than the presence of toys. Subsequently, it is worth combining a brief psychosocial support component to existing nutritional health services to promote positive parenting and enhance child development.
SUMMARY OF ACTION AGAINST HUNGER’S RESEARCH PORTFOLIO

Action Against Hunger continues to keep research as a critical component of our work in order to maximise impact for our beneficiaries in all contexts. The number of research projects that we conducted and the overall financial volume increased in 2019 compared to 2018. Our projects span our operational sectors and countries, where we collaborate with a variety of donors and partners to produce the results needed to deliver evidence-based interventions.

AN OVERVIEW

In 2019, Action Against Hunger reported 33 active research projects. Our research projects are overseen by our member offices who provide scientific leadership, coordination, technical, grant management and donor relationship support.

The increase in number of active research projects from 25 in 2018 is reflective of the natural ebb and flow of the research project cycle. One third (13) of active projects began in 2019, which is the same proportion of new projects initiated in 2018. Eleven research projects closed in 2019 and 22 were ongoing, with the majority (11 projects) expected to end in 2020.

The average project duration was 975 days (2.7 years). Typically, projects focusing on the treatment strategy axis tend to last longer (2.8 years) than on prevention (2.3 years) and humanitarian effectiveness (2.4 years). The longest project (FUSAM) has run since the beginning of 2013 and has finished at the end of 2019. The shortest project was 122 days long. Five projects were less than one year long, including four which started in 2019.

Figure 1: Active and new research projects 2016-19

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1 Targets set out in Action Against Hunger’s International Strategic Plan 2016-2020.

2 Previously known as headquarters. We have six members: Canada, France, India, Spain, the United Kingdom and the United States of America.

3 Follow-up of severely malnourished children: effectiveness of a combined nutrition psychosocial intervention on health and development in Nepal.
In 2019, Action Against Hunger had active research projects in 25 countries, same number as in 2018 and 26 countries in 2017 (see Figure 3). Of these countries, four did not have active research projects in 2018: Chad, Haiti, Ivory Coast and Spain. Most of the projects focused on one country, while 11 were multi-country. The most common countries for research were Senegal and Mali (5 projects each). The majority of our research projects (73% or 24 projects in 17 countries) were conducted in Africa. Of these, 20 projects were exclusive to Africa and four were multi-regional. Our research presence in Latin America doubled compared to 2018 with four projects in Colombia, Guatemala, and Haiti in 2019. The number of projects did not change in Asia (4 projects in Nepal and Bangladesh), the Middle East (2 projects in Iraq), and Europe (1 project in Spain).

Our research projects incorporate a range of programmatic areas. In 2019, three quarters (73%) were multi-sectoral, 82 per cent included a nutrition component, and 55 per cent had a health component. The less frequent thematic areas were food security and livelihoods (12% - 4 projects) and disaster risk reduction and disaster risk management (6% - 2 projects). Research projects also incorporated mental health and care practices (27% of projects) and water, sanitation and hygiene (15%). The majority (67%) of single-sector projects were nutrition focused, while all 18 projects with a health component were multi-sectoral.

**FINANCING**

We monitor the multi-year and annual budgets of our research projects where final financial spend for the year is not always available. With an increase in the number of active research projects from 2018 to 2019 from 25 to 33, the total value of ongoing research projects increased by €1.3 million from €12.9 million in 2018 to €14.2 million in 2019. The value of the research portfolio continues to increase since 2017 when it was €12.1 million. The median total multi-year value of our research projects that were conducted in 2019 was €51,000, down from €187,000 in 2018. 54 per cent of research projects have a total multi-year budget of less than €100,000. The average total multi-year value was €430,000 in 2019, a decrease from €536,000 in 2018, but still an increase from €232,000 in 2017. Projects ranged from a total value of €0 to €3.6 million. Our largest research projects in 2019 included MERIAM and RELAPSE. The total multi-year value of the DFID-funded MERIAM project is €3.6 million, of which nearly €685,000 were spent for this year. The RELAPSE project started in 2019 and has a total multi-year value of €2.0 million. Our research projects incorporate mental health and care practices (27% of projects) and water, sanitation and hygiene (15%). The majority (67%) of single-sector projects were nutrition focused, while all 18 projects with a health component were multi-sectoral.

4 For the updated figures on our financial spending on research, please see the Global Performance Report 2019.
5 Some research projects are not progressed using capacity and data, so do not require additional budget.
6 Modelling early risk indicators to anticipate malnutrition in Kenya, Niger, Nigeria, Somalia and Uganda.
7 Identification of the prevalence of and risk factors for relapse of acute malnutrition in Chad, Mali, Somalia, and South Sudan.

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**Figure 2: Multi-annual value of research projects**

<table>
<thead>
<tr>
<th>Year</th>
<th>€0-200k</th>
<th>€200k-400k</th>
<th>€400k-600k</th>
<th>€600k-800k</th>
<th>€800k-1M</th>
<th>€1M-1.2M</th>
<th>€1.2M-1.4M</th>
<th>€1.4M-1.6M</th>
<th>€1.6M-2M</th>
<th>€2M+</th>
<th>Total</th>
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<tbody>
<tr>
<td>2018</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>28</td>
</tr>
<tr>
<td>2019</td>
<td>20</td>
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<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>31</td>
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Figure 3: Global distribution of our research projects, and the sectors in which we work.
In 2019, Action Against Hunger collaborated with 58 partners on our research projects, nine more than in 2018, and 13 more than in 2017.

We continue to develop partnerships globally to benefit from the expertise of a diverse range of organisations, and work collaboratively in order to deliver high-quality research projects.

Our most common partner types were academic/research institutions, who we collaborated with on 88 per cent of projects. We also partnered with a range of public partners (for 42 per cent of projects) and private institutions (for 24 per cent of projects), United Nations agencies (21 per cent of projects), and non-governmental organisations (9 per cent of projects).

Thirty-one (53%) of our 58 partners were internationally based while 27 (47%) were based in country. Action Against Hunger also supported 13 graduate degrees across 12 research projects; this was up from nine degrees in 2018.

The 33 research projects in 2019 had a total of 21 donors, up from 17 donors in 2018 and 10 donors in 2017. Four of these funding sources were internal, including the Action Against Hunger Foundation (9 projects), Action Against Hunger France (7 projects), Action Against Hunger Spain (3 projects) and Action Against Hunger US (1 project). We had 17 external donors across our 33 projects running in 2019 and 51 per cent (18) of our research projects were co-funded by multiple donors. The Humanitarian Innovation Fund (Elrha, funding five projects), the Office of Foreign Disaster Assistance of the United States Agency for International Development (OFDA/USAID, funding four projects), and European Commission Humanitarian Aid (ECHO, funding four projects) were our most frequent external donors.

8 The Action Against Hunger Foundation has specific targets and distributes finances in order to reach these targets. Action Against Hunger France and Spain use unrestricted funds to act as funding sources for internal research projects.
• POST CODE LOTTERY
• SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY (SIDA)
• UNITED NATIONS REFUGEE AGENCY (UNHCR)
• WORLD FOOD PROGRAMME (WFP)

OUR PARTNERS

IN-COUNTRY PARTNERS
• AFRICAN POPULATION AND HEALTH RESEARCH CENTRE (APHRC), KENYA
• ASIAN UNIVERSITY FOR WOMEN (AUW), BANGLADESH
• ASSOCIATION AIDE POUR GAO (AAG), MALI
• BUREAU NATIONAL DE GESTION DES RISQUES ET DES CATASTROPHES (BGRNC), MADAGASCAR
• CENTRE DE RECHERCHE MEDICAL ET SANITAIRE (CERMES), NIGER
• REPRODUCTIVE HEALTH RESEARCH UNIT (CRESAR-CI), IVORY COAST
• ENLACE HISPANO AMERICANO DE SALUD (EHAS), COLOMBIA
• INSTITUT DE RECHERCHE EN SCIENCES DE LA SANTÉ (IRSS), BURKINA FASO
• INSTITUT FONDAMENTAL D’AFRIQUE NOIRE (IFAN), SENEGAL
• INSTITUT NATIONAL DE RECHERCHE ET SANTÉ PUBLIQUE (INRSP), MAURITANIA
• INSTITUT PÉDIATRIE SOCIAL (IPS), SENEGAL
• INSTITUT PASTEUR DE DAKAR (IPD), SENEGAL

INTERNATIONAL PARTNERS
• INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASE RESEARCH, BANGLADESH (ICDDR,B)
• LABORATOIRE DE RECHERCHE SUR LES TRANSFORMATIONS ECONOMIQUES ET SOCIALES (LARTES), SENEGAL
• MINISTRY OF HEALTH AND POPULATION, NEPAL
• MINISTRY OF HEALTH AND SOCIAL ACTION, SENEGAL
• MINISTRY OF HEALTH, MALI
• REGIONAL HYGIENE BRIGADES, SENEGAL
• THE UNIT FOR THE FIGHT AGAINST MALNUTRITION (CLM), SENEGAL
• UNIVERSIDAD DEL VALLE COLUMBIA
• UNIVERSITY OF ABOMEY-CALAVI, BENIN
• UNIVERSITY OF CHEIKH-ANTA-DIOP, SENEGAL
• UNIVERSITY OF NOUAKCHOTT, MAURITANIA
• UNIVERSITY OF ANTANANARIVO, MADAGASCAR
• UNIVERSITY OF BANGUI, CENTRAL AFRICAN REPUBLIC
• UNIVERSITY OF OUAGADOUGOU, BURKINA FASO
• UNIVERSITY OF TOLIARA, MADAGASCAR

INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASE RESEARCH, BANGLADESH (ICDDR,B)
• LABORATOIRE DE RECHERCHE SUR LES TRANSFORMATIONS ECONOMIQUES ET SOCIALES (LARTES), SENEGAL
• MINISTRY OF HEALTH AND POPULATION, NEPAL
• MINISTRY OF HEALTH AND SOCIAL ACTION, SENEGAL
• MINISTRY OF HEALTH, MALI
• REGIONAL HYGIENE BRIGADES, SENEGAL
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• UNIVERSITY OF ABOMEY-CALAVI, BENIN
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• UNIVERSITY OF ANTANANARIVO, MADAGASCAR
• UNIVERSITY OF BANGUI, CENTRAL AFRICAN REPUBLIC
• UNIVERSITY OF OUAGADOUGOU, BURKINA FASO
• UNIVERSITY OF TOLIARA, MADAGASCAR

AGROPARISTECH
• CENTRE FOR AFFORDABLE WATER AND SANITATION TECHNOLOGY (CAWST)
• CENTRE FOR DISEASE CONTROL (CDC)
• CENTRE FOR HUMANITARIAN CHANGE (CHC)
• ENN
• EPINUT
• GHENT UNIVERSITY
• GRADUATE INSTITUTE OF GENEVA
We aim to ensure that all research goes through the appropriate channels in order to ensure quality control and a strong consideration of context. As part of this process we encourage all relevant research projects to, where applicable, register on an online trial registry, obtain all relevant ethical approvals, and publish final protocols. See Figure 4 for the percentage of our projects that complied with these. In 2019, 33 percent of our projects had a trial registry, 12 percent had a published protocol, and 64 percent needed to go through ethical approval from review boards and received it. Diverse variables dictate whether research needs to be registered, have published protocols, etc. The wide variability in research requirements across our portfolio limits meaningful comparison of trends across years.

**RESEARCH DESIGN AND SET-UP**

We aim to ensure that all research goes through the appropriate channels in order to ensure quality control and a strong consideration of context. As part of this process we encourage all relevant research projects to, where applicable, register on an online trial registry, obtain all relevant ethical approvals, and publish final protocols. See Figure 4 for the percentage of our projects that complied with these. In 2019, 33 percent of our projects had a trial registry, 12 percent had a published protocol, and 64 percent needed to go through ethical approval from review boards and received it. Diverse variables dictate whether research needs to be registered, have published protocols, etc. The wide variability in research requirements across our portfolio limits meaningful comparison of trends across years.

**Figure 4: Proportion of research projects with a trial registry, published protocol and ethical approval**

- **Trial Registry:** 33%
- **Published Protocol:** 12%
- **Ethical Approval:** 64%

- JOHNS HOPKINS UNIVERSITY (JHU)
- INTERNATIONAL RESCUE COMMITTEE (IRC)
- LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (LSHTM)
- MASIMO
- MCGILL UNIVERSITY
- SAVE THE CHILDREN
- TUFTS UNIVERSITY
- TYRIS SOFTWARE
- UNITED NATIONS CHILDREN’S FUND (UNICEF)
- UNIVERSIDAD COMPLUTENSE DE MADRID
- UNIVERSITÉ D’AVIGNON
- UNIVERSITÉ LIBRE DE BRUXELLES
- UNIVERSITÉ LOUVAIN
- UNIVERSITÉ LYON II
- UNIVERSITY COLLEGE LONDON (UCL)
- UNIVERSITY MEDICAL CENTRE
- UNIVERSITY OF BERGEN
- UNIVERSITY OF COPENHAGEN
- UNIVERSITY OF MARYLAND
- UNIVERSITY OF MINNESOTA
- UNIVERSITY OF VICTORIA
- UNIVERSITY OF WORCESTER
- WORLD FOOD PROGRAMME (WFP)
RESEARCH UPTAKE AND PUBLICATION

Research uptake remains as a core element of Action Against Hunger’s International Strategic Plan 2016-2020 which includes a target of 90 per cent of research projects with a comprehensive and resourced uptake strategy. Last year we saw positive trends towards the achievement of this target, but we are still behind.

In 2019, 23 research projects (70 per cent) developed an uptake strategy, showing a slight decrease from 2018 when it was 72 per cent but up from 60 per cent in 2017. Of these 23 strategies, 8 (24 per cent) had funds secured to develop them. In total 30 per cent of our research projects (10 projects) secured resources for their uptake strategy. Action Against Hunger is committed to generating evidence that contributes to changes in policy and practice, and well-designed and resourced research uptake strategies are critical to achieve that. We have not yet achieved the strategic target and it must remain an organisational priority to ensure we proactively include this in all proposals, and advocate and secure funding for uptake activities, which remains a significant challenge.

In 2019, we produced 19 publications linked to our research projects. Six of these were articles published in peer-reviewed journals, and all of these journals were open access. This is important because even though publishing in open access journals is often more costly, it means our research is widely available and accessible especially to target audiences in policy and practice. In addition to articles, research teams produced 10 posters that were presented at a variety of conferences. Two of these posters were presented at more than one conference. Alongside these more traditional mediums, our research teams endeavour to reach wider and wider audiences by exploring more accessible mediums like blogs and social media. In 2019, 2 blogs were published.

See page 4 for a list of the organisation’s research projects and Annex 1 for a list of our publications in 2019.
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<th>PROJECT</th>
<th>COUNTRY</th>
<th>SECTOR</th>
<th>WORKSTREAM</th>
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<td>Agriculture surveillance in Niger. <em>(Spain)</em></td>
<td>NIGER</td>
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<tr>
<td>BFS+: Baby Friendly Spaces+ <em>(France)</em></td>
<td>ETHIOPIA</td>
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<td>Care Groups - potential of an at scale face-to-face behaviour: Results of an impact evaluation in North-eastern Nigeria. <em>(France)</em></td>
<td>NIGER</td>
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<td>Cash/Fresh food vouchers (FFV). <em>(Spain)</em></td>
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<td>C-MAMI: Testing the C-MAMI tool for nutritionally vulnerable mothers and infants. <em>(Spain)</em></td>
<td>MALI</td>
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<tr>
<td>C-PROJECT – Phase 1: Increased coverage of management of severe acute malnutrition through the support of community health workers in Mauritania and Niger. <em>(Spain)</em></td>
<td>MAURITANIA, NIGER</td>
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<td>C-PROJECT – Phase 2: The effect of integrating the management of severe acute malnutrition without complications into essential community health care in the Kita, Kayes and Bafoulaɓe health districts in Mali. <em>(Spain)</em></td>
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<td>Central America youth in action: Developing a counselling system/model to improve maternal and child health in communities. <em>(Spain)</em></td>
<td>GUATEMALA</td>
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<td>CHECK: Confirm real-life health benefits and effectiveness of community management of acute malnutrition programmes through improved knowledge. <em>(France)</em></td>
<td>MULTI-COUNTRY</td>
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<td>Comparative study on the effectiveness of two treatment interventions for trauma. <em>(France)</em></td>
<td>CENTRAL AFRICAN REPUBLIC, IRAQ</td>
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<td>Development of a tool to identify the causes of anaemia using the methodology Spring. <em>(Spain)</em></td>
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<td>women or who have given birth recently in Abidjan. (France)</td>
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<td>acute malnutrition diagnosis criteria. (France)</td>
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<td>» Evaluation of the changes in nutrition and health within the</td>
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<td>employability itinerary – Phase 1 (Monte Madrid). (Spain)</td>
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<tr>
<td>» <strong>FUSAM</strong>: Follow-up of severely malnourished children - Effectiveness</td>
<td>NEPAL</td>
<td></td>
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<td>of a combined nutrition psychosocial intervention on health and</td>
<td>BURKINA FASO</td>
<td></td>
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<tr>
<td>development. (France)</td>
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<td>» Health gardens and income-generating activities. (France)</td>
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<tr>
<td>» <strong>HydroNut</strong>: Investigation of the relationship between hydro-climatic</td>
<td>MADAGASCAR</td>
<td></td>
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<tr>
<td>data and nutritional status to improve the early warning system</td>
<td>KENYA</td>
<td></td>
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<tr>
<td>(EWS) in Southern Madagascar. (France)</td>
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<tr>
<td>» <strong>ICCM</strong>: Integrating treatment of severe acute malnutrition into</td>
<td>MALI, SENEGAL</td>
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<td>the integrated case management package in Kenya study. (USA)</td>
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<tr>
<td>» <strong>ICCM+</strong>: Effectiveness, cost-effectiveness, and coverage of severe</td>
<td>BURKINA FASO,</td>
<td></td>
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<td>acute malnutrition treatment delivered by community health workers</td>
<td>MADAGASCAR,</td>
<td></td>
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<td>in Mali and Senegal with a modified protocol. (Spain)</td>
<td>HAITI</td>
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<tr>
<td>» <strong>LINK NCA</strong>: Link Nutrition Causal Analysis - a meta-analysis.</td>
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<td>(France)</td>
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<tr>
<td>» <strong>MALINEA</strong>: Malnutrition and infant infections in Africa. (Spain)</td>
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<tr>
<td>PROJECT</td>
<td>COUNTRY</td>
<td>SECTOR</td>
<td>WORKSTREAM</td>
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<tr>
<td>MANGO: Modelling an alternative nutrition protocol generalisable to outpatient care. (Spain)</td>
<td>BURKINA FASO</td>
<td>NUTRITION</td>
<td>RUTF</td>
</tr>
<tr>
<td>MERIAM: Modelling early risk indicators to anticipate malnutrition. (USA)</td>
<td>GLOBAL; KENYA, MALI, NIGERIA, SOMALIA, UGANDA</td>
<td>WATER, SANITATION &amp; HYGIENE</td>
<td>RUTF</td>
</tr>
<tr>
<td>Opti’Diag: Biomedical investigations for optimised diagnosis and monitoring of severe acute malnutrition. (France)</td>
<td>BANGLADESH, BURKINA FASO, LIBERIA</td>
<td>HEALTH</td>
<td>RUTF</td>
</tr>
<tr>
<td>Rates and causal factors of post-treatment relapse in severe acute malnutrition children. (France)</td>
<td>NEPAL</td>
<td>MENTAL HEALTH &amp; CARE PRACTICES</td>
<td>RUTF</td>
</tr>
<tr>
<td>Relapse: Identification of the prevalence of and risk factors for relapse of acute malnutrition. (USA)</td>
<td>CHAD, MALI, SOMALIA, SOUTH SUDAN</td>
<td>FOOD SECURITY &amp; LIVELIHOODS</td>
<td>RUTF</td>
</tr>
<tr>
<td>Severe acute malnutrition mobile photo diagnosis. Chatbot photo diagnosis platform. (Spain)</td>
<td>SENEGAL</td>
<td>TREATMENT OF UNDERNUTRITION</td>
<td>RUTF</td>
</tr>
<tr>
<td>Severe acute malnutrition mobile photo diagnosis: Integrating chatbot and photo diagnosis app for rapid diagnosis and management of acute malnutrition. (Spain)</td>
<td>SENEGAL</td>
<td>PREVENTION OF UNDERNUTRITION</td>
<td>RUTF</td>
</tr>
<tr>
<td>Social representations of severe acute malnutrition and health-seeking behaviours. (France)</td>
<td>NEPAL</td>
<td>EFFECTIVENESS OF HUMANITARIAN ASSISTANCE</td>
<td>RUTF</td>
</tr>
<tr>
<td>TISA: The effect of adding household water treatment and hygiene promotion to standard outpatient therapeutic treatment of severe acute malnutrition in Matam, Senegal. (Spain) Cost-effectiveness study managed by France.</td>
<td>SENEGAL</td>
<td>NUTRITION</td>
<td>RUTF</td>
</tr>
<tr>
<td>Towards anticipatory information systems and action. (USA)</td>
<td>EAST AFRICA, KENYA</td>
<td>WATER, SANITATION &amp; HYGIENE</td>
<td>RUTF</td>
</tr>
<tr>
<td>Validation of a non-invasive system for measuring haemoglobin in population at risk of anaemia. (Spain)</td>
<td>COLOMBIA</td>
<td>HEALTH</td>
<td>RUTF</td>
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</tbody>
</table>
This year’s Research Review is focusing on our second strategic priority work stream, which is research into the treatment of undernutrition, including where we have tested new innovations and modifications to approaches and platforms.

While this work stream includes all forms of undernutrition, the majority of our research has focused on acute malnutrition. The close link between both moderate and severe acute malnutrition (SAM) and child mortality makes treatment at-scale an essential part of global efforts to reduce the prevalence and incidence of undernutrition, as well as to achieve Sustainable Development Goal child survival targets.

Action Against Hunger is committed to improving the effectiveness and cost-effectiveness of treatment of undernutrition through building evidence through our research efforts and sharing our knowledge and expertise with the world.

Practitioners working on improving treatment of acute malnutrition are constantly exploring new ideas and approaches to address bottlenecks associated with the supply, demand and quality of services. It is clear that the application of a “one-size-fits-all” approach is not appropriate to address these barriers across contexts. Efforts should focus instead on identifying how the treatment component can be adapted to reflect the context-specific opportunities and challenges of each health system.

In total, our portfolio contained 19 research projects focused on the treatment of undernutrition in 2019 (see Figure 5), spanning the full range of operational sectors and across a range of contexts. These projects cost more on average when compared to the prevention of undernutrition and effectiveness of humanitarian assistance work streams. These higher research costs could be reflective of longer duration of projects focusing on the treatment strategy axis tend (2.8 years).

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Figure 6: Venn diagram showing the distribution of projects across our three research strategic workstreams, the average multi-year value for projects in each workstream (Euro), and the distribution of projects by sector per workstream.
CASE STUDIES

This year we highlight three of our research projects on treatment of acute undernutrition. The following case studies showcase some of our research in this area, highlighting what has and hasn't worked, and helping us to better understand how we can continue to build on this evidence, and ultimately managing and mitigating the consequences of undernutrition.

Pilar Charle Cuellar
Health and Nutrition/ iCCM Coordinator, Spain
pcharle@accioncontraelhambre.org

CASE STUDY 1

Our first case study highlights Action Against Hunger’s efforts to test the integration of treatment of acute malnutrition into the integrated community case management (iCCM) platform through a series of operational research studies across multiple countries and contexts. This exciting work has been guided by a global strategy and a phased approach to move from small proof-of-concept pilots to delivery at scale across multiple countries.

ONGOING PROJECT: JULY 2019 – JULY 2022

SCALING UP SEVERE ACUTE MALNUTRITION TREATMENT WITH COMMUNITY HEALTH WORKERS: THERE IS NO TURNING BACK

BACKGROUND:

Action Against Hunger’s global strategies include a focus on increasing the coverage of treatment of severe acute malnutrition (SAM), with the aim to reach 60 per cent coverage by 2020. Research is essential to generate the evidence needed to strengthen service delivery models and approaches to achieve this coverage.

More than 70 per cent of children with severe acute malnutrition who are treated are cured, however less than 1 out of 3 children affected are able to access the treatment they need. Families in vulnerable communities face many challenges to accessing treatment, including long distances to health facilities and cost of services, which consequently limits optimal follow-up care. High coverage of SAM treatment (>90%) has the potential to be the most impactful and cost-effective nutrition intervention (Bhutta et al., 2013), though this level of coverage is rarely reached.

Integrated community case management (iCCM) is an effective strategy to achieve high coverage and quality care for sick children\(^2\). Community health workers (CHWs) are trained to both diagnose and treat several childhood illnesses during home visits in the communities in which they work, eliminating the need for the child to be taken to a health facility. In current iCCM programming however, acute malnutrition is still only offered at facility level, requiring that children identified as needing treatment be brought to the health centre on a weekly basis.

However, by including the management of acute malnutrition by CHWs as part of the iCCM package, these barriers could potentially be overcome. Moreover, this model would align with a number of different efforts at a global level that emphasise integration of nutrition and health platforms, including the Sustainable Development Goals, Universal Health Coverage, the No Wasted Lives Coalition, and the UN Global Action Plan for Wasting.

To support this Action Against Hunger has led efforts to test the integration of treatment of acute malnutrition into the iCCM platform through a series of operational research studies across multiple countries and contexts including Mali, Mauritania, Niger, Pakistan, and Senegal. Through a phased approach in each country, our teams have first proved the concept effective before moving to the next phase to generate evidence to support operational scale-up.

**OVERVIEW:**

The aim of Action Against Hunger’s work on ‘iCCM+’ is to support the generation and use of evidence to support scale-up of effective approaches to integrate management of acute malnutrition into the iCCM platforms.

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\(^2\) iCCM is supported by WHO/UNICEF. Joint statement on iCCM: An equity-focused strategy to improve access to essential treatment services for children.
**KEY FINDINGS:**

**Proof-of-Concept (2014-2016)**

Between 2014 and 2016, Action Against Hunger was funded by the innocent foundation to conduct two proof-of-concept pilot studies in Mali and Pakistan, working with the Institute National de Recherche et Santé Publique (INRSP), the National Nutrition Direction of the Ministry of Health, and Bamako University in Mali and the Ministry of Health and Aga Kan University in Pakistan. These studies tested the effectiveness, cost-effectiveness and quality of care delivered by CHWs in Mali and Lady Health Workers (LHWs) in Pakistan to diagnose and treat children with SAM outside health facilities.

In Mali, a total of 425 children under five years of age were treated for SAM by 19 trained CHWs. Almost 95 per cent of those children were cured, with only 4.5 per cent defaulters and 0.5 per cent deaths. The innovative model also resulted in an increase in treatment coverage from 43.9 per cent to 86.7 per cent in Mali and was found to be cost-effective compared to the standard approach. In Pakistan, LHWs reached sphere standards with a cure rate of 76 per cent, default rate of 3.8 per cent and death rate of 0.2 per cent. In both countries, the study demonstrated that this approach resulted in a reduction of default rates, high cure rates, higher quality of care and lower cost for families and the community.

**Transition to Scale (2017-2019)**

The success of the proof-of-concept in Mali has prompted Action Against Hunger to scale-up the iCCM approach in Mali. In Mali, with the support of the Government of Mali and the innocent foundation, the approach has been expanded to 120 health facilities, working with 169 CHWs to test different levels of monitoring and supervision. Over 1,200 children have been treated to date. This has directly informed the Government of Mali’s national policy and future planning for iCCM and SAM treatment.

In addition, new pilots supported by the US Office of Foreign Disaster Assistance (OFDA) were developed during the last two years in two countries and contexts with high prevalence of SAM (including Niger and Mauritania) to assess whether this methodology could be adopted globally. Pilots were conducted in Niger with Centre de Recherche Médicale et Sanitaire (CERMES) Niamey and Nutrition Direction of the Ministry of Health, and in Mauritania with the Nouakchott University and the Nutrition Direction of the Ministry of Health.

The three new studies showed similar results:

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>CURE RATE</th>
<th>DEFAULT RATE</th>
<th>DEATH RATE</th>
<th>TRANSFER RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMBINED (3 COUNTRIES)</td>
<td>80.1%</td>
<td>5.2%</td>
<td>0.2%</td>
<td>13.7%</td>
</tr>
<tr>
<td>MALI</td>
<td>79.2%</td>
<td>6.3%</td>
<td>0.2%</td>
<td>14.3%</td>
</tr>
<tr>
<td>NIGER</td>
<td>84.3%</td>
<td>7.8%</td>
<td>0.5%</td>
<td>7.4%</td>
</tr>
<tr>
<td>MAURITANIA</td>
<td>76.9%</td>
<td>2.6%</td>
<td>0.2%</td>
<td>20.5%</td>
</tr>
</tbody>
</table>

11 Treatment of severe acute malnutrition delivered by Community Health Workers in Niger
Two other pilots are ongoing in emergency contexts in Northern Mali (with the same stakeholders) and Senegal with the Health Direction of the Ministry of Health, Laboratoire de Recherche sur la transformation économique et sociale (LARTES) and Institut de Pédiatrie Sociale (IPS) supported by ELRHA (2019-2021)\textsuperscript{12}. The objective is to evaluate the effectiveness, cost-effectiveness and coverage of CHWs, using a modified approach to treat acute malnutrition in humanitarian contexts.

**KEY PUBLICATIONS AND UPTAKE:**

Results of the initial research in Mali and Pakistan, as well as preliminary results from the other studies, have been published in peer-reviewed journals (see key documents) and presented at global conferences including:


- Grey Literature: Management of severe acute malnutrition by Community Health Workers. Action against Hunger results (2019)\textsuperscript{13}

- Peer review: Two new peer reviews during the last two years, adding to the previous five, already mentioned in the key funding section:

  - Early admissions with CHWs in Mali (2020)\textsuperscript{14}: The addition of SAM treatment into the curative tasks provided closer to the families by the CHWs, can result in a reduction in the severity at admission and fewer absences and defaults during the treatment compared to standard CMAM care provided at health facilities generally located further away.

  - CHWs review of operational experiences (2019)\textsuperscript{15}: As many as 60% of children SAM do not receive the treatment they need. Distance, weekly follow-up visits, and transportation-related costs have been reported as key barriers to accessing treatment for SAM at health facilities. CHWs, with adequate training and supervision, can deliver high-quality treatment for SAM at community level. Scaling-up management of SAM through CHWs requires that key issues regarding training, supervision, motivation, and supply chain be adequately considered in the design of such services.

Further publications and presentations of findings from Mali, Niger, Mauritania, and Senegal are expected in 2020 – 2022.

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\textsuperscript{12} Elrha. ‘Effectiveness, Cost-Effectiveness, and Coverage of Severe Acute Malnutrition (SAM) Treatment Delivered by Community Health Workers (CHWs) in Mali and Senegal’. Accessed 6 March 2020.

\textsuperscript{13} Charle-Cuellar, Pilar et al. ‘Management of Severe Acute Malnutrition by Community Health Workers: Early Results of Action Against Hunger Research’. Field Exchange Issue 60, 1 July 2019, 61.


EVIDENCE GAPS AND FUTURE RESEARCH:

The ultimate goal of this research is to change policies for the treatment of acute malnutrition at the country level, and to contribute to global policies and operational guidance that will allow CHWs to diagnose and treat acute malnutrition without complications in the community as part of the iCCM package.

This work has identified gaps that need to be addressed in order to scale up this innovative treatment approach. In 2020, further research will be conducted to assess the following outstanding questions:

1. Can CHWs increase treatment coverage using a combined treatment protocol for moderate and severe acute malnutrition in a humanitarian context?

2. Does treatment of SAM by CHWs decrease the number of complicated cases of SAM at a hospital-level?

3. How can test remote training with CHWs with mHealth affect performance indicators for SAM treatment?
BACKGROUND:
The MANGO trial was designed in 2014 after a successful field experience in 2009 in Myanmar of using a reduced Ready to Use Therapeutic Food (RUTF) dosage to treat children aged 6 to 59 months suffering from Severe Acute Malnutrition (SAM) (James & al 2015). Reduction of RUTF to treat one child with SAM may be as effective as standard RUTF dose and if so, it would be more cost-effective. If this is proven, more children with SAM could be treated with the same resources. The MANGO acronym stands for Modelling an Alternative Nutrition protocol Generalisable to Outpatient care.

OVERVIEW:
This was an individually randomised controlled trial testing the non-inferiority of a reduced RUTF dose in the management of uncomplicated SAM among children aged 6 to 59 months, compared with a standard dose. It aimed to answer first the following question: CAN A REDUCED RUTF DOSE RESULT IN SIMILAR WEIGHT GAIN VELOCITY AND RECOVERY RATE AS A STANDARD RUTF DOSE DURING OUTPATIENT TREATMENT OF SAM?

Secondary outcomes were body composition, vitamin A and iron status, food and nutrient intake and dietary diversity, perceptions and use of RUTF at home.

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Sachets/week</th>
<th>Sachets/week</th>
<th>Sachets/week</th>
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</thead>
<tbody>
<tr>
<td>3.0-3.4</td>
<td>8</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>3.5-4.9</td>
<td>10</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>5.0-6.9</td>
<td>15</td>
<td>15</td>
<td>7</td>
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<tr>
<td>7.0-9.9</td>
<td>20</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>10.14.9</td>
<td>30</td>
<td>30</td>
<td>14</td>
</tr>
</tbody>
</table>

QUICK FACTS:
The MANGO study has demonstrated that the reduction of RUTF to treat one child with SAM may be as effective as a standard RUTF dose but questions for vulnerable groups remain. This means that treatment with a reduced dosage of RUTF could be more cost-effective and more children with SAM could be treated with the same resources.
The study is registered as a clinical trial on IRSCTN [here](#). It received ethical approval from the Burkina Faso national Ethical Committee in December 2015 and from the Direction of Pharmacy, Drugs and Laboratories in September 2016.

Eligible children were aged 6 to 59 months, suffering from SAM based on Weight for Height index <-3 z-score and/or a Mid Upper Arm Circumference (MUAC) <115 mm, presenting no medical complications, having successfully passed an appetite test. Children were included at 10 health centres in the rural district of Fada N’Gourma, East of Burkina Faso.

**KEY FINDINGS:**

In total 801 SAM children were enrolled from October 2016 until July 2018. The main outcome of weight gain velocity was not different between study groups with a mean of 3.4 g/kg/d in both arms confirming non-inferiority. The length of stay was not different between groups with a median of 56 days.

No differences were found in recovery (53% and 55%), death (0.3% and 0.3%), referral (19% and 20%), defaulter (12% and 9%), non-response (13% and 13%) and relapse (2% and 2%) rates between the two groups.

However, height gain velocity was a bit slower in children who received the reduced dose, in particular children under 12 months.

Reduced RUTF dose is as effective in inducing Fat Free Mass (FFM) growth during recovery as a standard dose and, on the other hand, receiving more RUTF does not lead to more Fat Mass (FM) gain. Children were still deficient in fat mass at recovery when compared to community controls.

Vitamin A and iron status of children was similar after treatment in reduced RUTF dose and standard dose groups. Only haemoglobin seemed slightly lower at recovery among reduced dose group. Overall, SAM treatment does not allow for a full recovery of a normal vitamin A and iron status.

Reducing the RUTF dose shows globally similar response to treatment as a standard dose except for linear growth in young children. SAM treatment using RUTF appears to enable only a partial recovery of fat mass and vitamin A and iron status. Treatment strategies need careful reconsideration to achieve anthropometric and physiological recovery.

Before any programmatic scale up, the effects of the reduced dose on treatment outcomes should be evaluated in a routine programme and in a food insecure context.

**PUTTING EVIDENCE INTO ACTION:**

More results from the trial will emerge in 2020 on the food and nutrient intake of children during SAM treatment and when receiving a reduced dose. Do family foods complement reduced RUTF to attain similar energy intake in both groups? What are the effects of reduced dose on breastfeeding and complementary feeding indicators including dietary diversity? One possible result could be that family foods complement RUTF importantly when the dose is reduced. As this trial happened in a context of rather food security, it would need to demonstrate its efficacy in emergency contexts when food insecurity is prevalent.

Another piece of result coming up in 2020 will be the cost minimisation of using a reduced dose of RUTF among children treated for SAM. How much saving does it represent and what is the average cost per child treated using this reduced dose?

Nutrition and Health teams of Action Against Hunger will seek to pilot the reduced dose in different contexts and SAM treatment programmes to evaluate its benefits and potential limits in routine practice.

Lessons learnt from the trial are being built for publication, one of which is already out on the MANGO page of Action Against Hunger’s website concerning the potential of Bioelectrical Impedance Analysis.
for assessing physiological progression to recovery and potential risk of SAM disease for Non Communicable Diseases at a later age.

Main results from the trial were presented at the Evidence to Action event hosted by Action Against Hunger in London in June 2019 gathering an invited panel of academics and donors around the innovations in Community-based Management of Acute Malnutrition (CMAM). The international community in emergency nutrition programmes gathered at the Global Nutrition Cluster in July 2019 benefitted of a poster on main MANGO trial results. Some results have been shared with scientific audiences as well as policy makers (mostly Ministers of Health and Nutrition Directors) at Federation of African Nutrition Societies (FANUS) conference in Rwanda in August 2019, and at R4NUT conference in Paris suburb in November 2019 where INGOs, donors, academics and policy makers discussed the Continuum of Prevention and Treatment of undernutrition.

Three peer-reviewed publications have been made available to date, including:

- **The main effectiveness results**
- **Results on vitamin A and iron status**
- **Body composition during and following treatment (2020)**

Main results from the trial have already informed the UN agencies (including WHO) review of CMAM innovations in 2019, and will feed the Global Action Plan (GAP) on Wasting in 2020. This international UN led plan will bring recommendations for treatment & prevention strategies and identify new research priorities by 2021.

The MANGO trial results are expected to be considered within the Cochrane review by Schoones on RUTF effectiveness for SAM rehabilitation as pre-listed in 2019 updated review.

### EVIDENCE GAPS AND FUTURE RESEARCH:

Two secondary analyses based on MANGO data are planned in 2020-2021 to dig more the effects of a reduced dose:

- What are the predictors of time to recovery and non response?
- What is the status in vitamin B12 & D after treatment, and what are the effects of a reduced dose on these?
- Some gaps in the evidence on SAM treatment emerging from MANGO are:
  - What is the adequate formulation of RUTF for achieving physiological recovery in addition to anthropometric recovery?
  - What is the most effective, equitable and cost-effective SAM treatment scheme including a reduced dose for food insecure contexts?
  - What are the most effective, equitable and cost-effective undernutrition treatment strategies to achieve sustainable recovery in children of different age groups and different condition severity, considering family foods?
  - What are the best services management strategies for ensuring high quality & sustainable recovery of SAM children?
BACKGROUND:
In 2015 Action Against Hunger's SAM2020 Agenda set out a call to reach more children with access to life-saving treatment for severe acute malnutrition by 2020. This agenda has guided much of our global work over the past five years, and is critical to supporting global progress towards the ambitious targets set by the World Health Assembly and Sustainable Development Goals.

Research and innovation have played a key part in the progress that has been made to date and continues to play a crucial role towards enabling us to achieve our goal of reaching more children. Action Against Hunger has worked with global partners on innovative research efforts to build the evidence on improved approaches and platforms to reach more children with safe and effective treatment for acute malnutrition. Through these efforts, we have the potential to unblock critical barriers to access and delivery across humanitarian and development contexts and achieve our global ambitions.

With new evidence on treatment approaches, we are now at an opportune moment to support coordinated dissemination, uptake, and use in global policies and programmes. With this in mind, Action Against Hunger

CASE STUDY 3
Research uptake is a critical part of effective research at Action Against Hunger to support the use of the emerging evidence – to inform programming, policy decisions, and future research across our own organisation as well as our partners. In addition to dissemination and publication of research results, Action Against Hunger also aims to support ongoing and active discussion about emerging findings through conferences and events with key stakeholders.

In the following case study, we highlight one example of an event that was held to support uptake of emerging evidence on innovative approaches for treatment of wasting. In addition to focused events like this one, the annual Research 4 Nutrition (R4NUT) Conference also supports presentation and discussion on emerging evidence on broader nutrition topics and the Research 4 Action (R4ACT) workshops allow for small-group, in-depth review of focused areas of evidence. The most recent R4Nut Conference was held in Paris in November 2019, focused on the theme of 'The Continuum of Undernutrition Prevention and Treatment: Sharing the Current Scientific Evidence'. The conference featured 43 speakers who gave 21 presentations and 30 posters to a group of 170 participants representing 68 institutions.

INNOVATIONS IN TREATMENT OF ACUTE MALNUTRITION: FROM EVIDENCE TO ACTION. A MEETING HOSTED BY ACTION AGAINST HUNGER ON BEHALF OF THE NO WASTED LIVES COALITION

BACKGROUND:
In 2015 Action Against Hunger’s SAM2020 Agenda set out a call to reach more children with access to life-saving treatment for severe acute malnutrition by 2020. This agenda has guided much of our global work over the past five years, and is critical to supporting global progress towards the ambitious targets set by the World Health Assembly and Sustainable Development Goals.

For more information on the Evidence to Action conference and the Research for Nutrition conference, please visit the R4Nut and R4Act pages.
CASE STUDIES


OVERVIEW:
The aim of the Evidence to Action event was to support this global momentum with focused efforts to reach key stakeholders and partners, raising awareness of the issues, latest approaches, and further opportunities for collaboration. The meeting primarily focused on new evidence on treatment approaches, including:

- Use of community and family members for the detection of acute malnutrition at the household level;
- Innovative diagnostic approaches to overcome challenges to diagnosing acute malnutrition;
- Combined protocols and simplified approaches for the treatment of acute malnutrition as a continuum with a single ready-to-use food product;
- Integration with health systems for the delivery of treatment of acute malnutrition at the community and household level;
- Reduced dosage of ready-to-use foods for treatment

KEY FINDINGS:
In order to support the presentation of new evidence and discussion on findings, the event was organised around three distinct themes:

Innovation in Diagnostics
With known limitations to the existing methods used to identify children with acute malnutrition in different contexts, innovation is important to expand our options and reach more children. The first session of the meeting focused on presentation on three innovative projects that are expanding existing and developing new, approaches for detection and diagnosis of acute malnutrition:

1. THE SAM PHOTO DIAGNOSIS APP (presented by Laura Medialdea, Action Against Hunger Spain): a study that developed a new diagnostic tool in the form of a photo-based mobile phone app;

2. OPTIDIAG: BIOMEDICAL INVESTIGATIONS FOR OPTIMISED DIAGNOSIS AND MONITORING OF SEVERE ACUTE MALNUTRITION (presented by Trenton Dailey-Chwalibog, Action Against Hunger France and ParisTech): which tested novel diagnostic and screening tools relying on the assessment of biomarkers and clinical indicators;

3. REDAC: THE RELATIONSHIP BETWEEN ACUTE AND CHRONIC MALNUTRITION IN GUATEMALA (presented by Laura Medialdea, Action Against Hunger Spain): exploring how to use current diagnostic methods at a much larger scale and in remote contexts.

Simplified Approaches
Acute malnutrition is a continuum, and yet moderate and severe acute malnutrition are treated separately, with different protocols and by different organizations which can often result in inefficiencies or even blockages in care. Ready-to-use foods (RUFs) are a costly component of treatment and supply shortages are not uncommon, limiting the availability of treatment for both moderate and severe acute malnutrition. The second session presented studies and included a panel discussion on the evidence on new approaches that aim to streamline, simplify, and improve the cost-effectiveness of treatment of acute malnutrition as well as explore the policy environment. The four research projects featured in this session included:
1. COMPAS: THE COMBINED PROTOCOL FOR ACUTE MALNUTRITION STUDY (presented by Bethany Marron, International Rescue Committee in partnership with Action Against Hunger US): examined the safety, effectiveness and cost-effectiveness of modified approaches that combine treatment of moderate and severe acute malnutrition and with a reduced and simplified dosage of ready-to-use food.

2. OPTIMA: THE OPTIMISING MALNUTRITION TREATMENT STRATEGY (presented by Kevin Phelan, ALIMA): examined the safety, effectiveness and cost-effectiveness of modified approaches that combine treatment of moderate and severe acute malnutrition and with a reduced, weight-based, dosage of ready-to-use food.

3. MANGO: THE MODELLING AN ALTERNATIVE PROTOCOL GENERALISABLE TO OUTPATIENT STUDY (presented by Suvi Kangas, Action Against Hunger France): examined the safety, effectiveness and cost-effectiveness of a simplified and reduced dosage of ready-to-use therapeutic food (RUTF) for treatment of severe acute malnutrition.

4. POLICYMAKING SURROUNDING ACUTE MALNUTRITION TREATMENT (presented by Naoko Kozuki, International Rescue Committee): explored the policy-level needs to support adoption of simplified approaches for treatment of acute malnutrition as a continuum in Niger, Nigeria, Somalia, and South Sudan.

Integration into Health Systems

Treatment of acute malnutrition is often delivered in parallel to the existing health platforms, creating inefficiencies in delivery and the workforce. The third session featured recent research on exploring different platforms to integrate detection, diagnosis, and treatment of acute malnutrition into different health platforms for mothers, infants, and children. The three research projects featured in this session included:

1. THE C-PROJECT: TREATMENT OF SEVERE ACUTE MALNUTRITION BY COMMUNITY HEALTH WORKERS (presented by Pilar Charle, Action Against Hunger Spain): which demonstrated that treatment delivered by community health workers in Mali, Niger and Mauritania can bring management of acute malnutrition one step closer to the community and improves coverage and outcomes.

2. RISE FOR NUTRITION (presented by Bethany Marron, International Rescue Committee): presented evidence demonstrating that tools for low-literacy community health workers in Nigeria and South Sudan supported community-based treatment.

3. MANAGEMENT OF AT RISK MOTHERS AND INFANTS (MAMI): BUILDING BRIDGES THROUGH EVIDENCE-BASED LEARNING (presented by Marie McGrath, Emergency Nutrition Network): emphasised the need to integrate nutrition and health services and gave the example of the C-MAMI tool which integrates both IMCI and nutrition guidance to support mothers and infants.

PUTTING EVIDENCE INTO ACTION:

In addition to the three focused panel discussions, a final panel reflecting on the meeting and forward looking opportunities was chaired by Lucy Lamble of the Guardian Global Development Desk included senior representatives from Action Against Hunger, the UK Department for International Development, the Children’s Investment Fund Foundation (CIFF), and Save the Children UK. Key themes from four panel discussions included:
Integration of Severe Acute Malnutrition Treatment into Health Systems

Reducing malnutrition should be at the heart of current efforts to achieve Universal Health Coverage (UHC). Approaches should be rooted in the latest evidence on diagnosis, treatment and cost-effectiveness. The nutrition community should take the opportunity of the upcoming summit on Universal Health care in New York in 2019 to ensure that new evidence on how to cost-effectively increase coverage of severe acute malnutrition treatment services is core to plans to expand access to healthcare.

Investing for the Short- and Long-Term in Treatment

Donors, both domestic and global, are called on to renew and increase funding and policy commitments for treatment of severe acute malnutrition at the Nutrition for Growth (N4G) Summit in 2020. The governments of countries with high rates of malnutrition must also be supported to mobilise domestic financial resources to invest in scaling up provision of treatment services, and to access new and innovative financing sources.

Continued Investment in Research to Build the Evidence on What Works

It will be imperative to do more research on critical outstanding questions that need to be answered in order to support safe and effective approaches and modifications to standard treatment that include both severe and moderate acute malnutrition. This includes building the ‘real world’ evidence by supporting operational pilots to further test promising new approaches in different contexts and at scale.

These calls to action are based on and must incorporate the latest available evidence to inform our efforts.
KEY DOCUMENTS

- Action Against Hunger Research Strategy 2016-2020
- Action Against Hunger Technical Strategy 2016-2020
- Action Against Hunger International Strategic Plan 2016-2020
- Designing and Managing Research Projects: A Practical Guide for Fieldworkers
- Action Against Hunger Ethical and Research: Principles and Guidelines (2012)
- Action Against Hunger Research Review 2017
- Action Against Hunger Research Review 2018

KEY CONTACTS

The Action Against Hunger Senior Working Group on Research, Innovation, and Development provides leadership and coordination across our research activities.

Members include:

- **Amy Mayberry**
  Deputy Director of No Wasted Lives, United Kingdom
  a.mayberry@actionagainsthunger.org.uk

- **Ellyn Yakowenko**
  Associate Director of Research, United States of America
  eyakowenko@actionagainsthunger.org

- **Myriam Ait Aissa**
  Head of Research and Analysis, France
  maitaissa@actioncontrelafaim.org

- **Pilar Charle Cuellar**
  Health and Nutrition/iCCM Coordinator, Spain
  pcharle@accioncontraelhambre.org
ANNEX: PUBLICATIONS LIST

Publications include peer-reviewed articles as well as posters and presentations. Peer-reviewed articles are highlighted in bold.

FOOD SECURITY & LIVELIHOODS

Agroecology - A climate resilient approach for food and nutrition security: lessons learned from Action Against Hunger’s project in Bangladesh, B. M. Dioula, Action Against Hunger France & Khulna University Bangladesh, Poster presented at the 2nd World Conference on Climate Change, Berlin (Germany), September 2019

Climate Change, agriculture and food security: the potential of edible insects in ensuring a climate resilient food security in Central African Republic, B. M. Dioula, Action Against Hunger France & Khulna University Bangladesh, Poster presented at the 3rd Agriculture and Climate Change Conference, Budapest (Hungary), March 2019

MENTAL HEALTH & CARE PRACTICES

BFS+: Process evaluation of an integrative health approach for lactating women and their babies in humanitarian emergencies in Nguenyyiel refugee camp in Gambella, Ethiopia, S. Murray et al., Action Against Hunger France & Johns Hopkins University, Poster presented at the Core Group Global Health Practitioner Conference, Bethesda (USA), May 2019 and at the Research for Nutrition Conference, Paris (France), November 2019

Breastfeeding assessment tools for nutritionally at-risk infants aged under 6 months old: a systematic review, C. Brugaletta et al., Action Against Hunger France, London School of Hygiene and Tropical Medicine, University College London & ENN, Poster presented at the Research for Nutrition Conference, Paris (France), November 2019


**NUTRITION AND HEALTH**

Assessing the cost-effectiveness of interventions within a humanitarian organisation, C. Puett, Action Against Hunger France, Disasters 43, April 2019

Correction to: A multicentre, randomised controlled comparison of three renutrition strategies for the management of moderate acute malnutrition among children aged from 6 to 24 months (MALINEA), M. Vray et al., Action Against Hunger Spain, Trials 20, April 2019

Impact of reduced dose of ready-to-use therapeutic foods in children with uncomplicated severe acute malnutrition: a randomised non-inferiority trial in Burkina Faso, S. T. Kangas et al., Action Against Hunger France, University of Copenhagen & Centre for Disease Control, PLOS Medicine 16, August 2019


Management of severe acute malnutrition by community health workers: Early results of Action Against Hunger research, P. Charle-Cuellar et al., Action Against Hunger Spain, ENN Field Exchange 60, July 2019

Reduced ready-to-use therapeutic foods dose in the treatment of uncomplicated severe acute malnutrition in Burkina Faso: impact on anthropometry, programmatic outcomes and body composition, S. T. Kangas et al., Action Against Hunger France, University of Copenhagen & Centre for Disease Control, Poster presented at the Research for Nutrition Conference, Paris (France), November 2019

Severe acute malnutrition and mortality in children in the community: Comparison of indicators in a multi-country pooled analysis, C. Schwinger et al., Action Against Hunger France, Université de Louvain & Université de Bergen, PLoS ONE 14, August 2019

Substandard discharge rules in current severe acute malnutrition management protocols: an overlooked source of ineffectiveness for programmes?, B. Guesdon et al., Action Against Hunger France & Université de Louvain, ENN Field Exchange 60, June 2019

**WASH**

A traditional closed-loop sanitation system in a chronic emergency: a qualitative study from Afghanistan, S. M. N. Uddin et al., Action Against Hunger France, Asian University for Women, University of Victoria & McGill University, Water 11, February 2019

Hydroclimatic monitoring in chronic humanitarian crisis area - Southwestern Madagascar, S. D. Carrière et al., Action Against Hunger France, École Pasteur & Université d’Avignon, Poster presented at the UNC Water and Health Conference, North Carolina (USA), October 2019 (article to be published in the Maternal Child Journal and master thesis to be published on Pasteur website)

Impacts on water, sanitation and hygiene on acute malnutrition, H. Stobaugh, Action Against Hunger France, published on the Research for Action website, December 2019
FOR FOOD. AGAINST HUNGER AND MALNUTRITION.
FOR CLEAN WATER. AGAINST KILLER DISEASES.
FOR CHILDREN THAT GROW UP STRONG. AGAINST LIVES CUT SHORT.
FOR CROPS THIS YEAR, AND NEXT. AGAINST DROUGHT AND DISASTER.
FOR CHANGING MINDS. AGAINSTignorance and indifference.
FOR FREEDOM FROM HUNGER. FOR EVERYONE. FOR GOOD.
FOR ACTION. AGAINST HUNGER.