

Field Exchange

Emergency Nutrition Network



50th edition

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Dear readers

As this half centenary issue of Field Exchange contains a number of guest editorials by individuals who were involved in Field Exchange from the start, we are going to keep this one short. It is pretty much 20 years since the idea of a Field Exchange and the ENN was mooted at an inter-agency conference in Addis Ababa. A throw away comment by Helen Young at the meeting planted the seed of an idea; Helen remarked that the Addis meeting was unusually productive as it brought together field practitioners, academics and donors who could all learn from each-other and wouldn't it be great if we could find a forum to enable this kind of 'exchange' to take place more regularly. The acorn tree that is now Field Exchange and the ENN grew from this one comment.

For the editors of Field Exchange, there has always been one core principle that has held sway. It is that the written word has unique value. Emerging from the ashes of the Great Lakes emergency in 1994/5 where mistakes and learning from previous decades appear not to have been heeded, Field Exchange was predicated on the realisation that institutional memory is fragile and that the written word can uniquely preserve learning. There is nothing wrong with the 'oral tradition' but memories are fallible in a way that the written word is not.

Over the 20 years of editing Field Exchange, we have also come to see how the process of writing up field experiences adds value. Those who put pen to paper are compelled to organize their thoughts and learning logically, to self-examine and to make only claims or recommendations that can be supported by written evidence which in turn can be scrutinised by others. Elements of learning that take place through the writing process would almost certainly not occur if simply recounted orally. The written word promotes accountability for what is said. Furthermore, it enables dissemination of learning at scale. The ENN has also learnt that even in situations where draft articles are withdrawn from publication (very often for reasons of sensitivity and risk to programmers), the very process of writing has enabled the authors(s) and their organisation(s) to learn from the programme experience even though this learning may not be disseminated more widely.

Whether the written word appears in print or digitally is perhaps less important but is still relevant. Many of our readers only have limited or expensive online access. Furthermore, it is notable (if not a little surprising) to find in Field Exchange evaluations that our readers still have a strong attachment to the hard copy even when they have online access. Flicking through the pages of Field Exchange in a life that is dominated by 'screen time' for many may well be a welcome relief and a better reading (and learning) experience.

We, of course, now produce Field Exchange (and its sister publication Nutrition Exchange) both in print, e-copy and online: we also plan to embrace multi-media developments, which may allow for wider and cheaper dissemination to our readership

Over the years, the ENN has expanded into a range of activities including technical reviews, operational research, technical meeting facilitation, and development of guidance and training material. Our activities are largely informed by from the privileged overview of the sector we obtain through pulling together Field Exchange. This expanded scope of work is thus a product of *your* work in contributing to the publication. Field Exchange has therefore been, and remains, the cornerstone of what ENN does.

On to the edition in hand; as ever, we have a wide range of articles covering innovations and challenges in programming. A special section looks at lessons and plans for delivering treatment of severe acute malnutrition (SAM) at scale in Northern Nigeria, with three articles by UNICEF/ACF/Mark Myatt; ACF; and Results for Development (R4D) on the topics of coverage, costs, cost-effectiveness and financial sustainability of CMAM. This includes a proposed sampling-based approach to estimate the number of deaths averted by the Nigerian CMAM programme which is accompanied by two 'peer review' post-scripts. An editorial by CIFE, a lead investor in the Northern Nigerian CMAM programming, introduces the section. Also on the theme of CMAM in Nigeria, an article by MSF documents malnutrition peaks associated with malaria peaks and highlights the fact that medical care typically does not come under CMAM funding, is implemented by different ministries and agencies and is often under resourced.

The logistical challenges of nutrition programming are reflected in an article from South Sudan by ACF, UNICEF and CDC, which describes the technical innovations that enabled nutrition surveillance in a vulnerable but quite inaccessible population. The response to flooding in Malawi in early 2015 is the topic of another article around CMAM by Concern. Whilst providing immediate support, they found lack of surge capacity and sub-standard existing SAM treatment services, despite longstanding external investment in the recent past. How to sustain long term CMAM programming once the NGOs 'go home', remains the 'million dollar question'. At the other end of the spectrum, an article by Help Age International describes the burden of care and experiences of non-communicable disease (NCD) programming in Lebanon amongst older Syrian refugees and vulnerable Lebanese. It reflects there is progress but a lot yet to be done to meet NCD and associated nutrition needs in humanitarian programming. The re-

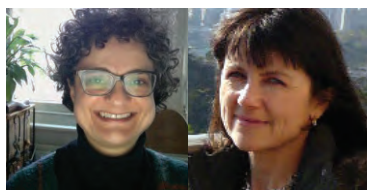
maining articles cover a range of topics – infant feeding support in the Philippines from the perspective of a local NGO responding to Typhoon Haiyan in 2013; experiences of the Sustainable Nutrition and Agriculture Promotion (SNAP) programme in the Ebola response in Sierra Leone authored by IMC and ACIDI-VOCA; and UNICEF experiences of a combined SMART-SQUEAC survey in Chad that saved on time and costs.

We have a run on views pieces in this edition, as well as a rich mixture of research summaries. An article by Ajay Kumar Sinha, Dolon Bhat-tacharyya and Raj Bhandari on the challenges of undernutrition in India provides a fascinating insight into the complexities of national and sub-national programming and highlights the need for coordinated actions. India also features in a research summary from MSF that shares great insights into community perceptions and behaviour around SAM treatment in Bihar. Resilience and nutrition is the topic of an article by Jan Eijkenaar which provides insights into the ECHO funded Global Alliance for Resilience Initiative in the Sahel. There are also some must read articles on accountability to affected populations, a topic that hasn't featured strongly in Field Exchange in the past and to which we all too easily pay 'lip service'. One piece describes ground breaking work in the Philippines by Margie Buchanan-Smith et al and the other is a very personal but experience based viewpoint by Andy Featherstone on progress and pitfalls around accountability over the last 20 years or so.

As a final word, we would like to thank all those authors who have written material for Field Exchange in the past and encourage those who are thinking about writing in the future to get in touch with us to discuss potential topics. We are here to support you in many different ways, from a 'brainstorming' conversation to review of a fledgling idea to editing. In this issue, we've included a guide to the process to help. Over the years, our content has become more 'technical' but we welcome more informal contributions too; it is great to see a few letters in this edition and we would love to receive more. We would also like to thank our many readers for taking an interest in the publication and sincerely hope that the hard won experiences and learning that appear in Field Exchange quickly and positively continue to inform your personal practice and agency programming for the benefit of those with whom you work. So here is Field Exchange 50 – Enjoy!

Jeremy Shoham & Marie McGrath
Field Exchange Co-editors

Send article ideas for future editions of Field Exchange to Marie McGrath,
marie@ennonline.net



By Lola Gostelow and Helen Young

In 1997 we were honoured to write the first Field Exchange (FEX) editorial. Now, fifty editions and nearly 20 years later, we have been given the privilege once more, to mark this 'golden' edition.

Our vision of FEX in 1997 embodied three things: joint learning; shared investment; and multi-disciplinary relevance. We'd like to explore the degree to which each of these has been realised.

FEX was launched as a result of wanting to share and learn from the growing experience of addressing nutrition in emergencies. As the distribution figures below show, the sharing is certainly taking place. In terms of learning, it seems that FEX's greatest impacts have been in personal and institutional learning; results from a recent on-line evaluation of FEX (summarised in this edition) reveal that 80% of the 130 or so respondents felt that FEX benefits them most for personal learning and nearly 50% indicated that FEX has influenced organisational strategy.

FEX was also launched on the premise that it could only be kept alive and relevant if we invested in it. Field Exchange has privileged the publishing of field articles, recognising the intrinsic value of sharing actual on the ground experience. Importantly, FEX has kept the barriers to entry low and worked closely in support of authors, so as to encourage a wide range of contributions. This reality check by practitioners is unique and is a vital reflection on the sector – in terms of the new trends and innovations that are happening and the realities that field workers have to face. This is perhaps its greatest value and unique contribution to the sector over its 18-year history. Yet, the evaluation indicates that only a small proportion of the FEX community (15%) provide articles. Perhaps this signals a reminder for us all to become more active contributors so that we can sustain this valued resource. Reflecting on the findings of the evaluation, the editorial team also recognise there is more they can do to 'advertise' the article development process and the support they can give (43% who did not contribute were unsure of the process). Today's FEX community is largely new – only 34% of respondents have been reading FEX for more than 5 years. So, it would appear that the FEX formula created by the nineties' nutrition community is just as relevant in the 2010s as well.

The need for greater connectivity across sectors, disciplines and levels is as relevant today as it was in 1997. We envisioned FEX supporting "a triangle of cross-fertilising communication and exchange" between field, head office and research

communities. Three years later, in another editorial, Lola wrote:

"The compound of research and practice makes for a powerful concoction, and it is exactly this synergy that Field Exchange has catalysed so powerfully: providing a forum for field practice to be exchanged and explored while also sharing research and academic insights that could influence future programming and priority-setting."

Perhaps the strongest connectivity has emerged in bridging research and practice, and bridging HQ to field. For example, the evaluation reveals that nearly 60% of respondents see FEX's impact in the application of evidence to field practice. More difficult, however, is to judge the degree to which FEX has helped to span sectors. And yet, the orchestrated efforts of multiple sectors is precisely what is needed to scale-up impact on undernutrition. This might be a useful signpost for the future evolution of FEX and the ENN; indeed, already significant steps are being taken in that direction with a special issue of FEX on nutrition-sensitive programming planned for the end of the year and a new programme of knowledge management support by the ENN to the Scaling Up Nutrition (SUN) Movement in development.

FEX has charted the major technical developments and revolutions in the field of nutrition in emergencies, including for example:

- The management of severe malnutrition, with the introduction of a community based care model, combined with evidence based treatment protocols and therapeutic foods.
- Developments in infant and young child feeding, showing how collective efforts can produce global results.
- The programmatic changes with improved registration, targeting and food distribution.
- The standardisation of nutrition survey procedures (SMART), and further development of nutrition and food security monitoring and phase classification (the Integrated Phase Classification System).
- The burgeoning interest in and application of livelihoods and food security responses, especially in designing cash transfers to improve nutritional outcomes.

The role FEX and ENN have played in the evolution of thinking and practice around IYCF deserves special mention. The very first edition featured guidelines on feeding infants under 6 months in emergencies (IFE), as well as a discussion on the challenges of meeting the needs of breastfed and non-breastfed infants as experienced in programmes in Former Yugoslavia. This proved a sign of things to come, with IFE a recurring theme over the years, including a special featured edition (Issue 34) and one of the notable experiences emerging from the Syria response (Issue 48). Whilst there has been huge progress, this 50th edition reflects continuing challenges; ebola being the new topic, infant formula 'troubles' the 'old' one.

Beyond the technical, FEX has also reported on institutional developments, including the development of the Sphere Minimum Standards (that started in 1997, just after the launch of FEX); the introduction of the Global Nutrition Cluster

in 2006; the emergence of the the SUN Movement from 2010; and growth in training programmes and courses from field to Masters level.

Today, FEX reaches over 4,000 people by post in 124 countries, with additional online access amounting to around 11,500 views of articles monthly. Its younger sibling, Nutrition Exchange (NEX), was born in 2009. It has a print run of 17,500, goes to 87 countries, with an additional 4,817 soft copies emailed out. These figures reflect the strength of demand for what FEX (and NEX) offers.

Looking forward, perhaps the time has come for more reflection on how the world out there is affecting humanitarian response to (mal)nutrition in emergencies. For example, in many contexts the risks facing humanitarian actors have increased to unacceptable levels, leading to the securitisation of aid, and distancing between fieldworkers and affected communities. How has this affected the lives of fieldworkers and their relationship with, and impact on, the people they are trying to help? There is also an increasing number of actors engaged in supporting nutrition in emergencies – ranging from local community based organisations, which are often operating alone on the front line, to the massive food trucking operations and commercial enterprises that provide nutritional products. The discourse around resilience is yet another influence on humanitarian response, challenging (once more) the disservice that the emergency/development silos have on effective programming. FEX has a role to play in reflecting these new and very different realities.

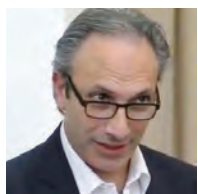
Nutrition has truly come of age. The unprecedented international, political and domestic mobilisation to address undernutrition in all its forms is an exciting, and ambitious, wave to be riding. We have, for the first time ever, global targets for stunting and wasting. We have a constantly changing landscape of institutions and actors, and a plethora of nutrition initiatives to improve practice, standardise procedures and achieve better results. Since FEX was first established, it has diligently captured the breadth and depth of this experience for all to learn from. For the future, practitioners will need to continue to play a vital role in critiquing, and influencing, the latest developments.

FEX is a pretty unique forum – the fact that FEX has continued for so long, and largely unchanged in its format, is a resounding affirmation that it met, and continues to meet, a felt need. FEX is golden not just in age but also in value.

Lola Gostelow and Helen Young

Lola Gostelow is an independent humanitarian consultant with over 20 years of experience in the aid sector. Originally trained and working as a nutritionist and food security analyst, the last twelve years of her work have focused on humanitarian policy, coordination and partnerships.

Helen Young has been a Research Director with the Feinstein International Centre since 1998, and a Professor with Tufts University for more than 10 years. She has been active in humanitarian response and development since 1985.



Field Exchange: Fifty issues young

by Lawrence Haddad

Someone recently asked me: is the nutrition community more fragmented than other development “sectors”? My answer was a firm no. At the Institute of Development Studies (IDS) where I previously worked, I was exposed to communities in climate, health, governance, participation and globalisation. All of them have fault lines and they tend to be very similar across sectors. Some examples? Those who like to plan and manage development processes versus those who prefer organic, emergent processes. Those who favour rights based arguments against those who prefer economics based arguments. Those who like to measure with numbers and those who like to describe with narratives. Those who look to the state first and those who believe market orientated solutions are the real thing. Those who favour genetic modification if proven safe and those who think it is the devil’s work. All of these are found in nutrition, of course, but they are just mirroring more widespread world views, often formed at very early ages and very resistant to new evidence. We are pretty much like every group of people trying to contribute to a better world.

Unfortunately we are also like other development areas when it comes to learning from the field. That is, we say it is vital and then we steadfastly refuse to do it. Why should we do so? My own limited experience in the programme world tells me that real problems have to be resolved by health workers, agricultural extension agents, programme staff, farmers, mothers and aid workers. They have no option, they have to innovate on the fly, extemporise, roll with the punches and innovate, innovate, innovate. The tragedy is that no one is around to document the dilemmas and capture the innovations that they spur. The frontline workers are too busy helping people and communities. Their supervisors are too busy managing and raising resources and reporting to their donors. Consultants have no strong incentives to share innovations beyond their immediate funders. And researchers? Well, they usually find out about the innovations too late. And even if they were in the right place at the right time, well, it’s not publishable, is it?

Big implementing agencies do some of this documentation and sharing, but they should do more. And even here, the pressure to make their organisations look good can give us only one particular view on an issue. So there is a space for a knowledge exchange that links the relative chaos and improvisation of the frontlines with the more measured but less timely analysis from the backline. Enter Field Exchange (FEX). FEX has provided those who don’t work at the

cutting edge of action a glimpse of the problems, paradoxes, innovations and successes that go hand in hand with an intensity of action driven by the very tangible costs of inaction. We learn about the impracticalities of, say, targeting, of measuring, of working without information, of trying to coordinate, consult and report when communications are difficult, trust is low, roads are destroyed and funds arrive after their peak need. For those working in this context, I would imagine FEX helps them to share their experiences, learn from each other, not reinvent the wheel and be heard. And they need to be heard. The development and humanitarian communities are like ships passing in the night.

I would hope that FEX can help bridge the development-humanitarian divide by bridging the frontline-backline divide. Development practitioners need to understand the role that shocks and crises can play in creating a context in which their models simply don’t work or their assumptions simply don’t hold. Likewise, humanitarian practitioners need to understand that some of the actions they take can set the course of development for many years, sometimes in very unknown ways.

Many of us in our 40s and 50s were taught about development with a mental model of a rural, fairly stable context. Well, the world is changing. Poverty (and I would guess undernutrition) is increasingly becoming concentrated in fragile contexts and, to a lesser extent, in urban ones. Research in fragile contexts is really difficult. FEX should increasingly inform the development community and the wider nutrition community about scaling up nutrition in fragile contexts. In fact, that would be a great topic for a special issue¹. Scaling Up Nutrition (SUN) countries tend to be better governed and less fragile than non-SUN countries at similar income levels. What does scaling up mean in Afghanistan or Syria or in northern Nigeria? What do people working in those contexts have to say about scaling up? They may simply be trying to avoid scaling down. How can the avoidance of scaling down help us to think about scaling up in those contexts and in less fragile places?

Once when sitting next to Hilary Benn, the then UK Secretary of State for International



Development, I pitched the idea of something like YouTube for development. Innovations from the field, captured in 1-2 minute videos, stories told by practitioners, organised and curated by a network of non-governmental organisations (NGOs). It never went anywhere (which is probably just as well) but I think the spirit of this remains important. We talk a lot about amplifying the voices of those in poverty or experiencing hunger or malnutrition, but surely hearing from those working closely with them is also important. This is why I will continue to glance at the list of articles in FEX, why I think it should broaden its reach into the nutrition “development sector” and why it should consider going beyond the printed word to the spoken word. Life begins at 50 (believe me). Viva FEX!

Lawrence Haddad

Lawrence Haddad is Senior Research Fellow at International Food Policy Research Institute. He is the former Director at the Institute of Development Studies (IDS) (2004-2014). An economist, his main research interests are at the intersection of poverty, food insecurity and malnutrition.

Follow Lawrence Haddad’s blog – unguarded reflection, thoughts and ideas on international development – <http://www.developmenthorizons.com/>

¹ For new developments in this regard, see news piece on ENN support to knowledge management of the SUN Movement, p117.



What became of..... Killian Forde?

Like a crazy bag lady rummaging in the skips, she was on her hands and knees on the floor searching carefully.

In her hand, a red pen and on the floor, the first issue of Field Exchange, all sell-taped together so it made one massive sheet that covered the entire office floor.

You see Fiona O'Reilly, for some reason that neither of us could recall, decided to do the layout and publishing herself. Beside the fact that she had zero experience of the software and the same amount of experience in design, she threw herself into learning it within two weeks.

And in those two weeks, Fiona, my boss had become slightly obsessed, borderline demonic, working 14 hours a day

to get the first issue out on her own self imposed deadline. And out on time it went.

My own contribution to the design of Field Exchange was my insistence it needed to look different, look attractive to read for those in the sector. Fiona and Jeremy took my views on board and we started a practice of looking for stunning pictures from the aid sector that wrapped around the whole front and back page.

Other than that, I proof read dozens of articles about a subject I knew little about but in my time working there could tell my MUACs from my JFNAMs.

It was in ENN that I got my taste to be an Aid Worker and it was from there that I got my first post, as a programme manager

for an Irish NGO based in Bosnia. I loved the place, staying in the region for five years and ending my time there working with an amazing small team of people in Montenegro with WFP.

A dabble in and subsequent retirement from electoral politics followed, a few years running a policy think tank and then suffering from a mid life ponder, I went out to Sierra Leone during the Ebola emergency.

Being away from aid work for so long, I forgot how intense the work is but the main difference to me is the extraordinary amounts of internal paperwork required to implement programmes. Emergency NGOs were established partly in response to the slow and bureaucratic international organisations' response.

Certainly transparency and good governance are essential to our work but the cost is both efficiency and speed of response.

The aid sector has also become more professional with aid agencies looking to nurture and care for their staff – that wasn't the experience of many 15 years previously. And organisations such as the ENN were perfectly placed at a time when the Internet was just beginning its stellar rise in use. The web means, that now, based in a rural part of Sierra Leone, I can log on and read the latest Field Exchange and share my learning with others.

I'd like to thank Fiona and Jeremy for the break they gave me and wish their little baby a happy grown up 50th edition.

Killian Forde

Killian Forde was the first employee of the ENN in 1997 working on administration and sub-editing of Field Exchange.

He left in 1998 and spent five years in the Balkans, before returning to Ireland and becoming involved in Irish Politics. He spent seven years on Dublin City Council following which he was CEO of the influential policy think tank, The Integration Centre. He is currently in Sierra Leone working on the post Ebola response.



Ebola Team

Killian Forde



Kern, Fiona & Ena

What became of..... Fiona O'Reilly?

Dear ENN,

Congratulations on your 50th issue of Field Exchange!

It seems like yesterday when Jeremy and I were putting together the very first issue of Field Exchange. Killian Forde, who 'helped out' long enough to make himself invaluable and guilt us into paying him a pittance, reminded me of how I manically upskilled myself to produce the inaugural issue. Thankfully, my dabble in production design ended when the brilliant Kornelius Elstner joined the team (Issue 6); he took on this role and greatly improved the design. Unfortunately Killian's 'What became of ...' column, which dug up old has-beens such as Michael Buerk (Issue 2, page 22) and had me door stepping Bob Geldof (slightly embarrassing as he declined an interview) didn't survive the test of time! I'm not sure how I feel about appearing now as an 'old has-been' myself!

How Field Exchange looked was very important to me as I would argue "no one will pick it up if it doesn't look good". I'm delighted to see that the design, under the creative hand of Orna O'Reilly, has been enhanced over time to reflect in visual terms the ENN's vision for professionalism, quality and accessibility. The website too has continued the attractive style and developed into one of the best examples of a web based portal and repository for learning and exchange. It's clear, simple, easy to navigate and attractive.

Initially and understandably when the publication was not well established, we had to put much work into 'stimulating' the production of articles. In practice, this meant hounding people to write about what they were doing and travelling to places where there were significant humanitarian food and nutrition interventions. One such place was Lokichogio, on the border of Kenya and South Sudan. The year was 1999 and my son Kern was 5 years old. I flew to the then humanitarian hotspot with him in tow to generate material for Field Exchange. Again, with my belief the photos were every bit as important as text, I asked a Turkana woman (from the local area) if she would pose for a photo that I could use in the publication. To my surprise, she refused. I was curious. She told me about her belief that my camera, if pointed at her, would take her soul. I reassured her by suggesting that my son would pose beside her. I would hardly steal my son's soul so she was safe, I reasoned. This worked and the result can be seen in Issue

6, page 10. However, my clever negotiation backfired on me in the years to come when, to defend myself from my reprimands or disapproval, my son would say, "What do you expect? You took my soul with your camera in Lokichogio."

Not only in aesthetics and accessibility, but every aspect of the ENN and Field Exchange appears to have developed. I recall that for a while before I left (Issue 20 was my last issue), I was mildly concerned that the increasing standard of the publication might follow other high-browed academic publications and risk excluding the less experienced/specialised; those like myself as a field worker, who did not have a nutrition degree and who wouldn't recognise a Z score if it hit them in the face. Getting the balance between accessibility and specialisation can be difficult. However, it's a balance that Field Exchange together with Nutrition Exchange achieves beautifully.

In my view, the ENN and Field Exchange have gone far beyond the original aim to strengthen institutional memory in the area of food and nutrition in emergencies. The ENN has also broken new ground in the area, through research and development and thus improved practice.

I can still recall the years pre-ENN, when best practice guides and research was either in short supply or hard to find from the field. I recall in the early nineties working in the Somali refugee camp in Hartisheik, Ethiopia and later in war torn Mogadishu. I, like others working in humanitarian crisis, was at a loss to know what to do with infants who didn't have breastfeeding as an option. The ENN provided an opportunity to tackle infant feeding in a practical and nutritionally sound way, which hitherto had not been done amidst a politically charged environment where infant formula could not be mentioned for fear it would undermine breastfeeding, yet homemade recipes were simply inadequate. The infant feeding group, with critical involvement from the WHO, IBFAN, UNICEF & Linkages, was established and the real and difficult problems that emergencies threw up began to be tackled. I'm delighted to see the huge developments in this area continue under the coordination of the ENN. This is just one of many areas in which developments were facilitated by the ENN.

While my career has taken me on a different path, I occasionally travel to Africa to undertake

research or evaluations and immediately reach for Field Exchange and ENN online if my work in anyway touches on the theme of food or nutrition. I always have a peep at 'People in Aid' on the back page to see who's still around and check out the witty Panda cartoon still contributed by Jon Berkeley each month.

Looking back, I fondly and proudly remember the early days of establishing the ENN and producing Field Exchange with Jeremy, Killian and Kornelius. Deirdre Handy, the beady eyed proof reader since the early issues, remains on the editorial team scrutinising every word. However we (the ENN formal team) could not have done it and it would not have worked if it had not developed as a collaborative effort. As it said in the first editorial, "it's yours and ours". In the early days of the ENN, a number of committed individuals got involved, keen to make a difference and share learning through experience; they helped to make it happen and deserve a mention. Those who spring to mind are Lola Gostelow, Anna Taylor, Saskia van der Kam, Rita Bhatia, Helen Young, Marion Kelly, Annalies Borel, Mike Golden and Yvonne Grellety (sorry to those not mentioned.. the aging brain and all that). Of course, Prof John Kevany was invaluable in providing an institutional base at Trinity College in Dublin and general wisdom. The foresight of Irish Aid, our first institutional funder, has to be noted too, with their strategy to make us get matched funding for their contribution from other organisations and donors. This strategy meant a broad base of ownership and involvement.

I congratulate Marie who I handed over to, Jeremy who has been the back bone since the beginning and the rest of the team in improving and developing the ENN and Field Exchange. Now I have broken an editorial rule of mine – to be brief!

Happy 50th Field Exchange and I wish you 50 more at least!

Fiona O'Reilly

Fiona was was the first Field Exchange Co-Editor and Co-Director of ENN from 1997-2004.

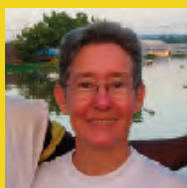
Dr Fiona O'Reilly is a Social Scientist currently working as a Senior Research Fellow for the Partnership for Health Equity based at University Limerick and the North Dublin City GP Training Programme in Dublin, Ireland. She is also the Director of Kernena Consulting.



MSF, Nigeria, 2012

Malnutrition peaks during malaria epidemic in Northwest Nigeria

By Chloë Wurr,
Joke Zeydner and
Saskia van der Kam



Chloë Wurr is a medical doctor in Alaska and worked as medical coordinator with MSF-OCA Nigeria



Joke Zeydner is a medical doctor in The Netherlands and worked as medical coordinator with MSF-OCA Nigeria



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Location: *Nigeria*

What we know: GAM is prevalent in Northern Nigeria. Seasonal peaks in acute malnutrition are often assumed to be linked to food insecurity.

What this article adds: MSF supported SAM treatment services in Goronyo LGA experienced alarming peaks in admissions in August 2012 which was not expected (no food security/nutrition issues in surveillance). A rapid increase in malaria admissions to the Goronyo health centre in August corresponded with this unusual SAM peak; 70% of SAM admissions were confirmed malaria cases. Support to CMAM scale up tends to focus on RUTF delivery and associated training; medical aspects of protocols are often under-resourced and managed by different ministries/agencies. Integration of funding and services to treat both childhood diseases and malnutrition is needed.

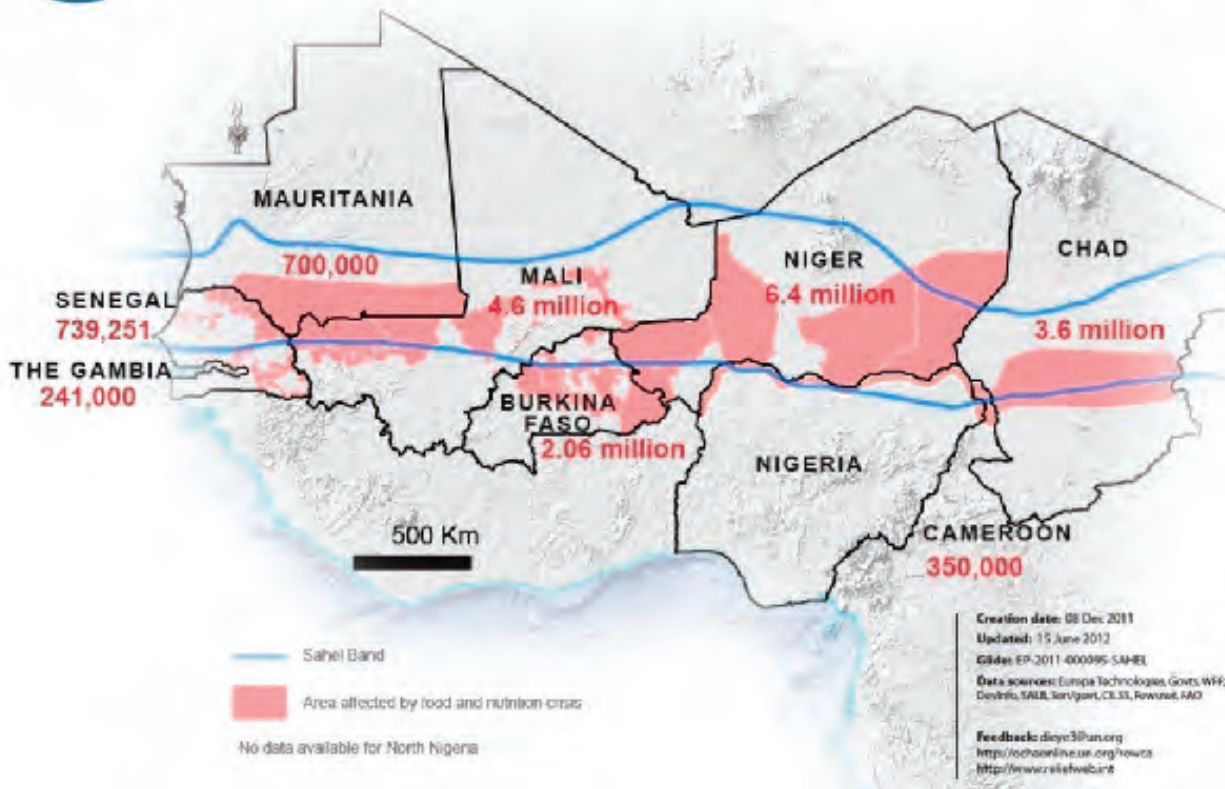
Médecins Sans Frontières-Operational Centre Amsterdam (MSF-OCA) has provided humanitarian assistance in Northwest Nigeria since 2008, delivering medical support to Sokoto State Hospital Goronyo. Activities include outpatient (OPD) and hospital based medical care for children less than five years of age, including a Therapeutic Feeding Programme (TFP) with both intensive inpatient services (ITFC) and outpatient ambulatory phases (ATFP). Goronyo Local Government Authority (LGA, administrative level comparable with a district) is located in Sokoto State and had a population in 2011 of 205,247 with an estimated population of 34,892 children aged less than 5 years. In the absence of other functioning medical services, MSF-OCA's catchment area is much wider, including many families from surrounding LGAs.

This region of Nigeria is rural and primarily dependent on agriculture and animal husbandry for its livelihood, with some income derived from trade and small-scale manufacturing. The Goronyo LGA livelihood zone is characterised by a decades-old irrigation scheme. A variety of crops is grown in dry lands, as well as the irrigated areas, such as millet, sorghum, rice, groundnuts and cowpeas, while vegetables such as okra, onions, spinach and tomatoes are important products of the irrigated soils. The irrigated areas also favour substantial secondary cropping of maize, sweet potatoes, and cassava.

Despite the strength of its agricultural sector, northern regions of Nigeria experience higher rates of malnutrition than expected. Nutrition surveys in Goronyo LGA in March 2009 and March 2010 showed a global acute malnutrition rate (GAM) of 14.8% and 11.5% respectively and a severe acute malnutrition rate (SAM) of 4.9%



The Sahel crisis: Affected zones and population



and 2.6% respectively. UNICEF’s SMART nutrition cluster studies carried out in Sokoto and other northern states since 2010 have found GAM rates between 11.3-12.6% and SAM prevalence of 1.3-2.9% during the last three years. MSF-OCA’s experience in Goronyo concurs with these findings, with high participation in the TFPs among the population of children who use our health services.

This region of Nigeria borders the Niger Republic, along the southern reaches of the Sahel belt, which is prone to food crises and epidemics. During 2012, in response to international concerns of an impending food crisis in the Sahel region, the MSF-OCA Nigeria Mission undertook

nutrition and food security surveillance along the borders with the Niger Republic, to provide early warning of regional population movements and increasing malnutrition rates. Ultimately, our monitoring did not identify any particular food security concerns or population movements from the north in search of food. The TFP experienced its usual rates of participation until August 2012 when TFP admissions suddenly increased to more than double the average for the same month in the two previous years (see Figure 1). The increase in children with SAM was seen in both the ITFC and ATFP. The rapid increase in numbers overwhelmed the programme so that in September, MSF was forced

to refer patients from other LGAs, who needed admission to the ATFP, to services near their home. This reduced overall activity in Goronyo and resulted in a sharp decrease in admissions (see Figure 1).

These high rates of TFP admissions in 2012 are particularly notable because MSF-OCA operated fewer ambulatory feeding programme sites in 2012 (4 sites) than in 2011 (7 sites), having closed three of seven sites at the end of 2011. A UNICEF SMART cluster survey carried out in August-October 2012 in Sokoto State also detected alarming increases in rates of GAM and SAM when compared to rates found in the same state earlier in the year (see Table 1).

Figure 1 MSF-OCA Goronyo TFP admissions, 2009-2012

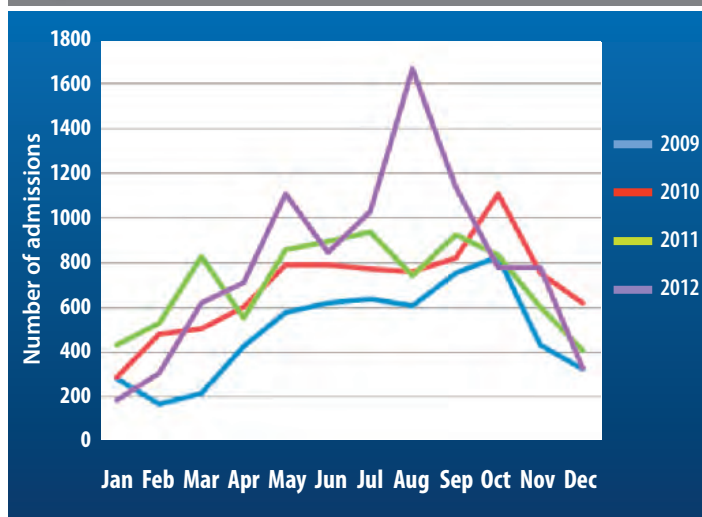


Figure 2 Malaria admissions amongst U5s, OPD and outreach clinics, Goronyo, 2009-2012

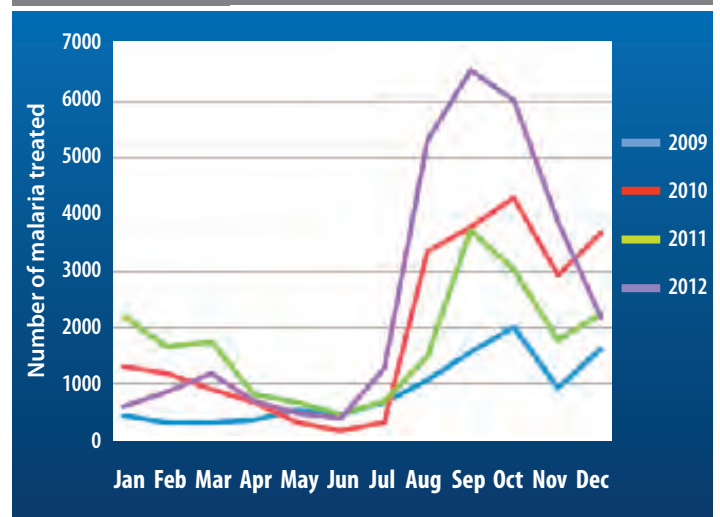


Table 1 UNICEF cluster surveys, 2012

Survey period	GAM	SAM
Feb-Mar 2012	11.9 %	2.9 %
Aug-Oct 2012	16.2 %	4.4 %

In August 2012, while our TFP was admitting record numbers of patients with SAM, the Goronyo Outpatient Clinics (OPD) experienced a huge influx of children less than five years with confirmed malaria, surging from under 100 cases in the second week of July to 833 cases in the fourth week of July. The number of cases of malaria, all confirmed by rapid diagnostic test (RDT), remained high through the end of October, with almost 18,000 children less than five years of age treated from August to October. This seasonal peak is seen in our malaria rates for 2012 as a whole, during which time MSF treated 29,183 children for malaria in four outpatient clinics. During the same year, 1,874 children under five years were admitted to the hospital for severe malaria. From September, over 70% of children with SAM admitted to the ITFC and over 50% of those admitted to the ATFC had malaria as shown by systematic screening upon admission with a rapid malaria test. This compares to rates of less than 10% during the low season.

Discussion

The rapid increase in rates of malaria in August corresponded to the unusual peak in admissions to the TFP during the same period, underscoring the relationship between disease and malnutrition. While presentation to the OPD for treatment of malaria may have increased our detection of SAM in the population, it is likely that bouts of malaria contributed to malnutrition in vulnerable children. Conversely, children with malnutrition are at greater risk of complications from malaria and other childhood diseases, requiring hospitalisation and increasing mortality.



This vivid connection between malaria and malnutrition informs our understanding of malnutrition in a region not suffering from food insecurity and explains why delivery of food aid alone is not sufficient to reduce rates of malnutrition in such areas. In the catchment area of the Goronyo TFP, primary health care clinics are scarce and those that do operate lack consistent access to drugs and vaccines. As a result, children in this region go untreated for common childhood illnesses contributing to the unexpectedly high rates of malnutrition we see.

Similarly malnutrition can only be cured if underlying disease is addressed. The Community Management of Acute Malnutrition programme (CMAM) established by the Nigerian government with the support of UNICEF addresses primarily the malnutrition component by providing Ready

To Use Therapeutic Food (RUTF) and training. While standard antibiotics and testing for malaria (and treatment when positive) are recommended in the CMAM protocol, they are not always provided as nutrition programmes frequently lack medical capacity, diagnostic tools and drugs to treat illness.

A complicating factor is that in Nigeria, the CMAM programme is administered by the State Primary Health Care Development Agency (SPHCDA) while primary health care, including diagnosis and treatment of malaria and childhood illnesses, is the responsibility of the State Ministry of LGA Affairs with few resources to provide this essential medical care.

The separation between nutrition and primary health care is not unique to Nigeria. Generally CMAM programmes are successful in supporting primary health structures with training and providing therapeutic foods, focusing on early case finding and decentralisation of nutrition care. But the medical component is under resourced, partly because medical care is under resourced in general, but also because medical care is the responsibility of another agent and not included in CMAM funding. As long as funding for treatment of malnutrition is separated from primary health care funding, comprehensive treatment of malnutrition and effective prevention of malnutrition are not possible. With this neglect of primary care services, children are more likely to become malnourished from disease, and yet, once malnourished, treatment will only be successful when the underlying diseases are addressed. Effective strategy for the prevention and treatment of malnutrition requires integration of services to treat both childhood diseases and malnutrition concurrently.

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Location: *Bangladesh*

What we know: Acute malnutrition in Bangladesh is highly prevalent. Treatment rollout is underway but is not yet at scale. Evidence from the Asia context of treatment outcomes in children, including post discharge, is limited.

What this article adds: An opportunistic study of outcomes of 'cured' children, 3 and 6 months from discharge, was conducted in an NGO supported CMAM programme in peri-urban and rural Bangladesh. Cure rate was 68%. Approximately one-third of children were lost to follow up at 3 and 6 months. At three months follow up (147 children), 9% had relapsed, 69% were moderately malnourished and the remainder had MUAC > 125mm. At 6 months follow up (112 children), only two had relapsed, 58% were moderately malnourished and 39% had MUAC > 125 mm. Referral to SFP on discharge had been delayed for the first five months of the programme. Infant and young child feeding practices were considered a significant contributing factor to acute malnutrition; a high proportion of admissions were aged 6 to 23 months.

Bangladesh is home to a large proportion of children suffering from acute malnutrition. The 2011 Demographic and Health Survey showed that 16% of children under 5 years of age were wasted, with 4% severely wasted. The Government of Bangladesh in 2011 developed Community based Management of Acute Malnutrition (CMAM) guidelines based on World Health Organisation (WHO) guidance. However, CMAM uptake has been slow, although first steps have been taken by the Government in rolling it out nationally. There is limited evidence from Asia and Bangladesh on the experience and effectiveness of CMAM and in particular, on follow-up of children who have been treated with Ready to Use Therapeutic Food (RUTF) for severe acute malnutrition (SAM) in the community.

Terre des hommes Foundation (Tdh) has been operating in the northern District of Kurigram since 1974 and currently offers comprehensive health services for women, infants and young children living in Kurigram through Government run community clinics, two maternal and child health centres and two community-based static clinics, in line with the National Nutrition Service Operational Plan and Community Clinic Project. A focus of the work has also been on Facility Based Management of SAM from a Special Nutrition Unit, based on the WHO Protocol, which was adapted for use in Bangladesh in 2008. In 2011, with support from UNICEF and the World Food Programme (WFP), Tdh rolled out a CMAM intervention in Kurigram. The programme was piloted in three Unions of the District- Ghogadaha, Thanahat and Kurigram Municipality. Twelve outpatient therapeutic programme (OTP) centres covered the three unions. The centres were independent of the state system but implemented with the necessary permissions. With the Government subsequently moving

to scale up CMAM rollout within the state health system, Tdh has a Memorandum of Understanding with the Ministry of Health & Family Welfare & Institute of Public Health Nutrition (IPHN) to coordinate the rollout in Kurigram district. At the time of writing, Tdh had coordinated a first round of CMAM training of all Medical Officers in the district of Kurigram as part of this rollout. The Medical Officers are heads of Primary Health care facilities in the district that will be involved in implementing CMAM.

Study overview

In order to increase our understanding of CMAM in the Asia context, a study was undertaken by Tdh in 2012 on children discharged from the programme. The retrospective cohort study took place in peri-urban and rural areas of Kurigram District of Northern Bangladesh. The objective of this opportunistic study was to report on the nutritional status of SAM children discharged as cured from a community based treatment programme. All twelve OTP centres in three unions of Kurigram District were included in the study. Children were followed up after 3 and/or 6 months, depending on the timing for the study relative to their discharge¹.

Admission to the CMAM programme was based on Mid Upper Arm Circumference (MUAC) <115mm for children aged between 6 to 59 months together with a successful appetite test. The programme definition of cure is MUAC ≥ 115mm and 15% weight gain, as per the National CMAM guideline of Bangladesh.

¹ Three month follow up was assessed in all children for whom there were available data, and in a subset of 112 children from whom there were six month data. The study examined the very small number of children who were present in both datasets; this added no additional information and so is not presented here.

Follow-up on status of children with SAM treated with RUTF in peri-urban and rural Northern Bangladesh

By Dr. Charulatha Banerjee, Monsurul Hoq and Dr. Ehsanul Matin



Charulatha Banerjee is Regional Advisor on Maternal and Child Health & Nutrition, South Asia with the Terre des hommes Foundation (Tdh).



Monsurul Hoq was an Epidemiologist & Statistician with Tdh at the time of this study.



Dr. Ehsanul Matin was Director of Health & Nutrition with the Bangladesh Delegation of Tdh at the time of this study.

The project was funded by UNICEF, Swiss Solidarity, Swiss Development Corporation and the World Food Programme. This intervention benefited from the technical guidance of Dr. Jean Pierre Papart, Tdh Health Advisor, and the support of John Brogan, Country Delegate, Tdh Bangladesh. The project was implemented by Tdh, Bangladesh Delegation.

C. Banerjee/Tdh, Bangladesh

A total of 255 children, 185 girls and 70 boys, with an average age of 14.96 months (standard deviation of ± 9.26 months) were admitted to the CMAM programme based on MUAC < 115mm, of whom 90 also had a weight-for-height z-score (WHZ) < -3. WHZ was measured for information purposes only and not used as a criterion for admission. Treatment outcomes were: 68% cured (n=174), 15% defaulted (n=38) and 17% non-responders (n=42). Children were classified as non-responders when they did not achieve discharge criteria (MUAC and 15% weight gain) within three months of starting treatment with RUTF.

The follow up status of 174 children discharged as cured from the CMAM programme between January and December 2012 was assessed using service data of community based growth monitoring run by Tdh during the same period. Among 174 cured, 147 children who were discharged July – September 2012 were considered for follow up at three months, while 112 children who were discharged before July 2012 were considered for follow up at 6 months. As part of the growth monitoring service, MUAC and weight of children below five years was measured monthly. The service data was initially recorded in registers and later entered in IBM SPSS Statistics (SPSS Inc, version 19, USA) for analysis. Data quality was ensured by a trained monitoring team who checked the measurement in the field and also validated electronic records against hard copies.

Results

A total of 147 children discharged as cured were eligible for follow up at three months, of whom 98 (66.7%) children were identified from the growth monitoring database. Thus one third of discharged children (33.3%) were lost to follow up. Of those 98 children identified, 90 children were between the ages of 6-23 months at admission to the CMAM programme. The majority of children (69%, 95% CI 60.1% - 78.4%), comprising 21 boys and 47 girls, had a current MUAC status ≥ 115 and <125 mm. Only nine children (9%, 95% CI 3.4% - 15.0%) had relapsed into SAM with a MUAC < 115 mm. Twenty-one children (21.4%) were no longer acutely malnourished with a MUAC ≥ 125 mm (95% CI 13.1% - 29.7%).

Among 112 potential follow up children who had recovered and been discharged from the programme six months earlier, a total of 71 (63.4%) children were successfully identified from the growth monitoring database; thus 36.6% were lost to follow up. Sixty-five of the children were in the age group of 6-23 months at admission to the CMAM programme. Thus, 36.6% were lost to follow up. Only two female children had relapsed to SAM with a MUAC < 115 mms, 41 children (58%) had a MUAC status ≥ 115 and <125 mms and 28 children (39%) had a MUAC status ≥ 125 mms. All SAM cases were re-referred to the OTP.

Discussion

This analysis looks at nutritional status of children discharged from a CMAM programme based on their MUAC status. Although in this sample,

relapse to SAM was low at both 3 and 6 months, follow up mechanisms for those discharged from such programmes should be implemented as part of project design; Tdh now recommend three monthly follow up for the first 6 months and then at 12 months. Furthermore, the implementation of a Supplementary Feeding Programme (SFP) or any other initiative that will contribute to household food security in tandem with the therapeutic feeding programme, should also be made available. In the project area, the SFP was introduced nearly five months after the therapeutic feeding programme started which meant that children initially admitted did not get any extra nutritional support on OTP discharge. In such a situation, emphasis on appropriate complementary feeding practice based on the family pot, assuming it is adequate, becomes critical to sustain recovery.

In this study, about one third of the children were lost to follow up. After discharge from the CMAM programme, mothers were expected to bring their children for monthly growth monitoring sessions where monthly weighing and MUAC measurements were made. An important reason for not attending these sessions was migration. Families with children moved out of the intervention area for various reasons – entire family migrating looking for better working opportunities or to look for better accommodation. Mothers visiting relatives or a pregnant mother moving to her parental home for delivery were also reasons for not attending. Women who had no support at home to look after other children, or women who were daily wage earners themselves were unable to continue attending the programme. On exploring this further with mothers, it was determined that the mother did not feel routine measurement was important and was only concerned if the child fell ill again. A few women with extended family support also could not attend due to the family, often elderly family members, prohibiting them from attending.

In this pilot programme, non-response² and defaulting³ rates did not meet Sphere standards. Default and non-responder rates were higher in the 24-59 months age group compared to the 6-23 month group ($p < 0.05$). There was no gender difference in defaulter or non-responder rates. An important reason for defaulting was migration for the same reasons as children who were lost to follow up (see above). Most of these missed visits occurred once the child showed some recovery in the mother's eyes; she did not then see the importance of completing the treatment. Domestic disputes and elderly family members not allowing the mother to attend the OTP were also given as reasons. An important reason for non-response to treatment was poor complementary feeding, including breastfeeding. Where children did not gain weight in households which could afford a nutritious meal for the child, seemed to rely entirely on RUTF to feed the child for the duration of treatment. A small number of cases of sharing were also reported, while a few households had a real shortage of food for the entire family. Not seeking treatment for illnesses and repeated illnesses also contributed to non-response.

In the Tdh programme's experience, lack of knowledge regarding infant and young child feeding (IYCF) practices was an important contributing factor to child malnutrition in Kurigram District, e.g. delayed introduction of high quality protein foods such as fish, even where there was adequate household access and daily consumption amongst older household members. Tdh are of the view that CMAM interventions often underemphasise the importance of IYCF. The immediate need after recovery from acute malnutrition is to ensure the quickest return for a child to consumption of normal household meal composition and frequency as per IYCF guidelines. This is the only sustainable solution to preserve the child's recovered status and give mothers the confidence that they have the resources to nourish and nurture their children. However, this principle only works where there is no food insecurity.

Tdh, as part of its comprehensive approach to prevention and treatment of acute malnutrition, has since introduced follow up of all children discharged from the therapeutic feeding programme for a period of six months, through home visits by field workers. The organisation has also stepped up its behaviour change communication programme on IYCF. During monthly growth monitoring days in the community, Tdh holds cooking sessions using locally available and affordable foods to demonstrate to mothers what can be achieved with their own resources. Additionally, an intensive homestead gardening programme was started in the area and mothers with children under 5 years are especially encouraged to get involved. As it has been rolled out, it has developed to include specifically families with MAM or SAM children.

Including follow up of discharged children through community groups and house to house visits, as currently takes place for post-natal visits, would be valuable. We suggest that routine MUAC measurement at quarterly intervals become a mandatory part of the CMAM programme extension work; this is now being implemented in Kurigram District.

Bangladesh has now rolled out the National Nutrition Service and through this, it is expected that CMAM roll out will be implemented in a phased manner and incorporated into the activities of the Community Clinic, with the CHCP (Community Health Clinic Promoter) being the frontline worker. In this context, the usefulness of MUAC for detection of acute malnutrition and follow up is clearly critical. Follow up will also be useful to detect any seasonal fluctuations, which may be particularly significant in areas prone to extreme climatic events such as floods, cyclones and severe cold winter periods.

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² As per the national guidelines, a non-responder is one who does not attain the discharge criteria within three months of admission into the CMAM programme.

³ As per the national guidelines, a defaulter is a case who before attaining discharge criteria is absent from the programme for three consecutive weeks.



Rapid Assessment Method for Older People (RAM-OP): Progress Report

Summary of online field article¹

By Pascale Fritsch (HelpAge International),
Katja Siling (Valid International),
Ernest Guevarra (Valid International) and
Mark Myatt (Brixton Health)



HelpAge International, Ethiopia

This article presents a summary of an online Field Exchange article that details field testing and other ongoing development work on the Rapid Assessment Method for Older People (RAM-OP).

The first field trial of the RAM-OP method was undertaken in Addis Ababa (Ethiopia) in early 2014. This trial was reported in a previous Field Exchange article². Testing involved performing two surveys using the SMART method and a prototype of the RAM-OP method simultaneously in the same population and comparing the two surveys in terms of resource requirements, estimates of indicator levels, and the precision of estimates. The results of this trial informed the design of a second trial.

The second trial was undertaken in a coastal district of Tanzania in August and September 2014. This trial also compared RAM-OP and SMART simultaneously in the same population. The SMART survey method followed published guidelines. The first stage sample size for RAM-OP was reduced from twenty to twelve clusters and a within community sample of sixteen older people was taken using systematic sampling of dwellings in the villages (or parts of villages) organised as ribbons of dwellings, and a random walk (*EPI3*) sampling strategy in villages (or parts of the villages) organised as clusters of dwellings. The *EPI3* method selects the first household to be sampled using the *EPI* strategy (as with SMART) with subsequent households selected by choosing a random direction and selecting the third nearest house in that direction. This sampling method has been shown to give results as good as simple random samples and to be better than the unmodified *EPI* strategy when a wide range of indicators is being assessed.

Both trials found that SMART and RAM-OP are functionally similar methods (i.e. the two methods return similar results) and that the RAM-OP method was considerably cheaper than the SMART method. Precision of RAM-OP in the second trial remained useful but was a little worse than that achieved by the SMART survey in the same population. This could be remedied by increasing the size of the first-stage sample (i.e. to sixteen clusters) whilst decreasing the size of the second-stage sample (i.e. to twelve older people) without increasing survey costs for RAM-OP much above about 50% of an equivalent SMART survey.

The online article³ describes key elements of the RAM-OP method, presents the results of the second trial, compares the results of the two field trials, and describes other ongoing RAM-OP development work.

¹ See the full article at: <http://bit.ly/1WEKcQt>

² Pascale Fritsch, Katja Siling and Mark Myatt (2015). RAM-OP: A rapid assessment method for assessing the nutritional status, vulnerabilities, and needs of older people in emergency and development settings. Field Exchange 49, March 2015. p67. www.ennonline.net/fex/49/ramop

³ See footnote 1.



Help Age International, Ethiopia

Developing regional weight-for-age growth references to optimise age-based dosing of anti-malarials

Summary of research¹

Location: *Global*

What we know already: Age is often used as a proxy for weight in anti-malarial drug dosing. Accurate knowledge of the weight-for-age distribution of a given at risk population could help optimise treatment regimens but country/regional specific reference data are lacking; the WHO Child Growth Standards describe optimal growth, rather than actual growth in a given place/time.

What this article adds: A recent study derived regional weight-for-age growth references to help optimise age-based dosing of anti-malarials in Africa, the Americas, South-East Asia and the Western Pacific. A model was used to combine data with varying distributions from a range of sources (largely DHS). Growth curves were modelled for adolescents and adult males for whom data were most lacking. Countries were weighted by their population at risk of malaria. The authors recommend that age-based anti-malarial dosing should shift from global to region-based regimens.

Manufacturers of anti-malarials recommend that dosing should be based on body weight. However, in many low and middle income countries, the dose is frequently based on age, which is used as a proxy for body weight because these drugs are often sold over the counter or prescribed in settings without weighing facilities. The use of inadequate age-based dosing regimens is responsible for a considerable proportion of treatment failures. Substantial improvements could be made by optimising age-based dosing regimens but this idea has received little attention from manufacturers or policy-makers. Accurate knowledge of the weight-for-age distribution of the population at risk of malaria is vital for establishing the optimal dosing regimen. Previously, the optimal age-based dosing regimen and drug ratio of a fixed-dose combination of artesunate and amodiaquine anti-malarials, for use in sub-Saharan Africa, were predicted using weight-for-age data from 88,054 individuals in several African countries. A recent analysis of the efficacy of artesunate and amodiaquine using pooled data on 5,410 patients from 24 studies showed that administered doses of the fixed combination were significantly better with both weight- and age-based regimens than when non-fixed combinations were used.

Currently weight-for-age reference data are lacking for most middle and low income countries. Existing global growth standards are the WHO Child Growth Standards for children aged 0-59 months – based on the Multi Centre Growth Reference Study and the 2007 WHO growth reference for school-aged children and

adolescents aged 5-19 years. Optimal growth can be assessed against these standards but they are inadequate for establishing optimal dosing of anti-malarials as they do not describe how children actually grow at a particular time and place. Since growth varies between regions, regional or country-specific reference data would enable dosing regimens to be tailored to the population affected.

Over the past two decades, a wealth of population-representative anthropometric data have become publicly available from low and middle income countries. A recent study has set out to derive regional weight-for-age growth references to help optimise age-based dosing of anti-malarials in Africa, the Americas, South-East Asia and the Western Pacific. This was done by compiling individual level weight-for-age population representative data sources in countries where malaria is endemic, principally in three areas: the WHO African Region; the WHO Region of the Americas; and the WHO South-East Asia and Western Pacific regions combined. Malaria endemic areas in WHO Eastern Mediterranean Region were initially considered but insufficient data were available.

The method involved constructing a weight-for-age database from pre-existing population-based anthropometric data obtained from household surveys and research groups. It contained data collected between 1995 and 2012 on 1,263,119 individuals older than 14 days and younger than 50 years in 64 malaria-endemic countries. Regional growth references were generated using a generalised additive model for

location, scale and shape by combining data with varying distributions from a range of sources. Countries were weighted by their population at risk of malaria to enable references to be used in optimising the dosing of anti-malarials.

The authors of this work found that large differences in weight-for-age distributions existed between the three regions and between these regions and optimal growth curves developed by WHO, which indicates that age-based dosing should shift from global to region-based regimens. In all three regions, the models achieved good fits with the original data, which confirmed that the generalised additive model for location, scale and shape extension method is a robust way of establishing growth references using mixed-source data in situations where multicentre growth reference studies are not feasible. The relative homogeneity of countries within the regions justifies modelling pooled country data sets in each region.

The large majority of the data came from Demographic Health Surveys (DHS), which are representative of national or subnational populations and have well-established designs and quality assurance methods. Extensive data were available for most of the age range of interest which helped in modelling the age range for which fewer data were available (i.e. 5-14 years). Data for adolescents and adult males were missing for many countries, however, they were available across the full age spectrum for at least one country in each region. Since the two step modelling approach was designed to use data from adjacent countries and age groups, where these showed similar growth distributions, the researchers were able to model the growth curves for adolescents and adult males for all three regions. In order to increase the representativeness of the curves, data sets from before 1995 were not used. Even so, growth curves should be updated periodically (e.g. every 5-10 years) using the latest data from representative surveys.

The authors conclude that the growth charts generated for individual countries as part of the modelling process could serve as powerful public health tools to support decision-making at national level. The logical next step would be to further validate these charts for countries where data were limited. Country-specific growth references could be improved further by extrapolating female data to derive male growth curves.

The method provides a way of deriving regional growth references by collating weight-for-age data available for populations. Furthermore, the method facilitates the transition from generic, universal, age-based dosing practices to more data-driven optimised, regional regimens for anti-malarials. The method could also help monitor nutrition and optimise age-based dosing of other drugs.

¹ Hayes D et al (2015). Developing regional weight-for-age growth references for malaria-endemic countries to optimise age-based dosing of antimalarials. Bulletin of the World Health Organisation, vol 93, pp 74-83. Doi: <http://dx.doi.org/10.2471/BLT.14.139113>

Follow-up of post-discharge growth and mortality after treatment for SAM in Malawi

Summary of research¹

Children enrolled in the MOYO nutrition ward



M. Kerac, Malawi, 2004

Location: *Malawi*

What we know already: There are limited data on long term outcomes following discharge from SAM treatment; what exists is largely pre-HIV. Current CMAM programmes rely on simple and short-term follow up programme indicators to measure treatment success.

What this article adds: A prospective cohort study in Malawi followed up mortality and growth outcomes in 1,024 patients over one year after their treatment for SAM in an inpatient (pre-CMAM) setting. Overall mortality was found to be high in both the short and medium term. Forty two per cent of admitted children died; 25% of these deaths occurred more than 90 days post admission. Of successful discharges, 77% were alive 1 year later. Excess mortality was associated with HIV infection; underlying disability (6%) also contributed. Long term survivors showed good weight-for height catch-up growth, some weight-for-age catch-up but minimal height-for-age catch-up, compared to sibling controls. The findings endorse the CMAM model of care. Further investigation of longer term, non-mortality outcomes of SAM and the impact of early SAM treatment on stunting are needed.

There are limited data on long term outcomes following discharge from severe acute malnutrition (SAM) treatment. The few studies that have looked at this are mostly old, pre- HIV and even pre-current definitions of SAM. This represents an important knowledge gap. The primary aim in a recently published study was to follow up patients over a year after their treatment for SAM to describe the longer term mortality and growth outcomes. A secondary aim was to identify key risk factors for good/poor long term outcomes, particularly those which might be amenable to change or which would help identify high risk individuals for more targeted future support.

This was a prospective cohort study, arising from a randomised controlled trial – the ‘ProNut study’ – which had enrolled malnourished children in a trial examining the efficacy of a prebiotic/probiotic mixture added to ready-to-use therapeutic food (RUTF) during SAM treatment.

Method

The study setting was the MOYO nutrition ward, Queen Elizabeth Hospital, Malawi. This serves a catchment population of both urban and rural Blantyre district. At the time, there were no community programmes for SAM active in the district; this meant no community mobilisation, no proactive identification of SAM cases and no sub-clas-

sification into ‘complicated’ and ‘uncomplicated’ SAM. Children diagnosed with SAM (either at local health centres or in the paediatric admissions area of Queen’s hospital) were all referred for inpatient care, while anti-retroviral treatment (ARVs) were always available at Queen Elizabeth’s Hospital since 2004, guidance at the time was for children newly diagnosed with HIV to start ARVs if meeting stage 3 or 4 (WHO classification) which included failure to respond to nutritional therapy. As a result, many would not have been considered for ARVs until 1–2 months after presenting with SAM, and those with good nutritional recovery were not eligible unless another staging criterion was met. From October 2006, the research team were able to obtain CD4 counts which also informed the decision to start ARVs. Co-trimoxazole prophylaxis was provided from admission and advised to be continued indefinitely.

Cohort subjects were children admitted to MOYO nutrition ward for inpatient care from the 12th July 2006 to 9th March 2007 (ProNut recruitment period), which included both dry (July to November) and rainy seasons (December to March). Whilst not every carer consented to their child’s enrolment into ProNUT, almost all answered a detailed baseline questionnaire. Admission criteria to MOYO followed Malawi 2007 national guidelines,

which defined SAM as weight-for-height <70% median (NCHS growth references) and/or mid upper arm circumference (MUAC) <110 mm and/or oedematous malnutrition. Because of the inpatient-only set-up with children self-presenting to care, it is likely that most would have been towards the ‘complicated’ end of the SAM spectrum. However, since the patient assessment at the time did not include an appetite test, an unknown (but likely small) proportion would have had ‘uncomplicated’ SAM – which in today’s treatment programmes would be treated at home.

Children who were successfully cured (defined as two consecutive visits at above 80% weight-for-height, no oedema, clinically stable) in MOYO’s combined inpatient/outpatient programme were asked to return for a ward-based review on the 1 year anniversary of their cure date. Non-cures and those failing to return for assessment were followed-up at their home by a mobile team who were usually able to determine outcome information at first field visit.

The main study outcome was to describe longer term post-treatment survival. This was defined as the child being seen or reliably reported to be alive at least 1 year after the original discharge date from MOYO. Deaths were subdivided into short term (whilst still an inpatient on MOYO); medium term (within the first 90 days of admission but after inpatient care); and longer term (defined as death >90 days following programme admission). Ninety days was chosen to be consistent with the upper limits of time normally spent in therapeutic feeding; three weeks of inpatient care and 10 weeks in the ‘outpatient therapeutic programme’ (OTP). We also assessed long term growth as a secondary outcome. Weight-for-height z score (WHZ), weight-for-age z score (WAZ), and height-for-age z-score (HAZ) were all assessed and compared with sibling controls. Sibling controls were identified at home visit and were defined as any child born to the same mother and living in the same household. We measured all siblings present at the time of follow-up visit but due to limited resources, were not able to return for a second visit if any live siblings were away from the household at the original visit. Additional variables were assessed at original admission to MOYO and are available with complete data collection sheets. They were clinical history, clinical signs assessed by a doctor or study clinical officer, family and socioeconomic status, HIV status (positive/negative/unknown) and HIV clinical staging according to WHO criteria.

Results

Over the eight month study period, a total of 1,024 children contributed to 1,187 malnutrition admission episodes. Final outcome information was found on 889/1024 (87%). Of the 135 (13%) with no 1-year outcome, 45/135 (33%) could not be traced at the address given; 42 (31%) did not give an address; 31 (23%) had missing notes; 7 (5%) lived too far away for the outreach team to visit and 10 (7%) had an outcome but at less than a year.

¹ Kerac. M et al (2014). Follow-Up of Post-Discharge Growth and Mortality after Treatment for Severe Acute Malnutrition (FuSAM Study): A Prospective Cohort Study PLOS ONE | www.plosone.org 1 June 2014 | Volume 9 | Issue 6 | e9630

A total of 462/1024 (45%) children were known to be still alive at a year or more after discharge from treatment. Long term survival was greatest amongst those who had been successfully cured following initial treatment. Of 471 discharged from the OTP as nutritionally cured, 365 (77%) were still alive at a year or more after their first admission. Of the 427/1024 (42%) who died, most did so early on in programme; 238/427 (56%) of deaths were during initial inpatient treatment. Most deaths, 274/427 (64%), were among children with underlying HIV infection. Differently expressed, 274/445 (62%) of known seropositive children died while a total of 77/459 (17%) of known seronegative children died.

Because admissions at the time were based on NCHS growth references, NCHS z-scores were used for subsequent calculations. To enable future researchers to compare their data, the study authors also present admission anthropometry calculated using WHO growth standards. Key observations are that: children who died were younger than those still alive at 1 year; kwashiorkor (oedematous malnutrition) was the dominant type of SAM but risk of death was lower than in non-oedematous SAM; children who were more malnourished (lower z-scores) at baseline were more likely to die; HIV was prevalent and HIV-associated mortality was high, especially with advanced disease (as indicated by low CD4 count); disability – mostly neurodisability such as cerebral palsy – was common and deaths among disabled children were high. Another observation was the large number of children who, according to their personal health record (health “passport”) or carer, were seen in an outpatient clinic in the six months prior to SAM admission. In addition, many of these were seen for symptoms potentially consistent with SAM (e.g. “swelling”; “severely thin” or similar noted in health passport).

Risk factors for mortality were further explored using multivariable Cox Regression. Adjusting for age, oedema and HIV, low baseline MUAC, WHZ and WAZ are all strongly associated with death. Low HAZ is of borderline significance. Children with oedematous malnutrition were significantly less likely to die than those without. Though the youngest children below 12 months of age were significantly more likely to die, there was no clear age-related risk gradient among older children. HIV stands out as having the greatest adverse impact, an adjusted hazard ratio of 4.03 (95% CI 3.08 to 5.25). Deaths among children whose HIV sero-status was unknown were especially high. Analysis also looked at clinical and social factors which might plausibly explain mortality. What is notable here is that after adjusting for baseline anthropometry, very few factors remain as independent predictors of death. Disability stands out as strongly and significantly associated with death in HIV negative patients, and only just outside the $p < 0.05$ threshold for HIV positive patients. Severe anaemia (PCV < 10) was also associated with increased risk of death, but in HIV positive patients only.

Finally, the research looked at the final anthropometry of the children who had received

treatment on the MOYO ward, compared to sibling controls. Median birth order of the MOYO children was second born. Over 90% of siblings were reported as never having had SAM themselves. Several points are of note. First is the complete catch-up of WHZ. From an initial programme discharge mean WHZ of -1.96 (SD 1.5), there was a 1.92 (95% CI 1.76 to 2.08) z-score catch-up, bringing the surviving group to a WHZ of 0.04 (SD 1.0), comparable to sibling controls. WAZ also improved by 1.66 (95% CI 1.50 to 1.82) z-scores to a ‘long-term’ final value of -1.77 (SD 1.1). This was, however, significantly below that of sibling controls; mean difference in z-scores was 0.55 (95% CI -0.71 to -0.38, $p < 0.01$). HAZ also improved, albeit by only 0.37 (95% CI 0.21 to 0.53, $p < 0.01$) z-scores, to a ‘long-term’ final value of -2.97 (SD 1.3). This was again significantly lower than that of the sibling controls: mean difference -1.13 (95% CI -1.34 to -0.93, $p < 0.01$). Median age of all the siblings who were measured was 61 months and median age of the ex-MOYO children who had a sibling measured was 41 months.

Discussion

In this SAM treatment programme, overall mortality was high in both the short and medium term, markedly above SPHERE targets of $< 10\%$. Long term survivors showed good weight-for-height catch-up growth, some weight-for-age catch-up but minimal height-for-age catch-up, compared to sibling controls. These observations are rare in the SAM literature and therefore offer key lessons for policy makers and programme managers.

First is the need for more information on longer term outcomes so as to assess the true impact of SAM on child mortality. In this particular setting, routine reporting would have given a falsely optimistic impression of post-SAM mortality. Overall 427/1024 (42%) children died, but 105 (25%) of these deaths occurred > 90 days after their original admission. They would have been missed by most nutrition programmes which only follow-up patients up to discharge from outpatient care. Other factors which can mislead routine reporting systems but which the study described, include defaulter follow-up so as to ascribe correct survival status and correct capture of readmissions (of the 52 readmissions, 17 (33%) died) – if not done, denominator population is overestimated and % mortality thus underestimated.

The second key lesson is that patient clinical profile needs to be better accounted for, both when managing individual patients and when judging programme performance. Simple targets, such as SPHERE, cannot distinguish between poorly performing programmes and those caring for a clinically complex patient population where underlying factors are more significant than food insecurity. HIV infection was associated with much of the excess mortality and likely underestimated; even higher mortality was noted among children whose serostatus was unknown (too sick to test) but who were likely seropositive. Notable in FuSAM is the importance of underlying disability. Underlying disability affected 6% of children and accounted for significant excess mortality – a likely underestimate given that the

study had no formal screening tool and therefore identified only the most obvious problems. At present, few programmes actively look for disability so this is a key area for future work.

The third message relates to stunting. Current treatments for SAM may not be sufficient to address stunting on their own. There was limited improvement in survivors’ height-for-age who were significantly stunted compared to sibling controls. This is even more notable given the siblings’ older median age: population prevalence of stunting increases over the first two years of life so that older cohorts might be expected to be more rather than less stunted. Whilst weight-for-age had improved, it also remained low, significantly below siblings’. The marked improvement of weight-for-height z-scores though in one sense welcome, likely reflects rapid weight gain combined with poor linear growth, a pattern which may be associated with later obesity and chronic disease. This needs further study.

FuSAM compares favourably to the few other studies looking at longer term SAM outcomes. Most of these other studies, however, took place pre-HIV. FuSAM thus fills a key gap regarding HIV-era outcomes, especially in sub Saharan Africa where the problem is greatest.

The authors acknowledge a number of potential limitations of the study. For example, FuSAM was conducted when CMAM was not as widespread as it is today and was not available in Blantyre district where the work took place (though it did start shortly after, in mid-2008). Even though some risk factors for mortality (e.g. HIV, disability) are likely to be found in both inpatient and community settings, care is needed before generalising these findings to CMAM programmes. However, the results are consistent with CMAM’s key principle that earlier treatment is better to maximise survival.

Resource limitations meant that it was not possible to follow-up regularly at fixed time-points after programme discharge, but instead relied on a single long term FuSAM visit. It is possible that some variables such as socioeconomic status or orphaning may have changed over time and hence have been missed.

Much more awareness of longer term outcomes of SAM is needed, with attention on important non-mortality outcomes such as growth, development, co-morbidities and pre-determinants for eventual adult non-communicable disease. Programmes should work more holistically, in closer collaboration with other child health services and form part of a seamless ‘continuum of care’. Urgent future work is needed to elaborate exactly which interventions are most effective and most cost-effective for children with disability (and likely other) chronic underlying disease. Finally, the results support calls for, and revitalisation of, early identification and treatment of SAM in CMAM programming. Whilst other confirmatory research is urgently needed, it is very plausible that earlier treatment of SAM would favourably affect stunting and longer term post-SAM chronic disease – both key areas in current international malnutrition policy and programming.

Who's Listening?

Accountability to affected people in the Haiyan Response

Summary of case study report¹



Thanks to Margie Buchanan-Smith and Sarah Routley, researchers and co-authors (with Jonathan Corpus Ong) of the original report, for sharing this work with ENN and reviewing this summary.

Location: *Philippines*

What we know already: Humanitarian agencies are investing more effort into accountability to affected people. Many channels of communication are used. International and national agencies employ different approaches.

What this article adds: Qualitative research following the Typhoon Haiyan response explored affected peoples and agencies respective perspectives and experiences around accountability efforts. Substantive collective efforts were made by agencies on AAP though there was limited engagement of government. Community consultations were common but tended to be 'one way' communication on programmes. Local people preferred face to face communication rather than technological approaches, e.g. hotlines or SMS, a reminder that dialogue and building relationships are at the heart of AAP. Beneficiary selection and providing critical feedback were both contrary to Filipino culture. Feedback rarely changed agency strategic or programme direction, but instead triggered minor adjustments to programming. Most agencies had no dedicated funding for AAP; WVI was an exception and example of excellence.

International humanitarian agencies invested more effort and energy into being “accountable to affected people” (AAP) in the Typhoon Haiyan response than ever before. A recently published case study explores how affected people experienced these accountability efforts, comparing their perspectives with the perspectives of the agencies themselves, and investigates the organisational and systemic factors that enabled some agencies to place AAP centre stage in their programming, and that inhibited others from doing so. The research was carried out between November 2014 and February 2015 using a range of predominantly qualitative research methods. It is part of the Pamati Kita project, designed to promote a more collaborative and collective approach to AAP in the Haiyan response.

As a middle-income country with one of the fastest-growing economies in Asia and a well-defined legal structure, the Philippines is a conducive context for promoting accountability and transparency. One of the most disaster-prone countries in the world, the government of the Philippines has disaster risk reduction and response policies and structures in place, although these were quickly overwhelmed by the scale of the Haiyan crisis. The United Nations (UN) declared it a Level 3 humanitarian response.

Most international agencies used a suite of mechanisms as channels of communication with affected people, including visits by agency staff, community consultations, suggestions and complaints boxes, help desks and hotlines. Technology

played an important role, especially for larger agencies, including the use of smart phones for surveys for assessments, baselines and monitoring; computerised databases to record and analyse feedback; and technological links between hotlines and databases. Most agencies developed their own systems for categorising feedback (although this lack of consistency hampered collective analysis of feedback data), and recorded whether action was taken. For the larger agencies, this was a somewhat formalised system of AAP in which they struggled to capture and accommodate less formalised forms of feedback from face-to-face interactions - for example, daily contact between staff and affected people - and from community consultations.

National non-governmental organisations (NGOs) had a different approach. Those that were local to the area and/or with local staff, with a community-development orientation, felt more naturally in touch with the perspectives of local people and therefore did not see the need to set up dedicated AAP mechanisms, nor did they have the resources. But not all national NGOs fell into this category, and some spent so much time on project delivery they had less time for community consultation. The more activist national NGOs tended to engage with the concept of “accountability” as holding government to account.

There were substantial efforts to promote collective AAP in the Haiyan response. OCHA deployed AAP and Communications with Communities (CWC) coordinators from the outset,

separate AAP and CWC Technical Working Groups were established (eventually merging) in five hubs, and a consortium of agencies – Plan International, International Organisation of Migration (IOM), and World Vision International (WVI) – came together to establish a common services project, Pamati Kita, from July 2014.

Collaborative practices and common services established included community consultations carried out by OCHA in the early response phase, which provided feedback on the overall response, the introduction of Community Feedback Forms to consolidate feedback from individual agencies, and multi-actor community consultations facilitated by the Pamati Kita project during the recovery phase.

Although WVI's database shows that feedback boxes, SMS hotlines, and help desks were the most widely used channels for affected people to feed back to the agency, consultations with local people show that they overwhelmingly preferred face-to-face communication, because of the human interaction and the opportunity for dialogue. Community consultations could be effective ways to air concerns, but local people reported that they tended to be “one-way” as agencies used them to communicate programme details, such as beneficiary selection. Hotlines were treated with scepticism because of the im-

¹ Margie Buchanan-Smith, Jonathan Corpus Ong and Sarah Routley (2015). Who's listening – Accountability to affected people in the Haiyan Response. May 2015. Report published by Plan International, World Vision, IOM and UKAID.

pression that they did not generate meaningful responses and local people did not know who was at the end of the hotline. Better use was made of SMS if the community already had a relationship with the agency.

Agencies had surprisingly little disaggregated data on who was using which AAP mechanisms. According to the research, users of SMS channels were mostly under 40 or 50 years old and female. Older people preferred direct contact. Despite some AAP initiatives targeted at young people, this group generally participated little. Overall, the perspective of affected people is that agencies were not as accessible as they may have believed themselves to be. In terms of closing the feedback loop, agencies gave greatest attention to individual redress, particularly through hotlines and SMS. Although this was generally a weak part of the AAP chain, there were some good practice examples of agencies feeding back at community level, for example to validate the findings of community consultations.

The major concern raised by affected people through these feedback mechanisms was beneficiary selection. There was deep-rooted unease with the conventional humanitarian practice of targeting according to need, which cut across Filipino culture where neighbours are regarded as extended family. Selective targeting triggered social divisiveness within communities and a deep sense of shame amongst the excluded. Although agencies discussed these concerns early in the response, they did not change their targeting practices, apart from making minor adjustments to beneficiary lists. As a result, some *barangay* officials chose not to receive aid at all.

There are a number of examples of how feedback triggered minor changes in programming, but very few examples of substantial changes to programming or to strategic decision-making. There are also cases of agencies not responding to issues raised and not communicating with those excluded from relief programming. *Utang na loob*, or debt of gratitude, is the key moral principle underpinning social relations in Filipino culture, especially to those who provide help beyond normal expectations. Assistance from international agencies falls into this category, creating an immediate disincentive for local people to express criticism. This is compounded by the patron-client culture in which humanitarian agencies are regarded as the patron in a highly unequal power relationship. There was also an underlying fear that support might decrease if communities complained. Overall, the relationship between international humanitarian agencies and affected communities was quite distant, characterised by a sense of ambivalence on the part of the latter. While agency branding (especially by international agencies) contributed to high levels of agency recognition by local people, they made a distinction between international agencies, which were seen as service providers, and some national agencies, which were seen as accompanying communities on their journey.

How agencies engaged at the *barangay* level was a key determinant of how residents engaged

with their AAP efforts. Where agencies had a weak relationship with the community, the influence of the *barangay* captain as “gatekeeper” was strongest; this could hinder feedback where *barangay* officials discouraged residents from raising concerns, partly to “maintain face” to the outsiders. Where agencies had a strong relationship with the community, they were more likely to receive honest feedback. The *barangays* that expressed the most positive experiences of the relief process each had an international NGO embedded in the community, and therefore had the deepest relationship. These relationships were mostly created during the humanitarian response, not before, and positively impacted contentious practices such as beneficiary selection, as well as accountability.

The international humanitarian response is believed to have “reactivated” *barangay* assemblies. But the record of how international organisations worked through national NGOs and their channels of communication with affected communities is less impressive. While national NGOs were overwhelmed with the scale of the response, international agencies prioritised delivery over partnership. There was little government participation in agencies’ collective AAP efforts; ongoing agency collaboration was too resource-intensive for limited government capacity and there is little evidence that agencies tried to build on existing government channels.

Most agencies had little or no dedicated funding for AAP, which was usually located within their M&E (monitoring and evaluation) departments. WVI provided a model of excellence in the way it mainstreamed AAP organisationally in its response to Typhoon Haiyan. There were five key inter-related factors. First, through early deployment (in the first week of the response) of an experienced and assertive accountability officer, the mindset of AAP was established in the programme from the outset and did not have to compete for attention later on. Staff had also been trained in advance. Second, senior programme managers were strongly committed to AAP, regarding it as a fundamental part of humanitarian programming. Under their leadership, AAP was built into management systems and they modelled decision-making based on information and feedback from communities. Third, AAP was passionately championed throughout the response, particularly by a series of dedicated AAP managers. Fourth, organisational structures and processes to support AAP were put in place, including a separate unit and dedicated staff for AAP. Fifth, there were reinforcing factors as WVI was recognised for the work it was doing in being accountable to affected people and as staff connected with this essence of humanitarian work. But this did not

mean that WVI got it right on its own. Periodically checking in with communities was essential to get their perspective, to find out if the agencies’ communication channels were working for them and to make adjustments accordingly. Other agencies’ experience is a reminder that a rhetorical commitment to AAP, even at the most senior levels, means little if responsibility for AAP is not clearly assigned and located in management structures. Ultimately, mainstreaming AAP requires will, resources and capacity to succeed.

In the Haiyan response, there is evidence that upwards accountability to donors squeezed out downwards accountability to affected people, for example in the allocation of staff and resources to donor reporting as opposed to listening to affected people. Although few interviewees felt that donor requirements prevented them from making programme changes in response to feedback from affected communities, the time it took to secure such donor approval was itself a disincentive.

While AAP was given much greater attention as an organisational and sector-wide priority in the Haiyan response, there were limitations in the way it was done. First, feedback tended to focus on existing agency programmes: “are we doing things right?”, rather than on bigger strategic issues: “are we doing the right things?” Second, local people’s preference for face-to-face communication highlights that dialogue and building relationships are at the heart of AAP. This may require spending substantial time at community level - a challenge for agencies with large programmes early in the response - but actions like setting up help desks in early distributions can be a stepping stone in providing much-valued face-to-face contact. While technology should be used to support interaction between local people and agency staff, it should not become an end in itself. Third, while humanitarian agencies tend to see the aid transaction as between themselves as service providers and individual vulnerable households, the Haiyan experience demonstrates the relevance of the wider cultural and societal context. Fourth, this case study highlights the importance of working through local government structures in an informed and nuanced way, alert to power dynamics at local level.

The three main reports from this work are:
Who’s Listening: A case study of accountability to affected people in the Haiyan response
Who’s Listening Briefing Paper: A short summary of the full report, above.
Obligated to be Grateful: How local communities experienced humanitarian actors in the Haiyan response
 All are available at: <http://www.plan-international.org/aap>

Alex Jacobs, of Plan International, has been invited to be the ‘focal point for accountability to affected populations and community engagement’ for the secretariat of the World Humanitarian Summit. He will help shape analysis and recommendations in this area for the summit. Working documents are also available at <http://www.plan-international.org/aap>. Please feel free to contact him via alex.jacobs@plan-international.org with any suggestions.

Risk sharing and social hierarchy in disaster aid

Summary of research¹

Location: *Fiji*

What we know already: To design effective participatory/decentralised disaster management, it is crucial to understand better community decision-making mechanisms. The process of benefit allocation within communities is poorly observed, particularly post-disaster. Social hierarchy can shape political economy; dominant elite can drive aid allocation.

What this article adds: The role and interaction of informal risk-sharing institutions and social hierarchies were explored using post-disaster surveys in rural Fiji. Analysis found evidence for weak targeting and elite domination for given damage. Patterns of targeting and elite domination varied over post-disaster phases, at different levels of allocation and across different shocks. Implications for local disaster management in similar developing country contexts include: private risk-sharing mechanisms should be strengthened pre-disaster; collection of social status data adds value; and a better understanding of local aid allocation (e.g. through kinship) is crucial to ensure external accountability mechanisms do not weaken local safety nets.

A common notion is that communities can play an active role in identifying vulnerabilities to natural disasters, mitigating them and responding to them in proactive ways, and thus communities need to be given decision-making power. In order to design effective participatory/decentralised disaster management, it is crucial to understand better community decision-making mechanisms. A recently published paper explores a critical question about disaster aid: once aid is allocated to a community, how are provisions allocated among households within the community? This question has not been sufficiently answered, especially in developing countries because of the paucity of household-level data on disaster damage and aid, with rich variations within communities. With such data, the extent to which targeting within the community is effective can be directly measured by aid response to damage in a regression model controlling for the community-level aid supply.

The author's original post-disaster surveys in rural Fiji collected such micro-level data². Fiji's disaster management is strongly centralised; in particular, communities do not participate in decisions about aid allocation across communities. Under the status quo, however, each community can influence how aid is allocated among its members, because local governments and aid agencies, with limited capacity for assessing household-level damage and implementing intra-community allocations, rely on community resources in practice and they are linked with those who have power within the communities.

The paper explores two community mechanisms: informal risk-sharing institutions and social hierarchies. First, extensive economic studies show that with a lack of formal insurance, informal risk sharing – reciprocal help based on implicit contracts – plays a central role as a safety net in poor populations. Second, a social hierarchy can strongly shape a community's political economy, which determines local benefit allocation as highlighted in community-based development. Then, elite domination can be a secondary driving force of aid allocation. For given damage, elites are more

likely to be recipients or to receive a greater amount than non-elites. This elite domination for given damage determines the equity of aid allocation. The limited observability of the process of benefit allocation within communities, however, is a common problem in community-based programmes and is especially serious in post-disaster contexts. The paper overcomes this challenge by exploiting direct measures of social status. As the author's survey stratified households in each village by their kin group and elite status, direct measures of elite status at the household and kin group levels with rich variations are available. With the author's micro-level data of social status, elite domination for given damage can be measured by aid response to social status in a regression model controlling for household-level damage and unobserved village heterogeneity, such as the process of aid allocation.

Treating risk sharing and social hierarchy independently, the paper shows evidence for both seemingly weak targeting and elite domination for given damage. Building on kinship, these two community mechanisms are not independent of each other; in particular, kin groups are a major village subgroup in both. The paper reveals that the interaction of the two mechanisms can lead to elite domination in the targeting on damage; aid allocation more strongly responds to elite's damage than non-elites. The analysis compares emergency food aid in the relief and early recovery phases and housing aid in the recovery/reconstruction phase. It also compares their allocations within the kin group and across kin groups, as well as allocations of food aid on housing and crop damage. As such, the paper demonstrates how patterns of targeting and elite domination vary over post-disaster phases, at different levels of allocation and across different shocks. Specifically, disaster victims are allocated less food aid in the early post-disaster phase, mainly because they receive greater labour help for housing rehabilitation, especially within kin groups; in contrast, the allocation of housing aid in the late phase is strongly targeted on housing damage. There was also evidence for potential elite capture; for given damage, local elites dominate the allocation of housing aid but not food aid.

The paper's framework and findings can apply to contexts where a natural disaster with moderate severity does not undermine social systems (hierarchy) and the community's risk sharing works between disaster victims and non-victims. Such natural disasters are common across developing areas and effective management to cope with them in a self-reliant manner, e.g. through a community-based approach, is of great importance. If instead, all or most community members suffer an unusual catastrophic hazard, such as the 2004 Indian Ocean Tsunami, not only does the risk-sharing institution not work, thus making the issue of seemingly weak targeting irrelevant, but also social systems per se can be damaged through massive casualties, evacuations and migrations.

These results lead to the following implications for local disaster management in developing countries:

- i) For better allocation of disaster aid within communities, private risk-sharing institutions should be maintained and strengthened as a self-targeting mechanism. Participatory community-based disaster management needs to be integrated with broad, community-based development programmes (e.g. poverty alleviation).
- ii) Although targeting aid on damage is critically important, the performance of overall risk sharing needs to be given direct attention. This is especially so in the early post-disaster phase when private risk sharing potentially makes up limited aid; however, information about it is lacking the most at that time. That is why strengthening local institutions before the event in a self-reliant manner is strongly demanded.
- iii) In hierarchical developing societies, elites and/or elite groups can dominate intra-community aid allocation not only for given damage, but also for targeting on damage throughout the post-disaster phases. More attention should be given to the political economy of local disaster management. Although its limited observability is a serious constraint, micro-level data of social status can help overcome this challenge.
- iv) The coexistence of risk sharing and social hierarchy as allocation mechanisms poses a great challenge for policy makers, because the former is often built on the latter, especially through kinship. On one hand, interventions to neutralise elite capture (external accountability mechanisms) may weaken local safety nets instead of strengthening them; on the other hand, when such interventions are weak or lacking, equity can be significantly undermined. To balance this trade off, a better understanding of the process of local aid allocation under the status quo is crucial, as in local benefit allocation of community-based programmes in general.

¹ Takasaki, Y (2014). How is disaster aid allocated within poor communities? Risk sharing and social hierarchy. *Journal of International Development*, vol 26, pp 1097-1114 (2014). DOI: 10.1002/jid.2985

² On the 13th January 2003, Cyclone Ami swept over the northern and eastern regions of the Fiji islands. The author conducted two rounds of surveys; between August and November 2003 among 374 households in nine villages and between July and September 2005 among 906 households in 43 villages.

Improving the assessment and attribution of effects of development assistance for health

Summary of research¹



Location: *Global*

What we know already: It is difficult to relate Overseas Development Assistance for health (DAH) and health outcomes; there are multiple funding resources, the contribution of health systems is typically underestimated and assumptions regarding the impact of external donor investment are overgenerous. Channelling funds through national delivery systems makes attribution to a specific funder difficult.

What this article adds: A set of agreements between donors on the principles underpinning assessment and reporting of the effect of DAH is suggested by the authors of a recent review. There are a number of promising initiatives on impact assessment (NOINE, 3ie, UN interagency groups, HIAs IHP+) to draw upon. Approaches should respond to country needs with appraisal of potential biased reporting; identify contextual factors affecting observed results; take into account confounding factors, such as economic growth or shocks; and adapt to different settings and needs. Lack of definition on what constitutes health systems strengthening activities and expenditures and methodological challenges reinforces the large knowledge gap in assessment of DAH effect.

The authors of a recent paper in the *Lancet* suggest a set of agreements between donors on the principles underpinning assessment and reporting of the effect of Overseas Development Assistance for health (DAH). Their suggestion stems from the methodological challenges in establishing a relation between Overseas Development Assistance for health (DAH) and health outcomes. The validity of the results presented by major funding agencies has been questioned because of weaknesses in models used to estimate outcomes, inappropriate counterfactuals and overgenerous assumptions of investment effects. Attribution of health outcomes to external investments by specific agencies has also proved to be challenging because of the multiplicity of funding sources. Furthermore, methods that attribute health effects to single interventions or specific funds do not reflect the vital contribution of health systems to health outcomes.

Most donors have committed to aid effectiveness principles underpinned by the Paris Declaration (2005) and the Accra Agenda for Action (2008), which stress national ownership and leadership, as well as harmonisation and alignment by donor agencies to national systems. Increasingly DAH is channelled through national delivery systems, making it difficult to attribute

results to a specific funder. Yet most donor agencies continue to report their results.

The most commonly used approaches to assess and report the effect of DAH on health outcomes are tracking of trends in mortality, morbidity and coverage indicators; and estimation of lives saved and deaths averted. Methodological challenges include insufficient reliable data and poor disaggregation by age, sex, socioeconomic groups and geographical location. Assessment of the health effect of health systems strengthening (HSS) interventions with use of these measures is particularly challenging, because of the complex causal pathways through which these interventions are likely to have an effect. Furthermore, gaps in tracking input (e.g. HSS expenditures) and output indicators (e.g. measures of service availability, accessibility, and quality) limit the ability of studies to fully describe the sequence of inputs, activities, outputs and outcomes leading to an effect.

Donor agencies also use lives saved or deaths averted metrics to quantify the effect of DAH targeting disease-specific interventions, by comparison of health outcomes after the implementation of an intervention with the outcomes in similar geographical areas that did not receive the intervention during the same period; with

outcomes in the same area(s) before the intervention was implemented; and with a hypothetical counterfactual scenario for the same area during the same period. Peer-reviewed models are used to estimate outcomes with these measures on the basis of estimated population coverage of interventions with well documented health outcomes. For example, the Global Fund has estimated lives saved by disease-specific interventions such as anti-retroviral therapy (ART) for AIDS and by insecticide-treated nets that reduce mortality.

Six points of interaction of DAH with national health systems have been identified: governance, finance, health workforce, health information systems, supply management systems and delivery of health services. However, there is no single framework to classify these interactions and research has identified several challenges, e.g. insufficient data, including for contextual factors that might have affected health effects and both the complexity of health system interventions and of the causal pathways leading to health effects.

Two main approaches used by donor agencies when attributing health effects to their funding are determination of plausible counterfactuals and establishment of exclusive attribution. When determining plausible counterfactuals, no intervention has frequently been used to attribute a health effect that could be linked to a specific source of funding, but determination of counterfactuals has been challenging, especially since an ideal control group was difficult to identify. The result attributed to a funder is sometimes assumed to be a proportion commensurate with the donor agency's contribution to the overall investment for the intervention or country in question, although funding is often pooled at country level.

Promising initiatives on impact assessment

There is as yet no consensus between key stakeholders on the strategies to improve and harmonise measurement approaches, but they could benefit from refinement and wider application of several promising approaches used by donors outlined below.

¹ Ataya, N et al (2014). Improving the assessment and attribution of effects of development assistance for health. *www.thelancet.com*, vol 384, pp 2256-2259, Dec 20/27, 2014

Beyond health, the *Network of Networks for Impact Evaluation (NONIE)* and the *International Initiative for Impact Evaluation (3ie)* support the use of study designs that enable analysis of interventions across the whole causal chain, from input to effects, and advocate the use of mixed methods for impact assessment to provide a more complete picture of effect.

In an attempt to strengthen country monitoring and evaluation platforms, the UN inter-agency groups (e.g. *UN Evaluation Group, Inter-agency Group for Child Mortality Estimation, and Maternal Mortality Estimate Inter-agency Group*) aim to develop new indicators, enhance capacity at country level to improve monitoring systems and strengthen data use, and harmonise work across partners on assessment and reporting of progress towards the Millennium Development Goals (MDGs).

Additionally, the *Development Impact Evaluation Initiative* by the World Bank provides technical assistance to projects and partners throughout the project cycle to ensure high-quality monitoring and effect evaluation.

One proposed approach, *Health Impact Accounts (HIAs)*, aims to identify crucial value chains (such as infrastructure, transportation, procurement systems, etc) required for effective implementation of interventions (whether disease-specific or HSS interventions) at country-level, and then apportions credit for effect to all investors, according to their relative contribution to different components of the value chain.

Recent efforts, including those by *International Health Partnership Plus (IHP+)*, have tried to improve and harmonise approaches used by donor agencies and partner countries to assess the effectiveness of DAH to reduce demands on weak health systems for donor-specific information; strengthen transparency and enhance comparability across different donor agencies; show the contribution of health systems to improvement of health; increase the efficiency of resource use; and provide reliable estimates of benefits of DAH. IHP+ encourages the documentation of results and of health aid effectiveness through in-depth individual country case studies. It also advocates joint annual reviews of country health strategies, including monitoring, evalua-

tion, and review mechanisms, based on country monitoring platforms. However, the extent to which the IHP+ support to improved monitoring of national health strategies produces improved output information that could serve as a basis for further health impact assessment remains to be established. Joint annual reviews by several donors would improve harmonisation and mutual accountability by aligning donor assessment and reporting with national assessment and reporting mechanisms, thereby avoiding parallel donor-specific systems.

Proposed agreements between donors

A set of agreements between donors on the principles underpinning assessment and reporting of the effect of DAH are suggested:

First, approaches to assessment and reporting should mainly respond to country needs (including national governments and end beneficiaries) and emphasise mutual accountability. Country-owned monitoring and evaluation platforms need to be strengthened by external and domestic investments, and include robust additional studies. For example, a national evaluation platform that uses the district as the unit of design for natural, quasi-experimental or experimental studies and is based on continuous monitoring of core indicators can provide a rigorous comparison of effectiveness of interventions and different scale-up approaches.

Strengthening of monitoring and evaluation platforms should include a careful appraisal of potential incentives towards biased reporting, which exist in the relationship between partner countries and donors, especially in performance oriented initiatives such as GAVI's (vaccine alliance) immunisation services support. Such perverse incentives might affect the accuracy of the data used to assess the effect of DAH, which in turn misinforms donors and their constituencies about their progress and might counteract efforts to strengthen country monitoring and evaluation platforms. Validated and standardised instruments and sampling frames, establishing systems for quality control and periodic surveys on a range of health topics that benchmark country-reported data, could help to address biases arising from perverse incentives.

Second, approaches to assess and report the health effects of DAH should identify the contextual factors both within and outside the health system that contribute to the observed results and might affect their wider applicability.

Third, there should be greater consistency and transparency in the selection of counterfactual scenarios, taking into account potential confounding by factors such as economic growth or conversely, economic shocks that can affect the determinants of health.

Fourth, approaches to assess and report the health effects of DAH should be adapted to different settings and needs. They should draw on a range of methods and designs dependent on what inference is likely to be made from them. They should be tested in both stable and fragile states, with coordinated approaches to monitoring sector performance that foster country ownership and reduce uncoordinated multiple donor programmes.

Substantial knowledge gaps in assessment of the effect of DAH exist, especially for investments in health systems. These knowledge gaps are accentuated by the absence of consensus about the definition of what constitutes HSS activities and expenditures. Methodological challenges include double counting, underestimation of the contribution of health systems to health effect, and overlooking of system-wide effects of DAH. These challenges could undermine public confidence in the fidelity of the figures presented on the effectiveness of DAH. Exclusively attributing effect to disease-specific interventions supported by donor agencies could lead to channelling of greater financial support to disease-focused interventions than to HSS interventions, which could be particularly damaging in view of the plateauing in DAH since 2010. Some studies have suggested that disease-specific interventions have potential adverse effects on the health system, e.g. distorting national health priorities and diverting health workers from other responsibilities. However, there is paucity of empirical evidence to conclude convincingly whether the effects of disease-specific interventions on health systems have been negative or positive. Rigorous methods are needed to assess whether negative system-wide effects of DAH, including the potential skewing of expenditure (fungibility) are a substantial problem. Donor agencies need to develop their own skills and competencies and work with the research community further to address the methodological challenges inherent in assessment approaches.

Improved measurement, enhanced comparability across different agencies and strengthened transparency in assessment of the effect of DAH should give credence to the results reported by funding agencies. To advance this agenda and appraise these new approaches in more depth is crucial, in view of the large amounts of funds spent, the growing recognition of the importance of HSS interventions to achieve global health goals and the political pressures on aid budgets at a time of economic austerity.



Justine Greening (UK International Development Secretary at the time) and The UK Prince of Wales at a WFP supermarket in the Zaatari refugee camp, Jordan. This visit marked the announcement of a further £100 million of assistance by the UK government for the Syrian crisis.

WFP/Joelle Eid

Interactions between nutrition and immune function:

using inflammation biomarkers to interpret micronutrient status

Summary of research¹

Location: *Global*

What we know already: Both clinical and sub-clinical inflammation affects the plasma concentration of many nutrients. This complicates assessment of nutritional status and interpretation of nutrition intervention impact, particularly in those who are apparently well but at risk of or recovering from infection.

What this article adds: A review used two acute phase proteins (CRP and AGP) to determine the presence of inflammation and assist interpretation of plasma retinol, ferritin and zinc concentrations in healthy HIV+ Kenyan adults. Iron deficiency was significantly under-estimated in uncorrected data; serum zinc concentrations only increased in response to supplementation in people without inflammation. The authors recommend that CRP and AGP measurement should accompany micronutrient status measurement in apparently healthy subjects and that correction factors should be applied in interpreting their data.

The immune response promotes a complex series of reactions by the host in an effort to prevent ongoing tissue damage, isolate and destroy the infective organism and activate the repair processes that are necessary for restoring normal function. The process is known as inflammation and the early set of reactions that are induced are known as the acute phase response (APR). The APR has marked effects on the circulation, liver metabolism and the plasma concentration of many nutrients. The changes in nutrient concentrations follow a cyclic pattern; they occur before any clinical evidence of disease, being at their most pronounced during the disease, and remain in convalescence when all evidence of disease or trauma has disappeared. Therefore, where susceptibility to disease is high as in people who are HIV + but still apparently healthy, obtaining an accurate measurement of nutritional status may not be possible.

Accurate measurements of nutritional status are important for national statistics to plan for the proper utilisation of government resources and they are especially important to evaluate the effectiveness of nutritional interventions. Many acute phase proteins (APP) are synthesised

during inflammation and they are used to monitor the progress of disease and recovery but individually, none of their lifecycles compare well with those of the nutritional biomarkers. Nevertheless, recognising the presence of inflammation can help interpret data. A recent review paper illustrates methods developed using two APPs to assist interpretation of plasma retinol, ferritin and zinc concentrations in apparently healthy, HIV + Kenyan adults.

In essence, the review found that the use of two APPs, C-reactive protein (CRP) and alpha(1)-acid glycoprotein (AGP), to identify subjects with inflammation enabled the researchers to show that iron deficiency was significantly under-estimated in uncorrected data and that the presence or absence of inflammation determined whether absorbed iron was stored as ferritin or utilised for haemoglobin (Hb) synthesis, respectively. In the case of zinc supplementation, serum zinc concentrations only increased in response to the supplement in people without inflammation. In the case of plasma retinol (used to measure vitamin A status), there was a large fall (up to 40% in women who had undergone uncomplicated orthopaedic surgery). Inflammation can be present in many apparently healthy infants and

children in developing countries which can lead to an overestimate of vitamin A deficiency. All the results illustrate that where sub-clinical inflammation is present, it should be identified to evaluate correctly nutritional status and interpret the effects of intervention.

In conclusion, the authors suggest that all workers measuring micronutrient status in apparently healthy subjects should measure the two proteins CRP and AGP and apply correction factors in interpreting their data. Even if the correction factors cannot be calculated, e.g. if there were insufficient people in the reference group, or the corrections fail to influence their data because of small sample sizes, examining subjects with inflammation separately from those without can reveal some interesting differences in the way micronutrient status sometimes responds in people with and without inflammation.

¹ Thurnham, D (2014). Interactions between nutrition and immune function: using inflammation biomarkers to interpret micronutrient status. *Proceedings of the Nutrition Society* (2014), vol 73, pp1-8. Doi:10.1017/S0029665113003662

Effect of Asian population-specific BMI cut-off values on malnutrition double burden estimates

Summary of research¹



M. Kerec, Malawi

Location: *India*

What we know already: India is a rapidly developing economy with huge socio-economic and demographic heterogeneity and co-existence of under- and over-nutrition is one of the consequences. Asians have higher body fat at lower BMI than Caucasians. South Asians in particular have increased risk of morbidities associated with overweight and obesity are apparently well but at risk of or recovering from infection.

What this article adds: A recent analysis assesses the gravity of the double burden of malnutrition across 21 states of India, through a comparative analysis of traditional and Asian population-specific BMI categorisations for overweight and obesity. Analysis was based on data on ever-married women (15–49 years) from the NFHS-2 and NFHS-3. This found that Indian women err toward high BMI resulting in a co-existence of under- and overweight populations, which portrays a regional pattern. With Asian population-specific cut-offs, 11 states can be classified as “double burden states”; following traditional categorisation, only four states face such dual pressure. Inequality plays a crucial role in determining the paradoxical existence of under- and over-nutrition in India.

India, a rapidly developing economy, is characterised by huge socioeconomic and demographic heterogeneity across its states. These states may, therefore, face different policy challenges in understanding the anthropometric status of its population. A recently published article aims to understand the magnitude of the double burden of malnutrition across major states in India, in terms of Body Mass Index (BMI)². However, studies comparing body fat and BMI have documented that Asians have higher body fat at lower BMI compared to Caucasians and that this difference can partly be attributed to body stature and composition. Researchers have suggested lower BMI cut-off points would be appropriate for Asians, since risks of cardiovascular diseases and diabetes have been found to be higher among Asians than other ethnic groups at a BMI value which is lower than the conventional overweight cut-off point³. Also, compared to other Asian ethnicities, South Asians have showed an increased

risk of morbidities associated with overweight and obesity regardless of the BMI standard used. According to the recommendations made by WHO in 2004, additional BMI trigger points of 23 and 27.5 have been identified for public health action, to identify the increased risk and higher risk respectively for overweight and obesity, particularly for an Asian continuum starting from 16 up to the BMI category of 40, while traditional BMI cut-off points should be retained as the international classification.

Data for a recently published study were drawn from the National Family Health Survey – NFHS-2 and NFHS-3, conducted 1998–1999 and 2005–6, respectively. Both surveys covered a sample representative of 99% of the Indian population. NFHS-2 collected information from 91,196 households and interviewed 89,199 ever-married women aged 15–49 years from 25 out of 26 states. NFHS-3 included 124,385 women aged 15–49 years (including never-married

women) and 74,369 men aged 15–54 years from 29 states. A total of 515,507 individuals who stayed in the household the night before the interview were enumerated from the NFHS-3 sample households. As NFHS-2 collected information from ever-married women aged 15–49 years, whereas NFHS-3 incorporated all women aged 15–49 years in the survey, only ever-married women were considered in this study.

Random sampling techniques were adopted in both rounds for the NFHS. The urban and

¹ Sengupta, A et al (2014). State-wise dynamics of the double burden of malnutrition among 15–49 year-old women in India: how much does the scenario change considering Asian population-specific BMI cut-off values? *Ecology of Food and Nutrition*, vol 53, pp 618–638. DOI 10.1080/03670244.2014.891994

² BMI for a person is defined as their body mass divided by the square of their height, with the value universally being given in units of kg/m²

³ Conventional BMI cut-offs are BMI 25–29.9 categorised as overweight, and BMI 30 or higher considered obese.

rural samples within each state were drawn separately and were allocated proportionally to the size of the state's urban and rural populations. In each state, the rural sample was selected in two stages, with the selection of villages at the first stage, followed by the random selection of households. In urban areas, a three-stage procedure was followed. In the first stage, wards were selected with probability proportion to size (PPS) sampling, followed by random selection of census enumeration block and households.

NFHS provides information on various demographic and health indicators along with the nutritional profile. The nutritional status of adults is measured using BMI. In order to understand the dual burden of malnutrition in India, in addition to the traditional cut-off points, the study also followed the WHO 2004 expert committee for the new BMI classification for the Asian population; where a BMI of between 23 and 27.4 is classified as overweight and a BMI of more than or equal to 27.5 is considered as obese. The focus of the article is only upon the major states of India, so the manifestation of dual burden of malnutrition has been depicted for 18 states from NFHS-2 and 21 states from NFHS-3 through a comparative analysis between the traditional and Asian population-specific cut-off points. The authors defined a state as a 'double burden of malnutrition state' when it had at least a 20% prevalence of both underweight and overweight in adult women.

With Asian population-specific cut-offs, 11 states can be classified as "double burden states"; following traditional categorisation, only four states are classified as such. According to surveys by the National Nutrition Monitoring Board (NNMB) conducted in rural areas of nine Indian states, the proportion of both men and women with a BMI below 18.5 has come down by 41% and 31% respectively over the period of 1975-2005. Even with this reduction, one-third of men and 36% of women in India still suffered from chronic energy deficiency in 2005. This study analysing data from NFHS-3 shows that still almost one out of three ever-married Indian women aged 15-49 years is underweight. In 16 out of 21 major states, still at least 25% of women are found to be underweight during the survey; the figures have gone up in three states.

The prevalence rates of overweight and obesity found in NFHS-3 using the conventional definition does not seem to be as significant as underweight. Although two data points are not enough to make a solid projection, assuming the established rate of changes in the nutritional dynamics during 1999-2006 will prevail over the coming years, there should be 29% of ever-married women aged 15-49 years underweight, while the prevalence of overweight and obesity

will be 21.1% and 10.5% respectively using the Asian population specific cut-off in the year 2013. This means that 61% of the reference group suffers some form of malnutrition and the proportion of overweight exceeds that of underweight among women. Again, using the Asian population-specific cut-off point values for overweight and obesity, a geographical pattern emerges. Except Punjab, Delhi and Kerala where overweight is the main concern, the entire northern, western and southern belt of India is facing the simultaneous risk from under- and over-nutrition. At the same time, all the Central and Eastern states, which are very poor, are still struggling with very high rates of underweight amongst women.



WFP/Rein Skulleud, India, 2004

(BMI <25), still had abdominal obesity. Among the Northern Indian population, the conventional cut-off level of the BMI underestimates overweight and obesity when percentage of body fat is used as the standard to define overweight. The cardiovascular risk was also found to be considerably higher among the Asian Indians with BMI values less than 25; for them, overweight cut-off points should follow WHO recommendations. The study findings using the revised cut-off points show that a massive growth rate for higher BMI values juxtapose a rapidly increasing threat of chronic diseases, while diseases associated with chronic energy deficiency are still highly prevalent in India. This dual burden of diseases is already evident in South Asia while India hosts the largest number of diabetic patients.

Macro-economic data show that the states which are having a high prevalence of overweight demonstrate much lower poverty levels and higher Gender Development Index ranks. In contrast, central and eastern Indian states, where proportions of chronic energy deficiency are very high among adult women, are characterised with high prevalence of poverty and weak socioeconomic status of women. The states that are in socio-economic transition show a tendency for double burden of malnutrition. Inequality plays a crucial role in determining the paradoxical existence of under- and over-nutrition in India. India is currently experiencing the second phase of nutrition transition. Globalisation and foreign direct investment into food processing, services and retail has played an important role in developing demand for highly processed foods. The need for India to focus attention (both research and policy) on both the problems of under- and over-nutrition simultaneously, to avoid serious public health concerns, has clearly been manifested through the results of this analysis.

There are a number of limitations of this study. Use of BMI to measure overweight and obesity among Asians has remained under question. It fails to

differentiate between fat and fat-free mass and hence is unsuitable to gauge coronary risk. It has been found that the prevalence of obesity-associated morbidities is higher among individuals with short stature, and in that case, lowering BMI threshold points for overweight and obesity may not resolve the problem.

Secondly, this study only analyses information on ever-married women in their reproductive ages and therefore doesn't provide a comprehensive picture of the nutrition pattern among Indian women. Moreover, as the study depicts that urban women and women aged 30-49 years are at risk for both under- and over-weight problems, more in-depth analyses are required on both these fronts.

Following Asian population-specific classification, there are now eight states where the proportion of overweight exceeds the proportion of underweight people. In fact in 2005-6, in Delhi, Punjab, and Kerala, the prevalence of overweight among adult women has been nearly five times higher than their underweight counterpart, with almost half of the ever-married women aged 15-49 years being overweight. The results suggest that more Indian states are about to go through this transition very soon.

Studies on Indians showed that even at moderately increased BMI levels, they are exposed to higher risk of abnormalities related to overweight or obesity, i.e. one study found that 20% of Indians who were not overweight or obese

Determinants of household vulnerability to food insecurity in Malawi

Summary of research¹

A food market in Malawi

M. Kerac, Malawi

Location: *Malawi*

What we know already: Subsistence farming households are vulnerable to food insecurity.

What this article adds: A household level study examined food insecurity and largely agricultural determinants in two semi-arid districts in Malawi. Maize was used as a proxy for measuring household vulnerability. The main determinants of household vulnerability to food insecurity were income, household size, land size, access to on-farm employment, climate information and modern agricultural technologies. Female-headed households were more vulnerable. Household income plays a major role in food security. Policy interventions are needed regarding women's access to and control of land; diversification of livelihoods; communication on climate change and production technologies; and adaptive support to low income households.

A recent study examined household vulnerability to food insecurity and its determinants in two semi-arid districts in Malawi. The study was conducted in two Extension Planning Areas (EPAs), Mitole and Manjawira, located in Chikhwawa and Ntcheu districts respectively. The districts are semi-arid, characterised by variable and erratic rainfall patterns, dry spells, floods and droughts. The main food crop grown in the areas is maize; however, other crops such as millet, sorghum, rice, sweet potatoes, Irish potatoes and beans are also grown. The population in the two areas is composed of smallholder subsistence farmers who mainly depend on rain-fed agriculture for their livelihoods.

A multistage sampling technique was employed to select 100 households from each EPA, making a total of 200 households. Household interviews were conducted to collect cross-sectional data from February to March 2010, using a pretested structured questionnaire. Data collected included maize harvests and purchases, land size, household size and composition, income, access to resources and the characteristics of the household head.

Maize was used as a proxy for measuring household vulnerability to food insecurity because over 90% of the rural population depends on it. It was measured in terms of total maize available (own harvest plus purchases) per adult equivalent. The study considered adults as persons older than the age of 16 years. Children aged 16 years and under were weighted as half an adult. Estimates show that adults require 270 kg of maize

per year and children about 135 kg. Maize contributes roughly 55% of total caloric intake. Therefore, per capita consumption requirement is estimated at 126 kg of maize per adult per year. All children in a household were converted to adult equivalents and this factor was used in calculating household vulnerability to food insecurity. The household vulnerability to food insecurity measure was calculated by dividing total maize available (maize harvested plus maize purchased) by the number of adult equivalents multiplied by 126 kg.

A simultaneous equation model was used to assess the determinants of household vulnerability to food insecurity. Most of the explanatory variables are agriculture related. Household vulnerability to food insecurity was conceptualised as the relationship between the amount of maize available (from own farm production and purchases) and household and farm characteristics, income, and on-farm and off-farm employment. Land size cultivated and education were presumed endogenous because they are influenced by other factors such as income and household size, which are also explanatory variables in the model.

The analysis of the study data found that the main determinants of household vulnerability to food insecurity were income, household size, land size, access to on-farm employment, climate information and modern agricultural technologies. The results are consistent with previous findings and the direct relationship between land size and food security is consistent with previous studies. Furthermore, female-headed households were

found more likely to be vulnerable to food insecurity because of poor access or control over resources such as land, climate information, technologies and income, which are the main determinants of household vulnerability in the study area. These findings may result from cultural beliefs, whereby access to resources for food production such as land and inputs is low among women in developing countries. Therefore, policy interventions that enable women to gain control and access over land and those that promote access to climate information and technologies on improving production are likely to have more community benefits than those that focus on men.

The findings also show that household income plays a major role in food availability at the household level. Households that do not produce food because of climate factors can still achieve food security through purchases. The results imply that agricultural policy should consider factors related to food production and household income to achieve household food security. In case of crop failure because of climate and other factors, households can still achieve food security through purchases if they have sustainable sources of income. Hence, policy intervention should promote diversification of livelihoods. Alternative sources of livelihood, such as small and medium scale businesses, may assist households to become food secure. Furthermore, agricultural policies that support low income households to adapt through the provision of farm inputs and credit facilities are crucial in achieving household food security. Moreover, policy interventions are required to promote the adoption of modern agricultural technologies and to improve the dissemination of climate information among the rural households, especially those that are affected by climate variability. Interventions should also focus on localising the collection and recording of climate factors in rural areas. This can be carried out through capacity building in collecting and recording climate factors using locally available materials to ensure that data on climate are available at local level to improve future prediction of climate and weather forecasts. In line with this, strong social networks among communities may provide a platform for introducing interventions and new policies.

¹ Kakota T et al (2015). Determinants of household vulnerability to food insecurity: A case study of semi-arid districts in Malawi. *Journal of International Development*, vol 27, pp 73-84. DOI: 10.1002/jid.2958

Mothers Understand And Can do it (MUAC)

Summary of research¹



A mother measures MUAC of her child

Location: *Niger*

What we know already: Community based management of SAM often relies on anthropometric screening by Community Health Workers. Training includes measurement of mid-point of the upper, left (non-dominant) arm.

What this article adds: In a rural setting in Niger familiar with MUAC screening, mothers given minimal training adequately performed and interpreted MUAC on their own young children. Results were comparable with Community Health Workers' results. Further findings suggest that the choice of arm and exact location of the tape on the upper arm are not important for screening children; it is likely the choice of arm remains relevant when measuring adolescents and adults. Frequent screening by mothers would allow early diagnosis and treatment of SAM in their children.

Community based management of severe acute malnutrition (SAM) often relies on Community Health Workers (CHW), who may be unpaid volunteers, to conduct the anthropometric measurements of children being screened and treated for SAM. Currently this requires training, standardisation testing, and follow-up; motivation and retention of these staff may also be problematic. In training to perform a mid upper arm circumference (MUAC) measurement, a CHW must learn to use the left arm and to measure and mark the mid-point of the upper arm, between shoulder tip and elbow.

The hypothesis of a recently published study is that mothers with minimal training can measure MUAC to classify the nutritional state of their children. The study hypothesis was tested in two villages in rural Niger. The rationale for teaching mothers to perform MUAC is to achieve an early diagnosis of SAM, which if acted upon in a timely manner, would decrease mortality and morbidity related to malnutrition, reduce programme costs due to shorter treatment times and lower the proportion of children requiring expensive inpatient care for SAM with complications. If mothers are able to screen their own children for malnutrition using MUAC, this may have implications for scaling up community based management of acute malnutrition (CMAM).

The study was performed between September 2011 and April 2012 in the community meeting

places in two villages in Mirriah, a rural district in the Zinder region in southern Niger. There were 54 mothers, each with one of their children in the first village (Magama) and 49 mothers, each with one of their children in the second village (Berberkia). It was conducted by the Alliance of International Medical Action (ALIMA) and its local non-governmental organisation (NGO) partner BEFEN (Bien Etre de la Femme et de l'Enfant). UNICEF colour-coded and numbered MUAC tapes, calibrated in 1 mm gradations, were used for all phases of the study.

The manager of the CHW employed by BEFEN, who is well known in both villages, explained the purpose of the study to the village chiefs, elders and leaders. In each case, an independent scribe was used, recording the consent and the colour class determined by the mother, and also noting the MUAC value in millimetres.

The planned study method had involved going from home to home, and performing a five minute training session for each mother. However, this proved impossible. In both villages, once the objective of showing mothers how to perform MUAC classifications had been explained to the village chief and other leaders, it was considered to be so important that they insisted on calling an immediate meeting of the villagers. Mothers and children formed a seated group around the investigators, circled by the older girls who stood to obtain a good view, with the men and boys standing behind. Each mother

did one MUAC measurement on the left arm, followed directly by one MUAC measurement on the right arm of their child. The mother called out the colour classification (e.g. "Red") and this was noted down by the investigator. This was then repeated by an experienced CHW testing the right and then the left arm of each child, having measured the midpoint according to current recommendations. All the mothers in both villages wished to participate, however only one child from each mother was accepted into the study. Any child identified with SAM was referred to the local CMAM programme (which was run by BEFEN).

In the statistical analysis, cross-tabulations were used to investigate the agreement between mothers' results and the CHW reference measure. The Weighted Kappa was used as a numeric summary of inter-rater agreement between two raters or methods, beyond that which would be expected by chance. Kappa is a measure of agreement, standardised along a -1 to 1 scale, where positive numbers indicate agreement, with 1 being perfect agreement; negative numbers indicate disagreement, with minus one being total disagreement; and zero indicating agreement expected by chance.

¹ Blackwell N et al (2015). Mothers understand and can do it: a comparison of mothers and community health workers determining mid-upper arm circumference in 102 children aged from 6 months to 5 years. Archives of Public Health. <http://www.archpublichealth.com/content/73/1/26>

Table 1 Weighted Kappa values for intra- and inter-observer variation

MUAC classification with mid-point of upper arm ascertained by eye by mothers compared with the mid-point ascertained by measurement by CHW	Right arm: 0.74 (95% CI=0.63, 0.65) Left arm: 0.77 (95% CI=0.67, 0.87)
MUAC classification by CHW in each arm	0.91 (95% CI=0.84, 0.97)
MUAC classification by mothers in each arm	0.88 (95% CI=0.80, 0.96).

The Weighted Kappa was used because of the ordinal nature of classifications (i.e. SAM is more serious than moderate acute malnutrition (MAM), which is more serious than normal nutritional status). As a guide, the level of agreement demonstrated by Weighted Kappa values is: 0.0–0.2 'slight'; 0.21–0.40 'fair'; 0.41–0.60 'moderate'; 0.61–0.80 'substantial' and 0.81–1.00 'almost perfect'. The mothers' sensitivity, specificity, and negative and positive predictive values (NPV and PPV) using the MUAC screening for SAM were calculated using the CHW measurements as the reference result.

Results

The study showed that mothers given minimal training can perform and interpret MUAC on young children in a village setting. It suggests that the choice of arm and exact location of the tape on the upper arm are not important for screening.

Importantly, all children misclassified as not having SAM, were nevertheless classified as MAM and none were considered 'normal'; thus classification errors occurred at the classification boundaries. Classification by mothers measuring the mid-point of the upper arm determined by eye, showed an accuracy of 86.4% – 88.4% in GAM (MUAC < 125mm) and 94.2% – 95.6% in SAM (MUAC < 115mm), compared with the current standard of the CHW classification. Roll-out of MUAC, done by mothers in the home, would involve small group learning with each mother able to practice under supervision. This would be expected further to improve the quality of the screening. There was very low inter and intra- observer variability and high levels of agreement achieved between the current standard (results from CHW), compared with mothers with minimal training. The study was conducted in free living village populations with a lower prevalence of SAM than a programme setting. This is the environment where scaled up CMAM will occur, with mothers screening their own children for malnutrition.

The Weighted Kappa values for MUAC classification by mothers compared to CHWs, and the variation in MUAC classification in left v right arms for both mothers and CHWs, is shown in Table 1. The observed Kappa values are consistent with excellent agreement between mothers and CHW. The Weighted Kappa values for inter-observer variation for the interpretation of classical physical signs elicited in clinical medicine are frequently less than 0.50. For example, raised respiratory rate (K=0.25), central venous pressure (K=0.3), bronchial breath sounds (K=0.32). These errors reflect variations between clinicians, patients and the circumstances at the

time of the examination. Such errors can be reduced by increased standardisation of the test method and by increasing the number of times the test is performed.

It is proposed that MUAC class rather than MUAC measurement is used by mothers for active case-finding in the home. This could be facilitated by the use of broader, colour-banded MUAC straps. Numberless colour-banded MUAC tapes have been available for many years. One advantage of using a colour (red, yellow or green) for MUAC classification is that children of illiterate and/or innumerate mothers are not disadvantaged. Female literacy in the 15–24 year age group in Niger is estimated at 23%, although this is expected to be lower in rural areas.

The use of numbered MUAC tapes could only be required for monitoring response to treatment in therapeutic feeding programmes but this approach needs validation. Numbered MUAC tapes may be useful also in nutritional anthropometry surveys or surveillance systems that estimate prevalence of SAM using the PROBIT method.

Community leaders were keen for local women to learn the skill. In contrast, men were not interested in learning the skill, while adamant that the women should learn. Mothers who had completed the task were observed to help other mothers perform the MUAC classification and the enthusiasm of girls (i.e. the next generation of mothers) to participate was striking. A future can be envisaged in which mothers in every home where childhood malnutrition is a risk are familiar with, and empowered to screen their children. Even in the most functional CMAM programme, it is unusual for children to be screened more than once a month. Repeated screening with MUAC, if a mother is concerned about her child's health, will increase the likelihood of early diagnosis, even if the initial screen classified the child incorrectly. Training mothers to perform MUAC could provide the most timely and proximal diagnosis of malnutrition in their young children. Furthermore, programmes could be designed to facilitate mothers monitoring their children once entered into a CMAM programme, to reduce the number of repeat visits, often at great distance on foot, to the treatment centre, and increase retention in the programme, although this approach has not

yet been validated. Advanced SAM is associated with complications, which often require hospital admission or cause death. Earlier diagnosis, when the MUAC has just passed the threshold for intervention, should support prompt entry into treatment programmes. This will lead to reduced mortality and length of stay, and favourable community impressions will lead to early treatment and in turn high cost-effectiveness. Giving mothers more autonomy in monitoring the nutritional status of their children may provide the tipping point in scaling up CMAM programmes.

In Niger, international and more recently national NGOs (eg BEFEN and Forum Santé Niger (FORSANI)) have been running nutrition programmes for more than eight years. This may explain why mothers and communities embraced



EU/ECHO/Anouk Delafortrie, Niger, 2014

A mother measures MUAC of her child

the idea of doing MUAC themselves; this may not be the case in contexts unaccustomed to nutrition programmes. Widespread dissemination of MUAC tapes may be an important step in raising community awareness of malnutrition.

The study reported here collected data on children under five years of age and the results may apply only to this age-group. The choice of arm on which MUAC is measured is likely to be important in adolescents and adults in whom the MUAC of the dominant arm is generally larger than the MUAC of the non-dominant arm. Some programmes (e.g. supplementary feeding programmes) admit both children aged under five years and adults (mostly pregnant and lactating women with a MUAC below a threshold between 210 mm and 230 mm). Training and supervision of programme workers should continue to emphasise different procedures are used when measuring children and adults.

This study demonstrates that mothers can classify their children by MUAC, and it suggests MUAC done regularly by mothers should become the focal point for efforts to scale-up CMAM.

Health-seeking behaviour and community perceptions of childhood undernutrition and a community management of acute malnutrition (CMAM) programme in rural Bihar, India

Summary of research¹

Location: *India*

What we know already: The caseload of severe acute malnutrition in India is significant. Access to treatment is challenging in rural settings; default rates to inpatient and community based treatment options are often high. Community perceptions of undernutrition and treatment can impact on health seeking behaviour.

What this article adds: In 2010, MSF undertook a qualitative study in rural India to understand the community perceptions of undernutrition and an existing CMAM programme and how these affected health-seeking behaviour. Health-seeking behaviour was influenced by social and cultural, logistical and economic factors. The findings did not differ between households with or without malnourished children and did not appear to be age specific. Undernutrition was attributed to a number of local disease concepts, such as 'mamarcha' (moderate acute malnutrition), 'jallachatu' (severe acute malnutrition), and the 'evil eye'. Families favour boys over girls, especially when resources are limited. Mothers lacked decision-making power. Interventions should raise understanding and awareness of undernutrition and treatment in a way that empowers mothers; respond to and respect traditions, religion and customs; engage with the broader community; and consider language skills and dialect in communication.

In 2006, the National Family Health Survey-3 estimated that in India, eight million children younger than 5 years suffer from severe acute malnutrition (SAM). As in many resource-poor settings, the provision of health care in rural India is often challenged by a shortage of health centres and health workers.

After a nutritional survey demonstrated a 4.8% prevalence of SAM in Darbhanga district in 2008, under a Memorandum of Understanding with the district authorities, Médecins Sans Frontières (MSF) established a community based management of severe malnutrition programme in Biraul block. Biraul block has a population of 300,000 and is one of eighteen administrative areas within Darbhanga district. Although widely practised outside India, community based management of acute malnutrition (CMAM) is a relatively new concept in India, where management of SAM is mostly in-patient based. In the MSF supported programme, SAM cases (6m -5 years) are identified using mid upper arm circumference (MUAC). Treatment involves maternal counselling on the condition and treatment; initial standardised systemic treatment for infection and vitamin deficiency; and weight-based weekly provision of an Indi-

an-produced, pre-packaged, WHO standard F100-equivalent oil-based paste with health review. The average length of treatment is seven weeks.

The CMAM programme in Biraul block involves five therapeutic feeding centres treating ambulatory 'uncomplicated' SAM children and one in-patient stabilisation centre treating the more unwell 'complicated' SAM children who require in-patient care. In four years, the programme has admitted over 10,000 children, with just over half the children travelling for treatment from outside the block. However, repeated semi-quantitative evaluation of access and coverage (SQUEAC) surveys suggested that there were many more children with SAM within the block not accessing treatment. Additionally, the programme struggled with default rates as high as 38%, particularly in those caregivers who were commuting from outside the block. Data from other facility-based nutritional programmes across India suggest that defaulting is an issue in other states, reaching 47.2% in in-patient only nutritional rehabilitation centres in Uttar Pradesh.

In order to help identify the underlying causes of poor coverage and default, in 2010,

MSF undertook a qualitative study in Biraul block to understand the community perceptions of undernutrition and the CMAM programme and how these affected health-seeking behaviour. The objective was to develop evidence that would be used to adapt the CMAM programme in order to improve outcomes and develop a more appropriate health promotion strategy for the community.

Method

Over a five week period, qualitative semi-structured interviews using a topic guide and narrative interviews were conducted with families (mothers, fathers and mothers-in-law) of children treated for severe malnutrition (approximately two-thirds of family interviewees), families containing children without severe malnutrition (one-third of family interviewees) and healthcare workers (traditional healers, Hindu and Muslim priests, traditional health practitioners, midwives, hospital nurses, health educators and doctors). Approximately 150 people participated in the

¹ 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 and Nutrition. doi:10.1017/S1368980015000440

discussions, which comprised: (i) 44 one-to-one in-depth key informant interviews in the participants' first language (Maithili); (ii) five focus group discussions with five to ten people participating; and (iii) nine natural group interviews, with an average of six people participating. Most participants were female. In the individual interviews, about two-thirds of participants were female; all focus group discussions were women only; and in the natural group interviews, one was men only, five women only and three were mixed. From the religious affiliation perspective, 80% of interviewees were Hindu and 20% were Muslim, reflecting the background demographic in the district.

diarrhoea and a swollen belly. Symptoms also included the child not being able to walk properly and preferring to crawl. According to the mothers, mamarcha was the result of a child eating 'delicious' salty or adult food too early, or as a result of there not being enough food in the family, or of the child not drinking its mother's milk. When describing mamarcha, non-allopathic health practitioners spoke of a swollen liver, blisters on the tongue, lack of fluids in the body, shortage of blood, anaemia, thin arms and legs, weakness, severe irritability, lethargy and a swollen belly. Allopathic health workers said that mamarcha was caused by undernutrition, anaemia, a shortage of blood due

witch that could only be treated by a Muslim or Hindu priest. Among other respondents, there were a variety of ideas about how jallachatu should be treated. Some respondents (fewer than half), who understood the Hindi word kuposan (ku means deficiency or lack and posahar means nutrition or nourishment) and were already familiar with the CMAM programme, said that kuposan and jallachatu were the same entity, and that both could be treated within the CMAM programme. Numerous others without exposure to the CMAM programme insisted jallachatu should only be treated by traditional health practitioners: "[...] The only way to treat it is with cow dung. You put it into a bag, and we hang it at the back of the house for one month, and when it is dried we throw it into a river. As the cow dung swells in the water, then the body of the child swells too. It is the same for girls. The cow dung is not mixed with anything." Traditional midwives reported that they treated the condition by heating mustard seeds in mustard oil in order to evoke an aroma to drive away the vulture or by throwing dried cow dung into the river. The cow dung was seen as a proxy for the child's body; when it swells in the water, the child puts on weight. The majority of caregivers reported that they first consulted the Muslim or Hindu priest and if the child did not improve, mothers would consult an alternative traditional health practitioner or go to the CMAM feeding centres.

Over half of caregivers reported that they would not take children under 6 months of age to the field where they worked out of fear of exposing them to nazar or the 'evil eye'²; as such, they were left at home meaning that for the duration of the work day, the child was not breastfed, in turn predisposing them to becoming weak. Fewer efforts were made to protect female children against nazar compared with males; indeed, females appeared to be disadvantaged in a number of other ways, with a lower level of importance during mealtime food distribution; and the threshold for seeking health care and treatment for SAM for female children appeared to be higher than that for male children.

Since undernutrition was generally not considered to be a disease by mothers, they sought to understand it from the perspective of traditional medicine. Thus, most mothers did not consult traditional health practitioners or visit primary health-care centres if their child was 'only skinny'. If the mothers felt their child required medical treatment, their initial action was to provide medications themselves. If these were not effective, they would then consult a health practitioner. Several allopathic and non-allopathic healthcare options were available to the caregivers, such as registered medical practitioners or traditional health practitioners. The majority of mothers reported that they treated their children themselves on the advice of their



Angel Navarrete, MSF India, 2013

MUAC assessment in an Indian clinic

Findings

In general, the findings did not differ between households with or without malnourished children, and our results did not suggest that health-seeking behaviour was age specific. It appears common for families to favour boys over girls, especially when resources are limited.

Since undernutrition was attributed to local disease concepts, of which all respondents were aware, community perceptions of childhood undernutrition and health-seeking behaviour did not appear to differ between caregivers who had severely malnourished children and those who did not.

All respondents mentioned 'mamarcha', a local term for a sickness that matches moderate malnutrition. It was described as being extremely common in early childhood and mothers reported treating their children for it even if the child had no symptoms. The symptoms of mamarcha were described as having big eyelids, weakness, wanting to lay down in cool places or eating salty food, having no appetite, watery

to insufficient birth spacing, suckling while mothers were pregnant, worms in the digestive system, lack of food, lack of health care or a poor diet. Almost all female respondents said that they primarily treated the child themselves and that mamarcha medicine could be found in any pharmacy in liquid form or at the local market as herbal medicine. Most mothers said that they went to the traditional health practitioner, primary health centre or hospital only if the child did not recover.

The symptoms of what most Maithili people call 'jallachatu' match those of severe malnutrition. Female caregivers noted that children with jallachatu were often born looking very thin 'like a bird', and continued to get thinner after birth. Jallachatu was believed to occur if a vulture flew over a mother during her pregnancy: "When the vulture crosses over the pregnant woman, then the child will be delivered as very weak and slim, and no matter what you do it will keep on being slim and will not gain weight and it will not survive." All but one mother-in-law described jallachatu as being an attack by a

² Described by respondents as a look believed to bring bad luck, to the person at whom it was aimed for reasons of envy or dislike.

in-laws or other elders before consulting a healthcare provider, or through purchasing medicine recommended by local shopkeepers, whose opinion was generally accepted.

Most respondents considered the CMAM programme to be functioning within the government allopathic healthcare system. Allopathic health care included certified doctors and nurses and most respondents held them in high esteem, but reported that they were also expensive and the quality of care not always consistent. Government primary health centres were most often located in bigger communities and often at a distance from villages. Most respondents stressed that even though drugs were supposed to be free of charge at primary health centres, they were generally of poor quality and sometimes unavailable. If drugs were unavailable, respondents said the doctor would then prescribe medication privately, for which they had to pay.

Respondents described a wide spectrum of traditional birth attendants (dais), priests, witch doctors, tent doctors, local drug mixers (vaidhs), healers and Godmen as traditional health practitioners. They lived within the community and were usually the first to be consulted. There appeared to be a strong feeling of trust towards traditional healers and respondents reported taking their advice seriously. A common theme was that these individuals shared the same cultural values and were able to communicate more freely with them than allopathic health-care providers. In particular, respondents from lower castes and with low literacy stated that these practitioners were their first port of call when their children were ill. According to the majority of the respondents, the advantage of these healers was their low cost compared with 'private doctors' or primary health centres.

Several factors significantly affected the health-seeking behaviour of the community in Biraal with regard to their utilisation of the CMAM programme. These factors can be categorised as: (i) social and cultural (perception of the problem by the patient and others around her/him); (ii) logistical (existing transport, availability and proximity of medical care); and (iii) economic (transport costs, wage loss, affordability of health care and acceptance of costs). Other important factors included the previous experiences of the caregivers and their perception and understanding of how prescribed medicines work on the body.

The majority of women interviewed appeared to lack decision-making autonomy and reported that it was necessary for them to ask their mothers-in-law or other senior, female family members for advice on what to do with a sick child. Figures of lay authority, such as village elders, appeared to play a major role in the diagnosis and treatment of illness. An additional factor mentioned by the majority of respondents influencing health-seeking behaviour was temporary migration. They explained that roughly twice per year, women took their children to

their home villages to stay for a month at a time. During these periods, they were unable to attend their local health centres, leading to difficulty in completing longer treatments such as CMAM. Finally, the cultural practice of mothers remaining strictly within the house following the birth of a child was widely mentioned as a reason for difficulty in attending the CMAM programme if another child was enrolled.

The availability of medical care played an important role in the caregivers' decision-making process. Modern healthcare facilities, such as the block-level primary health centres, were considered to be located only in more populous areas and respondents emphasised that no appropriate health facility was available at the village level. Caregivers living further away from CMAM facilities reported that it was difficult for them to reach the therapeutic feeding centres, especially during heavy rains when transport is challenging due to frequent flooding. In contrast, every village was reported to have a traditional health practitioner and/or a Muslim or Hindu priest. Even if most of the respondents did not necessarily consider these health-care providers to be ideal, they felt that they were sometimes their only option.

Mothers stressed the fact that in addition to caring for their sick child, they had to take care of housework, work in the fields (especially around planting or harvest times) and look after their other children. For caregivers commuting from outside the block in particular, visits often took an entire day since travelling could entail a 4 hour round trip in addition to the 2–3 h waiting time at the therapeutic feeding centre. Hence other family members had to shoulder an extra burden of work and thus would not always encourage mothers to visit the CMAM programme.

The choice of whether to access care was linked more to the perception of the disease and hence the importance of how much money and time should be spent on the treatment and within which sector. Most of the caregivers complained that they could not afford the transport costs to come each week for treatment in the CMAM programme.

Based on the responses of mothers whose children had been treated within the programme, the overall perception of CMAM was positive. Weight gain was seen as a measure of success and the positive perception of the service was expressed by mothers, family members and community participants who were aware of the programme. The concept of baby 'strength' rather than size was important; a healthy child was a 'strong' one. However, a significant number of caregivers said that they did not consider the peanut oil-based treatment offered to their children as effective enough and consequently would frequently think about stopping the treatment. The caregivers wanted to see immediate results when their child started any

treatment, so many were discouraged when the child did not rapidly gain weight.

Recommendations

As a result of this study MSF provide a number of suggestions to target undernutrition and the beliefs surrounding undernutrition that should be incorporated into CMAM programming.

Primary interventions should focus on the dissemination of basic information about undernutrition and on clarification of misconceptions. The aim should be to raise understanding and awareness of severe malnutrition as a disease, while empowering mothers to decide whether they want to seek treatment for their child or not. Longer term, secondary interventions should address behaviour change, taking into account the socio-economic, religious, cultural and political consequences of changes in the perception of undernutrition and the adaptation of health seeking behaviour of caregivers. Above all, active engagement and collaboration with communities is essential in order to address the barriers to enable change in such societies.

The success or failure of health programmes ultimately rests on how well they adapt to the local population. A fundamental focus of the training of health personnel should be the importance of being responsive and respectful to the traditions, religion and customs in the environment they are or will work in. Language is also important in the delivery of messages to the community. In countries with many dialects, it is important that local language skills are considered in communication strategies. For example, the staff within the CMAM programme routinely used the Hindi word *kuposan* to explain undernutrition. Yet, many of the respondents did not understand this; it is an elite Hindi word that is rarely used in these communities. Hindi is widely spoken in northern India, however, the standard of Hindi used may sometimes not be appropriate for the local context. In addition to using local language, disease can be understood through the use of local concepts. Expressions such as *mamarcha* and *jallachatu* can be used by health workers in the Biraal area to explain undernutrition to communities who would normally not think in terms of allopathic medicine.

Caregivers often do not make decisions alone; frequently, family elders decide whether a mother may seek and receive treatment for her child. Therefore, it seems imperative that information, education and communication programmes target communities broadly, including educators, youth and decision-making groups, and in particular those whose opinions are respected and considered most important in the social structure. Crucially, community engagement programmes must include both priests and healers, who could assist in encouraging appropriate referrals into the CMAM programme.

Developing food supplements for moderately malnourished children:

lessons learned from RUTF

Summary of research¹

Nicky Dent

Location: *Global*

What we know already: RUTF is as effective as F100 in treating SAM, where weight gain is the recovery outcome. Food supplements for moderate malnutrition treatment, including adapting standard RUTF, are being explored. The prevalent number of children with MAM is (under) estimated at 32.8 million, nearly double that of SAM; this has significant cost implications for their treatment.

What this article adds: Standard RUTF formulation has limitations with regard to vitamin and mineral levels and bioavailability, protein quality, amino acid profiles, phytate levels, anti-nutrients and cost. Different RUTF formulations might benefit vitamin and mineral status; functional and growth outcomes; and impact stunting in treated children but have not been explored. Cheaper ingredients may compromise RUTF effectiveness. To optimise RUTF formulation for both SAM and MAM treatment, priority research includes precise assessment of 'normal' food consumption during rehabilitation, investigation of processing options to improve product nutritional quality, and assessment of vitamin and mineral status of children post treatment.

The physiology of weight gain is not fundamentally different in children with moderate acute malnutrition (MAM); standard RUTF could be used in theory and has been used to treat successfully large numbers of children with MAM. Standard RUTF, however, was designed to be given as the only food that a child consumes while being treated for SAM. This approach may not be appropriate and in practice, in children with MAM, unless the household is severely food insecure. When special nutritious foods are required for treating children with MAM, cost considerations usually prohibit the use of standard RUTF; globally there are about 32.8 million children with MAM, compared with about 18.7 million with SAM². So there is a need to adapt the RUTF formulation to lower its cost by using less expensive ingredients. Using locally available ingredients is another important factor to consider; they are not always less expensive but may have political and other local benefits.

When trying to adapt the current RUTF formulation further for children with MAM, two important aspects of RUTF development should be taken into account. First, the current RUTF

formulation has not been fully optimised and may need improvement. Second, cost reduction by using less expensive ingredients may lead to less effective formulations, for reasons that are not fully understood. The goal of a recently published paper is to highlight the questions remaining in RUTF development and research, which may also be relevant for development of effective foods for children with MAM.

RUTF development

The first RUTF (Plumpy'Nut®) was formulated by replacing about half of the dried skimmed milk in F-100 formula with peanut paste. The resulting food paste did not require the addition of water, eliminating bacterial proliferation risk. Whey powder was included to achieve an equivalent level of lactose to F-100; similarly maltodextrins (used to reduce osmolarity) were also added. This approach had aimed to closely reproduce the existing reference diet, to minimise the risk of not obtaining similar programme results. This proved successful, as clinical trials showed that this RUTF formula was at least as effective in promoting weight gain as the existing F-100 diet. However, this approach has its limi-

tations. First, weight gain is not the best criterion to assess recovery. Evaluation of the efficacy of RUTF according to other criteria, including functional outcomes, is needed. Second, it assumes that F-100 is a gold standard. F-100, however, was formally tested in only a small number of children in one setting, and it is possible that its content of some nutrients is not optimal to reverse stunting, which is often associated with wasting.

F-100 was designed to be consumed as the only food during the nutrition rehabilitation phase; therefore, its mineral and vitamin contents were adjusted to take into account pre-existing deficiencies, rapid growth requirements, and to cover requirements of a child consuming 150 to 200 kcal/kg/day of this diet and having a weight gain of up to 15 to 20 g/kg/day. Most RUTF protocols, that recommend 175 to 200 kcal/kg/day, assume implicitly that RUTF is the only food consumed during treatment. However average weight gain in the community (4 to 6 g/kg/day or less) versus in clinical trials (0 to 15 g/kg/day) suggests this is rare; in reality, RUTF may be shared or children also consume local, less nutrient dense food. The level of consumption of local foods along with RUTF has never been precisely estimated so that substantial and consistent increased RUTF fortification may be needed to compensate.

The most common RUTF contains about 25% peanut paste; this contains 1% to 2% phytates that may potentially inhibit the absorption of divalent ions, such as iron, zinc, or calcium. The lipid matrix in RUTF, has unknown effects on their absorption, in particular of iron³ and also of phosphorus, which is likely in phytate form and less well absorbed than dairy sources. The 2007 World Health Organisation (WHO)/UNICEF/World Food Programme/United Nations Standing Committee on Nutrition Joint Statement requires a minimum of 300 mg of non-phytate phosphorus per 100g of RUTF (520 mg minimum for 1,000 kcal), substantially less than the 850 mg of phosphorus derived from milk in 1,000 kcal of F-100 and the 850 to 1,400 mg/1,000 kcal recommended by the 2012 WHO technical note on foods for moderately malnourished children.

Studies comparing the effect of different RUTF mineral fortification levels, in particular zinc, phosphorus, iron and calcium, used in real-life conditions are needed to optimise RUTF. For some nutrients that have stable isotopes, such as zinc, absorption could be measured and compared with their levels of absorption in F-100 and/or with calculated requirements for lean tissue synthesis. For nutrients that do not have stable isotopes, such as phosphorus, comparison of lean tissue synthesis and linear growth with different formulations is needed.

No study has ever assessed the vitamin status of children after treatment with RUTF. Ideally,

¹ Briend A et al (2015). Developing food supplements for moderately malnourished children: Lessons learned from ready-to-use therapeutic foods. Food and Nutrition Bulletin, vol 36, no 1, ppS53-S58, 2015 Supplement.

² Estimates based on prevalence data which underestimate the number of children suffering from MAM or SAM in a year.

³ Absorption of iron takes place in the upper part of the gut, where iron in RUTF may well still be within the fat matrix.

Box 1 Attempts to replace dried skimmed milk in RUTF formulation

A first attempt in Malawi to replace milk powder by a mixture of roasted chickpea and sesame led to a product that was well accepted by young children in tasting sessions but gave them abdominal pains when given several days in a row, apparently as a result of inadequate starch gelatinisation. Two other products in which starch gelatinisation was obtained by extrusion cooking were better tolerated.

A first study with RUTF in Malawi compared RUTF containing 10% dried skim milk with RUTF containing 25% dried skim milk in the standard formulation. The RUTF with reduced milk content, however, was less successful in treating children with SAM, achieving 57% recovery after four weeks, compared with 64% for RUTF with 25% milk. Weight gain, height gain and increases in mid-upper arm circumference (MUAC) were also higher for the RUTF with 25% milk.

A second RUTF made without milk, containing soy, maize, and sorghum (SMS-RUTF), was tested in Zambia and also proved less successful than the milk-based original formula, at least in children under 2 years of age, achieving a 53.3% recovery rate versus 60.8% for the standard RUTF.

this should be done in different contexts with children having different pre-existing nutritional deficiencies.

The vitamin A content of RUTF is a particular concern. Currently, it is added within narrow limits (between 0.8 and 1.1 mg/100 g) and to the maximal level given its instability and potential loss during storage. Pre-consumption levels of RUTF vitamin A and the vitamin A status of treated children have never been checked, although the current recommendation is to rely only on RUTF and no longer to provide a high-dose vitamin A capsule as part of SAM treatment. Despite uncertainties regarding iron absorption and the fortification levels of vitamins needed for haemoglobin synthesis, a proper evaluation of the haematological status of children after treatment is also lacking and overdue.

Following initial success with RUTF, attempts were made to simplify its formulation to make it easier to produce locally. A first successful step was to replace imported maltodextrin with locally available sucrose. Attempts to remove or to decrease the proportion of dried skimmed milk, the most expensive ingredient in RUTF, have been less successful (see Box 1).

Replacing milk proteins with proteins derived from other sources is likely to impact protein quality but this effect is not clearly quantified. A comparison of the protein digestibility-corrected amino acid score (PDCAAS) between RUTFs containing 25% and 10% milk suggested that PDCAAS decreases from 1.11 to 1.00. For SMS-RUTF, PDCAAS was estimated at 0.86, clearly inferior to that for the reference RUTF. These estimates of RUTF protein quality are based, however, on a method that is no longer recommended by the

Food and Agriculture Organisation (FAO) and WHO. The recently proposed method is based on true ileal protein digestibility (digestible indispensable amino acid score (DIAAS)), and not on faecal crude digestibility, which may give different results. The impact of this change on assessment of RUTF protein quality is unknown. Current efforts to measure DIAAS on different RUTF formulations may shed light on potential differences.

There is also an uncertainty regarding the amino acid profile that should be used to assess protein quality in RUTF. The amino acid requirements of children depend on those amino acids needed for body maintenance and those needed for new tissue deposition. After the age of 6 to 12 months, in a child growing at normal rates (not sustaining catch-up weight gain), new tissue synthesis is reduced and the amino acids needed are mainly those involved in body maintenance. Arguably, this profile may not be applicable to recovering malnourished children of the same age. During the catch-up growth phase, these children may use a much larger proportion of proteins consumed for new tissue synthesis than do well-nourished children. The availability of sulphur amino acids (cysteine and methionine) may also have an indirect effect on growth, since sulphur is needed for cartilage synthesis during catch-up growth in length. Peanut paste has a lower sulphur amino acid content than dried skimmed milk; the effect on linear growth is unknown.

Milk proteins seem to have a specific hormonal effect and to promote the production of insulin-like growth factor 1 (IGF-1), with a possible effect on linear growth likely due to the casein fraction of milk. This effect has never been tested in malnourished children. Dairy products have high calcium and phosphorus contents, which may also explain their specific effect on growth. Phosphorus is needed for muscle growth and phosphorus deficiency is associated with bone growth retardation in animals, in contrast with calcium, which is associated with decreased bone mineral density, without a clear effect on linear growth. An insufficient intake of phosphorus could possibly be corrected by adding phosphorus salts to the fortification formula of reduced dairy foods or to digest phytates using phytase during food production, which would make the phosphorus more available. Both approaches are used successfully in animal nutrition to promote growth with minimal amounts of dairy products. They have not been tested in foods for malnourished children. There is potential for adding acid resistant phytase to water free RUTF to improve the absorption of iron but this has never been tested.

In contrast to dairy products, plant-based foods often contain high levels of anti-nutrients, which may decrease protein digestibility and mineral absorption. A higher content of anti-nutrients may also explain why attempts to replace dairy products with plant-based sources of protein have given mixed results. Roasting and extrusion cooking⁴ are the most commonly used techniques to destroy anti-nutrients. However, excessive heat can lead to undesirable chemical reactions with proteins, which limit its application. Lysine, the

main limiting amino acid of cereals and groundnuts, has two amino groups and is particularly reactive, which leads to a decrease of protein quality in case of excessive heating⁵.

Mature dry legumes may contain up to 30 different soluble carbohydrates. Among those, the raffinose family of oligosaccharides are not digested by the small intestine but by the intestinal flora in the colon, hence large quantities may induce flatulence and abdominal discomfort and may explain the poor tolerance of early milk-free, legume-based RUTFs and limitations of legume-based alternative RUTFs. Flatulence factors can be reduced by as much as 47% to 60% by extrusion cooking or by 70% to 80% by germination, and most efficiently through use of enzymes. These techniques⁶ are not currently used when preparing foods for malnourished children – either lipid-based nutrient supplements or more traditional blended flours.

Conclusions

The authors conclude that although millions of children are treated every year with RUTF, there hasn't been a single evaluation of the vitamin and mineral status of children at the end of treatment. Furthermore, clinical trials are needed to compare different levels of fortification and their effect on growth and other functional outcomes. Very little is known currently about the effect of RUTF on correction of stunting, which is frequently present in children with SAM. The possibility should be explored of better correcting stunting by treating children with SAM with improved RUTFs containing higher levels of sulphur amino acids, phosphorus, or zinc. This can also provide clues on how to improve the diet to prevent stunting from occurring in the first place, with relevance for improvement of the diets of children between 6 and 23 months of age.

RUTF has not been optimised, and research to improve it should continue. This research is relevant for the development of foods for moderately malnourished children, as it can provide clues on how to optimise these foods as well. The following aspects should be especially investigated:

- Determine the amounts of RUTF and of local foods children are typically consuming during treatment and adjust nutrient density accordingly.
- Assess the feasibility of different processing steps to improve nutritional quality of the food, especially by the use of appropriate enzymes.
- Measure non-phytate phosphorus in proposed foods and compare the efficacy of different formulations with different levels of non-phytate phosphorus.
- Determine the vitamin and mineral status of children with MAM after treatment and revise the formulation if needed.

⁴ Extrusion cooking associates mechanical shearing with heating above 100°C for a few minutes in a humid environment and is the most effective method of removing antinutrients.

⁵ The Maillard reaction involves the reaction of an amino group of a protein with carbohydrates.

⁶ They require an aqueous environment during the production process.

New implications for controversial kwashiorkor treatment discussed in

Paediatrics and International Child Health

Summary of research¹

The latest issue of *Paediatrics and International Child Health* sees leading experts in the field of malnutrition address the ongoing controversy surrounding the use of albumin for treatment of oedema in children with kwashiorkor in shock.

For many years, the essential cause of oedema in kwashiorkor was considered to be low oncotic pressure owing to low plasma albumin concentration (Starling forces²). However, in 1980, this understanding was challenged by Mike Golden (University of Aberdeen), Alan Jackson (University of Southampton) and co-workers, and there has been controversy surrounding treatment of kwashiorkor ever since.

Now, in a new article³, Malcolm Coulthard (University of Newcastle, UK), re-analyses Golden et al's data and demonstrates that there is a significant association between low plasma albumin concentration and oedema in kwashiorkor, and that loss

of oedema is associated with a rise in albumin concentration. On the back of his findings, and based on his experience of managing crises in children with congenital nephrotic syndrome, he proposes a trial of IV albumin for children with kwashiorkor who are in shock.

Michael Golden has responded with an exhaustive review⁴ of the literature on oedema and a re-evaluation of a wide variety of conditions manifesting with oedema in children and adults, concluding that in light of present knowledge, each condition has enough anomalous characteristics such that Starling forces alone no longer explain the cause of oedema. In summary, he concludes that the child with kwashiorkor is physiologically different from the child with nephrotic syndrome and that the proposed treatment is "fraught with danger".

The third paper in the series, a commentary⁵ by Alan Jackson, reviews both of these articles and traces the development of the management of kwashiorkor since

the 1980s, particularly in relation to the role of dietary protein and systematic trials of volume and/or albumin replacement therapy. Both Golden and Jackson caution against the use of IV albumin in the management of kwashiorkor in general. Coulthard, in a Letter to the Editor⁶, acknowledges the lack of evidence of the value of IV albumin and the potential dangers of its use, but argues that, given the lack of appropriate guidelines, a carefully controlled randomised trial of IV albumin is justified.

Together, these three papers address the controversy around the treatment of kwashiorkor and stimulate further discussion and research in the area. Brian Coulter, the journal's Editor-in-Chief, comments: "These articles provide an excellent update on the pathophysiology and management of oedematous malnutrition. Despite a WHO review of the management of severe malnutrition in children in 2013, treatment of those with intravascular depletion, particularly patients with kwashiorkor in shock, remains unsolved."

All three articles, published in *Paediatrics & International Child Health*, are free to access at

www.maneyonline.com/toc/pch/35/2.



Bilateral oedema with pressure ulcer on a young child

Nicky Dent

¹ <http://www.maneyonline.com/toc/pch/35/2>

² The low oncotic pressure caused by hypoalbuminaemia induces hypovolaemia, which triggers salt and water retention.

³ Malcolm Coulthard (2015). Oedema in kwashiorkor is caused by hypoalbuminaemia. *Paediatrics and International Child Health* 2015 Volume 35, Issue 2 (May 2015), pp83-89

⁴ Michael H Golden (2015). Nutritional and other types of oedema, albumin, complex carbohydrates and the interstitium – a response to Malcolm Coulthard's hypothesis: Oedema in kwashiorkor is caused by hypo-albuminaemia. *Paediatrics and International Child Health*. Volume 35, Issue 2 (May 2015), pp. 90-109

⁵ Alan A Jackson (2015). Albumin in nephrotic syndrome and oedematous malnutrition. *Paediatrics and International Child Health*. Volume 35, Issue 2 (May 2015), pp. 77-80

⁶ Malcolm Coulthard (2015). Letter to the editor. *Paediatrics and International Child Health*. Volume 35, Issue 2 (May 2015), pp. 164-164

MUAC outperforms weight-based measures of nutritional status in children with diarrhoea

Summary of research¹

Location: *Bangladesh*

What we know already: Undernutrition and diarrhoea often present concurrently in children. Weight is affected by hydration status; there is limited evidence on how this impacts on assessment of acute malnutrition in practice.

What this article adds: Between February and June 2014, a prospective cohort study assessed the validity of four different measures of undernutrition in children <5 years of age presenting with diarrhoea at the rehydration unit at ICDDR'B. Comparing measures pre- and post-hydration saw greater misclassification of nutritional status using weight-based measures compared to MUAC. Each 1% increase in dehydration was associated with a significant change in weight for age and weight for length z scores but no significant change in MUAC measures. The mean % weight change with rehydration was 4%. This study confirms previous research; it may partially explain why MUAC and weight for length z score often identify different populations of children.

Undernutrition and diarrhoea frequently present concurrently in children. In a recent study from Malawi, half of children presenting with severe acute malnutrition (SAM) in the outpatient setting reported having diarrhoea in the previous two weeks. Prior research has found that children with diarrhoea have decreased weight gain, children with undernutrition have a higher incidence of diarrhoea and the relation between malnutrition and diarrhoea is bidirectional. However, few studies have addressed the impact of hydration status on the assessment of malnutrition in children. Because dehydration alone will lower the weight of a child, weight-based nutritional assessments such as weight-for-length or weight-for-age in children presenting with diarrhoea may be misleading. A recently published study aimed to assess the validity of four different measures of undernutrition in children <5 years of age with diarrhoea, by comparing performance of these measures during acute diarrhoeal illness and after rehydration to a stable, pre-illness weight.

The study used data collected as part of the 'Dehydration: Assessing Kids Accurately' study. This was a prospective cohort study that included a random sample of children presenting to the rehydration unit (short-stay unit) at the Dhaka Hospital of the International

Centre for Diarrhoeal Disease, Bangladesh (ICDDR'B). The study was conducted between February and June 2014. The hospital provides treatment for ~144,000 patients yearly, over one-half of whom are children.

Method

All children <60 months of age presenting to the rehydration unit were eligible for enrolment. Acute diarrhoea was defined as the passage of loose or watery stools at least three times/d and lasting <14 d total. Research staff identified children presenting to the rehydration unit (24 h/d, 7 d/week) and randomly selected children for screening. Research staff screened the selected patient to determine if they met any of the predefined exclusion criteria (children with <3 loose stools/d, diarrhoea lasting >14 d, a clear alternative diagnosis to gastroenteritis on arrival, and children previously enrolled in the study).

Research nurses received seven days of training in all study procedures². After consent was obtained, study nurses obtained basic historic and demographic data for each child including location, age, gender, days of diarrhoea, stool frequency in the past 24 h, and type of diarrhoea (bloody, watery, or rice water). Children were completely undressed and baseline weight to the nearest 100g was obtained on arrival.

If a child received intravenous fluid before baseline weight was obtained, study staff recorded the amount of fluid received before measurements but did not alter the initial weight measurement. Mid upper arm circumference (MUAC) was measured in millimetres using a standard measuring tape. Hospital physicians determined rehydration methods independent of enrolment in the study; a majority received oral rehydration solution (ORS) alone and a minority received additional intravenous fluid. Nutritional measurements of dehydration status were performed in 721 patients <60 months of age before and after achieving stable weight through an independent hydration method. After initial enrolment, patients were weighed every eight hours to determine their post-hydration stable weight, which was used as a proxy for the pre-illness weight to determine the percent dehydration on arrival. The stable weight was defined as the average of the highest two consecutive weights that differed by <2%. A repeat MUAC assessment was performed on children achieving a stable weight before discharge.

¹ Modi. P et al, 2015. Mid upper Arm Circumference Outperforms Weight-Based Measures of Nutritional Status in Children with Diarrhoea. *The Journal of Nutrition*. First published ahead of print May 13, 2015 as doi: 10.3945/jn.114.209718.

² Training consisted of 3 days of theoretical knowledge and 4 days of clinical experience practicing informed consent, weighing children, and measuring MUAC and length.



MUAC assessment

Malnutrition was classified as none, moderate, or severe based on MUAC cut-offs >125, 115–124, or <115 mm, respectively, and by weight for length z score (WLZ) and weight for age z score (WAZ) by cut-offs of >-2, -2 to -3, or < -3, respectively. Of note, MUAC was measured for children 6–60 months of age and MUAC z score (MUACZ) was calculated for children 3–60 months of age, based on available growth standard data.

Patients were classified into three dehydration categories based on their percent dehydration: no dehydration (<3%), some dehydration (3–9%) and severe dehydration (>9%); literature standards were used. Children who lost >3% of their body weight during their time in the rehydration unit were considered to have received inadequate rehydration despite persistent diarrhoea and were excluded from analysis.

Results

Between February and June 2014, 1,196 children <5 y of age were randomly selected for screening. Of these, 171 met exclusion criteria, 175 did not consent to participate, and 850 were enrolled. By discharge, 735 (86%) of all enrolled patients achieved a stable weight, allowing for calculation of their percent dehydration on arrival. Fourteen (2%) of these children lost weight during their stay in the rehydration unit, suggesting inadequate hydration in the setting of continued volume losses from diarrhoea and were therefore excluded from the analysis.

The mean percent weight change with rehydration was 4%. Eighty (11%) children were classified as having severe dehydration, 319 (44%) as having some dehydration, and 322 (45%) as having no dehydration. Median length of stay in the rehydration unit was 22 h (IQR: 16–38) and the median time to achieving stable weight was 14 h (IQR: 11–19).

Twenty-eight percent of children received intravenous fluids before their initial admission weight. However, for these children, the median amount of fluid received before their initial weight check was 1.5 ml/kg (IQR: 1.0–2.6), which is unlikely to be clinically significant in this context.

Comparing the pre-hydration and post-hydration malnutrition category assigned by each of the four indices of malnutrition in children, MUAC and MUACZ had a 92% and 94% agreement, respectively, with k-scores of 0.78. WAZ and WLZ had 68% and 76% agreement, respectively, with k-scores of 0.49 and 0.62. Based on a linear regression model analysing the impact of percent dehydration on the changes in anthropometric indicators with rehydration while controlling for age and sex, each 1% increase in dehydration was associated with a change in WAZ of 0.0895 (95% CI: 0.0892, 0.0905), and a change in WLZ of 0.1304 (95% CI: 0.1297, 0.1312). There was no significant change in MUAC or MUACZ with each 1% change in dehydration status. The change in each indicator with rehydration was analysed based on baseline dehydration category (none, some, or severe). Dehydration category had no significant effect on the change in MUAC ($P = 0.32$) or MUACZ ($P = 0.07$) with rehydration. However, dehydration category had a significant effect on the change in WAZ ($P < 0.001$) and WLZ ($P < 0.001$) with rehydration.

Finally, the study evaluated the impact of each of the four measures on the diagnosis of SAM in children with complete data available. Overall, 88 (12%) children were misclassified as severe underweight on arrival using WAZ and 104 (14%) children were misclassified as SAM using WLZ. Comparatively, only 10 (1%) children were misclassified as SAM on arrival using MUAC and 16 (2%) children were misclassified as SAM using MUACZ.

Discussion

Current WHO guidelines endorse using MUAC in community-based settings and WLZ in health facilities to diagnose children with SAM. In this study, a large proportion of children with diarrhoea were misclassified with SAM when using WAZ and WLZ whereas MUAC and MUACZ were far less likely to misclassify. Furthermore, dehydration status was found to have a significant impact on the accuracy of WLZ and WAZ, but not so for MUAC or MUACZ. This difference may partially explain previous research, which has shown that MUAC and WLZ often identify different populations of children with malnutrition³ and that WLZ can vary based on the severity of dehydration in the child⁴. This study also confirms the findings of the one previous Kenyan study of malnutrition specifically in children with diarrhoea, which found that WLZ was a poor indicator of undernutrition in children with diarrhoea and that MUAC and MUACZ were not significantly affected by dehydration status.

Rapidly identifying vulnerable populations suffering from both diarrhoea and undernutrition has important clinical implications. This high-risk population can receive targeted therapy for their severe malnutrition, while also receiving specialised ORS (Resomal) for their dehydration. If providers are concerned that measures of undernutrition may not be accurate in children with diarrhoea, they may delay treatment for undernutrition until after rehydration in some children who truly need it, with an attendant risk that they may never receive it. MUAC overcomes this issue and has many advantages (easy to implement, simple measure and cheap). In community-based settings, it may not be possible to reassess the nutritional status of a child with diarrhoea after rehydration, because they are only evaluated at a single point in time before being sent home with sachets of ORS. In these cases, MUAC or MUACZ can be used to assess nutritional status confidently assess nutritional status, enabling prompt diagnosis and initiation of community-based nutritional supplementation, without requiring the child to return for repeat assessment.

Limitations to the study include the fact that children with bipedal oedema and those with WAZ <-4 were not included in this study, because they are managed in a separate malnutrition unit at ICDDR'B. Furthermore, the study was conducted at a single urban hospital in Bangladesh, so the results may not be generalisable to more rural populations or those in other settings.

³ UNICEF, WHO. WHO child growth standards and the identification of severe acute malnutrition in infants and children. Geneva (Switzerland):

⁴ Berkley J, Mwangi I, Griffiths K, Ahmed I, Mithwani S, English M, Newton C, Maitland K. Assessment of severe malnutrition among hospitalized children in rural Kenya: comparison of weight for height and mid upper arm circumference. *JAMA* 2005;294:591–7.

The relationship between wasting and stunting: policy, programming and research implications

Summary of review¹

This summary was prepared by Tanya Khara, an independent consultant engaged by the ENN on this review. The review was made possible by the generous support of the American people through the United States Agency for International Development (USAID).

Background

In 2014, ENN published a technical briefing paper ‘the relationship between wasting and stunting: policy, programming and research implications’. The paper is a narrative review of available literature on the relationship between wasting and stunting, conducted in consultation with a specifically formed technical interest group (TIG) of key experts in child growth and nutrition. The review was triggered by previous ENN work illustrating the divide in financing between wasting and stunting² and a concern that this divide may have negative implications for children and nutrition targets. The wasting-stunting review aimed also to fill a gap identified by the American Society for Nutrition in 2012: “Little is known about how children progress from one manifestation of undernutrition to another as they grow older, nor how intervention strategies need to consider the potential overlap of these manifestations of undernutrition³.”

Methods

Journal articles found via PUBMED searches and reference lists, and resources contributed by TIG members were reviewed. Evidence of causes and effects, geographical and seasonal patterns, physiological mechanisms, and for direct relationships was included.

Findings

Burden

- Wasting and stunting occur together in many country contexts and may coexist in the same child, though the extent to which this happens is largely unreported. Being concurrently wasted and stunted may have particular causal pathways and effects which are not yet fully understood.
- Seasonality has a marked impact on both wasting and stunting prevalence. Rates of gain in weight and height often take place at different times of year and seem to be related over time in a consistent way, with height faltering peaking 2-3 months after weight loss/wasting levels have peaked.

Shared risk factors

- Wasting and stunting share mainly common risk factors (dietary inadequacy, infectious disease in childhood, diarrhoea, maternal stature). Only Environmental Enteric Dysfunction and zinc inadequacy were identified in the literature as risk factors only for stunting.
- There is good evidence that in-utero conditions and foetal growth contribute significantly to stunting at birth and during infancy; and there is emerging evidence of contributions to wasting.

Shared effects

- Both wasting and stunting are associated with increased mortality. Where they coexist in the individual child there is evidence to

suggest that the risk multiplies to a similar risk as the severely wasted child.

- Low muscle mass in both wasting and stunting and the link between muscle mass and survival during infection, suggest the risk of death associated with both conditions may be mediated through decreased muscle mass. However studies measuring body composition during both conditions are required to further investigate this hypothesis.
- Stunting is associated with child mental (cognitive) and psychomotor development. Evidence for wasting being associated with mental (cognitive) and psychomotor development is less strong.

Direct relationships

- Evidence suggests that linear growth slows at some point during wasting and that episodes of wasting in the previous three months (approximately) have an impact on attained length-for-age. Therefore, early identification and treatment of wasting may play a role in preventing stunting in particular contexts.
- Evidence that wasting treatment promotes linear growth of individual children is mixed. There are indications that optimising ready to use therapeutic food (RUTF) to include specific nutrients required for linear growth and development could have positive effects. However, preventing stunting relies on a range of nutrition specific interventions and nutrition sensitive approaches.

Programmatic approaches

- There is some encouraging operational research suggesting that both wasting and stunting (to a lesser extent) may be reduced with similar preventative food based approaches.

Implications and actions

The review elaborates implications of these findings and recommends a number of key actions:

1. Longitudinal data tracking nutritional status.

A number of limitations to available data were found during the review. Most importantly, measuring the association between wasting and stunting is challenged by the common use of cross sectional prevalence data. This does not allow for the capture of incident wasting cases occurring over time, nor how the causal pathways for wasting and stunting develop over time separately and in combination. Collection and analysis of longitudinal data tracking children’s status over time is required to better inform the design of services aiming to intervene in these causal pathways.

2. Concurrent wasting and stunting

We do not know the burden of concurrent wasting and stunting, the full implications for a child experiencing both deficits, nor whether these children are being already reached by services. Data is

available that could be analysed as a priority to quantify national, regional and global burdens of concurrent wasting and stunting. Further research/analysis of mortality and morbidity implications of concurrent wasting and stunting is also required. At the same time the extent to which these children are being reached by current nutrition programmes needs to be investigated (particularly those using mid upper arm circumference (MUAC) and weight for age (WFA)).

3. Common prevention approaches and research

As wasting and stunting share mainly common risk factors the literature does not support a need for different preventive intervention packages. Common prevention approaches are required and policies which separate the two re-examined. In addition research could more routinely measure impacts on incidence of both forms of undernutrition in order to more appropriately inform programming for both conditions.

As wasting can adversely affect linear growth the timely identification and treatment of wasting may be an important component of stunting prevention in some contexts. The question of whether protocols for the treatment of wasting could also be optimised (i.e. through reformulation of RUTF) to promote linear growth requires further investigation, however.

4. Maternal nutrition

Evidence included in the review that both wasting and stunting have origins in foetal growth highlights the importance of attention to maternal and adolescent girl health and nutrition as part of wasting and stunting prevention approaches. It also suggests that further investigation is required to differentiate ponderal and linear growth in utero and at birth.

5. Seasonal approaches

The evidence of seasonal and related patterns in wasting and stunting does not infer causality as other seasonal factors may be involved. Further research is needed to better understand these seasonal relationships and to build on existing experience of what works to mitigate seasonal peaks in both deficits.

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¹ Khara, T., & Dolan, C. (2014). Technical Briefing Paper: The Relationship between Wasting and Stunting, policy, programming and research implications. Emergency Nutrition Network (ENN) June 2014. <http://www.ennonline.net/ourwork/reviews/wastingstunting>

² Shoham J, Dolan C, Gostelow L, ENN (2013). The Management of Acute Malnutrition at Scale: A Review of Donor and Government Financing Arrangements. Main Report. March 2013. <http://www.ennonline.net/ennmfinancingreport2013>

³ Menon, P. and R. J. Stoltzfus (2012). Building convergence in science, programmes, and policy actions on child undernutrition: symposium rationale and overview. *Adv Nutr* 3(2): 224-226.



Development and pilot testing of the Maternal Opportunities for Making Change (MOM-C) screening tool

By Scott Ickes and Alex Lea

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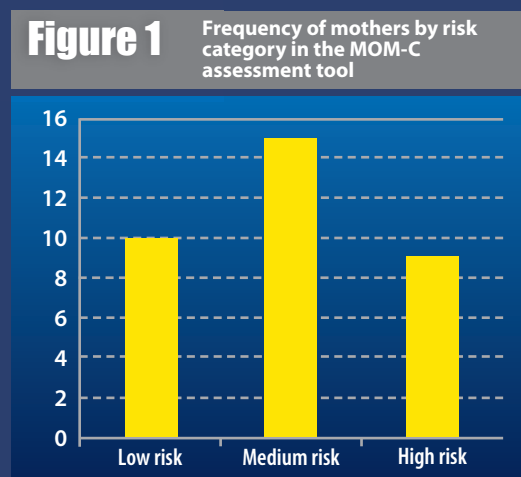


Table 1 Summary statistics for the MOM-C Screening Tool

	Mean (SD)	Median (95% CI)	Range
Social Support	8.8 (2.3)	8.5 (7.8, 10.0)	4 to 15
Psychological Wellness	6.4 (1.3)	34 (6.0, 7.0)	4 to 9
Decision-making	16.5 (2.6)	17 (16.0, 17.0)	9 to 20
TOTAL	31.6 (3.3)	32 (31.0, 33.0)	21 to 38

Background and purpose

Scaling up essential nutrition interventions, like ready-to-use foods (RUFs) and complementary feeding education in the context of moderate acute malnutrition, holds great potential for reducing child undernutrition. Discourse about how to effectively increase coverage of such interventions is often focused on strengthening delivery systems and dissemination through community health workers. However, successful implementation of these interventions requires considerable action by caregivers, almost always mothers. Programmes often lack important information about maternal factors, which can be important for informing educational approaches.

The purpose of the Maternal Opportunities for Making Change (MOM-C) screening tool is to provide community health workers and programme designers with brief information about mothers enrolled in the programme. This tool seeks to understand underlying factors that may affect women's abilities to respond to nutrition interventions.

Tool development and pilot

The MOM-C tool was developed and based on a larger survey that was used for research purposes in 2014 (results not yet published). This abbreviated screening tool (see Box 1 has been tested at the Nyahuka Health Centre, Bundibugyo, Uganda in June and July 2015 within the context of a community-based nutrition programme called *Byokulia Bisemeye mu Bantu*, or BBB. The programme, which operates under World Harvest Mission, aims to provide nutritional and agricultural education, as well as RUF supplements, to families with underweight children aged 6 to 59 months. The results are being used to help the nutritional education approach of the work.

The tool covers five domains: experience with the BBB supplemental feeding programme, infant and young child feeding education, social support, psychological wellbeing and decision-making. The first objective was to assess whether or not mothers have difficulty feeding the BBB food to the child enrolled in the programme and if so, what the reasons for these difficulties were. Participants were then asked about whether the programme education was helpful for them to make changes in how they feed their child or if making these changes remained difficult. If the respondent replied that it was difficult to make these changes, possible reasons for these difficulties were proposed in order to assess the source of difficulty, ranging from lack of money to purchase foods to whether or not the child likes the food that is prepared by the mother. To assess social support, the participant was asked

questions about who supports them in their day-to-day life as they care for their children and how satisfied the mother was with the support that was provided. Psychological well-being was assessed through determining a mother's satisfaction with their life, access to food and their feelings of safety in the community in which they lived. The final section of the survey was used in an attempt to understand what influences might affect a mother's decision making and to what extent a mother has control over her own decision-making process regarding her child's health and nutrition.

Pilot Testing

From June to July 2015, the MOM-C tool was pilot tested among 34 mothers who were currently or recently enrolled in the BBB programme. Survey results were tabulated across three domains (Social support, 6 questions, 15 possible points; Psychological Wellness, 3 questions, 12 possible points; and Decision-making 6 questions, 24 possible points) for a highest total possible score of 51, and lowest possible score of 12. Scores ranged from 21 to 38, with a mean (standard deviation) of 31.65 (3.31). We developed three risk categories: low risk (total score 12-29), medium risk (total score 30 to 32), and high risk (above 33 to 51), displayed in Figure 1. Table 1 presents the summary statistics for each sub-domain and the overall MOM-C screening tool.

Next steps for programme implementation

Following further refining of this tool, the programme will regularly adopt this screening questionnaire to assess maternal opportunities for making change at the time of programme enrolment to better understand the challenges mother face in each cohort of the programme, and to screen for mothers who are particularly vulnerable to a context of low agency, as assessed through the measured variables in this tool. Future educational messages, including programme dramas will emphasise decision-making capabilities and ways that women can advocate for and receive greater support. The programme will also encourage male partner attendance at education sessions, which will be designed to engage both partners in dialogue about issues related to women's decision-making. Future research directions will examine the associations between levels of risk, identified in the MOM-C tool, with baseline nutritional status, biologic (e.g. growth) and behavioural (feeding practices) responses to nutrition programmes.

For more information or if you would like to pilot this tool in a different context, contact: Scott Ickes, email: sbickes@wm.edu



Diego Macias/ACF, Nigeria

Nigeria Editorial



Special focus on Nigeria

By Amy Mayberry, Claire Harbron, Arjan De Wagt and Dr. Chris Osa Isokpunwu



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The story of Community Management of Acute Malnutrition (CMAM) in Nigeria is one of success and learning; documented in the three following articles by UNICEF/ACF/Mark Myatt; ACF; and Results for Development (R4D). What began in 2009 as a small emergency response in 30 outpatient treatment (OTP) sites, has grown into one of the largest non-emergency CMAM programmes globally. With technical support from UNICEF and funding from the Children's Investment Fund Foundation (CIFF), ECHO, EU, USAID, JICA, the Bill & Melinda Gates Foundation, CERF and DFID, there are 642 government-run

CMAM sites delivering life-saving treatment across 11 states¹ in Northern Nigeria today. From 2009 to May 2015, 1,085,498 children have been admitted for treatment – resulting in an estimated 831,686 children cured² and 207,805 lives saved.

Demonstrating delivery at scale

Despite fluctuating instability in the country, the programme continues to demonstrate that high-quality CMAM services can be

¹ Adamawa, Bauchi, Borno, Gombe, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara. As of May 2015.

² 75.2% average cure rate from 2009-2014

successfully delivered at large scale through a government health system. The programme has grown exponentially over the last five years, with more than 320,000 children admitted for treatment in 2014 alone. Overall performance has significantly improved and the majority of states (nine out of 11) now consistently meet SPHERE treatment standards. The 11 states achieved an average 84.5% cure rate as of March 2015³. To support further programmatic improvement, a series of SLEAC⁴ and SQUEAC⁵ coverage surveys found an average coverage of 36.6% across the 11 states. The leading causes of reduced access to treatment and default rates were lack of awareness of malnutrition and the CMAM programme. This was true across all 11 states. This information is critical for understanding how to improve the programme and ensure high-quality services are available and reaching children in need.

Delivering a cost-effective service

The data from Nigeria confirms that the delivery of CMAM services is a highly cost-effective and affordable treatment. A comprehensive costing analysis shared in the article by R4D⁶ found an average cost of \$219 per child cured, of which \$160 are financial costs attributable to the government and UNICEF and \$59 are economic costs to beneficiaries and community volunteers. Taking the government and UNICEF costs of \$160 per child cured, this translates into \$1,117 per life saved and \$30 per DALY gained⁷. This is considered highly cost-effective based on WHO-CHOICE cost-effectiveness thresholds. The Ready to Use Therapeutic Food (RUTF)

product is the single largest cost, at roughly \$76 per child cured⁸ (close to 50% of government and UNICEF costs). Efforts are underway to begin producing RUTF locally in Nigeria but it will take time before production can meet demand and it is not clear if this would lower costs significantly in the short-term. CIFF is currently funding Washington University in St. Louis to develop a tool and alternative formulations for RUTF using local ingredients with the aim to reduce cost. Further cost-efficiencies can be achieved at scale as the programme performance continues to improve and existing infrastructure is used to reach more children. In the end, funding for the product is likely to remain the main limiting factor for treating children in Nigeria; the health system is available and able to deliver treatment to many more children but without supplies, this cannot be done.

More children are in need of treatment

Rates of malnutrition remain high in Nigeria and this is an issue that cannot be ignored. In 2015, there will be an estimated 1.8 million⁹ children with severe acute malnutrition (SAM) in need of treatment. Despite the impressive scale-up seen in recent years, two out of every three children still do not receive the treatment they need in the 11 states where the programme currently operates. As we look forward to the future of CMAM in Nigeria, it is clear that availability of treatment must continue to increase.

This requires increased investment

Based on the above analyses, scaling up the

programme will cost up to \$160 per child cured. For an average OTP site, with over 500 admissions and 360 children cured per year¹⁰, estimated annual costs are \$58,157. With an average of five sites per LGA, this translates into a total annual cost per LGA of \$290,783 to admit over 2,500 children and cure over 1,800 children. While these costs are not insignificant, they are affordable and scale-up to reach more children with effective, life-saving treatment is essential for a country like Nigeria where the burden is high. Funding support to date has primarily come from international donors but domestic budget allocation of this affordable service is essential for sustainability of the programme to ensure continued treatment of children with SAM. The current domestic budget for nutrition as a percentage of overall government expenditure is low, though exact data are not currently available. In recent years, a number of state governments in Nigeria have specifically included CMAM services in their budgets, with a total of over \$2 million committed in 2014. One of these states included significant funding for RUTF procurement but this needs to increase. CIFF will be incentivising this through a matched-funding approach over the next three years.

A success story with lessons for Nigeria and beyond

The incredible success of this programme, with hundreds of thousands of children cured each year, offers an unparalleled opportunity to reach some of the most vulnerable mothers and children in Nigeria. The OTP sites of the CMAM programme offer an exciting opportunity to integrate additional preventative nutrition services such as Infant and Young Child Feeding (IYCF) and health services in the community and deliver critical interventions to reduce the overall burden of children with SAM in Nigeria.

This programme is also a lesson – for other countries and for Nigeria itself. The programme shows that it is possible to move from a small emergency operation to a national programme delivered through the existing health system and that high quality treatment can be provided to hundreds of thousands of children in regions with chronically high rates of undernutrition. As a highly cost-effective and life-saving service, CMAM and procurement of RUTF for treatment must be a priority for governments to include in their budgets and as part of their routine health services.



Diego Macías/ACF, Nigeria

³ UNICEF routine monitoring data (May 2015)

⁴ Simplified LQAS Evaluation of Access and Coverage; LQAS: Lot Quality Assurance Sampling

⁵ Semi-Quantitative Evaluation of Access and Coverage

⁶ Including cost to beneficiaries as well as government costs and UNICEF costs

⁷ As seen in Mark Myatt's article, this number is much lower when looking only at the UNICEF costs.

⁸ Of total children admitted, only a proportion will be cured so the cost of RUTF per child cured (\$76) is higher than the cost of RUTF per child admitted (\$54).

⁹ NNHS 2014

¹⁰ This assumes a 72% cure rate found in the sites included in the costing study. This is slightly lower than the current national average of 84.5% cured.



UNICEF Nigeria

How many lives do our CMAM programmes save?

A sampling-based approach to estimating the number of deaths averted by the Nigerian CMAM programme

CMAM programme

By Assaye Bulti, Stanley Chitekwe, Chloe Puett and Mark Myatt



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This article is accompanied by two postscripts; Andre Briend comments on how this article contributes to the evidence around cost-effectiveness of CMAM, whilst Max Bachmann was invited to explain the statistical methods. In the process of review, informal feedback provided by Max was shared with the authors who subsequently elaborated on content (most notably, the addition of sensitivity analysis and an expanded discussion section). The Field Exchange editors and articles' authors extend thanks to the reviewers for their valuable contributions (Eds).

Introduction

Since the inception of the community-based management of acute malnutrition (CMAM) programme in Nigeria in September 2009, until October 2014, a total of 919,876 children with severe acute malnutrition (SAM) have been treated by the programme across eleven states (Adamawa, Bauchi, Borno, Gombe, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara) in northern Nigeria.

The CMAM programme is a child survival programme. However, the number of lives saved by the Nigerian CMAM programme is not yet documented. This is a common and persistent problem with nutrition interventions that dates back to the time of limited impact and limited coverage inpatient therapeutic feeding programmes. Health impact assessment statistics such as the number of deaths averted (lives saved) as well as cost-effectiveness statistics such as cost per death averted (cost per life saved), and cost per disability adjusted life year (DALY) averted are increasingly being used by governments and donor organisations to decide funding priorities. Their absence for common nutrition interventions may therefore, jeopardise funding.

This article describes a simple and practicable method that has been used to estimate the number of lives saved by the Nigerian CMAM programme with the intention that this estimate be used as an advocacy tool to attract more government and international resources to the programme. The method

described in this article was developed by UNICEF Nigeria and Brixton Health from previous work undertaken by Tufts University, the World Bank, the International Food Policy Research Institute and Brixton Health investigating the cost-effectiveness of different types of therapeutic feeding programmes[1].

The method described in this article can be performed using readily available data (i.e. routine programme monitoring data, data such as mid upper arm circumference (MUAC) at admission that is commonly collected in SQUEAC coverage assessments, and programme accounting summaries). This means that the described method provides every CMAM programme with the ability to produce key health impact assessment statistics.

A counterfactual for estimating the number of deaths averted by a CMAM programme

Estimating the number of deaths averted by an intervention requires the construction of a *counterfactual* (i.e. an informed guess at what may have happened if the intervention had not happened). In the case of the number of deaths averted by a CMAM programme, the counterfactual is informed by the number of SAM cases treated by the programme (NT), the proportion of treated SAM cases cured by the programme (PC), and the expected excess mortality (EM) in untreated SAM cases with similar severity of wasting as those treated by the programme. If these are known or can be estimated, then the number of deaths averted can be calculated:

$$\text{Deaths averted} \approx EM \times PC \times NT$$

We know that 919,876 SAM cases were treated by the Nigerian CMAM programme between September 2009 and October 2014:

$$NT = 919,876$$

We estimated the proportion cured (PC) using data from:

1. A recently completed retrospective cohort study investigating outcomes in the 102,245 SAM cases admitted to the CMAM programme in Katsina and Jigawa states between January 2010 and December 2013. The proportion of programme beneficiaries discharged as cured in this study was 70.9%. We used this data to represent programme performance for the entire programme over the fifty-two months from September 2009 to December 2013.
2. Routine programme monitoring statistics for the entire programme for January 2014 to the end of October 2014 for 229,520 programme exits. The proportion of programme beneficiaries discharged as cured in this data was 83.3%. We used this data to represent programme performance over the ten months from January 2014 to October 2014.

A weighted (i.e. by time in months) average of these data is:

$$\text{Proportion cured} = \frac{0.709 \times 52 + 0.833 \times 10}{52 + 10} = 0.729 \text{ (72.9\%)}$$

This figure is, however, likely to underestimate the true proportion of beneficiaries that benefited substantially from the programme. This is because it is likely that a significant proportion of defaulting cases will have “defaulted” because the child had recovered and was clinically well. Such cases might be considered as *self-discharged as cured*.

The proportion of programme beneficiaries who defaulted in the retrospective cohort study was 19.7%. The proportion of programme beneficiaries who defaulted in the routine programme monitoring data for the first ten months of 2014 was 13.3%. A weighted (i.e. by time in months) average of these data is:

$$\text{Proportion defaulted} = \frac{0.197 \times 52 + 0.133 \times 10}{52 + 10} = 0.187 \text{ (18.7\%)}$$

Many of the cases that defaulted in the cohort study did so early in the treatment episode (i.e. more than 50% of cases defaulted after a single

visit). It is unlikely, therefore that more than about 20% of defaulters could reasonably be considered to have been *self-discharged as cured*. It is also unlikely that none of the defaulters received a substantial benefit from attending the programme. It is likely, therefore, that the proportion self-discharged as cured lies somewhere between about 5% and 20% of all defaulters. There was no compelling reason to believe that any value between 5% and 20% is more likely than any other so the average of 5% and 20% (i.e. 12.5%) was used.

We estimated the proportion cured (PC) accounting for those *self-discharged as cured* to be about:

$$\begin{aligned} PC &\approx 0.729 + (\text{proportion defaulted} \times 0.125) \\ &\approx 0.729 + (0.187 \times 0.125) \\ &\approx 0.752 \text{ (75.2\%)} \end{aligned}$$

The expected excess mortality (EM) can be estimated from background mortality and expected mortality (i.e. *the case fatality rate*) in untreated SAM cases:

$$\begin{aligned} \text{excess mortality (EM)} &= \\ \text{case fatality rate}_{\text{untreated SAM cases}} &- \text{background mortality} \end{aligned}$$

We used the under-five years mortality rate (U5MR) for 2009 to 2013 for Nigeria from an international database and took the average to estimate background mortality as 24.8 deaths per one thousand children per year (see Box 1).

Mortality (i.e. the *case fatality rate*) in both treated and untreated SAM cases varies with the severity of wasting. Mortality risk increases with increasing severity of wasting. Data on mortality risk in untreated SAM cases is available only from historical cohort studies. Since the advent of therapeutic feeding programmes capable of simultaneously delivering effective treatment (i.e. the current therapeutic feeding protocols and products) to large numbers of SAM cases (i.e. CTC¹/CMAM programmes) earlier this century, leaving SAM cases untreated and waiting for them to recover or die is no longer an ethically defensible option. This means that we are restricted to working with historical data.

The Nigerian CMAM programme uses only MUAC and oedema for deciding admission. About 95.1% of admissions in the retrospective

Box 1 Estimating background mortality from summary statistics

We used the under-five years mortality rate (U5MR) for 2009 to 2013 for Nigeria from an international database and took the average to estimate background mortality.

The World Bank (<http://data.worldbank.org/indicator/SH.DYN.MORT>) reports U5MR for Nigeria for 2009 to 2013 to have been:

Year	2009	2010	2011	2012	2013	2014*
U5MR	136	131	126	122	117	112

* U5MR for 2014 was estimated by linear extrapolation.

The U5MR is the probability that a newborn child will die before reaching age five and is expressed as deaths per one thousand live births. The U5MR data can be expressed as an annual individual risk by dividing by five (to give an annual mortality risk per thousand children) and then dividing by one thousand (to give an individual annual mortality risk). This is also an estimate of the proportion of children aged under five years that die each year:

Year	2009	2010	2011	2012	2013	2014*
U5MR	2.72%	2.62%	2.52%	2.44%	2.34%	2.24%

* U5MR for 2014 was estimated by linear extrapolation.

The mean of these estimates is 2.48% (i.e. 24.8 deaths per one thousand children per year or 0.68 deaths per ten thousand children per day).

¹ Community Therapeutic Care

cohort study were admitted using MUAC with the remainder admitted using MUAC and oedema (1.4%), oedema alone (0.2%), or discretionary criteria such as *visible severe wasting* (3.3%). The very high proportion of admissions made using MUAC means that we were able to use mortality estimates for MUAC cases to estimate expected mortality in untreated SAM cases.

Figure 1 shows the relationship between MUAC and mortality, expressed in deaths per one thousand child-years, reported by four separate historical cohort studies [2,3,4,5]. Mortality increases exponentially with declining MUAC. There is little between-study variation in the observed relationships between MUAC and mortality despite the fact that these studies were undertaken by different teams in different locations at different times with varying lengths of follow-up and inconsistent censoring of accidental and violent deaths. This suggests that each study is estimating the same underlying rate and that the observed differences were due to varying lengths of follow-up, inconsistent censoring of accidental and violent deaths, measurement error and sampling error.

The estimate of mortality associated with MUAC used in the analysis reported here was calculated using the published data on mortality associated with MUAC in untreated SAM cases summarised in Figure 1 [2,3,4,5]. Linear interpolation was used to estimate expected excess mortality at the mean admission MUAC (106.1 mm) observed in the cohort study (this data is also collected in SQUEAC coverage assessments). The reported mortality rates were corrected to allow for a background mortality rate of 24.8 deaths per one thousand children per year (see Box 1). The correction is made by subtracting background mortality from the estimated case fatality rate:

$$\begin{aligned} \text{excess mortality (EM)} \\ &= \text{case fatality rate}_{\text{untreated SAM cases}} - \text{background mortality} \\ &= \text{case fatality rate}_{\text{untreated SAM cases}} - 24.8 \end{aligned}$$

The linear interpolation and correction process is illustrated in Table 1.

It was assumed that the four mortality estimates in Table 1 were estimating the same underlying rate and that the observed differences were due to varying lengths of follow-up time, inconsistent censoring of accidental and violent deaths, measurement error, sampling error, errors introduced by our use of simple linear interpolation and propagation of rounding errors. Under this assumption, an average of the four estimates is likely to be more accurate than any single estimate.

A useful way of finding an average when you have very few data points is:

$$E(x) \approx \min(x) + \frac{\max(x) - \min(x)}{2}$$

The resulting estimated excess mortality rate from the mortality data presented in Table 1 is:

$$\begin{aligned} EM \approx 171.85 + \frac{327.86 - 171.85}{2} = \\ 249.86 \text{ deaths per 1,000 children per year} \end{aligned}$$

This is the equivalent of 24.986% (i.e. about one quarter) of untreated SAM cases with the same mean MUAC (i.e. 106.1 mm) as cases admitted to the programme dying each year.

An objection that is occasionally raised against the use of historical cohorts of untreated SAM cases to estimate excess mortality in this way is that there is considerable evidence of significant drops in childhood mortality over the years since the cohort studies were done [6]. Such drops can be seen in Box 1 where the U5MR drops by almost 20% over five years. The objection is mistaken because the drops in childhood mortality are, in very large part, due to a combination of reductions in the incidence of the causes of childhood mortality, improvements in

treatment coverage and improvements in treatment efficacy. In our counterfactual, we use the SAM cases admitted to the Nigerian CMAM programme and model what would happen to these cases if the programme had not existed. These cases already have the disease so reductions in incidence are not relevant. These cases are, in the counterfactual, untreated so improvements in treatment coverage and treatment efficacy are also not relevant. The SAM cases in the counterfactual have the same disease and the same absence of treatment as the SAM cases in the historical cohorts. In the absence of additional and contradictory evidence on the case-fatality rates for untreated SAM at different levels of severity (which would now be unethical to collect), there is no good reason to believe that the SAM cases in the counterfactual will not experience similar case-fatality rates to the SAM cases in the historical cohorts.

Having found/estimated the number treated (NT), the proportion cured (PC), and the expected excess mortality (EM) we estimated the number of deaths averted by the CMAM programme:

$$\begin{aligned} \text{Deaths averted} &\approx EM \times PC \times NT \\ &\approx 0.24986 \times 0.752 \times 919,876 \\ &\approx 172,840 \end{aligned}$$

It is important to note that EM and PC are expressed in the same way (i.e. as proportions).

The problem with the estimate of deaths averted calculated above is that it is only a *point estimate*. A credible range of values that accounts for the uncertainty in estimates of programme cure-rates (PC) and the expected excess mortality rate (EM) would be more useful and more credible.

Accounting for uncertainty – A sampling-based approach

Uncertainty can be incorporated into the calculation of deaths averted by the CMAM programme using *fuzzy numbers*. A *fuzzy number* is a generalization of a “regular” real number in the sense that it does not refer to a single value but rather to a connected set of possible values

Figure 1 The relationship between MUAC and mortality (untreated cases) in four cohort studies [2,3,4,5]

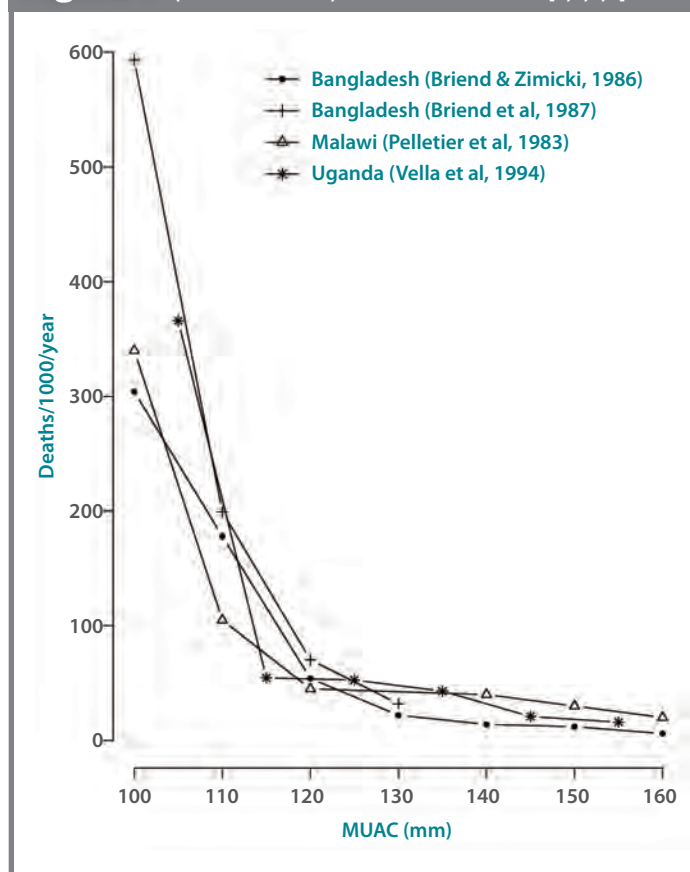


Table 1 The linear interpolation process used to estimate expected excess mortality associated with untreated SAM at the mean admission MUAC (106.1 mm) in the Nigerian CMAM programme

Source	Reported mortality at two MUAC thresholds in deaths/1,000/year		Linear Interpolation	
	MUAC threshold	Mortality	Slope (β)	Expected excess mortality in deaths/1,000/ per year at MUAC = 106.1 mm (EM)*
Briend & Zimicki (1986)	100 mm	304	$\beta = \frac{178-304}{110-100} = -12.6$	304 - 12.6 × 6.1 - 24.8** = 202.34
	110 mm	178		
Briend et al (1987)	100 mm	593	$\beta = \frac{199-593}{110-100} = -39.4$	593 - 39.4 × 6.1 - 24.8** = 327.86
	110 mm	199		
Vella et al (1994)	105 mm	366	$\beta = \frac{55-366}{115-105} = -39.4$	366 - 31.1 × 1.1 - 24.8** = 306.99
	115 mm	55		
Pelletier et al (1993)	100 mm	340	$\beta = \frac{105-340}{110-100} = -23.5$	340 - 23.5 × 6.1 - 24.8** = 171.85
	110 mm	105		

* The calculation here is $excess\ mortality\ (EM) = case\ fatality\ rate_{untreated\ SAM\ cases} - background\ mortality$ ** This is the background mortality (i.e. 24.8 deaths per 1,000 children per year).

where each possible value has its own *weight* (or *membership function*). The membership function typically ranges between zero and one. This range of weights has been found to be useful in many applications and when membership is defined on a semi-quantitative basis. Much of the data used in the calculation of deaths averted is taken from samples. This allows us to use *sampling distributions* (*probability distributions*) to define fuzzy numbers.

For example, the proportion discharged as cured (i.e. 72.9%) was estimated from a retrospective cohort study with a sample of size $n = 102,245$ and routine programme monitoring data for 229,520 programme exits. The total sample size for this estimate is:

$$n = 102,245 + 229,520 = 331,765$$

The proportion discharged as cured is a binomial proportion and can be modelled using the binomial distribution:

$$B(n = 331,765, p = 0.729)$$

This particular distribution is shown in *Figure 2*. This is the theoretical *sampling distribution* of the proportion discharged as cured. The shape of the plot in *Figure 2* reflects the level of belief about the true value of the proportion cured (i.e. we have most belief that it is close to the point estimate and little belief that it could be very far from the point estimate). In this case degrees of belief are determined by the statistical properties (i.e. the point estimate and sample size) of a sample.

In other cases the probability distribution used reflects informed guesses or reasoned belief alone. This is the case (e.g) with the proportion *self-discharged as cured* (i.e. defaulters who were cured before they defaulted). In such cases a probability distribution is chosen on a semi-quantitative basis. Given the distribution of lengths of stay in the programme for different outcomes we decided that it is likely that the proportion *self-discharged as cured* lay somewhere between 5% and 20% of defaulters. There was no compelling reason to believe that any value between 5% and 20% is more likely than any other so the *continuous uniform distribution* $U(0.05, 0.20)$ was used. If we multiply the proportion defaulting by this distribution we get a second uniform distribution:

$$\begin{aligned} &U(0.05, 0.20) \times 0.187 \\ &= U(0.05 \times 0.187, 0.20 \times 0.187) \\ &= U(0.0094, 0.0374) \end{aligned}$$

This approach neglects uncertainty in the proportion defaulting. We can model this using the binomial distribution:

$$B(n = 331,765, p = 0.187)$$

The fuzzy number for the proportion self-discharged as cured that captures both sources of uncertainty is:

$$U(0.05, 0.20) \times B(n = 331,765, p = 0.187)$$

The fuzzy number for the proportion cured (PC) that captures all sources of uncertainty is:

$$B(n = 331,765, p = 0.729) + [U(0.05, 0.20) \times B(n = 331,765, p = 0.187)]$$

This is shown graphically in *Figure 3*.

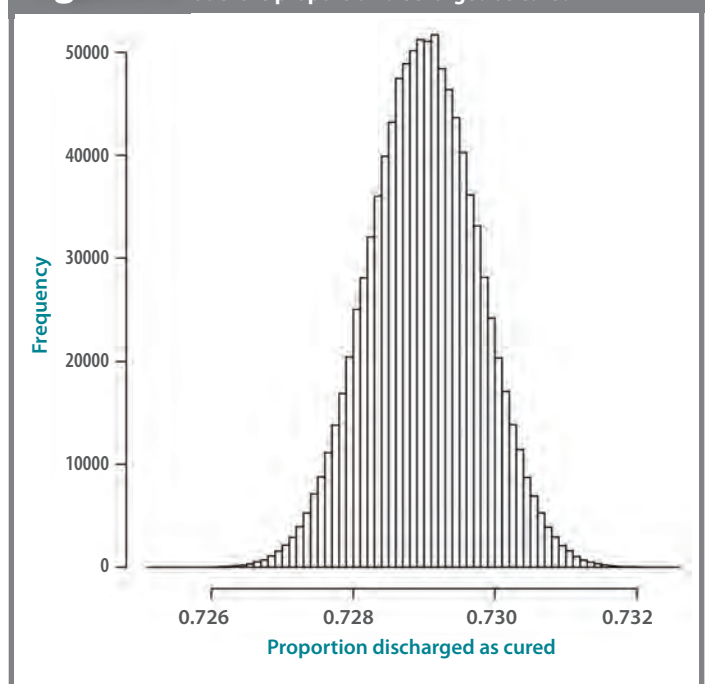
The approach of using sampling or probability distributions to define fuzzy numbers using a network of probability distributions is known as *sampling-based uncertainty analysis* [1].

A fuzzy counterfactual

Table 2 shows the probability distributions that we used to estimate the number of deaths averted by the CMAM programme.

This network of probability distributions is shown graphically in *Figure 4*.

Figure 2 Binomial Distribution $B(n = 331,765, p = 0.729)$ used to model the proportion discharged as cured



Histogram shows one million random numbers drawn from the $B(n = 331,765, p = 0.729)$ distribution

Figure 3 Determining the fuzzy number for the proportion cured

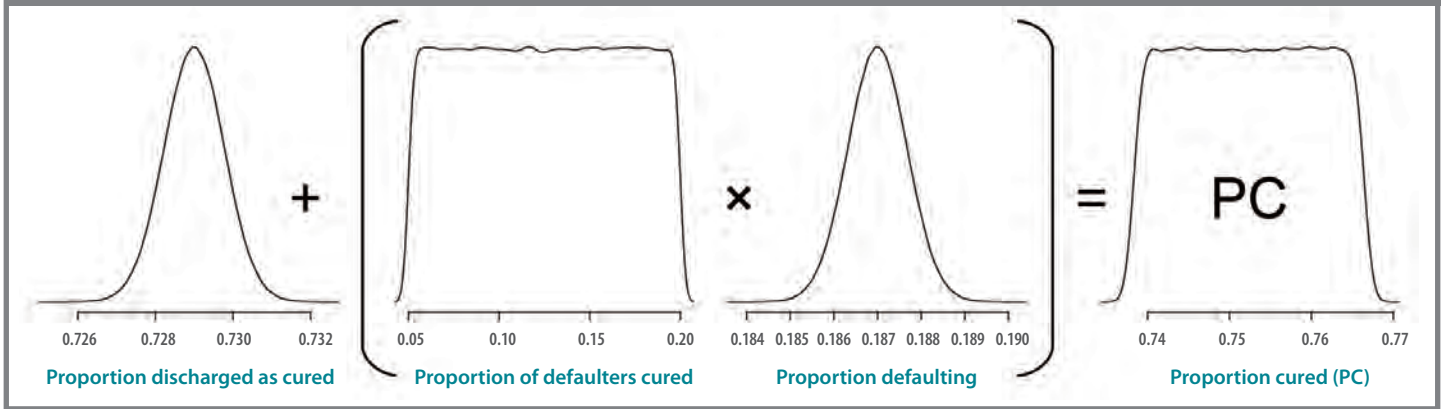


Table 2 Probability distributions used to estimate the number of deaths averted by the CMAM programme

Input	Source	Distribution*	Notes	Estimates ...
Number treated	UNICEF Nigeria	919,876	A fixed number	NT
Proportion discharged as cured	Cohort study Routine data	$B(n = 331,765, p = 0.729)$	See the Accounting for uncertainty – A sampling-based approach section, Figure 2 and Figure 3.	PC
Proportion defaulting	Cohort study Routine data	$B(n = 331,765, p = 0.187)$		
Proportion of defaulters cured	Cohort study	$U(\min = 0.05, \max = 0.20)$		
Background mortality	World Bank	$N(\mu = 0.0248, \sigma = 0.0008)$	$\mu = \text{mean}(USMR)$ $\sigma^{**} = \frac{\max(USMR) - \min(USMR)}{6}$	EM
Mortality in untreated cases	Historical cohort studies [1,2,3,4]	$N(\mu = 0.2747, \sigma = 0.0260)$	$\mu = \min(CFR^{***}) + \frac{\max(CFR^{***}) - \min(CFR^{***})}{2}$ $\sigma^{**} = \frac{\max(CFR^{***}) - \min(CFR^{***})}{6}$	
Deaths averted	All of the above data	$DA^{****} = EM \times PC \times NT$	Final result	Deaths averted

* $B(n, p)$ for binomial, $U(\min, \max)$ for continuous uniform, and $N(\mu, \sigma)$ for normal (one million observations were generated from each distribution).

**The method for estimating variability (σ) about a mean used here is a statistical rules of thumb commonly used in PERT/CPM projectmanagement applications and is useful when there are

only a few data points.

*** CFR = Case Fatality Rate (the proportion of untreated cases dead after one year).

**** DA is the joint or conjugate distribution of EM, PC, and NT.

Figure 4 Network of probability distributions used to estimate the number of deaths averted by the Nigerian CMAM programme

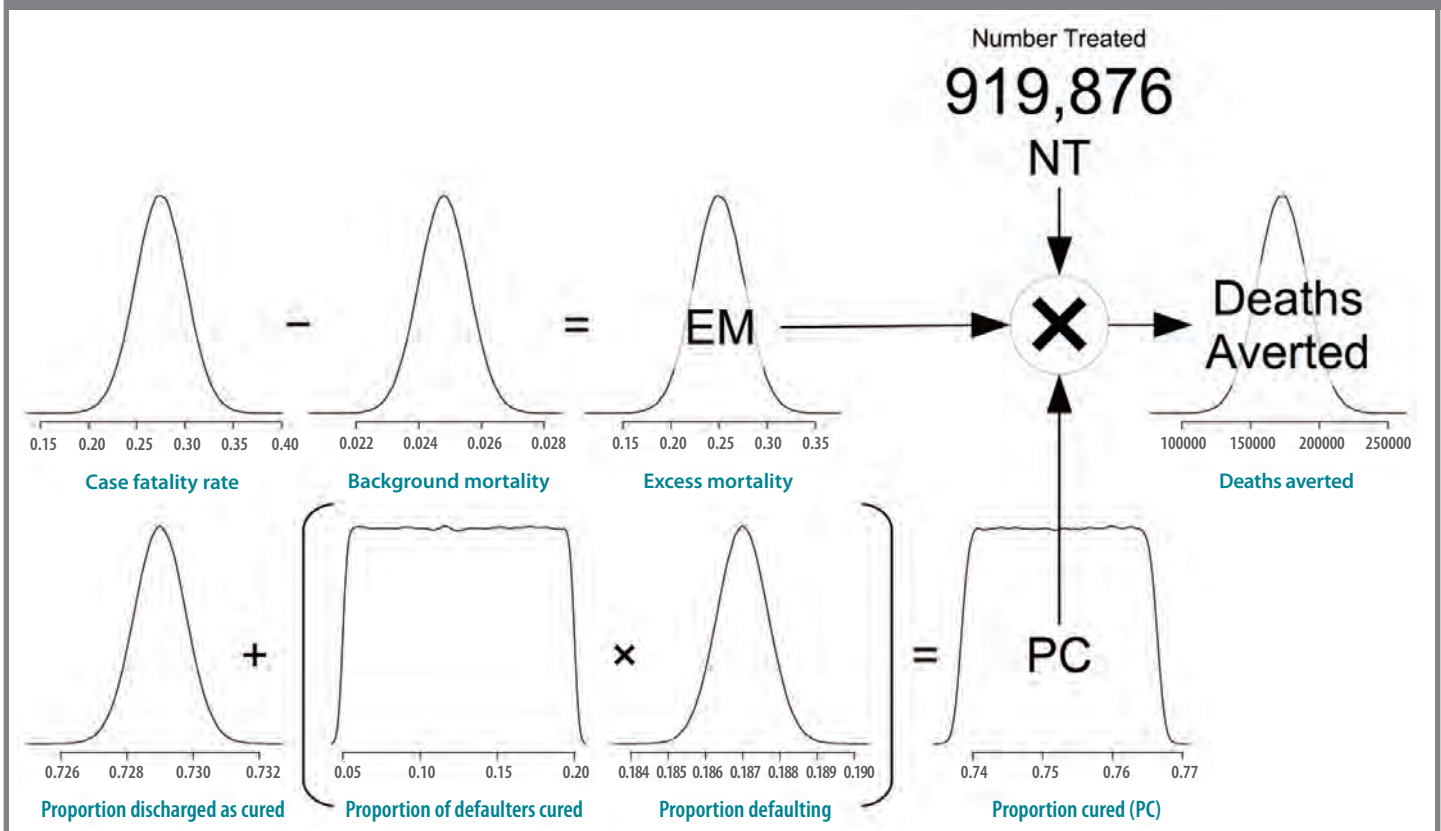
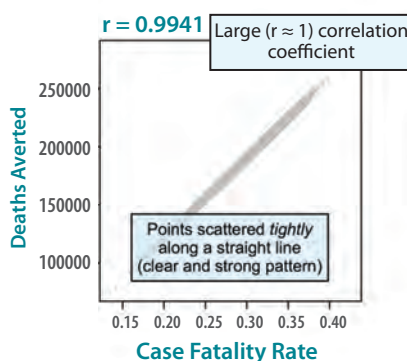
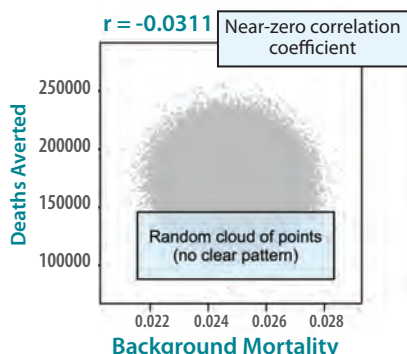
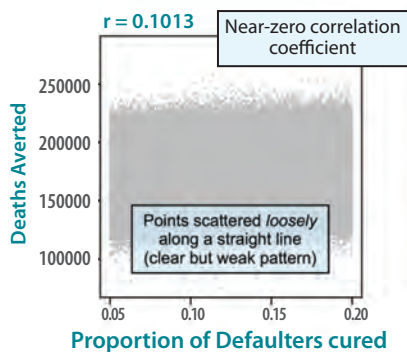
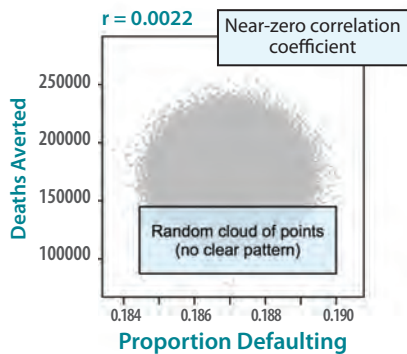
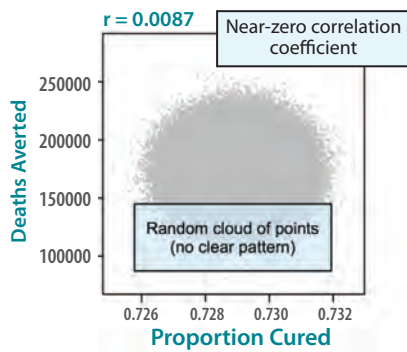


Figure 5 Sensitivity analysis by scatter-plot



Sensitivity Analysis

Output (i.e. deaths averted) is slightly sensitive to the proportion of defaulters cured and very sensitive to the expected case fatality rate in SAM cases not receiving the CMAM intervention.

Each of the distributions in the network was generated using appropriate pseudo-random number generators. In the analysis presented here, each distribution consisted of one million pseudo-random numbers. All calculations were performed using the *R Language for Data Analysis and Graphics*. The R language script for the sampling-based uncertainty analysis used to estimate the number of deaths averted by the Nigerian CMAM programme is shown in *Box 1*.

Since the output of the network of probability distributions is also a probability distribution, we can produce a point estimate (i.e. the 50% percentile of the output distribution) and a 95% credible interval (i.e. the 2.5th and 97.5th percentiles of the output distribution). In the analysis presented here, the estimate of the number of deaths averted by the Nigerian CMAM programme is estimated to be 172,898 (95% CI = 137,526; 208,434).

This type of analysis is usually accompanied by a *sensitivity analysis*. A sensitivity analysis explores how sensitive an output variable is to each of the input variables that are used to derive the output. A simple but useful way of performing a sensitivity analysis for a sampling-based uncertainty analysis is to produce scatter-plots of the output variable against each of the input variables. Each scatter-plot gives a direct visual indication of the sensitivity of the output variable to a single input variable. A strong pattern in the scatter-plot indicates sensitivity to a given input variable. Quantitative measures (e.g. correlation coefficients) may also be calculated. A large absolute value of a correlation coefficient indicates sensitivity to a given input variable. The R language script in *Box 1* also performs this type of sensitivity analysis. In this study, the output (i.e. deaths averted) is slightly sensitive to the proportion of defaulters cured and very sensitive to the expected case fatality rate in SAM cases not receiving the CMAM intervention (see *Figure 5*).

Box 1 R language script for estimating deaths averted in the Nigerian CMAM programme

```
#####
#
# Input variables for the sampling based uncertainty analysis :
# rep           Number of sampling replicates (a large number)
# NT           Number of SAM cases treated by the CMAM programme
# sampleN      Sample size for the proportion of exits cured and defaulting
# curedP       Proportion of exits discharged as cured
# defaultP     Proportion of exits defaulting
# U5MR         Under five years mortality (proportion dead at one year) for
#              each year of programme operation
#
rep <- 1000000
NT <- 919876
sampleN <- 331765
curedP <- 0.729
defaultP <- 0.187
U5MR <- c(136, 131, 126, 122, 117, 112) / 5 / 1000
#
# Sampling distributions for the proportions discharged and defaulting
#
pDisCured <- rbinom(n = rep, size = sampleN, p = curedP) / sampleN
pDefCured <- rbinom(n = rep, size = sampleN, p = defaultP) / sampleN
#
# Sampling distribution for the proportion cured in DEFAULTING CASES
#
pDefCured <- runif(n = rep, min = 0.05, max = 0.20)
#
# Sampling distribution for the proportion Cured (PC) accounting for
# "self-discharged as cured".
#
PC <- pDisCured + (pDefCured * pDefault)
#
# Background mortality (proportions dead at one year) from U5MR
#
bgm <- rnorm(n = rep, mean = mean(U5MR), sd = (max(U5MR) - min(U5MR)) / 6)
#
# Case fatality rate from historical cohort data (proportions dead at one year)
#
oldData <- c(0.22714, 0.35266, 0.33179, 0.19665)
cfr <- rnorm(n = rep,
             mean = min(oldData) + (max(oldData) - min(oldData)) / 2,
             sd = (max(oldData) - min(oldData)) / 6)
#
# Excess mortality (EM) as case fatality rate - background mortality
#
EM <- cfr - bgm
#
# Estimate number of deaths averted (lives saved)
#
DA <- EM * PC * NT
round(quantile(DA, probs = c(0.025, 0.5, 0.975)))
#
# Sensitivity analysis by scatter-plots
#
par(mfrow = c(3, 2))
par(pty = "s")
plot(pDisCured, DA, pch = ".", col = "grey", main = paste("r =", round(cor(pDisCured, DA), 4)))
plot(pDefault, DA, pch = ".", col = "grey", main = paste("r =", round(cor(pDefault, DA), 4)))
plot(pDefCured, DA, pch = ".", col = "grey", main = paste("r =", round(cor(pDefCured, DA), 4)))
plot(bgm, DA, pch = ".", col = "grey", main = paste("r =", round(cor(bgm, DA), 4)))
plot(cfr, DA, pch = ".", col = "grey", main = paste("r =", round(cor(cfr, DA), 4)))
```

Additional analysis

Having estimated the number of deaths averted it is possible, with little extra data, to estimate the *cost per death averted* (or *cost per life saved*). The total cost of the programme over the five years it had been running (which is also our assessment period) was US\$47,416,818. The estimate of the cost per death averted is:

Cost per death averted

$$= \frac{\text{Cost of Programme}}{\text{Number of deaths averted}}$$

$$= \frac{\text{US } \$47,416,818}{172,898} \left(95\% \text{ CI} = \frac{\text{US } \$47,416,818}{208,434} ; \frac{\text{US } \$47,416,818}{137,526} \right)$$

$$= \text{US } \$274.25 \text{ (95\% CI = US } \$227.49 ; \text{US } \$344.78)$$

For comparison, Table 3 shows the cost per death averted, reported for a variety of child survival interventions.

With a little extra data (e.g. the duration of an untreated episode of SAM, average age of SAM cases, sex-ratio of SAM cases, sex-specific life-expectancies at birth, disability weighting for SAM, and a reasonable and widely accepted discounting/age-weighting function), it is also possible to estimate the number of *disability adjusted life years* (DALYs) averted and *cost per DALY averted* [1].

A note of caution

It is important with any calculation to consider the term garbage in - garbage out. If the data we use to inform our calculations are wrong or of poor quality (i.e. garbage in), then the resulting estimates will also be wrong or of poor quality (i.e. garbage out). It is important, therefore, to consider the quality, completeness, and trustworthiness of the input data that we use:

Routine programme monitoring data: Monitoring data are often not well recorded. A common problem is that the proportion cured is overestimated. In the work reported here, we used data from beneficiary record cards and applied data cleaning and decision rules to the data. This corrected a tendency for defaulters to be recorded as discharged as cured at some CMAM sites. We did use routine programme monitoring data to cover the ten months programme operation not covered by the retrospective cohort study. The proportion cured in the routine programme data was higher than that observed in the retrospective cohort study but this was consistent with an upward trend observed on the retrospective cohort data and with recent reforms to programme activities and siting aimed at reducing default rates. If you use routine programme monitoring data, then you should check the quality of (at least) a subset of data (e.g. using SQUEAC tools) and correct estimates of the proportion cured and the proportion defaulted accordingly. Checking may be difficult to do in settings of remote management or conflict. If checking cannot be done, then you could use the SPHERE minimum standard (e.g. 75%) for the proportion cured.

Data related to programme costs: Costing data often does not include all costs that contribute to programme outcomes. Important programme inputs such as Ready to Use Therapeutic Food (RUTF) may be received as in-kind donations and thus will not be included in the programme's accounting records. Costs for (e.g.) security, transport, storage and staff may be allocated to (or seconded from) other programmes and not included in accounting records for the programme being assessed. In, for example, an integrated programme delivering CMAM services at government health facilities, you may only have the cost of adding CMAM to an existing primary healthcare programme, which provides resources essential to delivering CMAM that are also not included in the programme's accounting records. Data relating to direct and indirect costs to beneficiary households (e.g. travel costs, lost labour, &c.) are never included in budgetary data. These costs may be considered during programme design and in programme coverage assessments but almost never in budget documents, which concentrate on institutional costs. Inclusion of this data will usually require a dedicated survey to collect it [1]. When you use budgetary data, it is important to assess and report on any and all gaps in the budgetary data that you use. In the analysis reported here, the cost estimate used covers:

- Purchase of RUTF from abroad.
- Port handling and warehousing fees for RUTF.
- Transport costs for RUTF from ports to state capitals only (states were responsible for storage and transport to districts, districts were responsible for storage and transport to health facilities).
- Training of staff to deliver the CMAM protocol.
- Monitoring and evaluation activities related to the CMAM programme (excluding coverage assessments).
- Administrative costs at the national level.

The cost estimate used does not cover:

- Purchase and supply of drugs (e.g. antimicrobials) needed to deliver the CMAM protocol.
- Storage and transport of RUTF and other CMAM-related supplies from states capitals to districts and from districts to health facilities.
- Salaries, wages, allowances, and recruitment costs for staff in primary healthcare facilities. The Nigerian CMAM programme is implemented as part of an existing primary healthcare system without employing new staff or raising staff salaries. The incremental value of health workers' time spent implementing the CMAM programme was also not measured for the analysis reported here.

Table 3 Cost per death averted for a range of child survival interventions

Intervention	Context(s)	Cost per death averted*
CMAM delivered by community health workers**	Bangladesh	US\$869.00[1]
Standard EPI package***	Africa/South Asia	US\$313.00[7]
Intermittent Preventive Treatment in Infants (IPTi) for malaria****	Mozambique / Tanzania	US\$232.00[8]
Breastfeeding support (range of programming models)	Sub-Saharan Africa	US\$114.00 - US\$342.00[7]
Universal vitamin A distribution****	Philippines	US\$76.30[9]
Mass chemoprophylaxis for malaria***	Gambia	US\$163.00[9]
Social marketing of insecticide treated nets (ITN)***	Tanzania	US\$1780.00[9]

* All dollars values have been standardised to 2012 (i.e. the approximate mid-point of the Nigerian CMAM programme) values by multiplying the reported cost by the percentage increase in the United States Bureau of Labour Statistics' consumer prices index for all urban consumers (CPI-U).

** The quoted cost is for all staff salaries and allowances, site rental, all logistics costs, all community mobilisation costs, training, supervision, monitoring and evaluation including SQUEAC coverage assessments, case-finding and "watch-list" follow-up in the community, curative care, and costs to households [1]. Note that this is a much broader range of costs than is used in the analysis for the Nigerian CMAM programme (see 'A note of caution').

*** The quoted cost is for implementing the programme as a semi-vertical addition to existing healthcare package.

**** The quoted cost is for delivering the intervention within an existing EPI programme.



CMAM programme

It should be noted that salaries, wages, allowances, and recruitment costs usually account for about 50% of the cost of an NGO-delivered CMAM programme.

- Allowances, incentives, and “shadow” labour costs for community-based volunteers.
- Costs of maintaining infrastructure including clinic buildings and equipment.
- Direct and indirect costs to beneficiary households.
- SQUEAC and SLEAC coverage assessments.

The cost estimate used in the analysis reported here covers the costs needed to initiate and deliver CMAM services (excluding salary costs and local transportation costs) within an existing primary healthcare system in eleven states in northern Nigeria.

It is also important to realise that there may be a temptation for service providers seeking funding for continuation or expansion of programmes to underestimate programme costs in order to make the programme look more cost-effective than it really is.

Any counterfactual is based on assumptions, guesses, make believe and some difficult to define and measure data. A counterfactual is a type of fiction. It is important that it is not too much of a fiction. This requires care in selecting and using data and in carrying out calculations. Users of the fiction need to be made aware of the limitations of the data used.

Conclusions

The analysis presented here is simple to do and can be done with readily available (or easily collected) data. It is simple enough to allow current estimates to be produced using updated inputs from routine programme monitoring statistics and budgetary data for inclusion in, for example, monthly or quarterly programme reports and in advocacy material.

It is important to realise that the simple method used here is subject to limitations arising from the data sources used. The main limitation is the use of incomplete cost data. The cost data available to us was the cost to a donor organisation of initiating and implementing a large-scale CMAM programme within an existing primary healthcare programme. Our estimate of the cost per death averted reflects only this cost.

Different sets of programme costs will be of interest to different stakeholders. Whilst estimates such as those produced and reported here are relevant to donor organisations and some policy makers, they provide a limited understanding of the full extent of resources required/used by a programme. Capturing a more complete set of costs yields data that can inform programme design (e.g. to estimate and minimise costs to beneficiary households) and programme implementation (e.g. to estimate staff time

allocation to new services added to existing workloads and avoid “knock-on” quality of care issues). This information can aid our understanding of how much (and what kind of) resources are needed to enable effective implementation. It may prove particularly useful when scaling-up programmes. These methods require additional data to be collected, and using this information will require, for example, judgement on staff cost contributions to CMAM (or other new services).

The simple costing method that we used will always produce lower cost estimates than methods that capture and use a more complete set of costs. Care should always be taken when making comparisons between studies using different methods.

The Nigerian CMAM programme, despite failing to meet SPHERE minimum standards for proportions cured and defaulting in the initial years of operation, has saved a considerable number of lives at a reasonable cost per life saved. This information can be used to advocate for continuation and expansion of the existing CMAM programme.

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A mother attends with her enrolled infant in a CMAM programme

Postscript

Promoting community based management of severe acute malnutrition as a child survival intervention

By Andre Briend

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Striking the balance between prevention and treatment is one of the most difficult tasks for public health nutritionists working in poor countries. A key element to make decisions is to consider the potential impact of different interventions and also their cost-effectiveness. In this regard, management of severe acute malnutrition (SAM) stands out as it saves lives, whereas the effect of other interventions is often marginally to increase weight or height gain, with small or immeasurable effects on mortality. This was highlighted by an article of the Lancet series which suggested that SAM management is one of the most cost-effective nutrition interventions to prevent malnutrition related deaths¹. These results are important, but should receive confirmation, as the evidence base to support this claim is indirect and arguably weak compared to standards used to evaluate other health interventions. SAM treatment is typically one of these interventions for which a solid evidence base relying on a meta-analysis of a series of randomised controlled trials will never be available. This is a rather common situation in nutrition where waiting for this type of strong evidence is impossible or even unethical^{2,3}. Estimates of the number of deaths prevented by SAM treatment given by the Lancet series are based on observation of mortality reduction in hospital settings with the progressive improvement of treatment protocols and then transfer of these treatment protocols to the community. A Delphi process to obtain consensus on these mortality estimates with and without adequate treatment from key experts was also used in the process⁴. These figures are then applied to current estimates of severe wasting prevalence in different parts of the world to calculate the number of deaths which could be averted. Prevalence data, however, are notoriously inadequate

to estimate the burden of acute conditions: children who are acutely ill or malnourished can have died or recovered at the time of a cross sectional survey, and will not be counted, a point which was already noted by Cicely Williams more than 40 years ago⁵.

The paper published in this issue of ENN's Field Exchange trying to estimate "how many lives do our CMAM programmes save" is an interesting contribution to get evidence of effectiveness of SAM treatment. This paper is based on an approach relying as far as possible on locally obtained data which has been used previously to estimate the cost effectiveness of community based management of severe acute malnutrition (CMAM) programs in Bangladesh⁶. To estimate the mortality of SAM children in absence of treatment, it relies on historical data of untreated children with a low mid-upper arm circumference (MUAC) adjusted for the level observed on admission in the programme. This approach is preferable, as MUAC is more closely related to mortality than weight-for-height. Also, programme admissions are used to estimate the number of deaths prevented. In the presence of active case finding, this gives a more reliable estimate of the SAM burden than prevalence data used in the Lancet article. Also, the authors used data on background mortality in the country to estimate the excess of deaths which would happen in the absence of treatment, which seems a reasonable approach. Costs of mortality reduction are also based on locally collected data. This is welcome, as these costs, which include staff cost, transport costs, and are influenced by the type of health system, is highly context specific.

The result of this study suggests that CMAM saves lives at a cost of US \$ 274.25 per life (95% CI = US \$ 227.49; US \$ 344.78). There are two ways to use these

results. They can be compared directly with other child survival interventions as done by the authors and this shows that CMAM is a cost effective strategy to prevent deaths. This figure can also be compared in pure economic terms with the annual Gross National Product (GDP) of the country, as recommended by WHO⁷. With this approach, cost of a death averted by CMAM is less than the regional GDP and can be regarded as "highly cost-effective".

The methodology described in this study has clear limitations as it is based on assumptions on mortality which cannot be validated. However, these estimates are the best we can have with currently available data. It is a transparent approach which can be applied to other settings. Replication of this study in other contexts will help to collect more solid evidence on the cost-effectiveness of CMAM treatment. These studies may prove a more powerful advocacy tool at the national level than current global estimates, which are always difficult to apply to the local context.

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Postscript

How many lives do our CMAM programmes save? Statistical commentary

By Max O Bachmann

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The authors of this study aimed to answer this question by estimating how many children who received CMAM in Nigeria died, then estimating how many of them would have died if they had not received CMAM, then subtracting the first estimate from the second. They then go on to estimate how much CMAM cost for every death averted.

Some readers may be put off by the equations and graphs in the article, but the basic principles are quite simple. The calculations are all based on just seven sets of numbers (called “inputs” or “parameters” in this type of modelling study). The six parameters used to estimate deaths averted are listed in the first column of Table 2. The seventh parameter is the total cost of the CMAM programme.

The results of such a study are uncertain, partly because of uncertainty about the true values of the parameters. Much of

the paper – in the section headed “Accounting for uncertainty – A sampling-based approach” – is about how the authors dealt with this “parameter uncertainty”. This method is what health economists call a “probabilistic sensitivity analysis”. In other words, if we don’t know the true value of some parameters, we change their values many times, each time repeating the calculations, then seeing how much the final results vary with repeated sampling. We get a computer to do this, each time sampling from a frequency distribution which we have assumed for each parameter. We can then report the uncertainty about each estimate, conventionally using the 5th and 95th percentiles.

The third column of Table 2, and Figures 2-4, describe the frequency distributions used in this study. As the figures illustrate, the computer will mostly sample numbers near the middle of the distribution, which is where the average or mostly likely value of the parameter lies. Values further away

from the middle are sampled less often, because there is reason to believe they are less likely to be true. The only exception is for the proportion of defaulters cured, which for some reason the authors assume has an equal probability of being anywhere between 5% and 20%, but zero probability of being less than 5% or more than 20%. There is no statistical uncertainty about the number treated. The statistical uncertainty about the proportions discharged as cured or defaulting are tiny because of the enormous sample size (almost a million children). I don’t understand the reasoning behind the uncertainties for background mortality and mortality in untreated cases (called σ in Table 2), which does not seem to be based on any statistical principle that I am aware of¹. In any case, although there is little or no uncertainty about six of the seven parameters used to estimate the numbers of deaths averted, when they are all combined through the various calculations in the model, the confidence interval around the number of deaths averted is quite large, that is, plus or minus 20% of the central estimate.

Commercially available software programmes commonly used by health economists, such as TreeAge, make it easy to do probabilistic sensitivity analyses like this, with the assistance of graphics and menus. However they can be expensive and are more than is really needed for an analysis such as this. The advantages of using open access software such as R are that is free² and, as Box 1 shows, quite simple and transparent to anyone who is not put off by simple programming language.

UNICEF Nigeria



Children attending a CMAM programme

¹ In response to this commentary, a footnote marked ** was subsequently added to Table 2 of the article by the authors to explain the basis of their reasoning.

² R is a programming language and software environment for statistical computing and graphics. R is a GNU project (a free software, mass collaboration project). http://en.wikipedia.org/wiki/GNU_Project

The Coverage Project: a national partnership for evaluating CMAM services in Nigeria

Carers and children attending a CMAM programme

Diego Macías/ACF, Nigeria

By Maureen Gallagher, Saúl Guerrero, Ifeanyi Maduanusi and Diego Macías



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Saul Guerrero is Director of Operations at Action Against Hunger (ACFUK). Prior to joining ACF, he worked for Valid International Ltd. in the research, development and roll-out of CTC/CMAM. He has



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CMAM Deputy Programme Manager for the Coverage Project.



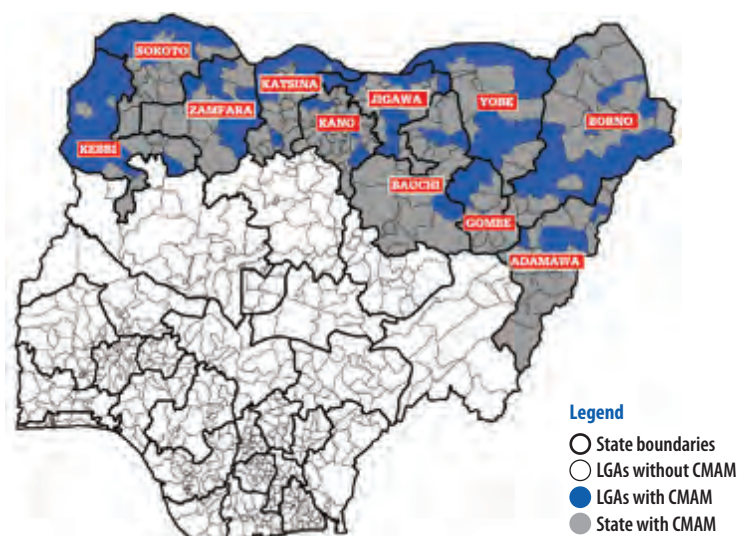
Diego Macías is a Learning Officer for ACF, working on learning outcomes from coverage programmes, including data analysis and qualitative assessments.

The authors would like to thank the participating Federal and States' authorities, health workers and communities for their commitment to CMAM, support and active participation throughout the Coverage Project. Thanks also to the Coverage Monitoring Network for their technical support. Thank you to UNICEF, Save the Children, Valid International and Centre for Communications Programme in Nigeria for their collaboration as partners of the consortium. The authors would like to acknowledge the contribution of the Children's Investment Fund Foundation (CIFF) for their support to the Coverage Project and CMAM in Nigeria.

The Severe Acute Malnutrition (SAM) burden in Nigeria is known to be amongst the highest in the world, with over 10% of the global burden, resulting in an estimated 2 million children affected. Since 2009, the Government of Nigeria, with the support of UNICEF, started tackling the problem by piloting Community-based Management of Acute Malnutrition (CMAM) in two Local Government Areas (LGAs), one in Kebbi State and the other in Gombe State. Since then, Nigeria has proven their strong commitment to the fight against SAM, with geographical coverage extending to 91 LGAs in 11 states of the country, including 642 health facilities, as presented in Figure 1. This has also been possible as partners and donors have supported federal and state Ministries of Health (MoH) to institutionalise SAM management as part of regular routine health services. More than 1,000,000 children received treatment between 2009 and mid-2015.¹

A large component of this scale up has been possible due to a strong partnership launched between the Children's Investment Fund Foundation (CIFF), UNICEF and the Government of Nigeria (GoN) in 2013 (see article in this 50th issue of Field Exchange). This also generated the opportunity for comprehensive evaluation and learning about progressively scaling up CMAM services. As a result, another partnership – for assessment and learning of coverage – was formed. ACF, Save the Children and Valid International worked together with UNICEF and MoH to design the Coverage Project, a collaboration in support of evaluation of SAM services funded by CIFF. The project included two key components: 1) Assessment of coverage and 2) Community Mobilisation Pilot Project. The findings, recommendations and lessons learned from the project were brought together in a Learning Review document². Both project components were undertaken in close consultation and collaboration with the MoH and UNICEF.

Figure 1 Maps highlighting States and LGAs offering CMAM services



¹ ACF (2015). SAM Management in Nigeria: Challenges, Lessons & the Road ahead

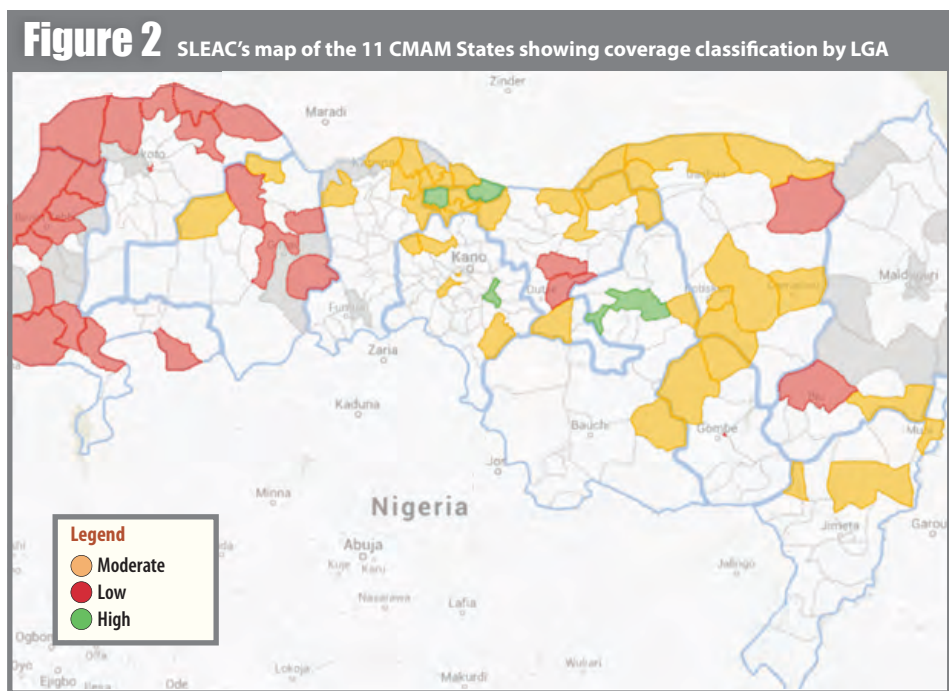
² Learning Review. SAM Management in Nigeria: Challenges, Lessons & the Road Ahead. ACF International, ACF Nigeria. March 2015. Available at: <http://www.coverage-monitoring.org/resources-library/>

The Coverage Project in Nigeria

The *Assessment of Coverage* component was implemented in two phases. First, a SLEAC³ was conducted by Valid International to classify coverage of 71 of the 91 LGAs implementing CMAM programming between October 2013 and March 2014, providing an overall picture of the coverage levels of CMAM throughout a high proportion of LGAs. The SLEAC offered a clear view on both the geographical and the direct coverage of CMAM in the region, identifying regions, especially in the northwest, where efforts were needed most. The results are presented in Figure 2.

A national workshop was held with key stakeholders to review findings and identify locations for the second phase of this component. More in depth information on coverage was obtained through 12 Semi Quantitative Evaluation and Access of Coverage (SQUEAC) surveys which were implemented by ACF and Save the Children, with support of the Coverage Monitoring Network (CMN) and Valid International. A practical training was conducted in March 2014, when the first survey was jointly done. Then, Save the Children conducted five surveys in the northwest and ACF conducted six surveys in the northeast. All surveys were completed by December 2015. Key findings of the more in depth analysis provided by the SQUEACs on barriers to access are presented in Figure 3.

Based on SLEAC and SQUEAC findings, which clearly revealed the lack of awareness about SAM and of services available as common barriers to access across states, the Community Mobilisation Pilot Project was developed in partnership with the Centre for Communication Programmes Nigeria (CCPN) in June 2014. The pilot approach for a sensitisation campaign was developed and tested in two LGAs in Sokoto State – Goronyo and Sokoto South LGAs (both had SLEACs conducted in November 2013 and one SQUEAC was conducted in Goronyo in March 2014). The choice of State and LGAs was discussed and agreed between ACF, Save the Children and UNICEF based on common criteria.



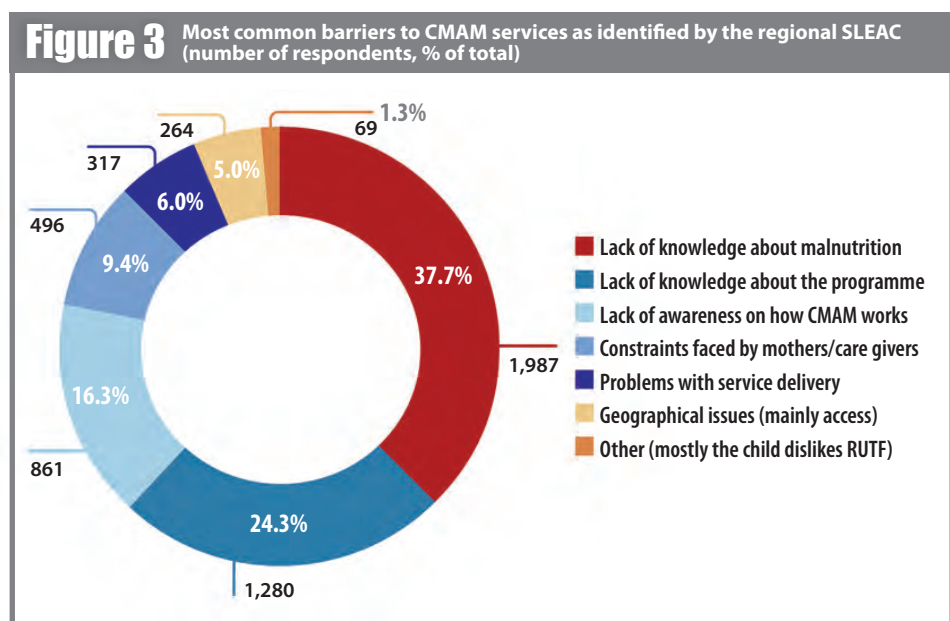
UNICEF then supported the visit and introduction of CCPN to Sokoto State. Workshops were held with key stakeholders in the State to explain the goals of the initiative and engage participants in the design of the awareness strategy and tools. The campaign was implemented by Hikima Community Mobilisation and Development Initiative (HCOMDI), a local grassroots organisation. During the four months of the campaign (October 2014 - Jan 2015), over 110 community dialogues, 300 household visits and active case-finding activities were delivered with the support of community volunteers and involvement of key stakeholders of the outreach area; about 32,000 people are estimated to have been reached during the campaign. In order to measure the impact of the approach and compare it between LGAs, end line SQUEACs were conducted in both LGAs in February 2015. The results of the pilot project are presented in Box 1.

A final workshop was held mid-March 2015 in order to present the SQUEAC and pilot project results, as well as to engage key stakeholders on next steps and recommendations in order to strengthen key findings. Directors of Primary Health Care (PHC), State Nutrition Officers (SNO) from the 11 states and FMOH Nutrition Department members attended the workshop and shaped key recommended actions. A summary of actions proposed by the Directors, SNOs, and other partners to tackle the key challenges revealed by the coverage assessments is presented in Box 2.

Lessons learned for SAM scale up in Nigeria

The Learning Review – *SAM Management in Nigeria: Challenges, Lessons & the Road Ahead*⁵ – outlines the current state of SAM in Nigeria, provides the detailed in depth analysis and results of the coverage assessment, the outcomes of the pilot project and the recommendations for improving SAM in Nigeria. It was revised and agreed on by all partners of the project. Some of the key lessons learned from the Coverage project, pulled together from multiple streams – including the comprehensive SAM context analysis, coverage assessments, pilot project and workshop inputs – and reflected in the learning review are outlined below.

1. Two out of every three SAM cases in North Nigeria are not accessing treatment. Recent surveys carried out by the SLEAC of 2013-14 suggest that CMAM services across the 11 northern states are reaching an estimated 36.6 per cent of SAM cases.
2. SAM management services are located in states with the greatest need, but the spread of services within those states remains limited. Most states only offer SAM treat-



³ Simplified LQAS (Lot Quality Assurance Sampling) Evaluation of Access and Coverage

Box 1 Community mobilisation pilot project results

- **Admissions.** In both LGAs, the admissions between September and December 2014 were higher in proportion to total yearly admissions compared to the earlier part of the year (41% in Goronyo and 40.6% in Sokoto South). Seasonality did not affect admission rates in this case, as the lean season is between May and August, which would have led to higher admissions during that part of the year rather than Sept-Dec and/or Jan-April.
- **Barriers to access.** The study demonstrated that barriers can be positively tackled. In Goronyo, awareness related barriers (about malnutrition, the ongoing programme and/or how the programme works) accounted for 71% of the reasons provided by all non-covered cases for not accessing services prior to the campaign. This proportion reduced to 48% after the campaign. Whilst this is based on a small sample, it does suggest that targeted campaigns can have a measurable impact on awareness related barriers. As a result of the decrease in awareness related barriers reported, two other key barriers were more widely reported – quality of service delivery (including stock outs) and constraints faced by the mother (opportunity costs, money for transport). This suggests that addressing awareness is effective yet not sufficient to increase coverage alone as other barriers become more prominent.
- **Coverage.** Estimated coverage levels did not significantly change between baseline and endline. Sokoto South's level indicated slight improvement in comparison to the SLEAC (below 20%), whereas Goronyo (14.7%) did not reflect meaningful changes⁴. This is likely to have been due to a combination of wide confidence intervals but also because other barriers became more prominent, indicating that all barriers need to be addressed at the same time to result in increased coverage.

Box 2 Key actions proposed by stakeholder to tackle main barriers to increasing coverage of CMAM in Northern Nigeria

- 1) **Innovative awareness-raising method**
 - Diversify groups and locations for meetings: community dialogues, social, town hall, compound and household meetings
 - Diversify key stakeholders involved: include community & religious leaders, traditional birth attendants (TBAs), school teachers and students
 - Use of community based organisations (CBOs) and existing support groups
 - Use of media, mobile phones/SMS, IEC (information, education & communication) materials to sensitise the public
 - Community action-oriented activities such as: local dramas, local songs, food demonstrations, community nutrition champions
- 2) **Resource learning to institutionalise CMAM and scale up**
 - Evidence-based advocacy and sensitisation to engage philanthropists, policy makers, and first ladies to support CMAM, at all levels
 - Include nutrition and CMAM into state budget / Costed Nutrition Plans and timely release of funds
 - Engage in public-private partnership to support nutrition and CMAM
 - Collaborate with other projects such as Millennium Development Goals Fund projects and Maternal Child Health initiatives
 - Reactivate and strengthen committees for food and nutrition for resource mobilisation
- 3) **Strengthen adherence to national protocol**
 - Increasing number of health workers trained and refresher training on national protocol and its application
 - Continuous training of community volunteers on detection and referral
 - Routine and supportive supervision by the State MoH teams
 - Engage trained and skilled community health extension workers for management of SAM
- 4) **Improve data quality**
 - Strengthen capacity of service providers on data collection, management and analysis and M&E systems
 - Timely supportive supervision, on-site monitoring, dissemination and feedback at all levels (consider the use real time monitoring through smart phones)
 - Verification and validation of data, including data quality assessments
 - Provision of a central databank for nutrition programmes
- 5) **Strengthen community volunteer (CV) network**
 - Training and retraining of CVs with regular meetings and experience sharing with health workers
 - Strengthen CVs to support outpatient activities in the communities (screening, tracing of defaulters, referral and home visits)
 - Performance awards for motivated and engaged CVs
 - Motivation and incentives schemes should be considered for CVs

ment services in less than half their local government areas, which considerably reduces the capacity to deliver services to the targeted population.

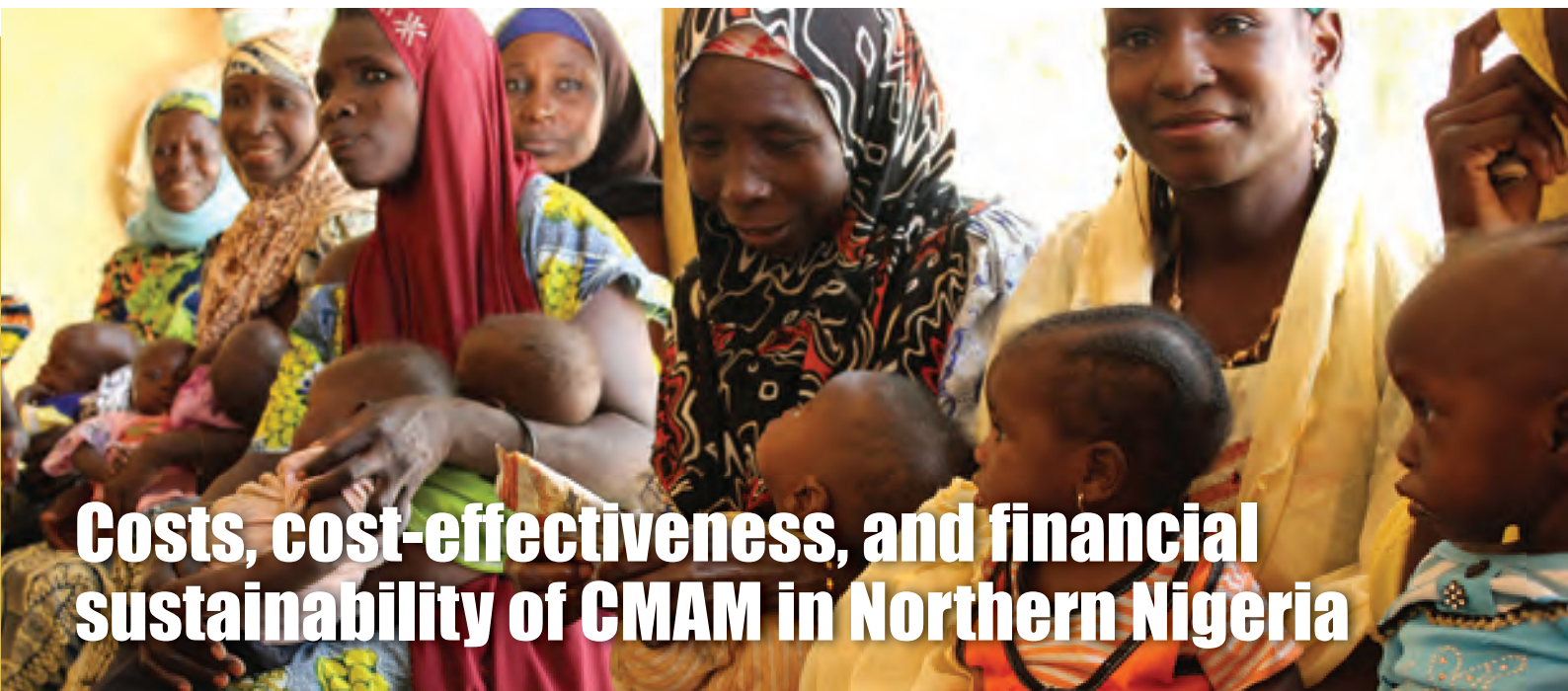
3. **The expansion of CMAM services has not been matched by an increase in trained and available staff.** Training and follow up of an increased number of health workers and CVs has the potential to increase the quality of services delivered both through the availability of adequate numbers of personnel and the improvements in treatment, screening, referral and follow-up activities. For instance, evidence from SQUEAC assessments show that some inconsistencies exist with regards to CMAM protocols at times of cured discharges. Revising modes of delivery and extending staff training can also improve quality of care.
4. **Making CMAM services available does not make them accessible.** The data shows that the coverage in areas with a higher number of facilities, or smaller geographical or demographic catchment areas, is not necessarily higher. Efforts to improve infrastructural and logistic obstacles, such as stock outs of ready-to-use therapeutic food (RUTF), are necessary. Stock outs were especially problematic in Goronyo with SLEAC and SQUEAC surveys showing these lasting more than two months in late 2013/early 2014. Examples of approaches to address stock outs could include an increase in LGA and health facility based stocks of RUTF. Furthermore, a doubling or tripling of rations could be considered as a way of reducing the numbers of visits and time spent traveling for caregivers.
5. **Awareness about SAM, the existence of CMAM and the way it functions can and must be improved.** A community mobilisation strategy should be designed to sustain wider sensitisation campaigns involving local populations and empowering local and state authorities. Recent evidence suggests that increased awareness helps to increase admissions to CMAM. Moreover, in the long term it might help improve service delivery itself.
6. **There is room for improving the quality of SAM management information and data.** The scale up of CMAM services requires strong information systems that can provide reliable and timely information to decision makers at LGA, state and federal levels. Improving the quality of available information must be prioritised and the expansion of existing pilot models (including Rapid SMS) considered. Strong commitments to capacity building, training and resource allocations are necessary to improve the performance of CMAM service delivery; this can only happen via a coordinated mechanism between key nutrition stakeholders in country.

The Coverage project and a key output in the form of a learning review has been a positive joint partner initiative to work in support of the GoN to further advance and succeed in their fight against SAM. Key next steps will involve close follow-up of application of recommendations and monitoring of coverage for further strengthening CMAM in Nigeria.

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⁴ The first programme SQUEAC took place precisely in Goronyo and its coverage estimate was 14.3%. In the SLEAC in late 2013, the LGA had an estimated coverage of 0.5%.

⁵ See footnote 2



Costs, cost-effectiveness, and financial sustainability of CMAM in Northern Nigeria

Diego Macias/ACF, Nigeria

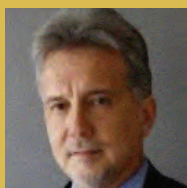
By Sasha Frankel, Mark Roland and Marty Makinen



Sasha Frankel worked for the Results for Development Institute as a Senior Programme Associate focusing on health financing and costing work in Ghana and Nigeria. She is currently pursuing a Master in Public Affairs at Princeton's Woodrow Wilson School of Public and International Affairs.



Mark Roland is a Senior Programme Officer at the Results for Development Institute. His work, which spans the education and health sectors, focuses on programme evaluation and analyses of cost and financial sustainability.



Marty Makinen is a Managing Director at the Results for Development Institute. He is a health economist with more than 30 years of experience and has worked extensively in the areas of health financing and the economics of nutrition.

Results for Development Institute (R4D) was supported by consultants Joel Lehmann – who provided technical support to the study and instrument design, as well as training and field supervision – and Bryan Plummer, who assisted in data cleaning and analysis. For on-the-ground data collection, R4D worked with Binomial Optimus Limited (BOL), an evaluation firm based in Abuja, Nigeria. BOL co-managed the data collection effort, including recruitment, training, and supervision of enumerators. Initial instrument development was supported by Health Systems Consult, Ltd. This analysis was made possible thanks to the support of the Children's Investment Fund Foundation (CIFF). The report benefited from strong technical guidance from a number of counterparts at CIFF, in particular Amy Mayberry.

Background

To date, the evidence on the efficacy and cost-effectiveness of CMAM has been encouraging. Previous studies suggest that CMAM can reduce the cost and barriers to access associated with inpatient care, and in certain contexts, reduce mortality. This study¹ provides an estimate of the cost, cost-effectiveness, and financial sustainability of the CMAM programme in northern Nigeria based on data collected in four states.

This information is intended to equip government, external financiers, and programme implementers with data to inform decisions around programmatic expansion. Cost and financial sustainability data will allow the Nigerian government, at both the federal and state levels, to understand what financial actions must be taken to ensure that sufficient resources are directed toward the CMAM programme. Cost-effectiveness data can help policymakers understand the value of their investments in CMAM relative to alternatives and provide evidence to help make the argument for appropriate budgetary commitments.

Methodology

The categorisation of costs varies across similar studies conducted to date², as do the methods used to collect cost information. This study uses a “bottom-up” methodology, in which data about cost line items were gathered through facility-level interviews rather than relying upon existing budgets/programmatic reporting. As a result, this study appears to have assembled a more robust and comprehensive estimate of costs associated with obtaining CMAM treatment (through inclusion of items not found in official CMAM budgets, such as proportion of facility overhead costs).

Economic vs. financial costs

Total cost per child cured includes several cost components that can be categorised as either financial or economic. Financial costs or cash outlays are those that support the functioning of the CMAM programme and economic costs are costs

¹ Frankel S, Roland M, Makinen M (2015). Costs, Cost-Effectiveness, and Financial Sustainability of Community-based Management of Acute Malnutrition in Northern Nigeria. Results 4 Development Institute, June 2015

² Cost per child cured in other examined studies are as follows: Ethiopia: \$135 (Tekeste et al), Malawi: \$169 (Wilford et al), Bangladesh: \$180 (Puett et al), Zambia: \$203 (Bachmann), Indonesia: \$332 (Purwesti), Ghana: \$805 (Abdul-Latif)

Table 1 Economic and financial costs collected

Economic costs	Financial costs
Staff time not paid for by CMAM, caregiver time, user fees, use of health facilities, community volunteer time and costs	Cash outlays for drugs, materials for CMAM programme administration, resources for trainings and monitoring visits, supply chain activities involved in managing the CMAM drugs and materials, transportation, RUTF, stipends for the CV, salaries of CMAM-specific health workers

Table 2 Organisational level and associated cost elements elicited from survey instrument

Organisational level	Cost elements collected
UNICEF	Staff time, monitoring, RUTF, supply chain, training, start-up equipment
State Nutrition Officer	Staff time, monitoring, supply chain, CMAM drugs, MIS tools, miscellaneous CMAM costs
Local Government Authority (LGA) Nutrition Officer	Staff time, monitoring, supply chain, CMAM drugs, MIS tools, miscellaneous CMAM costs
Stabilisation Centre (SC) Health Worker	Staff time, drugs, overhead
Caregiver at SC	Transportation, opportunity cost, out-of-pocket expenditures
Outpatient Therapeutic Programme (OTP) Health Worker	Staff time, drugs, number of RUTF used, overhead
Caregiver at OTP	Transportation, opportunity cost, out-of-pocket expenditures
Community Volunteer (CV)	Transportation, opportunity cost, stipend

Table 3 Number of surveys completed and average surveys per facility by cost centre and cost collection wave

	Wave 1		Wave 2		Wave 3		Wave 4		Total Across all Waves
	Total	Per facility	Total	Per facility	Total	Per facility	Total	Per facility	
Caregiver at OTP	89	7.4	102	8.5	101	8.4	104	8.7	396
Caregiver at SC	37	3.1	48	4.0	50	4.2	45	3.8	180
Community volunteer	186	15.5	146	12.2	206	17.2	181	15.1	719

Table 4 CMAM costs by type of cost

Cost type	Cost per child cured
Staff time	\$74.28
RUTF	\$76.06
Out-of-pocket costs	\$33.98
Opportunity cost ⁵	\$7.08
CMAM drugs	\$9.24
Monitoring	\$1.34
Supply chain	\$11.17
Other CMAM	\$0.47
Management Information System (MIS) tools	\$0.48
Overhead	\$4.27
Training	\$0.80

borne by the economy as a whole (including opportunity cost). Examples of both types of costs can be found in Table 1. Inclusion of both financial and economic costs in costing analyses is crucial to understand the full cost of the programme. Financial costs only are used for the cost-effectiveness and fiscal space analysis to represent the estimated cost to government and UNICEF in this scenario.

Study design and settings

Costs were observed at eight organisational levels and specific survey instruments were then developed for each level to elicit relevant cost information. Table 2 lists each of them, along with the cost elements collected.

Sampling

Four of the eleven CMAM states in northern Nigeria were selected for the study: Bauchi, Jigawa, Sokoto and Kano, with security being a primary criterion for selection. Data were collected in four waves, conducted quarterly from 2013-2014 to take into account seasonal variations (see Table 3). Within each state, three of the LGAs where CMAM services are delivered were randomly sampled to participate in the survey³. Within each LGA there are multiple OTPs, one of which was selected at random to participate in the study. A total of 25 different LGAs, 25 SCs, and 40 OTPs participated in the study across the four waves.

Data collectors used the survey instrument to interview a focal person in each state, LGA, OTP, and SC, so for each wave there were a total of four respondents at the state level, and 12 at each LGA, OTP, and SC level. At the state level, the focal person was typically the State Nutrition Officer (SNO), although in a few cases, when the SNO was unavailable, the Assistant SNO or the Community Health Officer was interviewed. At the LGA level, the Nutrition Focal Person or their deputy were interviewed. At the OTP, data collectors identified the health workers most directly involved with provision of CMAM services. If that person was unavailable, the next most senior person at the OTP was interviewed. At the SC, the CMAM focal person was interviewed.

Results

Costs

Cost per child cured. The cost per child cured estimate includes all costs collected from organisational levels, both economic and financial costs, as well as costs associated with SAM patients who either died or defaulted, meaning they did not complete treatment. Our findings show that for every 1,000 children who complete treatment, 17 children die and 254 default on average across the four states.

The comprehensive average cost per child cured⁴ is \$219, of which \$160 (73%) are financial costs borne by the government and UNICEF and \$59 (27%) are economic costs. This cost was predominantly driven by RUTE, staff, and out-of-pocket costs, which together comprise more than 85% of total costs (see Table 4). RUTF constitutes the single largest share of total costs: for every child cured, \$76 worth of RUTF was needed. Of nearly identical magnitude were staff costs, which comprise 34% (\$74 dollars per child cured). Staff costs were drawn from salaried and non-salaried actors, with non-salaried CVs accounting for almost a third of staff costs through stipend, transportation and opportunity costs. The remaining 15% of costs are comprised of opportunity costs, supply chain, drugs, monitoring, overhead, and training costs.

Staff costs by type. Staff costs, which are the second largest driver of costs, were drawn from salaried and non-salaried actors. Non-salaried community volunteers account for nearly a third of staff costs, which includes opportunity cost, stipend and transportation for the CVs (see Figure 1).

Cost per child by state. It is important to highlight that costs per child cured varied across states, from \$175 in Jigawa and Kano to \$273 in Sokoto, reflecting a range of contexts in which the programme is operating⁶ (see Figure 2). Although Sokoto's annual costs are the second-lowest among all states, the number of children reported to be cured in those OTPs is less than half as many as in the other OTPs. The number of RUTF issued per patients cured is also highest in Sokoto (133 sachets in Sokoto compared to 115 on average across the other states). This means that more patients default and die per patient cured in Sokoto than in other states, so for every one patient cured, the OTPs give out relatively more RUTF – including to patients who are not getting cured – which may contribute to Sokoto's higher costs. Sokoto had similar cure rates to the other states and did not have the highest rate of defaulters. However, it had the highest rate of deaths per 1,000 admissions at 25 compared to 8, 17, and 19 in Bauchi, Kano, and Jigawa respectively. However, RUTF

³ In Bauchi, there were only three intervention LGAs which were automatically selected for all four waves.

⁴ This assumes a 72% cure rate found in the sites where data was collected.

⁵ Opportunity cost was calculated through self-reported proportion of time spent on CMAM activities and self-reported income by caregivers.

⁶ Cost per child cured by state is as follows: Bauchi \$188, Jigawa \$175, Kano \$175, and Sokoto \$273.

Figure 1 Staff costs by type

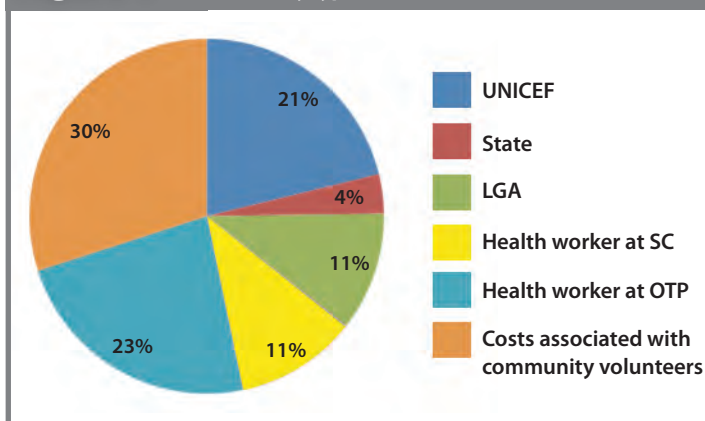


Figure 2 Cost per child cured by state

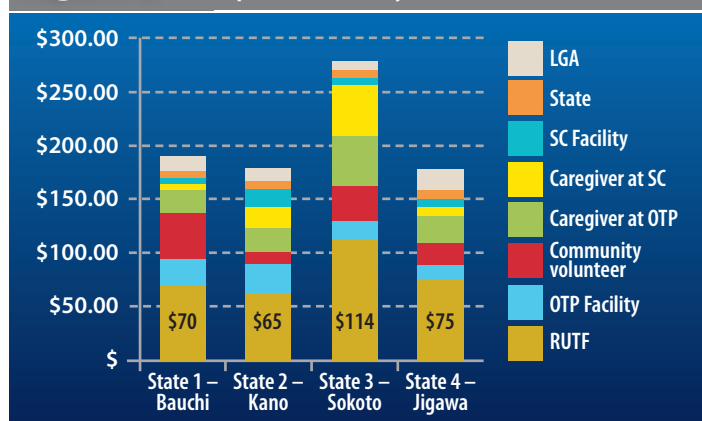


Table 5 Financial implications of base and scale-up scenarios

	OTP sites	Caseload	Total cost	% national health budget
Base scenario	633	320,247	\$36,813,175	2.3%
25% increase	791	400,309	\$46,016,469	2.9%
50% increase	949	480,371	\$55,219,763	3.5%

as a percentage of total cost did not vary greatly across states, ranging from 36% of total costs in Kano to 42.6% of total costs in Jigawa.

Cost effectiveness

The financial costs described above were used for the cost-effectiveness analysis to estimate the cost to government and donors to deliver treatment. CMAM treatment in the four states included in this study was estimated to cost \$1,117 per death averted⁷ and \$30 per Disability-Adjusted Life Year (DALY) gained⁸, which situates it favourably among existing literature that calculates CMAM cost per death averted. In calculating cost per death averted, a 15.7% mortality reduction for those cured is estimated, based on Bachmann 2009⁹, but adjusting for Nigeria's implied untreated death rate (18.5%) and background mortality rate (2.9%). Cost per death averted (\$219) is considerably higher than cost per death cured since not every child cured would have died; SAM may incapacitate or otherwise disable those who do not die.

The WHO deems interventions where cost per death averted is below GDP per capita as highly cost-effective; cost-effective if between one and three times GDP per capita, and not cost-effective if more than three times GDP per capita¹⁰. In 2014, average GDP per capita in Nigeria was approximately \$3,000, suggesting that the CMAM intervention is highly cost-effective¹¹. Perhaps more importantly, GDP per capita in the four states where the study was conducted ranged from \$983 in Bauchi to \$1,274 in Sokoto¹², further suggesting CMAM is cost-effective in Northern Nigeria.

Financial sustainability analysis

The average total financial cost of CMAM to scale up will be up to \$160 per child cured. For an average OTP site, with over 500 admissions and 360 children cured per year¹³, estimated cost is \$58,157 per year. From this, we can esti-

mate that the total financing needed to support an average LGA with five OTPs would be approximately \$290,783. While these costs are not insignificant, they are affordable. As of March 2015, CMAM is functioning in 633 OTPs in 97 LGAs, yielding a total cost of \$36,813,175, which represents 2.3% of the 2014 national health budget¹⁴ and \$0.20 per capita. As Nigeria looks forward to the future of the CMAM programme and potential scale-up to meet the unmet burden, it is important to understand the financial implications. Scale-up scenarios to cover up to nearly half a million children per year are detailed in Table 5.

Financial sustainability thresholds developed by R4D suggest that, while the costs are by no means crippling relative to available domestic resources (especially in light of the potential number of lives saved), concerted effort should nevertheless be paid to the financial sustainability of the CMAM programme.

Discussion

At \$219, the cost per child cured in the CMAM programme is comparable to cost estimates in other studies. Other studies do not necessarily include the costs of community volunteers and most rely upon programme budgets, which have the effect of producing lower cost estimates, making the estimate for this study even more encouraging.

RUTF is the major cost driver for the CMAM programme, comprising approximately 35% of total costs and close to 50% of financial costs. As such, some investment in strategies to reduce RUTF costs could prove worthwhile. Sensitivity analysis is illustrative insofar as it reveals how reductions in the cost of RUTF can provide moderate savings. For example, a 25% reduction in the cost of RUTF would provide a savings of \$16, or 7%, of the total cost per child treated. Additionally, efforts to increase the effectiveness and maximise efficiencies in the programme could also reduce total costs.

Costs associated with community volunteers are responsible for approximately 10% of total costs, and 30% of all staff time costs. The costs of community volunteers relate to their opportunity cost, i.e. the economic value of their time and their implicit lost wages. While CVs contribute significantly to the economic costs, not all of these costs are actually compensated. As a result, care should be taken to ensure that an adequate supply of quality CVs continue, given that compensation does not match the true economic value of their contributions. Qualitative data from the evaluation support the idea that some diminution of interest over time on the part of CVs is present.

While the financial sustainability numbers suggest that fiscal space constraints should be considered, the low programmatic costs and encouraging cost-effectiveness estimates indicate high value for money, especially relative to other potential health investments. As such, the case for further investment in the programme is a compelling one.

For more information, contact: Mark Roland, email: mroland@r4d.org

⁷ Cost per death averted is calculated using total programme costs over 10 years. Costs include all financial outlays, including human resources, monitoring, training, worker compensation, RUTF, medicine, and inpatient costs. Total deaths averted is calculated as follows: (Estimated caseload x mortality reduction for those cured x weighted cure rates for outpatient and inpatient services).
⁸ This study estimates 37 DALYs gained per death averted. Total DALYs gained is calculated by multiplying DALY gained per death averted by the estimate of deaths averted. Cost per DALY gained is calculated by dividing total projected programme costs over 10 years by total DALYs gained.
⁹ Bachmann MO. Cost effectiveness of community-based therapeutic care for children with severe acute malnutrition

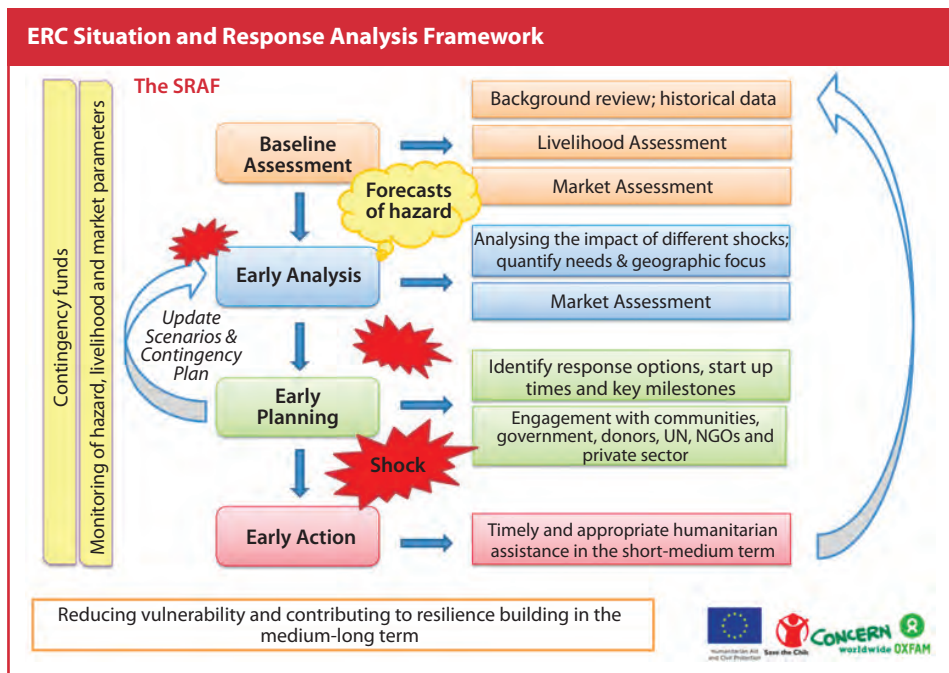
in Zambia: decision tree model. Cost Effectiveness and Resource Allocation 2009;7:2.
¹⁰ WHO Cost-effectiveness thresholds http://www.who.int/choice/costs/CER_thresholds/en/
¹¹ World Bank 2013 current dollars <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>, accessed 4/23/15
¹² All figures in 2010 USD, <http://services.gov.ng/states> accessed 4/23/15
¹³ This assumes a 72% cure rate found in the sites where data was collected.
¹⁴ This calculation uses the 2014 Appropriations Bill which establishes a FMOH Budget of 262,742,351,874 Naira. We use an exchange rate of 167 Naira per dollar.



Launch of Situation and Response Analysis Framework

Oxfam GB, Save the Children UK and Concern Worldwide have recently launched a Situation and Response Analysis Framework (SRAF) with component tools. The SRAF was developed as part of an ECHO-ERC (Enhanced Response Capacity) project¹ to improve timely, relevant response to slow-onset or predictable crises at scale.

The SRAF framework uses livelihood and market analysis and relevant forecast information to predict the impact of a crisis on affected populations, before a crisis happens. The SRAF uses contingency planning as a vehicle for improved response analysis, using scenarios and modelling to develop a needs-based rationale for early preparation and response. This can help communities, governments, non-governmental organisations (NGOs) and donors ensure that both funding and programmes are in place when they are needed. Using the SRAF approach can allow more timely and appropriate responses in slow-onset



food security crises, broaden response options and support the design of programmes that protect livelihoods and build food security and resilience in vulnerable populations.

The SRAF website provides guidance and tools for the SRAF and works through the response analysis process. The website also houses resources on the tools used for conducting baseline analysis – the Household Economy Approach (HEA) and Pre-Crisis Market Mapping and Analysis (PCM-

MA) – as well as case studies, news and events relevant to the project.

Access the SRAF at: www.sraf-guidelines.org. If you have any questions, comments or would like any further information, please contact Carol Brady, email: cbrady@oxfam.org.uk, or Chiara Trincia, email: C.Trincia@savethechildren.org.uk

¹ 'Reinforcing Institutional Capacity For Timely Food Security Emergency Response To Slow Onset Crises At Scale'

World Humanitarian Summit 2016



An initiative of UN Secretary-General Ban Ki-moon, managed by UN OCHA, the first World Humanitarian Summit (WHS) will be held in Istanbul on 23 and 24 May 2016. The last global discussion on humanitarian action took place almost 25 years ago; since then, the humanitarian landscape has changed tremendously. The Summit is expected to propose a new agenda for humanitarian action. It will bring together people affected by humanitarian crises; governments; established humanitarian and development organisations; and other humanitarian actors such as civil society organisations, businesses, militaries, academic institutions, and faith-based organisations.

In the two years leading up to the summit, extensive regional (eight) and online consultations are well underway to gather the perspectives, priorities and recommendations of all stakeholders on what must be done to make humanitarian action fit for the future. Participants of the regional and online consultations prioritise the relevant issues in their respective regions. Four major

themes serve as broad categories to guide the conversations and ensuing recommendations – humanitarian effectiveness; reducing vulnerability and managing risk; transformation through innovation; and serving the needs of people in conflict. Over-arching issues and cross-cutting themes are also identified.

Throughout the consultation phase, teams of thematic experts are working to bring the results of the regional consultations together with findings from global research and policy work, to identify areas of consensus and points of divergence and to translate them into clear recommendations. These experts come from a diverse range of regions, areas of expertise and organisations. Around the common thread of building resilience to the changing nature of shocks and stresses, the WHS will also build clear linkages with concurrent global development, disaster risk reduction and climate change processes.

Towards the end of 2015 (Geneva, 14-16 October 2015), a thematic consultation and a

global consultation meeting will be held to bring together the results of the thematic work, the online consultations and the regional consultations, into a set of concrete recommendations for the future. These recommendations will be presented in a final report of the Secretary-General and will set the agenda for the summit.

The UN Office for the Coordination of Humanitarian Affairs (OCHA) is tasked with managing the WHS, working closely with partners and key stakeholders, including governments, NGOs, UN agencies, the Red Cross/Red Crescent movement, civil society organizations, community groups, businesses and academic institutions.

There are various ways for organisations and individuals to make contributions to the Summit. For more information, visit: https://www.worldhumanitariansummit.org/whs_get_involved

¹ https://www.worldhumanitariansummit.org/whs_global

Core Humanitarian Standard on Quality and Accountability

In humanitarian disaster or conflict situations, it is critical that aid workers deliver their best quality work. Yet in a sector characterised by high turnover, rapid deployments, steep learning curves and the need to collaborate with multiple humanitarian actors, it is often difficult for responders to know when and how to apply the standards that enable them to deliver their best work and to be accountable to the communities they serve. The recently launched Core Humanitarian Standard on Quality and Accountability (CHS) has been devised to clarify the responsibilities of aid workers, and to make the implementation of the standard simpler and

easier. A single core standard will contribute to better humanitarian response. A coherent and easy-to-use standard is more likely to be put into practice and make a difference to the lives of crisis-affected communities.

The CHS is a direct result of the Joint Standards Initiative (JSI) in which the Humanitarian Accountability Partnership (HAP) International, People In Aid and the Sphere Project joined forces to seek greater coherence for users of humanitarian standards. It emerged from a 12-month, three-stage consultation, during which humanitarian workers, communities and people

affected by crisis, several hundred non-governmental organisations (NGOs) and networks, governments, United Nations agencies, donor agencies and academics rigorously analysed the content of the CHS and tested it at headquarters and field level. It is intended that the CHS will replace the 2010 HAP Standard in Accountability and Quality Management, the People In Aid Code of Good Practice in the Management and Support of Aid Personnel and the Core Standards section of the Sphere Handbook.

As a core standard, the CHS describes the essential elements of principled, accountable and high-quality humanitarian action. The CHS comprises a set of Nine Commitments to communities and people affected by crisis, stating what they can expect from organisations and individuals delivering humanitarian assistance. Each Commitment is supported by a Quality Criterion that indicates how humanitarian organisations and staff should be working in order to meet it, Key Actions to be undertaken in order to fulfil the Commitments and Organisational Responsibilities to support the consistent and systematic implementation of the Key Actions throughout the organisation (see Box 1).

Humanitarian organisations may use the CHS as a voluntary code with which to align their own internal procedures. It can also be used as a basis for verification of performance, for which a specific framework and associated indicators have been developed to ensure relevance to different contexts and types of organisation. Many individuals, organisations and institutions have expressed their support for the Core Humanitarian Standard since it was launched on 12 December 2014.

For more information about The Core Humanitarian Standard, related resources, statements of support and other documents under development, visit:
www.corehumanitarianstandard.org.

The Core Humanitarian Standard will be made available in Arabic, French and Spanish. If you would like to translate the CHS into an additional language, please contact info@corehumanitarianstandard.org for guidance on translations. All translations will be free to access at www.corehumanitarianstandard.org.

Comments on the CHS are welcome at any time, and can be sent, along with enquiries, to info@corehumanitarianstandard.org. All comments received will be addressed in the revision of the CHS, which will be undertaken no later than December 2019.

Box 1

The Nine Commitments and Quality Criteria



1. Communities and people affected by crisis receive assistance appropriate and relevant to their needs.

Quality Criterion: Humanitarian response is appropriate and relevant.



2. Communities and people affected by crisis have access to the humanitarian assistance they need at the right time.

Quality Criterion: Humanitarian response is effective and timely.



3. Communities and people affected by crisis are not negatively affected and are more prepared, resilient and less at-risk as a result of humanitarian action.

Quality Criterion: Humanitarian response is effective and timely.



4. Communities and people affected by crisis know their rights and entitlements, have access to information and participate in decisions that affect them.

Quality Criterion: Humanitarian response is based on communication, participation and feedback.



5. Communities and people affected by crisis have access to safe and responsive mechanisms to handle complaints.

Quality Criterion: Complaints are welcomed and addressed.



6. Communities and people affected by crisis receive coordinated, complementary assistance.

Quality Criterion: Humanitarian response is coordinated and complementary.



7. Communities and people affected by crisis can expect delivery of improved assistance as organisations learn from experience and reflection.

Quality Criterion: Humanitarian actors continuously learn and improve.



8. Communities and people affected by crisis receive the assistance they require from competent and well-managed staff and volunteers.

Quality Criterion: Staff are supported to do their job effectively, and are treated fairly and equitably.



9. Communities and people affected by crisis can expect that the organisations assisting them are managing resources effectively, efficiently and ethically.

Quality Criterion: Resources are managed and used responsibly for their intended purpose.

Core Humanitarian Standard on Quality and Accountability



En-net update

By Tamsin Walters, en-net moderator

Over the past four months, 57 questions have been posted on en-net¹, generating 200 responses. Seventy vacancy announcements have been posted, which have accumulated over 9,000 views.

There has been an increase in the number of questions around stunting, including discussions on the relationship between wasting and stunting, potential interventions to reverse stunting in children under 2 years and the timeframe within which both individual and population level stunting might be reduced.

A question asking whether the WHO Growth Standards are appropriate for assessing stunting in populations of South East Asia generated significant debate:

A response from WHO outlined the process of construction of the WHO Growth Standards and the evidence-base behind their application: *The WHO Standards are based on data collected in six countries (Brazil, Ghana, India, Norway, Oman, USA) following a prescriptive approach that excluded children with growth constraints due to environmental factors (as opposed to selecting elite segments of the population)... Linear growth among children in the six sites was strikingly similar confirming previous evidence from Martorell, Habicht and other researchers showing that, on average, children from different world regions have similar growth potential when raised in environments that minimised constraints to growth such as poor diets and infection. After the standards were released, countries like China*

or India conducted thorough evaluations of them prior to their adoption.

More than 10 years after the WHO Growth Standards were developed, the INTERGROWTH-21st consortium conducted a study on foetal growth and newborn size in urban areas of eight countries² using a methodology similar to that used to construct the WHO standards. The results of this study are in strong agreement with the WHO results³.

Further input from the INTERGROWTH-21st Consortium confirmed that... *International standards based on the WHO MGRS and INTERGROWTH-21st studies compare the longitudinal skeletal growth in diverse populations around the world free from overtly adverse influences. This allows us to determine how much of the variation in human size is due to differences between countries. The answer has been shown consistently to be only around 3%; hence the vast majority of the differences in human size and early growth observed around the world are due to factors independent of ethnicity...and raised the concern that the use of growth references specific to the local population risks normalising abnormal growth, perpetuating a cycle of low growth expectations in many parts of the world.*

Despite these helpful clarifications, several participants remain concerned that, although there is agreement that the majority of the growth variation is environmentally mediated (by the social, economic and natural environment), *why should we aim to have every child*

growing the same way? Given that environmental conditions in which children live are not similar, growth patterns can be expected to differ: *Certain growth patterns are likely to confer short and long-term advantages in certain environments as well as penalties. These advantages and penalties are likely to be different in different environmental settings.*

While this debate remains unresolved, participants unanimously agreed on the value of having a common yardstick to facilitate understanding of how much growth varies across the world and the reasons behind this variability, and further note the value of the WHO Growth Standards in giving shape to growth curves and providing information on timing and velocity of child growth.

Advocacy for researching the causes of deviance from the standards where it exists was proposed in order to institute appropriate high impact measures where necessary.

Follow the discussion at <http://www.en-net.org/question/1755.aspx>

To join any discussion on en-net, share your experience or post a question, visit www.en-net.org

Contributions from Aisling, Melaku Begashaw, Blessing, Carlos Grijalva-Eternod, Jane Hirst, Mark Myatt, Mercedes de Onis, Rosemary, Brad Woodruff.

¹ From 1st April 2015 to the reporting date of 17th July 2015

² The cities of Pelotas (Brazil), Turin (Italy), Muscat (Oman), Oxford (UK), and Seattle (USA); Shunyi County, Beijing (China); the central area of Nagpur (India); and the Parklands suburb of Nairobi (Kenya).

³ Villar J, et al. The likeness of fetal growth and newborn size across non-isolated populations in the INTERGROWTH-21st Project. *Lancet Diabetes Endocrinol* 2014, https://intergrowth21.tghn.org/site_media/media/articles/Villar_published_LancetDE_article.pdf

New global centre for chronic disease in India

A new international health research partnership based in India plans to tackle chronic diseases ranging from diabetes to dementia in an integrated way. Chronic conditions are the leading cause of death in India, accounting for more than 5 million deaths each year. They are also a leading cause of disability. The Centre for Control of Chronic Conditions (CCCC), launched in New Delhi, India, on April 7, brings together experts from four leading institutes in Europe, America, and Asia – Emory University, London School of Hygiene & Tropical Medicine (LSHTM), the All India Institute of

Medical Sciences (AIIMS), and the Public Health Foundation of India (PHFI) – to increase collaboration in research into non-communicable diseases (NCDs).

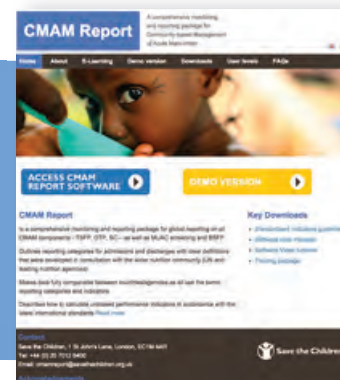
The CCCC, which will have its secretariat at PHFI, will act as a research platform for clinicians, public health experts, geneticists, biochemists and social scientists from these institutes. The goal of the partnership is to generate evidence-based knowledge and solutions to address chronic conditions in India and globally from a policy and clinical perspective.

One CCCC project aims to study the feasibility of training health workers in the management of chronic conditions so that specialists can be engaged in other crucial tasks. Another is investigating mental and neurological disorders and cardiovascular diseases to develop interventions for people to deal with multiple morbidities, and developing a mobile app for community health workers to integrate management of diabetes, hypertension, alcohol misuse, and depression.

A large community-based cohort of 100,000 adults will be the main research resource available to the new centre. It includes people in two large cities (New Delhi and Chennai), two mid-sized cities (Visakhapatnam and Sonapat), and a set of villages in Himachal Pradesh. The idea is to follow-up this cohort to study risk factors, evaluate dietary and environmental factors, and evaluate causes of diseases, including cancers over a period of time.

CMAM Report: development of a global online reporting system for CMAM programming

By Rachel Evans, Christoph Andert and Susan Fuller



The authors would like to express their gratitude to all individuals who have contributed to the development of the CMAM Report since 2008: Carlos Navarro-Colorado, Jeremy Shoham, Vicky Sibson, Mark Yarmoshuk, Jennifer Martin, Lourdes Vazquez, Shafat Sharif, Emily Mates, Emily Keane, Geraldine Le Cuziat, Andrew Crossman, Jaime Hargreaves, Terry Reed, Vasantha Mountford, Stewart Gordon, Elena Pullara, the MSM software developer's team around Graham Douglass and Simon Gibbs and all consultants. Further acknowledgements go to the steering committee of agencies that contributed to the development of the standardised reporting categories and indicators used in CMAM Report - CDC, Concern Worldwide, FANTA2, IRC, Nutrition Information in Crisis Situations (NICS), Save the Children UK, UNHCR, UNICEF, Valid International, WFP, WHO and World Vision – and all agencies that improved the software by giving continuous feedback to the development team – Concern Worldwide, GOAL, International Medical Corps (IMC), ACF-USA, Eastern Deanery Aids Relief Programme (EDARP) and Save the Children.

The MRP/CMAM Report was funded by OFDA 2008-11, ECHO 2011-12 and HIF 2013-15. The CMAM Report online software was developed by Management Systems Modelling (MSM) Ltd, UK

Since the publication of the Humanitarian Practice Network (HPN) Network Paper *Measuring the effectiveness of Supplementary Feeding Programmes (SFPs) in emergencies in 2008¹* highlighted inconsistencies, inadequacies and bias associated with reporting on Supplementary Feeding Programmes (SFP), the idea of standardising community based management of acute malnutrition (CMAM) reporting categories and indicators across implementing agencies and countries has gained traction. This has culminated in the development of a comprehensive reporting system for all aspects of

CMAM, which features a web-based central database called the 'CMAM Report'. This article describes certain experiences and lessons learnt from the development process of this reporting system and its use as a management tool in CMAM programming.

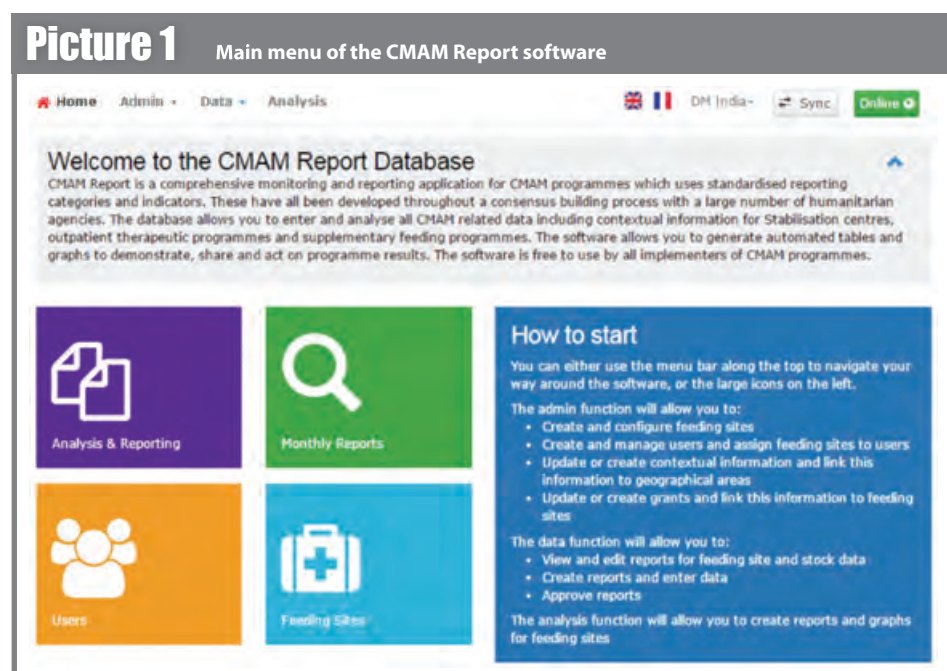
Background

The CMAM Report started out in 2008 as the Minimum Reporting Package (MRP), with the formulation of standardised reporting categories and indicators for SFPs coordinated by a steering committee of twelve international agencies, led

by the ENN and Save the Children. These were piloted in four countries. In 2011/12 and in response to the feedback from the pilot, Outpatient Therapeutic Programme (OTP) and Stabilisation Centre (SC) reporting categories and indicators were added through a similar consultative process and a Microsoft Access™ based reporting software was developed. Both reporting standards and software were subsequently rolled out by seven non-governmental organisations (NGOs) in 15 countries; Save the Children, Concern Worldwide, International Medical Corps (IMC) and GOAL were the main users.

A number of challenges were identified following this first phase in relation to the indicators and the software. Despite guidance on standardised indicators, these were still not fully adopted, even by agencies committed to the MRP principles. The software appeared not to be user friendly enough. Evaluations and feedback on the software also emphasised the focus on NGO implementation, the lack of capacity for coordination and the potential for parallel systems. For example, there were concerns that the MRP added another layer of reporting on top of government reporting systems (this was not the intention but rather to be a complementary initiative, whereby the standardised reporting categories and indicators of the MRP could positively influence government systems in the long run and where systems needed strengthening).

With these issues in mind, a new phase of software development and reorientation took



¹ <http://www.enonline.net/sfpeffectiveness>

place in 2013-15. The software was redesigned into a global web-based database with a specific function for United Nations (UN) agencies and the Ministry of Health (MoH). Mid upper arm circumference (MUAC) screening and blanket supplementary feeding programme (BSFP) components were added. The system was finally re-named as CMAM Report.

Developing an online software

In order to address all the challenges identified with the initial software, Save the Children decided to modify the software to a web-based tool with offline capability. The aim was to develop a system that would not require installation and that gave access to data from several levels via synchronisation with a central server. The actual development of the software was given to a software developer but additional funding was needed to meet the cost of development, which proved several times higher than expected. When development started, it was through an iterative process between the developer, the Save the Children IT team (who reviewed system structure and general functionality) and the Save the Children Nutrition team (who reviewed content and usability). For each iteration delivered by the software developer, testing took place by Save the Children IT and nutrition experts and was reported back to the developer. The main phase of software development was completed in June 2014.

In parallel with the software development, the team at Save the Children facilitated con-

sultations with partners and users, which resulted in a number of changes to the software and the addition of some new components:

- The structure of the software was changed from being focused around programmes funded through specific grants to the unit of focus being sites, i.e. programme feeding sites, health centres or hospitals are the main level for data entry and analysis. Grants and contextual information can be attached to this to support 1-click reporting if desired.
- INS² has been renamed within the software to 'OTP discharges in TSFP³'.
- A 'Country Administrator' user access level was added. This is a view-only function that allows the MoH and UN agencies to view and analyse data from all agencies in a given country.
- Stock tracking, MUAC screening and BSFP components have been added.
- The software and all supportive material are now available in English and French.

With the wider launch to the nutrition community mid-2015, CMAM Report can now be used on computers, laptops and tablets with a common browser⁴ and is freely available to all agencies/countries that wish to use it. The software supports secure data collection through controlled access from the field via country to headquarters levels (five adaptable user access levels). It enables the use of standardised reporting categories and indicators (enables comparable data and unbiased reporting) and gender and age disaggregated

Box 1 Yemen experience

The CMAM Report software replaced Excel sheet reporting; this was prone to errors and had limited use. The Yemen team cited the following as ways in which the CMAM Report has added value to reporting:

"With the CMAM Report, we can see indicators directly when entering data – a major advantage over the old system. We can take actions if indicators do not reach Sphere standards in single feeding sites. Data in the CMAM Report format is shared with the Ministry of Public Health and UNICEF. The CMAM Report helps to improve the quality of the programme. Before starting the CMAM Report, the defaulter rate of the programme was very high. With the CMAM Report it has been easier to monitor the data and to take corrective actions."

reporting through all reporting categories. Users can analyse data for trends and create summary tables and graphs by feeding site, group of feeding sites and geographical location up to country and global levels for any required time period, in one month steps. The system features export of tables and graphs to PDF, Excel and Word. Raw data can be selectively exported to Excel and in turn to statistical software. Data entry mistakes are reduced by real-time validation checks.

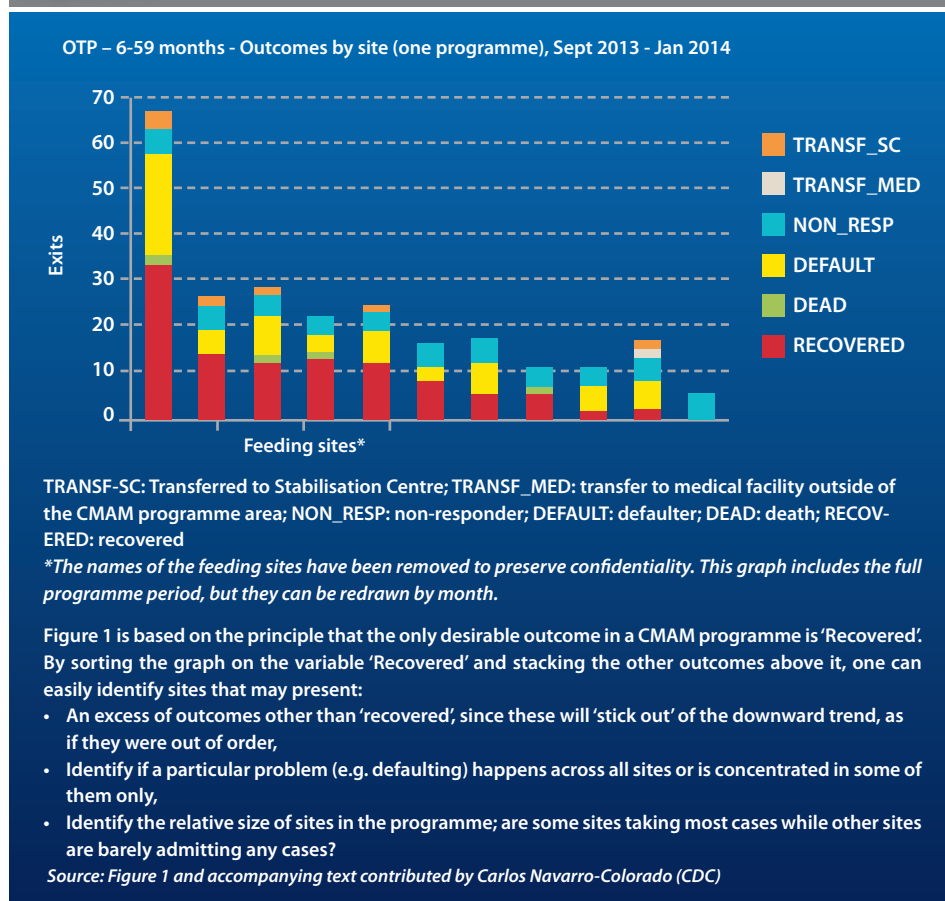
Lessons learned in software development

The main challenges in establishing this system have been due to the lengthy time taken to develop complex new software, the unexpected costs of this process and lack of a framework for defining what constitutes a change to the original specification for the new software.

The following lessons can be taken away from the development process:

- Software development projects require flexibility in delivery time and financial resources in order to meet needs which evolve over time.
- Clear definition on what constitutes change in specification should be defined with the software developer early on.
- Wider learning is essential as use of Information & Communication Technology (ICT) increases in our programmes. This kind of development requires specific skill sets and level of shared understanding and common language between both IT and nutrition experts to build a software that is fit for purpose for the end users in the field.
- The potential for parallel systems and duplication of efforts remains; there are a number of ongoing related initiatives (e.g.

Figure 1 High number of defaulters revealed by CMAM Report's performance indicators graph output



² Individual Nutrition Support: A term used for beneficiaries that move from OTP to TSFP and that are kept separate from MAM cases that enter TSFP. This allows unbiased calculation of TSFP performance.

³ Targeted supplementary feeding programme (TSFP)

⁴ Not running on Apple devices

Box 2 Added value of the CMAM Report software

- Data are easy to manage and share
- Reduces reporting time compared to Excel
- Error proof as false data can't be entered
- Highlights missing data, can be used to enforce better reporting
- Compliance reports improve timeliness of reporting
- Facilitates trend monitoring to feed into donor reports/stock checks
- Easy to extract indicators for donor reporting
- Useful for programme review
- Field staff using analysis functions to produce reports and graphs
- Analysis by feeding site possible, so easier to target support in programme management Able to verify/compare with national reporting system to do a data quality assessment and inform monthly data discussions with cluster
- Graphs highlight problems assisting management
- Support from head office is easier as programme details can easily be accessed
- Good information source
- Encouraged monthly instead of quarterly HQ reporting and increasing transparency
- Remote supervision and technical support is easier
- Transparent - easier to trace back results to original sites.

other agencies who are developing national and global reporting systems with similar objectives). Transparency and coordination around such initiatives are essential in order to avoid duplication and maximise reporting effectiveness. Lessons should be shared between developers of different systems.

- Systems should be flexible in terms of indicators to be collected, but definitions should be standardised.
- There is much sensitivity around data storage, sharing and ownership. There may be some governments who do not wish for their data to be stored outside their country. There are questions as to whether NGO collected data belongs to the NGO or to the government (since it concerns their citizens).
- Advanced systems are not a solution to poor quality data; the system is only as good as the data.
- Software development projects should be adequately resourced, both technically and financially.
- In the world of information systems, there is no one solution that would fit everywhere; platforms which can link different systems are likely to play a vital role in facilitating more efficient ways of working in the future.

Examples of good practice and added value

Several examples of good practice were found by a recent evaluation.

Using the CMAM Report software to inform programme management

In Yemen, high defaulter rates were revealed and resulted in the management team adapting their programme delivery model. In Asia, a large number of defaulters were revealed due to a supply chain break. The CMAM Report software made this visible and results could be traced back to specific sites (Figure 1). In West Africa, the CMAM Report clearly showed a number of programming issues and therefore where to focus technical support. Stock management is

one of the main challenges for CMAM programming and the CMAM Report is particularly effective and useful for estimating caseloads and supply needs, e.g. in Puntland, Somalia.

Highlighting issues with data quality

CMAM Report has been useful in highlighting issues with data quality across programmes, partly through the standardisation to calculate performance indicators. Using the CMAM Report software, indicators can also be easily compared across programmes and compliance and validation reports have highlighted missing, late and erroneous data. One organisation conducted a global assessment of missing, late and erroneous data during the initial months of CMAM Report implementation and it was observed that data quality improved during that time.

Using standardised indicators to inform national reporting systems

In some contexts, agencies have also entered into discussions with partners, government and

UN agencies on using the standardised indicators to inform national reporting systems:

Somalia: Save the Children Somalia was invited to present the CMAM Report as a potential reporting tool for a nutrition consortium in April 2014 that includes the CMAM implementers IMC, ACF and Oxfam. The additional utility of the tool was recognised and it was decided to use the CMAM Report as a consortium reporting tool.

Philippines: Save the Children invited partner staff for training on the CMAM Report indicators and software in Manila in May 2013. Attendees included the Department of Health at the Autonomous Region in Muslim Mindanao, WFP, UNICEF and ACF. Partners identified the CMAM Report as a strong Save the Children system. However, further efforts to de-brand the CMAM Report are required so that external agencies feel comfortable in using the system. This reflects a constraint in locating a sector-wide initiative within an operational agency; there is risk of less buy-in by others who consider it an agency-specific product.

Yemen: Save the Children and IMC presented the CMAM Report at a cluster meeting and it was well received. In addition, a joint CMAM Report training was conducted in Yemen between IMC and SCUK staff.

West Africa: Agencies are using their own internal databases due to the lack of a strong national system in many countries. There is therefore a need for a regionally standardised CMAM reporting tool which could be met by the CMAM Report software.

The added value of the software reported by users is listed in Box 2.

The software, user manuals, standardised indicator guidelines, e-learning, demo version and more information can all be found at www.cmamreport.com.

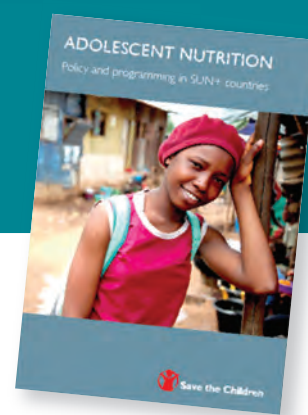
For more information and to receive your personal login details, contact: cmamreport@savethechildren.org.uk



Adolescent Nutrition: Policy and programming in SUN+ countries

Summary of report¹

This summary was prepared by Emily Mates (ENN) who undertook the review as an independent consultant together with Tanya Khara (independent), with the support of Frances Mason, Save the Children.



Location: *Bangladesh*

What we know already: Ninety per cent of 1.2 billion adolescents in the world live in low or middle income countries where up to half may be stunted. Sixteen million adolescent girls give birth every year, which heightens maternal and infant risk.

What this article adds: A recent review found that programmes to support adolescent nutrition in SUN countries and India are lagging behind international attention. ‘Promising’ interventions (Lancet 2013) are not yet widely implemented or planned. Gap areas include needs assessment, policy provision, access to services, the evidence base and adolescent consultation. Identified actions include reaching clarity on UN mandates and leadership on adolescent nutrition, acknowledging adolescents as a distinct category, developing links to reproductive health programmes and stronger inter-sectoral collaboration. The SUN Movement could play an important role in bringing adolescent nutrition to the fore.

There are 1.2 billion adolescents (aged 10–19 years) in the world⁴.

90% live in low and middle income countries (LMICs), where they make up 19% of the population⁵.

Sub Saharan Africa is expected to have more adolescents than any other region by 2050⁶.

Save the Children recently undertook a review of what is being done in Scaling Up Nutrition (SUN) countries and in India, to address adolescent nutrition through policy and practice. The report is targeted at ministers in SUN countries who are responsible for the welfare of adolescent girls; senior officials in the United Nations, international agency programme implementers and policy-makers in SUN countries; and officials in donor governments and agencies. The main points of the report are outlined below.

Adolescents – a neglected group

“Adolescents are in many contexts a marginalised and disempowered group. They lack a voice on the social stage, have constrained access to resources, are likely to drop out of education and are vulnerable to exploitation and violence.”²

The lifetime opportunity cost of adolescent pregnancy in Uganda, for example, amounts to an estimated 30% of the country's annual GDP³.

In 2012, there were 1.2 billion adolescents in the world – with adolescents defined as those between the ages of 10 and 19 years. Ninety per cent live in low or middle-income countries. In some countries, as many as half of all adolescents are stunted, meaning that their physical and cognitive development has been restricted because of inadequate nutritional status. The first 1000 days of life – from the start of the mother's pregnancy to the child's second birthday – is critical

and has been the focus of the nutrition community over recent years. But with 16 million adolescent girls giving birth each year, tackling undernutrition in women once they are pregnant is often too late to break the intergenerational cycle of malnutrition. These 16 million adolescent girls giving birth each year are more likely to die themselves during childbirth, or be left nutritionally depleted. Their babies are also more likely to die or be born with nutritional deficits. The infants who survive have a greater risk of continued nutritional deficits during childhood and grow up to be stunted mothers or fathers themselves. In order to prevent malnutrition being passed on to the next generation, adolescent girls and communities must be supported both for improved nutrition and to delay marriage and pregnancy. The economic benefits of this could amount to up to 30% of a country's Gross Domestic Product (GDP)³.

What is being done?

Programmes to support adolescent nutrition are lagging behind the international call for focus on this area and the general increase in attention on nutrition nationally and internationally. The promising interventions for adolescent nutrition identified by the Lancet 2013 series are not yet being widely implemented and are reflected in only a minority of the country plans written by those countries that have signed up to the SUN Movement. In the SUN countries where plans were available (22), just less than half (10) included any detail on adolescent nutrition. Only seven included support for adolescent nutrition or im-

provement of adolescent nutrition status as part of a strategic objective or result (Bangladesh, Benin, Ethiopia, Guatemala, Mozambique, Nepal). Just two of these countries (Mozambique and Nepal) reported assessing the status of adolescent nutrition in country and none had plans to include adolescents in their monitoring and evaluation. It was noted that only Nepal⁷ was conducting a national assessment of the situation of adolescents in country as part of their plans. India, the only country not part of the SUN Movement included in this review, where 55% of adolescents are anaemic, provides the largest

¹ Adolescent nutrition. Policy and programming in SUN+ countries. Save the Children. 2015. Available in English and French at: <http://www.savethechildren.org.uk/resources/online-library/adolescent-nutrition>

² Burman, ME and McKay, S (2007). ‘Marginalisation of girl mothers during reintegration from armed groups in Sierra Leone’, *International Nursing Review* 54, 4, pp 316–23. doi: 10.1111/j.1466-7657.2007.00546.x.

³ Chaaban, J and Cunningham, W (2011). Measuring the Economic Gain of Investing in Girls: the Girl Effect Dividend, World Bank Policy Research Working Paper 5753, The World Bank.

⁴ Cappa, C, Wardlaw, T, Langevin-Falcon, C and Diers, J (2012). ‘Progress for children: a report card on adolescents’, *The Lancet* 379, 9834, pp 2323–5. doi: 10.1016/S0140-6736(12)60531-5.

⁵ Black, RE, Victora, CG, Walker, SP, Bhutta, ZA, Christian, P, de Onis, M, Ezziati, M, Grantham McGregor, S, Katz, J, Martorell, R, Uauy, R, and Maternal and Child Nutrition Study Group (2013). ‘Maternal and child undernutrition and overweight in low-income and middle-income countries’, *The Lancet* 382, 9890, pp 427–51. doi: 10.1016/S01406736(13)60937-x.

⁶ UNICEF (2011) ‘Adolescence an age of opportunity’, Executive summary, in *The State of the World's Children 2011*, UNICEF. Sawyer et al, 2012

⁷ This report was produced prior to the earthquakes in Nepal.

⁸ See footnote 3.

scale example of direct nutrition interventions being targeted to adolescents.

Adequate assessment of adolescents is therefore missing in the majority of countries. Progress on direct interventions has been more substantial, but even in these cases, the extent to which adolescents are really being covered and the effectiveness of interventions in addressing nutrition outcomes is mostly unknown. Participation of adolescents in the design and implementation of programmes, despite being a strong recommendation from those working with adolescents, does not seem to have been adopted by nutrition programmers.

Iron deficiency anaemia is the third most important cause of lost Disability Adjusted Life Years (DALYs) in adolescents worldwide at 3%, behind alcohol and unsafe sex⁹.

It is clear that a range of programmes may have important impacts on adolescent nutrition across health and other sectors such as education, family planning, social protection and water, sanitation and hygiene (WASH). Multi-sectoral approaches, as well as those taking account of the particular experiences and social position of adolescents, are therefore urgently required. Ethiopia, Mozambique and Nepal, in particular, stand out for making inroads into integrated approaches for adolescent nutrition across the sectors. Further investigations into the effectiveness of approaches in these countries to inform the wider community would be useful.

In India, 55.8% of adolescents aged 15–19 years are reported to be anaemic¹⁰.

The nature of adolescent nutrition means that the responsibilities for supporting it need to span a wide range of ministries and actors at country level. The SUN Movement could play an important role in promoting such inter-sectoral collaboration for nutrition, particularly in bringing adolescent nutrition issues to the fore and encouraging all actors to adopt the sort of holistic approach required to tackle them.

What are the challenges?

A number of important challenges, research gaps and missed opportunities were identified in this review, including:

- Insufficient policy attention on adolescent nutrition, perhaps as a result of the successful focus within the nutrition community on the first 1,000 days.
- A lack of empirical evidence and documented practical experience on what should be done to support adolescent nutrition and a large number of continued research gaps related to operational issues. As a result, evidence of how to assess adolescents and programme effectiveness is lacking and evidence of cost effectiveness even more so.
- Finding ways to reach adolescents both

within existing services and specific targeted interventions/promotion is a major challenge. There is a common, but flawed assumption that adolescents will be automatically included in any maternal health programmes.

- Adolescents are not being consulted about the extent to which nutrition services are currently serving them, or how they can be better designed in order to meet their particular needs.

What actions need to be taken?

- **International actors should give greater attention to meeting adolescents' nutritional needs.** To do this, there needs to be more research (including age- and sex-disaggregated data) to generate empirical evidence about what works in reaching adolescents with nutrition interventions. As such, there is an urgent need for clarity on UN mandates and leadership in addressing adolescent nutrition so that the issue gets the leverage it needs. In the meantime, a multiagency group should be created to find a way forward for policy and programming. This group should prioritise a research agenda and review strategies for the scale up of promising interventions.
- **SUN country governments should consider the long term economic and health benefits that can be gained from strengthening adolescent nutrition and prioritise it in their policies and practice.** Interventions should find ways to reach adolescents and include them in the programme design phase. Adolescents should be acknowledged as a distinct category, with their own needs and capacities, rather than be subsumed within the broader mother and child care programmes. Systems and structures should be put in place to monitor and evaluate outcomes for adolescents.
- **A multi-sectoral approach in policy and practice is critical.** Links with policies and programmes aiming to delay marriage and first pregnancy are a priority alongside other reproductive health programmes (contraception promotion, HPV vaccination). There is also a need for more research to assess the

extent to which health, education, WASH, social protection and agriculture interventions could be made more nutrition-sensitive for adolescents. Strategies need to consider the context-specific burdens of malnutrition including undernutrition, obesity and eating disorders. Coordination must be undertaken at the ministerial level, with guidance from the relevant UN organisations particularly the WHO, UNICEF and UNFPA.

1 in 3 girls in developing countries are married before the age of 18 and a startling 1 in 9 before the age of 15¹¹.

About 16 million adolescent girls give birth each year, roughly 11% of all births worldwide, with almost 95% of these births occurring in LMICs¹².

- Given the challenges involved in reaching this neglected demographic group, it is necessary to **capitalise on the mechanisms that multi-sectoral programmes use to reach adolescents.** Nutrition and health practitioners need to use social media to provide innovative opportunities for engaging adolescents, including particularly hard-to-reach adolescents who are not receptive to the more traditional health and nutrition education approaches or platforms.
- Finally, while the inclusion of adolescents in the proposed **post 2015 Sustainable Development Goals (SDGs)** is welcome, it is critical that this focus is translated into practice. A first step is to scale up the existing 'promising interventions' as listed by the Lancet 2013 (see Box 1) and ensure that these interventions reach adolescents. If so, they should provide essential stepping stones to achieve the SDGs by 2030. In the same vein, the role that adolescents themselves can play in helping to reach the WHA nutrition targets for 2025 (WHO 2015) – through inclusive consultation, must be kept at the forefront of the minds of those aiming to achieve them. Future Global Nutrition Reports should include an analysis of adolescent nutrition intervention coverage and impacts.

Box 1 'Promising' interventions for adolescent nutrition

Maternal nutrition interventions targeted to pregnant adolescents – including multiple micronutrient (MMN) supplementation, calcium supplementation, balanced energy protein supplementation, malaria prevention, maternal deworming, obesity prevention.

Preconception care via reproductive health and family planning interventions for adolescents aimed at reducing unwanted pregnancies and optimising age at first pregnancy and birth intervals.

Antenatal care – ensuring access, given that adolescents are particularly at risk of complications

Nutrition promotion – via schools

Source: Bhutta et al (2013)¹³.

⁹ Sawyer, SM, Affifi, RA, Bearinger, LH, Blakemore, SJ, Dick, B, Ezech, AC and Patton, GC (2012). Adolescence: a foundation for future health. *The Lancet* 379, 9826, pp 1630–40. doi: 10.1016/S01406736(12)60072-5.

¹⁰ UNICEF (2012). Progress for Children: A report card on adolescents, UNICEF, www.unicef.org/publications/index_62280.html (accessed 12 February 2015).

¹¹ UNFPA (2012). *Marrying too Young: End child marriage, United Nations Population Fund*, www.unfpa.org/sites/default/files/pub-pdf/MarryingTooYoung.pdf (accessed 12 February 2015).

¹² WHO (2014a). 'Adolescent pregnancy', WHO factsheet no 364, www.who.int/mediacentre/factsheets/fs364/en/ (accessed 11 February 2015).

¹³ Bhutta ZA, Das, JK, Rizvi, A, Gaffey, MF, Walker, N, Horton, S, Webb, P, Lartey, A, Black, RE, Lancet Nutrition Interventions Review Group, and Maternal and Child Nutrition Study Group (2013) 'Evidence based interventions for improvement of maternal and child nutrition: what can be done and at what cost?' *The Lancet* 382, 9890, pp 452–77. doi: 10.1016/S01406736(13)60996-4.

Practical pointers for prevention of konzo in tropical Africa

By J.H Bradbury, J.P.Banea, C. Mandombi, D. Nahimana, I.C. Denton and N. Kuwa

Dr J Howard Bradbury, Emeritus Fellow, Australian National University, developed the cassava cyanide and urinary thiocyanate kits and the wetting method that removes cyanogens from cassava flour.

Professor Jean Pierre Banea is Director of the National Institute for Nutrition (PRONANUT) in Kinshasa, DRC and directed all the field work.

Sister (Dr) Chretienne Mandombi of Caritas examined patients for konzo and led the small team that visited the villages monthly.

Mr Damien Nahimana directs the full team and oversees training in the wetting method and collection and analysis of samples of flour and urine.

Mr Ian C Denton assists in preparation and despatch of cyanide and urinary thiocyanate kits at ANU.

Mrs N'landa Kuwa is involved with food surveys to check on malnutrition and training of women in use of wetting method.

Konzo is an upper motor neuron disease of sudden onset that causes irreversible paralysis of the legs mainly in children and young women, due to high cyanide intake and malnutrition from consumption of a monotonous diet of bitter cassava¹. Konzo occurs in the Democratic Republic of Congo (DRC), Mozambique, Tanzania, Cameroon, Central African Republic and Angola and is spreading into new areas with increasing cassava production needed to feed rapidly increasing populations. In the DRC, konzo occurs in at least four provinces and in 2002, there were an estimated 100,000 cases. The disease was first reported in Bandundu Province, DRC in 1938 and it was first prevented there in 2011, by the daily use by village women of a new simple wetting method, that removes nearly all residual cyanogens present in cassava flour produced by traditional methods. We wish to share our experiences of the practical aspects of the prevention of konzo using the wetting method in similar contexts.

1. Choice of villages for intervention. The regional and local health authorities are consulted and they usually know the extent of konzo in their area; if this is not known, a survey for konzo cases may be needed². The choice of villages in which interventions are to be made depends on the konzo prevalence in the village, the presence of capable village leaders, their willingness to be involved in the project and the accessibility of the village to a

wheel drive vehicle. A first visit is necessary to choose suitable villages for an intervention.

2. Intervention team. The team must include (a) a medical doctor familiar with the diagnosis of konzo³ and rehabilitation of those with konzo, (b) a teacher to explain in the local language the cause of konzo and to teach the women how to use the wetting method, (c) a person trained to make a census of the village and conduct a food consumption survey used to assess the extent of malnutrition and (d) a technician trained to collect and analyse urine samples from school children for thiocyanate, and cassava flour samples for cyanide⁴.

3. Second visit to konzo villages. About one month later, baseline data are obtained on population, numbers of konzo cases, urinary thiocyanate analyses made on site from 50 school children. Approximately 30 cassava flour samples analysed for cyanide and food consumption data are then obtained from konzo and non-konzo households. The senior women are subsequently taught about the poisonous cyanide present in cassava flour and the means to remove it using the wetting method. This is shown to them by the teacher as follows:

“Cassava flour is placed in a bowl and the level is marked on the inside of the bowl. Water is mixed in and the level of the flour at first decreases and then increases up to the mark. The flour is spread in a thin layer about 1 cm deep on a mat in the sun for two hours or the shade for five hours to allow hydrogen cyanide gas to escape. The treated flour is mixed with boiling water to make the traditional thick porridge called fufu.”

Each senior woman then trains 15-20 village women to use the wetting method until all the women in the village are trained (see Figure 1). A committee of the leading women is formed to

ensure that all the women are trained in the wetting method and that it is used on a regular daily basis to remove cyanogens. Each household is given a plastic bowl, knife, mat and an illustrated poster which explains the wetting method in their own local language.

4. Subsequent visits to konzo villages. After the second visit, a small team visits each month to check on konzo cases and that the wetting method is still being used daily. Four months after the second visit, there is another visit of the full team to check urinary thiocyanate and flour cyanide levels. This is followed by three monthly visits of the small team and a final visit by the full team to conclude the nine month intervention.

5. Targets: Village women are very satisfied with the wetting method and at least 60-70% need to use it daily for it to be effective⁵. Recently in Mozambique, only about 40% used the method, because there were very few new konzo cases in the villages and hence there is less incentive for the women to use the wetting method than where there are recent konzo cases, as in DRC. However, it is expected that this attitude would change under drought conditions when the cyanide content of flour increases greatly⁶ and konzo outbreaks occur.

During the intervention there are no new konzo cases. At the end of the intervention, mean cassava flour cyanide levels are less than 10 ppm and no children have high urinary thiocyanate levels of >350µmole/L.

Years after completion of the intervention, there are no new konzo cases in the villages, the wetting method is still being used and it's use has spread by word of mouth to nearby villages⁷.

6. Cost of intervention. Our first intervention took 18 months⁸ but now takes 9 months⁹. We have undertaken interventions in 13 villages reaching nearly 10,000 people. The cost per person has been reduced to \$16¹⁰, but could be reduced further by scaling up the operation.

7. Comparison of preventing konzo by reducing malnutrition or reducing cyanide intake. A cross-sectoral approach has been used to reduce malnutrition and prevent konzo in Kwango District¹¹ but this approach is less direct and much more expensive than our methodology, which greatly reduces uptake of poisonous cyanide from cassava.

Funding is needed to continue work to prevent konzo amongst poor village children and young women.

For more information, contact: Dr J Howard Bradbury, email: Howard.Bradbury@anu.edu.au or Professor Jean Pierre Banea, Director PRONANUT, email: jpbanea@yahoo.fr

Figure 1 Teaching the wetting method to village women in Kay Kalenge, DRC.



¹ Banea JP, Bradbury JH, Mandombi C, Nahimana D, Denton IC, Foster MP, Kuwa N and Tshala Katumbay D, Konzo prevention in six villages in the DRC and the dependence of konzo prevalence on cyanide intake and malnutrition. *Toxicology Reports*, 2, 609-615 (2015).

² Banea JP, Bradbury JH, Nahimana D, Denton IC, Mashukano N and Kuwa N, Survey of the konzo prevalence of village people and their nutrition in Kwilu District, Bandundu Province, DRC. *African J. Food Sci.*, 9: 45-50, (2015).

³ World Health Organisation, Konzo: a distinct type of upper motor neuron disease. *Weekly Epidemiol. Rec.* 71: 225-232 (1996).

⁴ See http://biology.anu.edu.au/hosted_sites/CCDN/

⁵ See footnote 1.

⁶ Cardoso AP, Mirione E, Ernesto M, Massaza F, Cliff J, Haque MR and Bradbury JH, Processing of cassava roots to remove

cyanogens. *J. Food Comp. Anal.* 18: 451-460 (2005).

⁷ Banea JP, Bradbury JH, Mandombi C, Nahimana D, Denton IC, Kuwa N and Tshala Katumbay D, Effectiveness of wetting method for control of konzo and reduction of cyanide poisoning by removal of cyanogens from cassava flour. *Food Nutr. Bull.* 35: 28-32 (2014).

⁸ Banea JP, Nahimana D, Mandombi C, Bradbury JH, Denton IC and Kuwa N, Control of konzo in DRC using the wetting method on cassava flour. *Food Chem. Toxicol.* 50: 1517-23 (2012).

⁹ See footnote 1.

¹⁰ See footnote 1.

¹¹ Delhoune M, Mayans J, Calo M, Guyot-Bender C. Impact of cross-sectoral approach to addressing konzo in DRC. *Field Exchange*, No. 44, 50-54 (2012).

National and local actor's share of global humanitarian funding

Summary of report¹

Location: *Global*

What we know already: Emergency aid funding has risen tenfold in the last 14 years.

What this article adds: A recent review of national and local actors' share of global humanitarian funding demonstrates how conventional emergency aid money flows overwhelmingly to UN agencies, big western-based charities and the Red Cross / Red Crescent Movement. A tiny fraction is supplied directly to frontline charities in the affected countries. Four percent of the total number of emergency aid agencies received about 85 percent of the total funding reported. Current reporting and tracking of funding flows to national and local actors is severely limited, compromising transparency and accountability.

Recommendations to contribute to the World Humanitarian Summit 2016 discussions include development of a classification system for types of L/NNGOs and the nature of funding 'partnership' and humanitarian agency commitment to report funding flows.

Since 2010, the Local to Global Protection Initiative (L2GP) has published a number of studies of major humanitarian crises. All studies stress the importance of local and community led responses to protection threats but also demonstrate that genuinely locally-led responses are poorly understood and only very rarely supported by international humanitarian and protection actors. In the discussions leading up to the World Humanitarian Summit in 2016, locally-led humanitarian responses are gaining some attention with advocacy for increased funding flows to local and national non-governmental organisations (NGOs) and investment in local capacity building. A recent briefing note, 'Funding flows to national and local humanitarian actors,' supported by a set of online interactive visualisations², demonstrate current inequalities in the global humanitarian funding system. Some of the key observations are outlined below.

Data sources

There are two main sources of data on humanitarian funding: the Development Assistance Committee (DAC)³ of the Organisation for Economic Co-operation and Development (OECD)⁴ and the Financial Tracking Service (FTS)⁵ of UN OCHA⁶. Another annual publication, the Global Humanitarian Assistance report⁷, combines the two data sources adding its own research and analysis. Data reported to FTS is considerably smaller than the overall humanitarian response as reported by the GHA reports.

For 2013, the GHA data (coded from OCHA FTS sources) includes direct funding flows to

LNGOs and NNGOs from the UN pooled funds, Common Humanitarian Funds (CHF) and Emergency Response Funds (ERF), a few foundations, private individual and organisations, and nine DAC donors

How funding flows through the humanitarian system

Money within the humanitarian system usually flows through several entities before (parts of) it are realised as protection and assistance to the intended 'end user' – individuals in need. At the first level ('direct funding') most funding flows from an original donor (governmental or private) to UN agencies, international NGOs, UN pooled funds or the Red Cross/Red Crescent system. Only a small fraction of the funding from the original donors is received by national and local NGOs. This 'direct' funding channel is relatively well documented and a fair amount of information about donors and recipients and the size of this funding flow are available. From these 'first level recipients' (primarily international agencies and organisations) some funding is sub-contracted to other international organisations as well as national and local actors in order for them to carry out activities. However, when trying to track this 'indirect' funding through second, third or fourth levels of the humanitarian system, comprehensive information is not available. This is reflected in Figure 1, where blue arrows indicate the relative volume of the specific 'direct' funding flow, whereas the grey arrows are uniform in size as no reliable global level data are available regarding the actual or relative volume of these 'indirect' funding flows.

Global humanitarian funding 2000 – 2014

Humanitarian funding from governments, private donations, foundations and organisations dramatically increased from around USD two billion in 2000 to more than USD 22 billion in 2014. According to data as reported to the UN, the largest amounts of funding come from individual governments and the EU. Significant peaks in 2005 and 2010 were most likely related to donor responses to the tsunami in the Indian Ocean in December 2004 and the earthquake in Haiti in early 2010.

Figure 2 shows, in descending order, the 29 humanitarian agencies, governments and institutions, which received the most humanitarian funding in 2013 according to OCHA FTS; local and national NGOs (L/NNGOs) do not feature (an interactive version of this chart is available online⁸). They constitute less than 4% of the recipients of humanitarian funding reported to OCHA FTS but between them, they receive more than 85% of the total first level ('direct') funding from large institutional donors. Just 10% of the organisations receive more than 90% of the funding.

The Gini coefficient⁹ is a widely-used measure of inequality, which ranges from 0 (every person/organisation has the same amount of money) to 100 (one person/organisation got everything, the others nothing). The Gini coefficient for the humanitarian "economy" is about 95, showing a very high degree of market concentration¹⁰.

Direct funding to L/NNGOs

According to the Global Humanitarian Assistance (GHA) 2014 Report, 'direct' funding flows to national and local actors¹¹ (based in the countries where emergencies unfold) are only known to have received respectively USD 40 million and USD 9 million in 2013 (0.2%) out of the USD 22 billion. In the period between 2009 and 2013, L/NNGOs received 0.2% (USD 212 million) of the international humanitarian response. This represents 1.6% of the resources given to all NGOs (INGOs, NNGOs and LNGOs) in that period. Both in the period between 2009 and 2013, and considering 2013 only, NNGOs received about 80% of these funding flows while LNGOs only received about 20%. The very modest size

¹ Christian Els & Nils Carstensen. Funding flows to national and local humanitarian actors. May 2015.

http://www.local2global.info/wp-content/uploads/12gp_local_funding_final_250515.pdf

² http://www.local2global.info/wp-content/uploads/funding_flows.html

³ <http://www.oecd.org/dac/>

⁴ <http://www.oecd.org/>

⁵ <http://fts.unocha.org/>

⁶ <http://www.unocha.org/>

⁷ <http://www.globalhumanitarianassistance.org/>

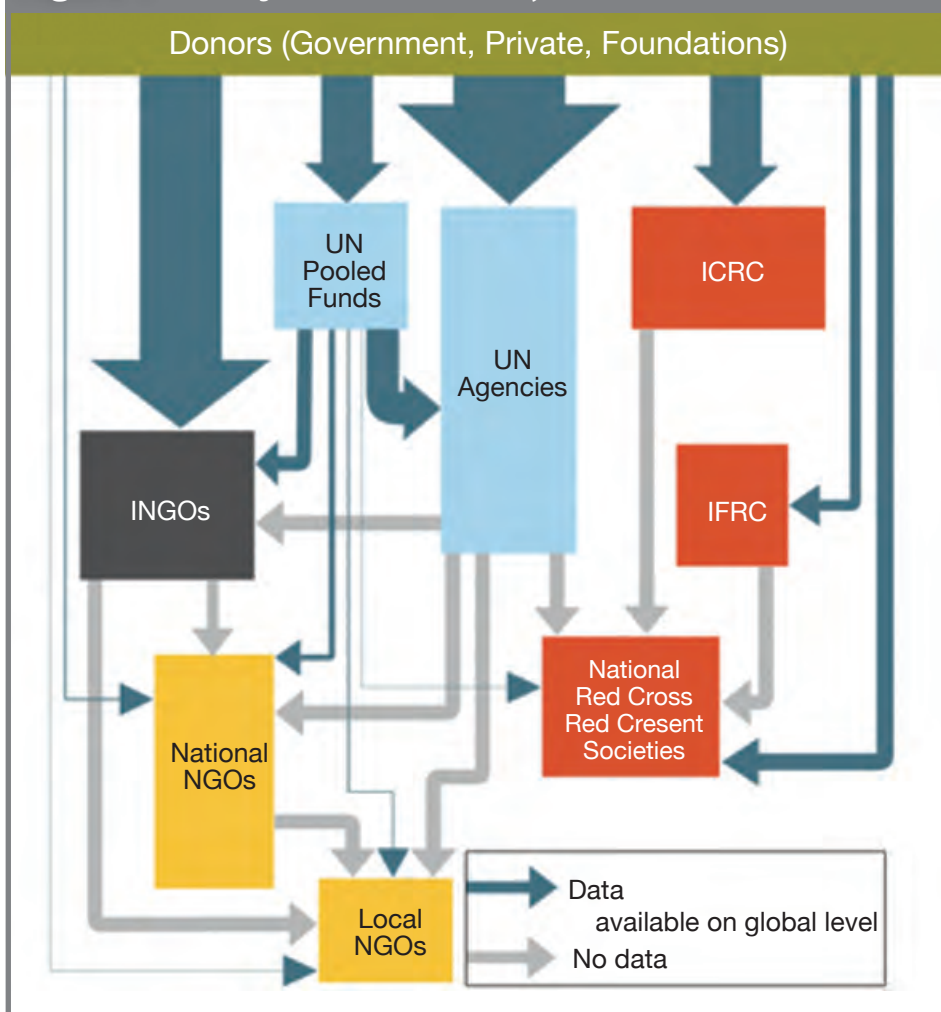
⁸ http://www.local2global.info/wp-content/uploads/funding_flows.html

⁹ https://en.wikipedia.org/wiki/Gini_coefficient

¹⁰ https://en.wikipedia.org/wiki/Market_concentration

¹¹ In this briefing note, the term 'local and national NGO s' or L/NNGOs refers to the collective of national and local NGOs as defined in GHA Report 2014 while the term 'local and national humanitarian actors' includes national Red Cross/Crescent Societies.

Figure 1 Funding flows in the humanitarian system



of local and national funding is a persistent feature of global humanitarian funding flows.

In 2013, almost 70% of the total known direct L/NGO funding came from the OCHA managed pooled funds ERFs and CHF. Based on the data submitted to OCHA FTS by ERFs and CHF, GHA's data of funding flows to local and national NGOs differs starkly from the data presented in the annual reports of these pooled funds. The magnitude of differences is approximately 100% and is due to different definitions of local/national NGOs.

In 2013 international donors and pooled funds channelled USD 1.2 billion directly to the Red Cross/Crescent System. Out of this funding, 72.5% were received by the ICRC, 16.0% by national societies, which are DAC members ('northern' national societies (N)), 7.1% by the IFRC, and 4.3% by national societies, which are not DAC members ('southern' national societies). These southern members worked in a similar way to international NGOs by implementing projects abroad (3.4%), or worked within the country in which they are based (0.9%).

Indirect funding to L/NGOs

UN agencies

The largest multilateral first-level recipient of humanitarian funding is WFP, who worked with 1162 national NGOs and community based organisations in 2013, who in turn distributed approximately one third of the 3.2 million metric tons of food commodities in that year. WFP has no data available on how much of its annual humanitarian budget is made available for na-

Figure 2 First level recipients of international humanitarian funding

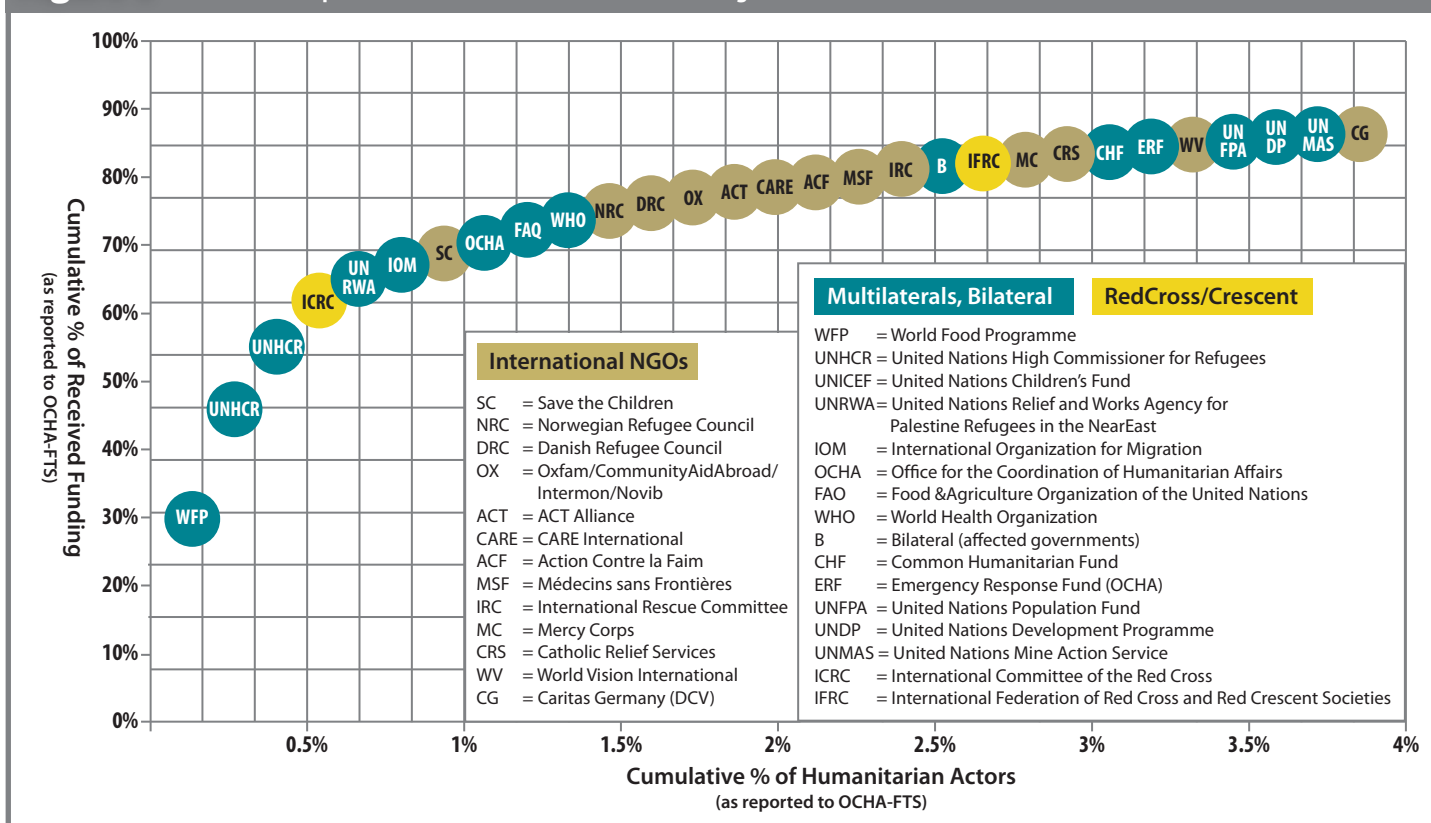
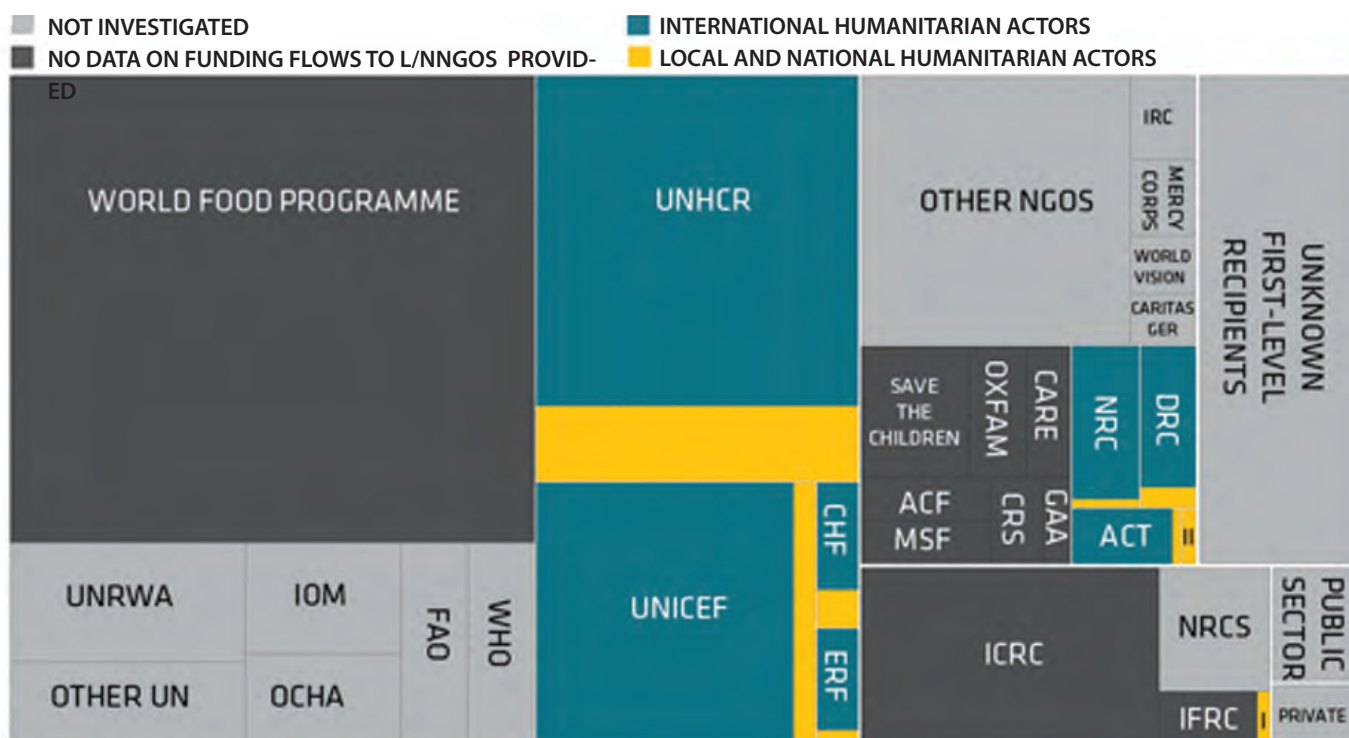


Figure 3 Available data on funding flows to local and national humanitarian actors



Abbreviations: I = southern national red cross/crescent organisations, II = direct funding to local and national INGOs by DAC donors and private organisations. NRCS = National Red Cross and Red Crescent Societies, GAA = German Agro Action/Welthungerhilfe.

Source: OCHA FTS, GHA2014 report, UNICEF, DRC, NRC, ACT Alliance and UNHCR annual report

tional and local NGOs but suggests that such data could be available after activating its new financial tracking systems later in 2015.

UNHCR publishes figures on funding flows to local and national humanitarian actors. In 2013, USD 389 million (18.7 %) were allocated to 567 local and national humanitarian actors.

While UNICEF does not officially publish funding flow data, data was made available: in 2012, USD 63.5 million (or 7.6% of its annual budget) went towards funding 595 national and local humanitarian actors, which have a partnership agreement with UNICEF. Out of this amount, USD 3.4 million went to national Red Cross/Crescent Societies. UNICEF also provides funding to L/NNGOs which work under service providers contracts (no data available on these disbursements).

INGOs

Ten of the largest international NGOs were asked to report on their funding flows to national and local NGOs. Only three of the INGOs/alliances provided any data on the amount of funding they channelled to local and national NGOs: The Danish and Norwegian Refugee Council (DRC and NRC) and the ACT Alliance. In 2013, DRC spent USD 17.3 million on 150 different local and national NGOs which amounts to 5.6% of its annual humanitarian budget. The NRC spent USD 8.6 million on L/NNGOs which amounts to 2.66% of its annual humanitarian budget. The ACT Alliance could provide partial data for 34.8% of a 100 million USD budget. Of this, USD 6.7 million (19.3%) was channelled to 24 local and national NGOs.

ICRC/IFRC

ICRC and IFRC could not provide data on internal funding flows/flows to national societies.

Conclusions

Funding flows to national and local organisations appear very modest compared to the crucial importance of local responses. The current reporting and tracking of funding flows to national and local actors is so limited and so lacking in terms of quality, consistency and depth of detail, that it is hardly possible to establish a single overall actual figure or percentage with a reasonable degree of certainty. Furthermore, there is little information on the nature and quality of the partnerships and collaboration with L/NNGOs. Given the importance of local actors in humanitarian crises throughout the world, this finding in itself could indicate a failure in transparency and accountability for the global humanitarian system as a whole.

Suggestions currently under discussion in global fora include that a minimum of 15% of donors, UN agencies and INGOs' humanitarian funding should be directed to NNGOs; or 20% of all global funding to go to local organisations by 2020; or country level pooled funds (CHF/ERF) should allocate 50% of their funds to national NGOs. Based on the findings of this report, the authors make a number of further recommendations for consideration during the dialogue leading to, and at, the World Humanitarian Summit 2016:

- All humanitarian actors (donors, international and national/local agencies and NGOs) should make detailed data about

funding flows available in a form, which is transparent and universally recognizable.

- A sufficiently nuanced and universally agreed classification system for types of L/NNGOs and the nature of the funding collaboration ('partnership') is required in order to improve the ability to analyse more qualitative aspects of future trends.
- Relevant data collecting and processing entities such as DAC, OCHA FTS, GHA and the International Aid Transparency Initiative (IATI) may, in cooperation with relevant local and national authorities and NGO coordination fora, lead in developing and agreeing universally replicable reporting criteria, classifications and tracking modalities.

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A series of interactive graphs and figures by Christian Els (who worked on the visualisation graphics) and Nils Carstensen are jointly published with IRIN as a companion to the L2GP Protection study on humanitarian financing. Graphics are available at: http://www.local2global.info/wp-content/uploads/funding_flows.html

For further work by IRIN on the humanitarian economy, visit: <http://newirin.irinnews.org/the-humanitarian-economy>, including a new report on reforming the humanitarian financing system, <http://www.irinnews.org/report/101694/it-s-all-about-the-money>

¹² <http://www.aidtransparency.net/>

Linking agriculture with nutrition within SDG2: making a case for a dietary diversity indicator

By Anna Larrey



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Main Messages

- Undernourishment and undernutrition, including micronutrient deficiencies, have decreased in the last 20 years, but are still major challenges.
- Over-weight and obesity are increasing and are now prevalent in most countries, even those where undernutrition persists.
- Trends in the global food supply – namely heavy investment in cereals and underinvestment in non-staples – have created a situation where the cost of a healthy diet can be very high and the incentives to eat highly processed foods of minimal nutritional value are strong.
- These trends have contributed to the “perfect storm” for the double burden of malnutrition which is now common-place.
- Tackling these issues requires strengthening the links between agriculture, a healthy and affordable food supply, diet quality, and nutrition.
- A new focus on diet quality in high level political discourse is key to strengthening these links.
- Indicators of diet diversity are essential for assessing diet quality; as such they should be included in the SDG on food security and nutrition.

The essence of this article featured as a key note presentation in the 5th annual research conference of the Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH), at the London School of Hygiene and Tropical Medicine, London, on the 3rd and 4th of June, 2015¹.

What does malnutrition look like in 2015?

While most of the world's hungry people are still in South Asia, followed by East Asia and sub-Saharan Africa, Asia's share in terms of absolute numbers has decreased markedly, while that of Sub Saharan Africa's has considerably increased. Overall, the prevalence of undernourishment in developing countries has declined since 1990; however the rate of decline has slowed in recent years.

In line with undernourishment or hunger² trends, undernutrition (stunting and wasting) is also declining, albeit too slowly. Stunting and underweight remain high in many countries, especially in Africa, as do micronutrient deficiencies, most notably in iodine, iron and vitamin A.^{3,4}

At the same time that these trends in undernutrition persist, overweight and obesity are rising so much so that in many countries, undernutrition, micronutrient deficiencies and overweight and obesity now co-exist and present

within the same populations and in some countries, in the same households.

Nutrition transition and global shifts in diet quality

What is driving this “double burden of malnutrition”? Often referred to as the “nutrition transition”, the causes are complex and linked to rapid socioeconomic, demographic and technological changes, most of which are, themselves, linked to globalisation. These include changes in technology regarding how food is processed, marketed and prepared and changes in meal patterns. The end result is major shifts in diet patterns, characterised by increased total energy intake. While the latter includes increased intake of animal source foods and vegetable oils, as well as a small increase in global fruit and vegetable intake, most of the foods that people are eating more of are cereal-based.

Indeed between 1965 and 1999 in developing countries, growth in cereal production was over 100%, outpacing population growth; gains in

pulse production during this same period remained relatively low, averaging well below 50%. The low production of pulses can be considered a rough indicator for all kinds of non-staple foods including fruits and vegetables, none of which have increased at anywhere near the rate of cereals, namely because agricultural research and other types of investment during this period was strongly biased towards cereal production.^{5,6}

Consequent declines in cereal prices have been followed by dramatic increases in the price of non-staple foods, effectively raising the “price” of diet quality and contributing to the aforementioned persistence of vitamin and mineral deficiencies. For example, in Bangladesh, prices for cereals, non-cereal plant foods and animal source foods were roughly equal in 1975. By 1996, cereal prices had decreased substantially while prices for non-staple foods had increased. The end result, especially for poorer families, was an increase in the percentage share of household food expenditures on non-staple foods, with a concomitant decrease in actual intake of those foods. The implication is that households will spend more of the food budget on non-staple foods, but these foods comprise only a modicum of total energy intake⁷.

Until the year 2000, cereal prices were in decline, assuring that at very least, the world's poor were assured in terms of total energy intake. However in the last decade, cereal prices have themselves begun to rise, increasing food budget expenditures on staples at the expense of whatever small amounts of higher nutrient foods were being consumed. The end result is that in recent years, the “cost” of diet quality is higher than ever.

Revising conventional food security paradigms

As previously mentioned, today's global food systems have been shaped by trends in agricultural research and investment over the past thirty years. These trends are in line with conventional food security paradigms which put the focus squarely on physical food availability at a national or sub-national level, usually assessed in terms

¹ <http://www.lcirah.ac.uk/5th-annual-conference>

² Undernourishment means that a person is not able to acquire enough food to meet the daily minimum dietary energy requirements, over a period of one year. FAO defines hunger as being synonymous with chronic undernourishment. For more information on trends, see <http://www.fao.org/hunger/en/>

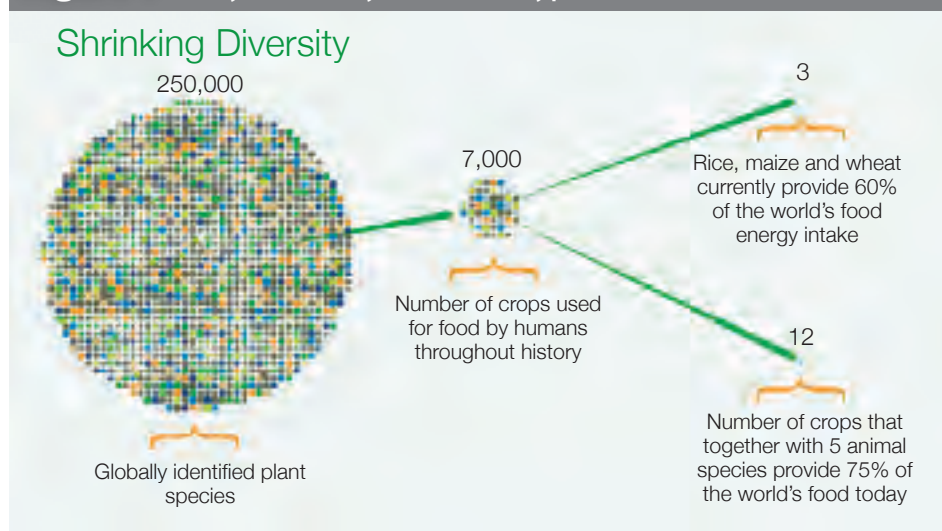
³ Levels and Trends in Child Malnutrition: UNICEF, WHO, World Bank Joint Estimates 2014. Available online as of June 24, 2015 at: http://www.data.unicef.org/corecode/uploads/document6/uploaded_pdfs/corecode/LevelsandTrendsMalNutrition_Summary_2014_132.pdf

⁴ International Food Policy Research Institute (2014). Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition. Washington, DC.

⁵ Pingali, P. (2015). Agricultural policy and nutrition outcomes - getting beyond the preoccupation with staple grains. Food Security 7:583-591.

⁶ Bouis, H., Eozenou, P., Rahman, A. (2011). Food prices, household income, and resource allocation: Socioeconomic perspectives on their effects on dietary quality and nutritional status. Food and Nutrition Bulletin, vol. 32, no. 1 (supplement). The United Nations University.

⁷ See footnote 5.

Figure 1 Very little diversity in current dietary patterns

Source: 'Dimension of Need: An atlas of food and agriculture'. FAO, 1995

of net food production and cereal stock levels. While national food availability is an obvious pre-requisite for total food security, it is not the whole story, as it does not necessarily reflect what foods households are growing and able to afford, let alone what individuals are actually eating. These dimensions of food security are typically referred to as "household food access" and "individual utilisation".

Tackling malnutrition in all its forms requires revision of conventional food security paradigms to better include these dimensions. Doing so requires revisiting the cereal-centric support policies that have characterised the last three decades of agricultural policy in favour of an investment agenda that promotes production diversity. Figure 1 shows just how far we have to go in terms of achieving this goal. To date, there are over 250,000 globally identified, edible plant species; historically, 7,000 of these have been used for food by humans. Currently, three crops – rice, maize and wheat – provide over 50% of the world's energy intake, and 12 (including five animal species) provide 75%.⁸ No wonder there is so little diversity in today's diets.

Prioritising diet diversity: a key indicator for improving diet quality

How then do we meet the challenge of increasing the nutrition sensitivity of today's global food system? How can we lower the "price" of diet quality in the hopes of increasing nutrient adequacy and decreasing excessive energy intake?

A stronger, more explicit focus on diet diversity is now increasingly recognised as an important strategy in achieving these goals. Indicators of diet diversity are typically constructed from scores for individual food consumption which are computed based on information on the number of different food groups from which the individual consumed over a recent short period of time. Diet diversity scores have been repeatedly validated as having a robust and consistent positive statistical association with ade-

quacy in individual micronutrient consumption. In other words, the higher the diet diversity score for an individual, the more likely that individual has a diet which meets his or her vitamin and mineral requirements.⁹

Associations have also been reported between diet diversity and other outcomes, including cognitive function, all-cause mortality in the elderly^{10,11} and wasting in children.¹² Diet diversity is relative simple to measure and relevant across a variety of cultures. Moreover, all national food-based dietary guidelines include this dimension.

In July 2013, FAO and partners announced a new development in diet diversity scores: consensus on a threshold metric to classify women as having high or low diet diversity. Referred to as the MDD-W or Minimum Dietary Diversity for Women, this indicator measures the percent of women, 15-49 years of age, who consume at least 5 out of 10 defined food groups. The development of the MDD-W offers a unique opportunity to systematically survey women's diet diversity, thus facilitating assessment of diet quality at population level.

Leveraging current opportunities

Jointly organised by the FAO and the WHO, the Second International Conference on Nutrition (ICN2) was an inclusive inter-governmental, high-level ministerial conference on nutrition. The primary outcome documents were the Rome Declaration on Nutrition and an accompanying Framework for Action¹³. Both documents place strong emphasis on the role of food systems in improving nutrition, in particular through the adoption of policies and legal frameworks, which enhance the availability and accessibility of safe and nutritious foods and which ensure healthy diets throughout the life course (Commitment 7 of the Rome Declaration). Specific recommendations from the Framework for Action are as follows:

- Integrate nutrition objectives into

- agriculture and food policies
- Promote diversification of crops
- Improve storage....reduce seasonal food insecurity, food and nutrient loss and waste
- Develop international guidelines on healthy diets
- Gradual reduction of saturated fat, sugars, salt/sodium and trans-fat from food and beverages

These messages are reiterated in Goal 2 of the Sustainable Development Goals (SDGs): *End hunger, achieve food security and improved nutrition and promote sustainable agriculture*.

These high level political documents offer unprecedented opportunities to advocate for the prioritisation of nutrition within agriculture. As such, they also offer an unprecedented opportunity to advocate for a stronger focus on diet quality as a way to measure progress in achieving food security that goes beyond the conventional focus on cereal stock levels, to assure increased production diversity with implications for the food supply and nutrition.

The proposed indicators for this SDG - proportion of the population below the minimum level of dietary energy consumption; prevalence of anaemia in women; and prevalence of wasting and stunting in children under 5 – do not capture this consideration.

Given this situation, and the subsequent risk of continuing to fall short of our goals for improving food security and nutrition for all, for reducing the triple burden of malnutrition, and for improving the quality of the food supply for millions of people worldwide, it is imperative that we leverage the precedent set during the ICN2 to advocate for inclusion of the MDD-W as an indicator for SDG 2. Simply put, diet diversity underpins a healthy diet. As such, an indicator of diet diversity like the MDD-W should be used to promote agricultural policies that go beyond "business as usual" and look towards a more nutrition-sensitive paradigm that prioritises production of diverse, nutrient-rich foods for all.

For more information on the MDD-W, visit: <http://www.fantaproject.org/monitoring-and-evaluation/minimum-dietary-diversity-women-indicator-mddw>

⁸ Food and Agriculture Organisation, 1995. Dimensions of need - An atlas of food and agriculture, FAO, 1995. <http://www.fao.org/documents/card/en/c/e9a6a212-d7d5-5e06-b104-230a52a56ca9/>

⁹ Ruel, M., J. Harris, and K. Cunningham. 2013. "Diet Quality in Developing Countries." In *Diet Quality: An Evidence-Based Approach*, Volume 2. V.R. Preedy, L.-A. Hunter, and V.B. Patel (eds.), 239-261. New York: Springer.

¹⁰ Chen, R.C., Chang, Y.H., Lee, M.S., Wahlquist, M. (2011). Dietary quality may enhance survival related to cognitive impairment in Taiwanese elderly. *Food Nutrition Research*. 2011;55

¹¹ Lo, Y.T., Chang, Y.H., Wahlquist, M., Huang, H.B., Lee, M.S. (2012). Spending on vegetable and fruit consumption could reduce all-cause mortality among older adults. *Nutrition Journal* 11:113.

¹² Amugsi, A., Mittelmark, M.B., Lartey, A. (2014). Dietary Diversity is a Predictor of Acute Malnutrition in Rural but Not in Urban Settings: Evidence from Ghana. *British Journal of Medicine & Medical Research* 4(25): 4310-4324.

¹³ <http://www.fao.org/about/meetings/icn2/en/>

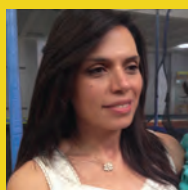


Blood pressure measurement as part of the Mashaghra campaign

Quentin Bruno, Lebanon, 2015

Management of hypertension and diabetes for the Syrian refugees and host community in selected health facilities in Lebanon

By Maguy Ghanem Kallab



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Health. She has 10 years of professional experience in the public health field.

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Location: *Lebanon*

What we know: Non-communicable diseases are a major and growing public health problem in low and middle income countries; this is relevant for protracted crisis situations.

What this article adds: In August 2014, Help Age International and partners began a clinic-based health project (prevention and management) in four regions of Lebanon targeting Type II Diabetes and hypertension in the Syrian refugee population and the vulnerable Lebanese host communities aged over 40 years. From November to May 2015, 1,825 patients were enrolled (two-thirds were Syrian refugees); 46% with hypertension, 27% with diabetes, and 27% with both. It has been a successful collaboration amongst partners; coordination and communication proved critical. Challenges include insecurity, transportation costs and workload.

Non-communicable diseases (NCDs) constitute a major global public health problem expected to evolve into a staggering economic burden over the next two decades¹. The upsurge in NCDs is related to the epidemiological transition from communicable to NCDs, demographic change related to the increased longevity, urbanisation and globalisation that has resulted in exposure to 'junk' food, increased consumption of alcohol, less physical activity and an overall unhealthy lifestyle.

According to the World Health Organisation (WHO), the four common NCDs are cardiovascular diseases (CVD), cancers, diabetes and chronic lung diseases. These diseases share common modifiable risk factors including smoking, unhealthy diet, physical inactivity and alcohol abuse. In 2012, cardiovascular disease was the leading cause of NCD deaths, causing 17.5 million deaths worldwide². Two important CVD risk factors CVDs are hypertension (HTN) and diabetes mellitus (DM) that are increasing in epidemic proportions globally. HTN affects about one billion people world-

wide and is expected to reach 1,561.56 billion by 2025³. DM affects 366 million people around the world and according to the International Diabetes Federation, one in 10 people will suffer from DM in 2030⁴.

The burden of NCDs is rapidly yet disproportionately increasing, with the highest impact in low and middle income countries (LMIC). In 2004, NCDs accounted for 60% of the 59 million deaths world-wide⁵, rising in 2012 to 68% of the 56 million global deaths⁶. Nearly three quarters of NCD deaths occur in LMICs; about 48% of deaths occur before the age of 70 years⁷. Furthermore, it is estimated that by 2030, NCDs in the LMICs will be responsible for three times as many disability adjusted life years (DALYs) and nearly five times as many deaths as communicable diseases, maternal, perinatal and nutritional conditions combined⁸.

In the Arab countries, data for NCDs and their risk factors are limited but there is clear evidence that risk factors for the development of NCDs are on the rise. According to WHO, physical activity in the Mediterranean region is very limited and

¹ Bloom DE, Cafiero ET, Jane-Llopis E, Abrahams-Gessel S, Bloom LR, et al (2011). The global economic burden of non-communicable diseases. Geneva: World Economic Forum. p48

² World Health Organisation (2011). Global status report on non-communicable diseases 2010. Geneva

³ P. M. Kearney, M. Whelton, K. Reynolds, P. Muntner, P. K. Whelton, and J. He, "Global burden of hypertension: analysis of worldwide data," *The Lancet*, vol. 365, no. 9455, pp. 217–223, 2005

⁴ N. Unwin, D. Whiting, L. Guariguata, G. Ghyoot, and D. Gan, Eds., *Diabetes Atlas*, International Diabetes Federation, Brussels, Belgium, 5th edition, 2011

⁵ Global Burden of Disease 2004 Update (published 2008) http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf

⁶ See footnote 2

⁷ See footnote 2

⁸ See footnote 2

⁹ WHO- Global Health Observatory Data Repository, Prevalence of insufficient physical at <http://apps.who.int/gho/data/view.main.2482?lang=en>

¹⁰ Abdul Rahim, H., Sibai, A., Khader, Y., Hwalla, N., Fadhil, I., Al Siyabi, H., Mataria, A., Mendis, S., Mokdad, A., Husseini, A., 2014, Non-Communicable Diseases in the Arab World, *Lancet*, 383: 356-367



the region ranks the highest for sedentary lifestyle among school-going adolescents (87.5%) and second highest for adults 18y plus (31.1%)⁹. Low physical activity in the Arab region has been attributed to the lifestyle changes that accompanied urbanisation and the cultural constraints of the conservative communities where women are more likely to stay home¹⁰. Except for tobacco smoking, between 1990 and 2010, attributable DALYs of all leading NCD risk factors increased in the Arab world and obesity reached an alarming stage¹¹. In Syria, WHO estimates that NCDs accounted for 46% of total deaths of which 28% are attributed to CVD¹². A survey conducted in Aleppo in 2006 involving 1168 adults aged 25 years plus showed a HTN prevalence of 45.6% with 15.6% for DM¹³.

In Lebanon, NCDs are rising rapidly and the gravity of NCDs relates to the prevalence of risk factors as well as the proportion of undiagnosed patients. According to WHO, NCDs account for 85% of all deaths in Lebanon of which 47% relate to CVD and 4% to DM¹⁴. A chronic diseases risk factors surveillance conducted in 2008 among a representative population aged 25-64 years old showed that 13.8% of the surveyed population were already diagnosed with HTN and 5.9% affected with DM. Disease prevalence increases with age; for the 55-64y age group, HTN is estimated at 41.6% and DM at 20.3%. Moreover the relatively high percentage of undiagnosed cases is alarming with 12.7% of people having high blood pressure that they did not know about¹⁵. The problem of undiagnosed diseases was also reported in a survey conducted in 2012-2013 among healthy Lebanese aged 40 years plus where 15% of the respondents had elevated blood pressure and around 10% had elevated random blood sugar¹⁶. The Ministry of Public Health in Lebanon (MOPH) devotes a considerable amount of its budget to subsidise chronic medications that have been distributed free of charge for the last 18 years. In 2012, the MOPH and WHO initiated an NCDs screening programme at primary health care level for early detection and management of HTN and

DM cases. Nowadays MOPH/WHO are joining efforts with various stakeholders for the implementation of a national NCD strategy.

Situation of Syrian refugees in Lebanon

After four years of conflict, bombardments, killing and displacement, the Syrian crisis is turning into a complex protracted humanitarian crisis with millions of displaced people living in poor conditions, facing illnesses and death on a daily basis. In Lebanon, up until June 10th 2015, 1,174,690 Syrian refugees were registered with UNHCR and many more are awaiting registration (suspended since May 6th 2015 as per the Lebanese government directives)¹⁷. A vulnerability assessment survey conducted by UNHCR, UNICEF and WFP in 2014 among 1,747 Syrian refugee households showed that despite the continuous assistance provided, the situation of Syrian refugees in Lebanon was deteriorating with half of surveyed respondents below the extreme poverty line for Lebanon (3.84US\$/day). Food, rent and health care constitute the main expenditures of 77% of the Syrian refugees. Of surveyed households, 69% benefited from food vouchers and for 41%, these vouchers are the main source of food. Nevertheless the most consumed food groups had low nutrient values and the diversity of food had decreased compared

to the previous year¹⁸. Significant variation of diet is associated with the financial status, location and type of shelter and household size¹⁹. Syrian refugees adopted different coping strategies including reduced number of meals and reduced portions, reduced spending on education and health and engaging children in labour²⁰.

For health, more than half of surveyed households articulated a need for greater health support either for chronic diseases or for maternity care. The high cost of health services was noted as the main barrier for management of health problems²¹. A study conducted in 2013 by Caritas Lebanon Migrant Centre and Johns Hopkins Bloomberg School of Public Health, among 210 older refugees in Lebanon showed that 79% of them did not seek health care because of its high cost and 87% complained of the very high cost of medication²². Many refugees used to cross the border to get their chronic medication but with the implementation of the legal measures at the border in 2015, this is becoming too difficult²³. For 66% of older Syrian refugees, their health conditions deteriorated in Lebanon and more than half of them report poor health status²⁴.

Restricted mobility linked to limited legal status constitutes a major source of insecurity, fear and anxiety for the Syrian refugees. By the end of 2013, the Norwegian Refugee Council conducted an assessment among 1,256 Syrian refugees enquiring about the legal component of residency in Lebanon. The survey showed that 89% of respondents exhibited fear of arrest or mistreatment at checkpoints whilst travelling to UNHCR registration sites and trying to access health care services²⁵.

HelpAge project in Lebanon

A survey conducted by HelpAge International (HelpAge) and Handicap International in 2013 among 3,202 Syrian refugees in Jordan and Lebanon showed that 15.6% of the total surveyed population and 54% of older people are affected by at least one chronic disease and that they are facing barriers for proper disease management including difficult access to health care and lack of medications for chronic conditions. Cost was a key element²⁶. In August 2014, HelpAge launched a health project in Lebanon in partnership with Médecins du Monde (MdM), Amel Association

¹¹ See footnote 10

¹² World Health Organisation-Non Communicable Diseases (NCD) Country Profiles, 2014 Syrian Arab Republic 7

¹³ Radwan Al Ali, R., Rastam, S., Fouad, F., Mzayek, F., Maziak, W., 2011, "Modifiable Cardiovascular Risk Factors Among Adults in Aleppo, Syria" International Journal of Public Health, 56 (1) 8

¹⁴ WHO, Non communicable diseases profile Lebanon, 2014

¹⁵ Sibai AM and Hwalla N. WHO STEPS Chronic Disease Risk Factor Surveillance: Data Book for Lebanon, 2009. American University of Beirut, 2010 (http://www.moph.gov.lb/Publications/Documents/WHO_Databook_Lebanon_2010_final.pdf).

¹⁶ Yamout, R., Adib, S., Hamadeh, R., Freidi, A., Ammar, W., 2014, Screening for cardiovascular Risk in Asymptomatic Users of the Primary Health Care Network in Lebanon, 2012-2013, Preventive Chronic Diseases, 11: 140089

¹⁷ <http://data.unhcr.org/syrianrefugees/country.php?id=122> accessed June 23rd 2015

¹⁸ Syrian Refugee Response: Vulnerability Assessment of the

Syrian Refugees in Lebanon 2014

¹⁹ Jonathan Strong, Christopher Varady, Najla Chahda, Shannon Doocy, Gilbert Burnham. 2015. Health status and health needs of older refugees from Syria in Lebanon. Conflict and Health 9:12 doi:10.1186/s13031-014-0029-y 14. See also footnote 18.

²⁰ See footnote 18.

²¹ See footnote 18.

²² See footnote 19.

²³ See footnote 19.

²⁴ See footnote 19.

²⁵ The Consequences of Limited Legal Status for Syrian Refugees in Lebanon, NRC Lebanon Field Assessment: North, Bekaa, South, March 2014.

²⁶ Hidden victims of the Syrian crises: disabled, injured and older refugees copyright 2014 HelpAge International and Handicap International & UNHCR 2014. Health access and utilisation survey among non-camp Syrian refugees. Available at <http://data.unhcr.org/syrianrefugees/download.php?id=6029>

International (AMEL), Young Men's Christian Association, Lebanon (YMCA) and the American University of Beirut, Centre for Public Health Practice (AUB/CPHP). The project intends to address the major public health issues of Type II DM²⁷ and HTN in the Syrian refugee population and the Lebanese host communities, and targets adults from the age of 40. It aims at improving the management of DM and HTN at primary health care level through three pillars: 1) provision of appropriate medical care for HTN and DM, 2) capacity building of local staff with focus on the needs and vulnerability of older adults, and 3) advocacy for specific measures to account for the vulnerabilities of older people in the humanitarian response.

Provision of services

Following a baseline needs assessment and a pilot phase, the project was planned in eight health facilities (five health centres and three mobile units) run by AMEL in four regions in Lebanon that foster underprivileged refugee and host community populations (North Bekaa, West Bekaa, Tyr and Beirut). Pre-project, these facilities were providing basic NCDs care (mostly repeat prescriptions) without active involvement in their proper diagnosis and management. Some of these facilities were dedicated to mother and child care.

At the beginning of the project, the eight health facilities were provided with basic equipment for NCD management at primary health care level (blood pressure machine, stethoscope, weight/height scale, measuring tape, glucometer +lancet +strips), while the health staff received a refresher training on diabetes and hypertension management.

The project offers a comprehensive portfolio of services that cover promotion, prevention and management of DM and HTN. All patients above 40 years of age visiting the health facilities are screened for DM and HTN according to WHO guidelines; people at risk or diagnosed

with any of these diseases will receive clinical examination²⁸, laboratory tests, chronic medications and necessary information about disease management, preventive measures, medication compliance and medical follow up. Information is provided within awareness/informal education sessions.

The clinical assessment is performed by a General Practitioner (GP) and when needed, patients are referred to a specialist -usually a cardiologist. Nominal fees (2000LBP-3000LBP) are paid for this service at the health care centre while it is free of charge in the mobile unit. Medications for chronic conditions are provided free of charge in compliance with the MOPH list for chronic medications and WHO recommendations. Medications are provided either on a monthly basis or quarterly for stable patients, those with disabilities and those aged 60 plus with reduced mobility, in order to minimise transportation issues.

Selected laboratory tests, recommended by WHO for the diagnosis and management of DM and HTN, are prescribed at the health facilities (such as HBA1C tests and lipid profiles). To save the patients transportation costs and trouble (especially for disabled and older people), blood samples are collected on site and sent to a nearby laboratory for analysis. Alternatively, patients are directly referred to a laboratory that has a contract with AMEL/HelpAge. The laboratories do not charge the patients but are reimbursed by AMEL/HelpAge on submission of monthly financial reports. At the mobile units, on-site blood tests for sugar, HBA1C, cholesterol and triglycerides are performed for those unable to reach the clinics.

Patient education is offered in the health centres under three modalities; 1) one-on-one, during the brief time of patient enrolment, 2) brief informal awareness sessions given in the waiting areas, 3) formal sessions scheduled every two weeks (usually 30-45 minutes long), followed

by a questions/answers session. In the mobile units, nurses and social workers carry out informal educational and awareness raising sessions for people who gather around the mobile unit whenever the time and workload permits. Patient education and awareness sessions include information about HTN or DM or both. Items discussed include lifestyle modifications (general information on tackling common modifiable factors noted by WHO, such as smoking, alcohol, exercise and diet), and the importance of compliance to medications and follow-up. One to one specific dietary counselling is not provided.

Capacity building

A series of training was conducted throughout the project on different topics as per identified needs. AMEL staff involved in the direct implementation of project services received training on the management of HTN and DM by the Lebanese Cardiology Society and the Lebanese Diabetes Society respectively. The training was followed by one to one training at centres level by the AMEL medical coordinator to foster the implementation of WHO guidelines and ensure quality of care.

Training on drugs use and management was conducted by YMCA for all twenty AMEL centres with on-site follow up and monitoring for the centres included in the project. A training workshop on data collection methods and tools was conducted by the American University of Beirut (AUB/ Centre for Public Health Practice (CPHP) to AMEL staff highlighting the basic principles of evaluative research and data collection with much emphasis on the ethical aspect of data collection, including the concepts of respect, beneficence, social justice and informed consent. Training on accountability was provided by HelpAge to all partners with a focus on the practical application of accountability commitments: participation, transparency, complaint handling and feedback, staff competency, M&E and programme quality. Moreover, AMEL staff were consulted on and involved with the design and planning of activities and the development of monitoring tools and an evaluation plan. At national level, training on the specific needs and vulnerabilities of older adults with a focus on HTN and DM was conducted by YMCA for 285 health staff and social workers practicing at primary health care level. Besides the nutritional information and messages about specific dietary measures recommended for diabetic and/or hypertensive patients, training on a mini-nutritional assessment for older people²⁹ was given within the comprehensive geriatric assessment (due to capacity limitations and workload, the mini-nutrition assessment was not implemented in the NCD project).

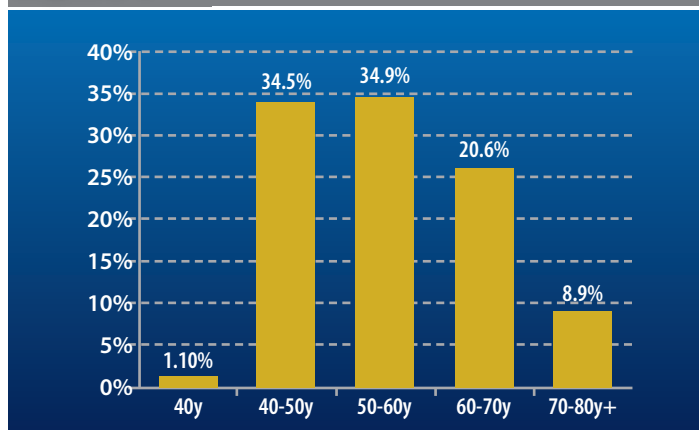


Receiving medications

²⁷ Insulin dependent (Type I) diabetes is not managed within this project.

²⁸ This included Body Mass Index (BMI) and waist circumference to assess risk of disease.

²⁹ This involved a screening tool that captures anthropometry (BMI, MUAC), weight loss history, social factors, mobility and psychosocial and dietary characteristics to generate a malnutrition risk score.

Figure 1 Distribution by age category of adults screened in eight health facilities from November 2014 to May 2015

A specific session on nutritional needs of older people was also conducted in the training. The topics tackled included nutritional assessment at old age, malnutrition at old age and associated risk factors, symptoms and diseases related to malnutrition at old age, food pyramid for older people, nutritional needs at old age and some tips about nutritional rehabilitation and community support programmes.

Outcomes

Inclusion of older people

This project has proactively supported the understanding and capacity of humanitarian actors to implement older person and disability inclusive humanitarian programming. Older people needs were highlighted on many occasions among humanitarian actors, governmental bodies, United Nations (UN) agencies, international non-governmental organisations (INGOs) and local NGOs.

Enrolment

An average of 300 new patients is enrolled every month in the project and 350 patients are followed up every month for the management of their HTN or DM. A total of 2,447 adults aged 40 and above were screened for HTN and DM within a period of seven months, 67% of whom were females and 33% males (see Figures 1 and 2). From November until the end of May 2015, 1,825 patients were enrolled in the programme; 66% were Syrian refugees and 34% vulnerable Lebanese. HTN accounted for 46% of the cases, DM accounted for 27% of the cases and the remaining 27% were affected by both diseases.

Source: AMEL monthly reports

In accordance with the disease management schedule, patients receive a medical follow up visit every six months. Between November 2014 and May 2015, 22% of the recruited patients have had two visits, 10% three medical visits and a small number of uncontrolled cases had additional medical follow up. More than 90 awareness sessions about HTN and DM were conducted from December 2014 to May 2015 promoting healthy lifestyle and compliance to the medical treatment. However, only a few patients reported weight reduction and initiation

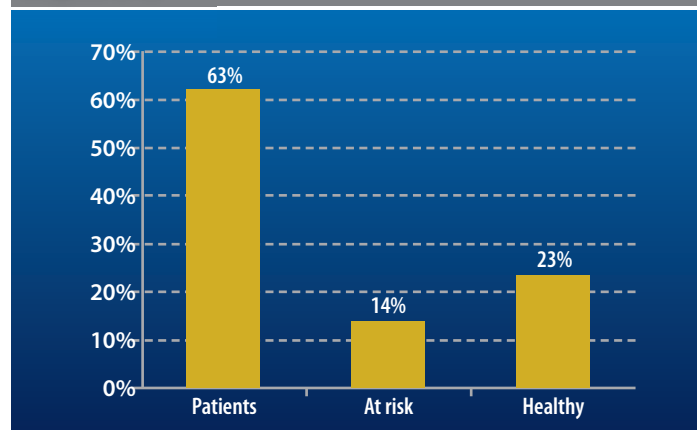
of physical activity following the awareness sessions. Furthermore, both staff and patients had many concerns about the recommended diet since most beneficiaries consumed large amounts of bread (high in salt) and sugar; the main issue was that both the Syrian refugee and vulnerable host community consumed the cheapest type of food rather than the most nutritious or diverse. Diet diversity seemed associated with region, type of shelter and economic situation. Syrian refugees staying at the informal tented settlements in the Bekaa Valley reported high consumption of potato, rice, sugar and tea. Those residing in rented houses in West Bekaa were more likely to eat meat and cereals. Vegetables, fruits and fish were reported to be high cost hence not affordable even for the host communities. There was no communication between the NCD programme and the WFP voucher scheme.

Exit interviews conducted among 59 beneficiaries during the month of March showed an overall high patient satisfaction with the programme, especially the opportunity to obtain medications for free, for being given the chance to identify disease through screening, and to be able to access lab tests free of charge. Focus group discussions with the health facilities personnel revealed the overall appreciation of the staff for the project, especially in that it provided the underserved population with a disease screening opportunity and management.

Information about the project was spread in the catchment areas of the involved health facilities including informal tented settlements through flyers and direct contact with key people such as “shawish”, “moukhtar” and municipalities.

Strengths of the programme

The HelpAge project addressed two main problems: lack of access to NCD services and lack of proper management of NCDs. In Syria, refugees were used to benefiting from free health services and regular free drug supply for their NCDs. In Lebanon, only poor people and older adults benefit from free drugs for NCDs, and only in selected facilities supported by the YMCA. Within the response to the Syria crisis, the Instrument for Stability Project funded by the Eu-

Figure 2 Distribution of the screened population by health status

ropean Union enabled distribution of chronic medication to 150,000 patients in 435 primary health facilities; however, shortage in chronic medication was still noted.³⁰

The HelpAge project allowed more vulnerable older adults to benefit from free services. The programme was tailored according to the needs of the target population; for example blood sampling was done on site since transportation is problematic (in terms of security, availability and affordability). High levels of satisfaction and a sense of ownership was reported by AMEL staff who appreciated the positive work dynamics among all members and the efforts to make the best out of delivering the service.

The programme was very effective from a partnership perspective. It embraced five partners that interacted and cooperate to attain the project objectives. From the early stage of the project design, all partners were consulted on how to design the intervention in a way that ensure complementarity, quality and sustainability of services; each partner brought its expertise and speciality into the project and efforts were geared to support and complement each other. Furthermore the training on older adults' specific needs and vulnerabilities is a pioneer initiative acknowledged by all participants.

For the Lebanese population, the government provides medication for chronic conditions but only within the MOPH network that includes almost one-quarter of the primary health care facilities³¹. For the Syrian population, there is a project that enables them to access such medications in the MOPH network when certain conditions are met. HelpAge is planning to continue this programme for the next 30 months while building the capacity of AMEL centres to join the MOPH network to ensure access to patients and sustainability of services.

Challenges

The major constraint has been insecurity. The initial design of the project included an AMEL

³⁰ Reducing conflict by improving healthcare services to vulnerable Lebanese and Syrian Refugees. Lebanon Update. 3 July 2015.

³¹ National Health Statistics Report in Lebanon, 2012 edition



Measuring waist circumference within screening process at Kamed el Loz Centre

health facility in Ersal. However, following security incidents occurring in the early phase of the project, generating temporary suspension of humanitarian operations, the decision was made to provide in kind support (equipment and medication) rather than implementing the full package of services. The kidnapping of Lebanese soldiers in North Bekaa in September 2014 resulted in road blockades for 17 days and an overall period of no security clearance for 6-7 weeks, which delayed the health facilities assessment and the refresher training on WHO guidelines. Other security events affected the mobility of the refugees, i.e. the one day mobilisation campaign in Mashghara coincided with a military incident, leading to checkpoints being spread all over the region, preventing even the host community from going out. Consequently despite a well disseminated message about the campaign and thorough organisation of the event, the number of beneficiaries was relatively low and only three Syrian refugees were able to attend. Furthermore, the fluid movement of the refugee population according to the level of security made it difficult to assess accurately and meet the needs of this population, e.g. following refugee influxes, there might be greater demand for medications than planned.

It was important and challenging to align the approaches, have clear communication channels and consensus on roles and responsibilities of the five agencies involved in the programme.

Resistance to changes in practice was evident amongst some service delivery staff so a key element was to highlight the importance of the project and to trigger a sense of ownership through active involvement in the project activities. At the same time, close monitoring was critical to allow intervention as necessary.

From a beneficiary perspective, the main obstacle to visiting a health facility is trans-

portation; transportation fees may add up to 15,000LBP (=10US\$) which is considered expensive by both Syrian refugees and vulnerable host communities. Consequently, the services provided by the mobile units are considered "as a gift from heavens". Waiting time at the health facility is another problem for beneficiaries, especially for the frail and older patients. Waiting times become a major obstacle at mobile units during harsh weather conditions as it is difficult for the patients to stand outside in cold or excessively hot weather waiting to be screened or managed. Opening hours of the centres is another issue, with most closing at 2 pm, making it difficult for people among the local host communities and a small number of refugees, who work during the day. This might explain the high percentage of women attendees compared to men. Shortage of medication is a major concern for patients who may not get all prescribed medication on the same visit. This relates to the high consumption of drugs associated with the increased number of beneficiaries. A contingency stock was established at AMEL headquarter to address this issue but delayed reporting of need and insufficient means of transportation created delay in the delivery of medication.

Health care providers state that the length of time it takes to perform all the required tasks as per the guidelines and the increased workload, make services provision difficult and challenging. The screening process is viewed by the health staff as successful but highly stressful because of the high volume of patients and the requirement of a 10 – 15 minutes consultation to collect data and indicators as per WHO guidelines. The consequences are longer waiting times for other patients to be screened and more congestion in the centres.

The increased workload is affected by a number of determinants such as 1) the security situation, e.g. when Syrian refugees fled from North

to West Bekaa following military actions, the influx of patients necessitated the recruitment of additional staff to cover the additional work, 2) the shortfall in international humanitarian response funding resulted in closure of services; in February 2015, International Organisation for Migration (IOM) had to shut down services in two clinics in the Bekaa area resulting in an influx of patients to AMEL centre in Kamed El Loz; 3) the deteriorating economic situation for both Syrian refugees and host communities resulting in an increase in the number of vulnerable people requiring health services.

Key lessons learned

Essential basic equipment for the management of DM and HTN at primary health care level can be modest and affordable, however the capacity of the health staff and their skills in the management of HTN and DM are critical for the proper management of the diseases. Educational background, training and capacity building of staff are essential elements for the success of similar projects.

Flexibility in the implementation of guidelines and tailoring of activities as per resources and needs of the beneficiaries is vital; the guidelines need to be adapted to the context and not adopted as they are. For example, laboratory tests implemented in the primary health care centres could not be implemented at the mobile clinics because of transportation constraints.

Resistance to change, especially among older experienced staff, might be problematic and it is challenging to trigger the interest of such staff and generate a sense of commitment to the project.

Time is a key factor; in an emergency context especially, there may be major delays in activities due to insecure situations. Contingency planning is important in such contexts.

The success of partnership requires sound coordination and a number of key elements such as involvement of all partners in all stages of the project development and implementation, to ensure that decisions and activities receive widespread support and recognition; clear communication of responsibilities and perceived roles to avoid misunderstandings, frustration and loss of commitment; and sharing of information continuously and in a timely manner. Trust takes time to build between partners but it is the basis of a strong and sustainable partnership.

Conclusions

NCDs management should be seen as a fundamental pillar of the long-term policy response to the crisis in Syria. The HelpAge health project is a successful example of a comprehensive package of services and collaboration among different partners. Similar projects should be encouraged and scaled up to meet the increasing health needs of Syrian refugee and host communities.

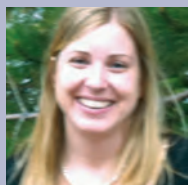
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Nutrition surveillance in emergency contexts: South Sudan case study



Transport in Fashoda

By Alina Michalska, Eva Leidman, Suzanne Fuhrman, Louise Mwirigi, Oleg Bilukha, and Cecile Basquin



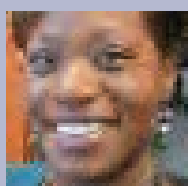
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Suzanne Fuhrman is the Health and Nutrition Head of Department with ACF in Sierra Leone. She was the Coordinator for the ACF Surveillance and Evaluation Team (SET) project in South Sudan. She has five years of experience in the field of nutrition, previously working for Concern Worldwide in Ethiopia, Uganda, and South Sudan, with a strong background in surveys.



Louise Mwirigi-Masese is currently the Nutrition Information Officer with UNICEF Kenya where she supports the national nutrition information systems in collaboration with the MoH and also provides surge support in the East Africa region, including South Sudan (2014) and Malawi (2015). Prior to this, Louise was a Nutrition Analyst with the FAO/ FSNAU for six years in Somalia.



Oleg Bilukha is Associate Director of Science with the Emergency Response and Recovery Branch of the Centers for Disease Control and Prevention where Oleg has worked since 2000. He obtained his MD from Lviv State Medical Institute, Ukraine, and his PhD in Nutrition (with minors in Epidemiology and Consumer Economics) from Cornell University, USA. Oleg has served as a consultant and temporary advisor to the WHO, UNHCR, WFP, and UNICEF on multiple assignments worldwide. His extensive experience includes international nutrition, statistics, epidemiology, surveys and surveillance, war-related injury and reproductive health.



Cécile Basquin is a Nutrition & Health Technical Advisor at ACF-USA headquarters. Cécile joined ACF in early 2010, has managed CMAM, integrated surveillance and community-based prevention of undernutrition programmes in the field, and now provides technical guidance notably to the ACF-South Sudan team.

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Location: South Sudan

What we know: Reliable nutrition data are critical to assess and respond to a crisis but are often lacking due to resource and population access constraints; monitoring change over time is particularly challenging.

What this article adds: Nutrition surveillance activities were launched in South Sudan mid-2014 due to a deteriorating crisis situation. In ten of the most food insecure counties, ACF launched the Surveillance and Evaluation Team (SET), funded by UNICEF and with technical support from CDC, to monitor the nutrition status, provide the foundations of a nutrition monitoring system, and provide technical support to nutrition partners. Rapid SMART was the survey method used. In practice, surveys (eight in total) were limited to three (high priority) of the 10 counties due to lack of implementing partners. High quality anthropometric data were gathered. Challenges included accurate population data, access and logistics, and lack of in-agency survey technical capacity. This experience reflects one feasible option of obtaining periodic, representative prevalence data in a particularly challenging setting.

Why nutrition surveillance in emergencies?

Reliable data are critical, to assess the severity of a crisis and respond appropriately. In crises affecting the food security of a population, nutrition indicators inform decisions on types of interventions, geographic prioritisation, and levels of funding¹. Unfortunately, recent experiences have demonstrated that rigorous and representative nutrition data and robust nutrition surveillance

¹ Bilukha O, Prudhon C, Moloney G, Hailey P, Doledec D (2012). Measuring anthropometric indicators through nutrition surveillance in humanitarian settings: Options, issues and ways forward. Food and Nutrition Bulletin, vol. 33, no.2, pp169-176.



ACF, South Sudan, 2015

Transport in Fashoda

systems are often lacking in humanitarian crises with few exceptions, e.g. nutrition surveillance implemented by the Food Security and Nutrition Analysis Unit (FSNAU) in Somalia^{2,3,4}. This is particularly true in the most severe crises when overwhelming needs restrict available resources and limited access constrains the ability to collect data. This challenging paradox – the need for data when they are least available – is common in sudden onset disasters, as well as during severe deterioration of a protracted crisis.

Continuous monitoring of nutrition status over time, often required in a crisis, poses even greater challenges compared to individual assessments. This type of analysis requires ongoing, systematic collection of data, i.e. surveillance⁵. Practitioners use many methods of data collection to help monitor changes in the nutritional status of a population and, where possible, respond in a timely manner. There are at least five recognized approaches to nutrition surveillance⁶. Nearly all of these methods, however, have key limitations. For instance, health facility-based surveillance systems only include individuals who visit health centres; they are often not representative, potentially over-sampling younger children (who come for immunisations) and those who are sick. Mass screenings include all children,

however do not produce ongoing data, and the quality of anthropometry data obtained from mass screenings can be difficult to control. Interpreting data from therapeutic feeding programmes can be challenging, as changes in nutritional status may be attributed to many factors including stock-outs of commodities or changes in access^{7,8}. In emergency contexts, using these methods can be even more challenging and costly than in non-emergency settings given access constraints and other factors that may disrupt existing systems.

Currently there is no gold standard for monitoring trends in prevalence of acute malnutrition. However, these data are essential in crisis settings. They are used by responders and more broadly to inform analyses, such as the Integrated Phase Classification (IPC) for Acute Food Security used to declare famine⁹. We present an example of South Sudan to illustrate one feasible option of obtaining periodic, representative prevalence data in a particularly challenging setting.

Case of South Sudan emergency, 2014

Since independence in July 2011, South Sudan has suffered ongoing internal conflict. However, violence escalated in mid-December 2013 and

as a consequence, the humanitarian situation markedly deteriorated¹⁰. An estimated 740,000 persons were displaced and heavy fighting was reported in the capital, Juba, as well as in the greater Upper Nile region¹¹. In February 2014, the United Nations Emergency Relief Coordinator declared South Sudan in a Level 3 (L3) emergency, the highest level on the scale¹².

The challenges of this context cannot be overstated. During this period, there was mass displacement of people who often were displaced repeatedly as the conflict moved. There was limited capacity in country to respond, particularly as staff were sheltered or evacuated with escalating conflict. These challenges exacerbated the vulnerability of a newly formed state with limited infrastructure and few formal institutions to provide assistance to the population. As the conflict persisted, people lost livelihoods, incomes and assets. Access to food was threatened, as was access to functional health centres and other basic services. Beginning in May 2014, the rainy season began limiting both access to these populations and food availability.

In May 2014, the IPC analysis projected that 3.9 million people (34% of the total population) would be in crisis (IPC Phase 3) or facing emergency (IPC Phase 4) acute food insecurity levels from June through August 2014¹³. Jonglei, Unity and Upper Nile States were the three most conflict-affected areas and accounted for about 56% of the total population classified as food insecure at IPC Phase 3 or 4 levels. Based on the experience from the FSNAU and the monitoring of the famine in two regions of Somalia during 2011 drought crisis in the Horn of Africa, Nutrition Technical Experts who contributed to that IPC analysis (including representatives from ACF, UNICEF, and the United States Centers for Disease Control and Prevention [CDC]) highlighted that there was a dire need for data to describe and track the evolving nutrition situation and to inform the acute food security IPC analysis. At this time, fears of a deterioration of the food security situation and potentially a famine (IPC Phase 5) in certain locations mounted as the lean season approached in July/August.

Within this context, nutrition surveillance activities were launched. Nutrition Cluster partners in South Sudan jointly developed a list of ten priority counties in Jonglei, Unity and Upper Nile States (from the 28 counties most affected by the conflict). Counties with no recent nutrition assessment were included and prioritised based

² For more information, see the FSNAU web site: <http://www.fsnau.org/>

³ Salama, P. et al (2012). Famine in Somalia: Evidence for a declaration. *Global Food Security* (2012), <http://dx.doi.org/10.1016/j.gfs.2012.08.002>

⁴ Note that ACF also has an ongoing approach in the Democratic Republic of Congo that allows identification of nutrition crises, and ACF led integrated surveillance systems notably in certain parts of Kenya and Uganda with high recurrent levels of malnutrition.

⁵ National Institute for Occupational Safety and Health (NIOSH) 2012. Surveillance. Available from: <http://www.cdc.gov/niosh/programs/surv/>

⁶ There are five major methodological approaches to nutrition surveillance design: repeated surveys, community-

based sentinel sites, periodic exhaustive screenings, admission data from feeding programmes for moderately and severely malnourished children, and anthropometric data from health clinics (Bilukha, et al, 2012).

⁷ Nnyepi M, Kesitegile SM Gobotswang, Codjia P, 2011.

Comparison of estimates of malnutrition in children aged 0-5 years between clinic-based nutrition surveillance and national surveys. *Journal of Public Health Policy*, vol. 32, no. 3, pp 281-292.

⁸ Grellety E, Luquero F, Mambula C, Adamu H, Elder G, Porten K, 2013. Observational Bias during Nutrition Surveillance: Results of a Mixed Longitudinal and Cross-Sectional Data Collection System in Northern Nigeria. *PLoS ONE*, vol. 8, no. 5, pp 1-11.

⁹ Integrated Food Security Phase Classification (IPC) 2012. IPC and Famine. Available from: <http://www.ipcinfo.org/ipcinfo->

[detail-forms/ipcinfo-resource-detail0/en/c/178965/](http://www.ipcinfo.org/ipcinfo-detail-forms/ipcinfo-resource-detail0/en/c/178965/)

¹⁰ UNICEF 2014, South Sudan Situation Report, 11 February 2014. Available from: http://www.unicef.org/appeals/files/UNICEF_South_Sudan_SitRep9_11FEB2014.pdf

¹¹ OCHA 2014, South Sudan Crisis: Humanitarian Snapshot as of 31 January 2014. Available from: <http://reliefweb.int/report/south-sudan/south-sudan-crisis-humanitarian-snapshot-31-january-2014>

¹² UNICEF 2014, South Sudan Situation Report, 11 February 2014. Available from: http://www.unicef.org/appeals/files/UNICEF_South_Sudan_SitRep9_11FEB2014.pdf

¹³ Integrated Food Security Phase Classification (IPC) 2014. Current Acute Food Insecurity Overview in South Sudan May 2014. Available from: <http://www.ipcinfo.org/ipcinfo-detail-forms/ipcinfo-map-detail/en/c/234337/>

on levels of insecurity, road access and flooding¹⁴. To gather information in these priority counties, ACF launched the Surveillance and Evaluation Team (SET), funded by UNICEF and with technical support from CDC. The overall goal of this project was to monitor the nutrition status in the most food insecure areas to inform the national response, while setting up the foundations of a stronger and broader nutrition monitoring system country-wide. A secondary objective was to provide technical support, led by ACF, to all nutrition partners in country to ensure all data collection efforts produced high quality results.

To achieve the first goal, SET established a nutrition surveillance system in South Sudan through repeated rounds of Rapid Standardised Monitoring and Assessment of Relief and Transition (SMART) surveys¹⁵.

What is Rapid SMART and how was it used in SET surveillance in South Sudan?

South Sudan Nutrition Cluster survey recommendations were amended to allow for a more streamlined questionnaire and sampling strategy to be used in South Sudan per Rapid SMART guidelines. Rapid SMART is essentially a “normal” SMART survey following all the provisions of SMART guidelines with two key caveats:

1. To minimise time required to collect data in the field (to adapt to extremely insecure or difficult to access settings and to focus on the quality of the key indicators – anthropometric measurements), the questionnaire is substantially shortened to include only anthropometry measurements (including both weight for height and mid-upper arm circumference [MUAC]) and a few additional indicators, e.g. child morbidity. All the other sectoral modules of indicators (water, sanitation and hygiene [WASH], food security, infant and young child feeding [IYCF], etc.) are excluded.
2. To simplify sample size determination and minimise sample size requirements (to decrease time spent in the field while still achieving minimum precision for meaningful interpretation of results), Rapid SMART calls for a two-stage cluster design (25 clusters with 8-12 households per cluster, depending on percentage of children aged under-5 years in the population). This design produces a sample of 250 or more children aged under-5 years, which is sufficient in almost all situations (except where prevalence or design effect are very high) to achieve precision of +/-5% or less around the global acute malnutrition (GAM) estimate. When the mortality indicator is added to the survey, the sample size is increased to 30 clusters and about 420 households to achieve meaningful precision for mortality. In this particular case of South Sudan, mortality results were absolutely critical to assess the severity of the crisis and to inform the much-needed IPC analysis, since mortality is a required indicator for famine declaration.

Again, the indicators (a very limited number with few additional variables) and the “fixed” minimised sample size are the only key features that differentiate Rapid SMART from the traditional SMART methodology¹⁶.

ACF SET implemented repeated rounds of Rapid SMART surveys in three high priority counties: Leer County, Mayendit County (in Unity State) and Fashoda County (in Upper Nile State), which were outside of ACF operational areas¹⁷. For the purpose of monitoring nutritional trends in these high risk counties, three rounds of surveys were planned: round 1 to inform the situation immediately (June, pre-harvest or lean season), and rounds 2 and 3 to take place throughout the rainy, harvest and post-harvest seasons at 2-month intervals. This relatively high frequency of survey rounds was based on the key lesson learned from the Somalia famine, i.e. the vulnerability of populations in critical situations can deteriorate extraordinarily quickly¹⁸.

Recognising early on that technical capacity in South Sudan would be a limiting factor, the SET included a secondary objective with two components to complement data collection and to contribute to strengthening of the South Sudan Nutrition Information Working Group (NIWG), a technical sub-group of the South Sudan Nutrition Cluster:

- 1) Capacity Building – ACF worked with the NIWG to help build capacity of all implementing partners in the SMART methodology to enable them to design and implement nutrition surveys.
- 2) Validation process – CDC worked with the NIWG to establish a process of data review

(validation) to ensure partners in country had the skills to review and validate survey protocols critically and review and approve the quality of collected data before results were released.

Initial plans called for identifying partners to implement the nutrition surveillance system (Rapid SMART surveys) in all 10 priority counties. However, no additional partners could be identified. Partners reported that their ability to undertake the surveys outside their usual areas of operation was limited due to lack of funding, technical capacity, and concerns about insecurity and access. Assessments in the other seven priority counties were therefore never implemented.

What results were obtained by SET?

Execution of surveys

A total of eight surveys were completed as part of the SET project over six months: three in Leer, three in Mayendit, and two in Fashoda. Data collection in Fashoda was interrupted during the second round (in October) after one day due to a security incident, resulting in evacuation of the team from the field. The sample sizes obtained for each survey are presented in Table 1. In all eight surveys, assessment teams successfully measured at least 350 children 6-59 months of age, well above the 250 minimum required. In most surveys, nearly twice that number of children was surveyed, likely due to lack of up-to-date demographic data and also to increases in household size related to recent large population movements due to insecurity and flooding. These sample sizes allowed for a



Improvised boat for an enumerator

¹⁴ The 10 counties that are high priority change semi-regularly as response progresses. South Sudan Nutrition Cluster 2014, South Sudan Updated Nutrition Cluster Response Plan – August 2014. Available from: <https://www.humanitarianresponse.info/en/operations/south-sudan/document/ssudan-updated-nutrition-cluster-response-plan-final-draft-1-sep>

¹⁵ SMART Methodology 2014, Rapid SMART Guidelines. Available from: <http://smartmethodology.org/survey-planning-tools/smart-methodology/rapid-smart-methodology/>

¹⁶ SMART Methodology 2006, SMART Methodology Manual.

Available from: <http://smartmethodology.org/survey-planning-tools/smart-methodology/>

¹⁷ ACF chose these three countries out of the list of 10 priority counties for feasibility reasons, after careful assessment of security, access, road network, and availability of transportation means, among other parameters set by the ACF logistics staff.

¹⁸ Hillbruner, C., Moloney, G. When early warning is not enough – Lessons learned from the 2011 Somalia Famine. *Global Food Security* (2012), <http://dx.doi.org/10.1016/j.gfs.2012.08.001>

precision of between $\pm 3.1\%$ (Mayendit Round 2) and $\pm 6.3\%$ (Leer, Round 1), in all cases acceptable precision to interpret the results (Table 2). The design effect for all surveys was relatively low¹⁹ indicating that the population in a given county was fairly homogeneous with regard to acute malnutrition.

In all three settings, point estimates for prevalence of GAM remained in serious (10%–14%) or critical (>15%) categories throughout the assessment period (GAM in Leer in June was >30%, Table 3). It was observed in all counties surveyed that the prevalence of GAM declined throughout the year (Table 3). The most notable (and statistically significant) decline was in Leer, where prevalence of GAM declined from 34.1% (95% CI 28.0–40.6) at the end of June to 16.2% (95% CI 12.5–20.9) in September to 11.0% (95% CI 7.7–15.6) at the end of November. The marked reduction in GAM between the first and second rounds in Leer could be attributed to several factors including: i) seasonality, as people began to harvest in September; ii) increased availability of food in the markets, as major roads opened due to improved security; iii) food aid air drops; and iv) introduction of health, nutrition, WASH, and food security interventions by several partners in the area. Mortality was assessed once in each of the three counties. Crude Death Rate (CDR) ranged from 0.8/10,000/day (in Leer) to 1.2/10,000/day (in Mayendit), significantly below the emergency threshold, 2/10,000/day (Table 3).

Assessment methods were designed such that one team could complete two clusters per day. However, security and logistics (lack of road access to clusters by car) made this overall infeasible, and data collection required an average of 6.1 days of field work per survey (range 5 to 9 days, Table 2). The technical team at ACF supporting the SET surveys consisted of six SMART survey specialists and one SMART capacity building specialist (all international staff), as well as a logistician. Training of enumerators was undertaken over the course of 1–2 days. Field work was completed by between eight and 18 enumerators per survey working in teams of

two to three enumerators (Table 2), each led by one SMART specialist. The SET had between 1 to 3 weeks between each round to finish the survey report, rest and prepare for the next survey. Preliminary results were shared with local authorities and partners the day after data collection at field level.

In terms of data quality, despite the major logistic and security challenges, the assessments were rigorous. Two key parameters used to assess nutrition survey data are the percent of extreme outliers (biologically implausible values) and standard deviation of z-scores²⁰. Across all surveys, less than 3.0% of children were excluded as extreme outliers applying the SMART recommended thresholds, < -3 or > 3 z-scores from the surveyed population²¹. In five of the eight surveys, there were no outliers. Standard deviation of the weight-for-height z-scores (WHZ) is expected to be close to 1.0. Classified using the SMART thresholds, seven of the surveys had an excellent standard deviation (0.89–1.00), and one survey (Leer County, Round 1) had an acceptable standard deviation (1.15)²². Together these tests indicate that the quality of anthropometric measurement was high.

The sex ratio and age distribution (not presented) were analysed to assess whether the selected sample was representative of the general population. For all 8 surveys, age and sex distributions were as expected, indicating no selection bias. The overall composite SMART plausibility check quality score, which also takes into account several additional tests, indicated high quality data in all completed surveys²³.

Use of the Rapid SMART method enabled SET to use the standard SMART software²⁴ to assess the data quality and produce a preliminary report, a key advantage over other rapid methods. This enabled timely dissemination of results. For all rounds, a summary of key results was shared with the NIWG of the Nutrition Cluster, which reviews surveys in South Sudan, within 1 or 2 days of completing data collection; survey reports and datasets were shared within seven days.

Building SMART methodology capacities and strengthening survey validation process

As part of the SET, to build the capacity of partners in country including the Ministry of Health (MoH), one ACF SMART methodology expert was dedicated on a full-time basis to support all partners organizing nutrition surveys in their programme areas. This was prompted by a learning needs assessment, which demonstrated that the majority of agencies that had previous experience conducting surveys (11 of 15 agencies) used external human resources to carry out surveys. In most cases, external consultants were hired, which is both costly and introduces delays as the process of bidding and negotiating with consultants can often take weeks or months. Of the individuals who had received training on managing surveys, most reported that they were trained several years ago or that they were no longer in a position where carrying out surveys is their main work task. Among this group, many reported they did not have recent enough experience to feel confident in supervising a survey or critically reviewing surveys presented by their consultants or to the NIWG. Based on the results of the assessment, ACF organised and facilitated several SMART methodology trainings and subsequently trained 19 survey managers, enabling them to design surveys and critically review data quality²⁵. An additional 35 field supervisors were trained to be able to ensure rigor in the selection of households and measurement of children.

In addition, support was provided directly to the NIWG to enable its members to play a meaningful role in prioritising survey areas, critically reviewing survey protocols, and technically assessing the validity and accuracy of survey data. This validation process was developed jointly with the MoH, UNICEF, CDC, and the ACF SMART expert. The process was modelled on the Kenya NIWG, which has been operating since 2008. Building the capacity of these partners included multiple intensive, 1 to 2-day technical information sessions for partners on reviewing the plausibility of survey results and interpreting data. NIWG members were also mentored for several months, during which time every survey



Anthony, a SET officer, on his way to a sampled village

ACF, South Sudan, 2015

¹⁹ Design effect ranged from 1.00 in Mayendit round 1 to 1.81 in Fashoda round 2.

²⁰ WHO 1995. Physical Status: The Use and Interpretation of Anthropometry. Available from: http://www.who.int/childgrowth/publications/physical_status/en/

²¹ SMART Methodology 2006, SMART Methodology Manual. Available from: <http://smartmethodology.org/survey-planning-tools/smart-methodology/>

²² Acceptable range of standard deviation is 0.80–1.20. SMART Methodology Manual, 2006. Available from: <http://smartmethodology.org/survey-planning-tools/smart-methodology/>

²³ SMART plausibility check data quality score is a composite score based on ten standardized statistical tests of data quality.

²⁴ ENA for SMART 2015. Available from: <http://smartmethodology.org/survey-planning-tools/smart-emergency-nutrition-assessment/>

²⁵ Of the individuals (from MoH, UN agencies, NGOs, etc.) trained as survey managers, four participated as active members of the NIWG and several additional individuals organised surveys for their NGOs within and after the SET project period. Two of the participants trained as survey managers were part of the SET.

Table 1 Sample design nutrition assessments in Leer, Mayendit and Fashoda counties of South Sudan, 2014

	Leer, Unity State			Mayendit, Unity State			Fashoda, Upper Nile State [±]	
	Round 1	Round 2*	Round 3	Round 1	Round 2*	Round 3	Round 1*	Round 3
Month of data collection	Jun (week 4)	Sept (week 2)	Nov (week 4)	Jul (week 3)	Sept (week 3)	Dec (week 2)	Aug (week 3)	Nov (week 2)
Design (# of cluster x HHs)	25 x 10	30 x 14	25 x 10	25 x 10	30 x 14	25 x 10	30 x 14	25 x 10
Sample size (HHs)	224	391	206	223	422	212	326	193
Sample size (Children 6-59 months of age)	425	540	375	410	643	364	556	351

*Indicates survey included both anthropometry and mortality components.

± Data collection in Fashoda County was stopped during the second round (in October) after one day due to a security incident. Therefore complete data are available for only 2 (of the 3 planned) assessments in this county.

HHs= households

Table 2 Data quality and logistic requirements of the nutrition assessments in Fashoda, Leer and Mayendit counties of South Sudan, 2014

	Leer, Unity State			Mayendit, Unity State			Fashoda, Upper Nile State [±]	
	Round 1	Round 2*	Round 3	Round 1	Round 2*	Round 3	Round 1*	Round 3
Logistic Requirements								
Number of teams (staff) involved in collecting data	4 (8)	5 (15)	5 (15)	4 (12)	4 (12)	6 (18)	4 (12)	6 (18)
Days required for data collection	5	7	5	8	8	4	9	6
Quality for Acute Malnutrition (weight-for-height Z-score [WHZ]) Data*								
Standard Deviation	1.15	0.96	0.98	1.00	0.99	0.95	0.97	0.89
Z-score values out of range (SMART flags) (%)	2.6%	0.7%	0.8%	0.2%	0.5%	0.5%	1.1%	0.9%
Design Effect WHZ <-2	1.73	1.64	1.36	1.00	1.18	1.38	1.30	1.69
Precision for GAM	±6.3	±4.2	±3.9	±3.8	±3.1	±4.3	±3.6	±5.0
Overall composite data quality score (SMART)+	Good (16%)	Excellent (3%)	Excellent (0%)	Excellent (5%)	Excellent (0%)	Excellent (4%)	Excellent (0%)	Excellent (5%)

*Indicates survey included both anthropometry and mortality components.

± Data collection in Fashoda County was stopped during the second round (in October) after one day due to a security incident. Therefore complete data is available for only 2 (of the 3 planned) assessments in this county.

&ENA for SMART software version 2011, April 21st 2015 update was used to obtain data and results presented in this article.

+ SMART plausibility check data quality score is a composite score based on ten standardised statistical tests of data quality.

HHs= households

Table 3 Summary of nutrition assessment results in Leer, Mayendit and Fashoda counties of South Sudan, 2014

	Leer, Unity State			Mayendit, Unity State			Fashoda, Upper Nile State [±]	
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 1	Round 3
Acute malnutrition, children aged 6–59 months (%) (95% CI)*								
GAM (WHZ <-2 and/or bilateral pitting oedema)	34.1% (28.0-40.6)	16.2% (12.5-20.9)	11.0% (7.7 - 15.6)	16.9% (13.4-21.0)	14.1% (11.3 - 17.5)	12.7% (9.0 - 17.6)	16.0% (12.7 - 20.0)	14.1% (9.8 - 19.9)
SAM (WHZ <-3 and/or bilateral pitting oedema)	10.9% (7.8 - 15.0)	2.8% (1.8-4.2)	2.2% (1.0 - 4.4)	1.2% (0.4-3.5)	2.2% (1.1 - 4.2)	2.2% (1.1 - 4.6)	3.1% (2.0 - 4.8)	2.6% (1.4 - 4.8)
Mortality (deaths/10,000/day)*								
Crude Death Rate (CDR)	—	0.81 (0.46 - 1.41)	—	—	1.18 (0.75-1.87)	—	0.92 (0.51 - 1.68)	—
Under-5 DR (U5DR)	—	0.74 (0.26 - 2.04)	—	—	1.22 (0.57-2.61)	—	1.50 (0.77 - 2.89)	—

Abbreviations: CI = confidence interval; GAM = Global Acute Malnutrition; SAM = Severe Acute Malnutrition; WHZ = weight-for height z-score.

± Data collection in Fashoda County was stopped during the second round (in October) after one day due to a security incident. Therefore complete data is available for only 2 (of the 3 planned) assessments in this county.

&ENA for SMART software version 2011, April 21st 2015 update was used to obtain data and results presented in this article.

completed in South Sudan was reviewed by the NIWG, CDC, and the ACF SMART expert who together discussed its quality. This ongoing work helped build the ability of NIWG to review the survey data. A secondary outcome was that datasets and preliminary reports were quickly validated and disseminated. This allowed for up-to-date information to be used by the NIWG for accurate programmatic decision making. Validated surveys were published on a regular basis on the South Sudan Humanitarian Response website²⁶. The results from the 8 rounds of the nutrition surveillance were among the highest quality of all the surveys reviewed by the NIWG together with the CDC and SMART expert.

The NIWG is recognised now as the established coordination body playing a key role in providing technical support to all partners, reviewing survey protocols, validating survey results, and interpreting data utilised by the Nutrition Cluster and other partners for both programme planning and situation analysis, e.g., IPC.

In view of the challenges faced and lessons learned, is this nutrition surveillance system a replicable model?

The implementation of the SET model in South Sudan convincingly demonstrated that high quality anthropometry data can be obtained even in the midst of an ongoing conflict using the Rapid SMART method. The survey data presented here are of excellent quality, as assessed by all standard parameters. The data have been validated by the NIWG in country, as well as by technical experts at the CDC and ACF. This is an important proof of concept, and a counterpoint to those suggesting that only MUAC assessments are feasible in these contexts.

The model also helped minimise risk to the assessment teams. The streamlined approach enabled teams to spend less than 10 days collecting data for all assessments. By comparison, data collection during SMART surveys carried out in South Sudan

²⁶ Nutrition Information Working Group 2015, South Sudan SMART Survey Summary Matrix. Available from: <http://www.humanitarianresponse.info/en/operations/south-sudan/document/final2701-2015ssd-smart-survey-summary-matrix>.

in 2013-14 took up to 32 days (average 11.6 days)²⁷. The time required for training of enumerators was also reduced, as the same ACF SET field supervisors assisted by locally recruited enumerators took anthropometric measurements in each round, so that there was no need for the standard 5-day training and standardisation test prior to each round. For this standing team of highly trained individuals, enumerator training was reduced to 1 or 2 days. Conversely, data collection was far from being rapid, even though from round 2 onwards the number of survey teams was increased from 4 to 5 to sometimes 6 teams (Table 2). This was mainly because of access and terrain challenges; survey teams could not complete two clusters per day per team as was originally planned.

However, in evaluating the replicability of the model, there are several other factors to consider – first of which is technical capacity. The major barrier to implementing this model was the lack of agencies with in-house capacity for designing surveys and reviewing data quality. As mentioned, the surveillance system was designed to produce estimates of prevalence of acute malnutrition for the 10 priority counties identified during the May 2014 IPC assessment. The plan presumed two to three agencies would collect the data that could inform national decision making; 10 counties exceeded the capacity of ACF SET operating alone. However, despite the simplifications made, e.g. fixed sample size, and the external technical support (from ACF, UNICEF, and CDC), no other partners were identified to support this activity. Replication of this model, or any other cross-sectional survey model, to obtain nutrition surveillance data depends on building the capacity of partners working in these challenging settings.

The other major challenge was related to logistics and access. The rainy season lasts in South Sudan anywhere from May to October, and significant flooding and poor road networks impacted access to certain parts of the selected counties, especially during the first two rounds of surveys. Many roads were washed out. Teams had to walk up to three hours each way to access certain villages. Time spent travelling to each cluster was often longer than the time spent in a village undertaking data collection. In Mayendit, the lack of road networks due to flooding meant that only the northern payams of this county accessible from a road in the north in neighbouring Leer County, could be visited by the survey teams during the first two rounds. The southern payams were accessed by a chartered flight only in the third round. In Fashoda, teams reached certain clusters using a chartered speed boat. However, in other areas, survey teams relied on make-shift rafts that they constructed to facilitate their movements between selected clusters. A helicopter was also used to move teams during round 2 in Fashoda in order to increase the number of accessible villages. Fuel shortages further challenged data collection. For surveys in Leer County, fuel for cars was sent to the teams by plane from Juba. Limited fuel supply was only sufficient for 1 car,

requiring all four teams to share a vehicle. While various means of transportation were used to maximize access to villages, fighting that erupted in Fashoda prevented the teams from completing the second survey round in that county (October 2014). Access was further restricted due to insecurity resulting from the ongoing conflict. For the surveys, the SET was sometimes deployed to opposition-controlled areas. Several rounds of negotiations with local authorities were required to obtain approval for undertaking surveys in these areas. Given these conditions, any other methods of surveillance data collection would have likely broken down completely. Facility-based surveillance would not be feasible; in most of the areas visited, there were no functional health centres and those that existed were unable to communicate information regularly for national aggregation. Very few areas had ongoing nutrition treatment programmes, limiting the utility of their data for monitoring the situation. Therefore, we suggest that while logistics and access were major barriers in all three counties that delayed the assessments and affected their cost, this model is the only one that was able to be used to gather actionable information in these conditions.

The SET had to address other challenges. First, accurate population data at the village level during an ongoing crisis were limited. The South Sudanese population at that time was experiencing mass migration. Some clusters were significantly larger than expected as they were hosting displaced persons, while others had countless empty homes. In certain cases, only women and children fled villages. However, the SET was able to work with local authorities to update sampling frames for nearly all villages, though this sometimes required several days of work with local leaders to ensure village lists and population figures were up to date²⁸. Underestimating the target population where there was uncertainty in population data helped ensure enough children were measured in each cluster. Second, recruitment of skilled survey teams was more challenging in South Sudan than in other settings, and threatened to affect the implementation of the SET model. Recruitment was cited by several agencies as a challenge that precluded them from participating in the assessments. ACF had success in recruiting young professionals to build the SET. These professionals, some of whom had never been exposed to an international or emergency context, were extremely motivated and under a strong leadership and close technical support.

This nutrition surveillance system, though limited to three counties, was successful for a variety of reasons. In the initial stages, there was adequate planning, funding, and, importantly, collaboration with all relevant stakeholders. In the implementation stages, the surveillance was successful due to teams working closely with local authorities for access to population data and facilitation of movements, timely recruitment of qualified staff, rigorous training of field enumerators, and dedicated logistical support. Finally, close supervision of data collection, and capacity building for data analysis and inter-

pretation of results were the basis for a long-term in-country survey validation system.

Limitations of these repeated rounds of Rapid SMART surveys were akin to those undertaken in any emergency situation: fluctuating populations (in- and out-migrations) leading to inaccurate population figures, and fluctuating access to areas within each county. However, the SET demonstrated that high quality, representative anthropometric and mortality assessments are feasible in areas with significant access and security constraints. The budgets of these Rapid SMART surveys were in most rounds comparable to any other SMART surveys, with survey costs ranging from around USD 5,000 to USD 20,000²⁹ (on the higher end when mortality data were included). However, in two rounds, the survey cost was around USD 100,000 due to use of charter planes, helicopter, speed boats, and purchase of electronic devices for digital data collection. These costs could have been avoided or minimised if stronger nutrition survey capacities (both for execution and coordination/validation of surveys) existed before the start of the conflict. It is possible that if partners were more willing and prepared to engage in surveillance, the first round of surveys could have begun slightly earlier prior to rainy season and costs would have been reduced.

The results obtained in Leer County between June and September 2014, showed how important it is to have a surveillance system that detects rapid changes, especially given the dynamic fluctuation one may observe with the prevalence of GAM. The data generated by this surveillance system were key in providing an accurate picture of the situation. SET survey results were largely used in the subsequent IPC analysis, and also allowed humanitarian actors to get a sense of the impact of their interventions.

The importance of nutrition information in areas of high insecurity cannot be overemphasised. If nutrition survey capacity issues are addressed (for both execution and coordination/validation of surveys), the SET process described here could be used as a model for nutrition surveillance in other emergency contexts. However, in order for this type of nutrition surveillance system to be replicated, either inside South Sudan or elsewhere in an emergency situation, more partners need to be capable and willing to scale-up assessments in volatile emergency areas.

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²⁷ Nutrition Information Working Group 2015, South Sudan SMART Survey Summary Matrix. Available from: <http://www.humanitarianresponse.info/en/operations/south-sudan/document/final27012015ssd-smart-survey-summary-matrix>.

²⁸ Sampling frames were updated before every survey due to frequent population movements.

²⁹ Includes survey staff (enumerators), training, data collection kit (materials) and transport costs.

Experiences of the Sustainable Nutrition and Agriculture Promotion (SNAP) programme in the Ebola response in Sierra Leone

By Sibida George and Georgia Beans



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The authors would like to acknowledge USAID/Food For Peace; Jennifer Burns, Senior Development Nutritionist, International Medical Corps; Caroline Abla, Director, Nutrition and Food Security, International Medical Corps.



Handwashing in a Mother Child Group session

Location: *Sierra Leone*

What we know already: Disease outbreaks have nutritional consequences for the individual affected and depending on the disease, for the wider community.

What this article adds: An outbreak of ebola disease in West Africa in 2014 proved a public health emergency of international concern. Existing capacity and typical programme approaches to access those affected were severely challenged. The 5 year Sustainable Nutrition and Agriculture Promotion (SNAP) programme adapted to respond to the crisis in its affected rural areas of operation. Redirected food aid to quarantined patients, self-screening by MUAC of children by lead mothers, and focus of mother child groups on essential hygiene actions were some of the adaptations. Transition to more routine programming is underway.

Background

The Ebola virus disease (EVD) in West Africa broke out in Sierra Leone in May 2014. As the EVD spread, it was declared a public health emergency of international concern by the World Health Organisation (WHO) (8 August 2014). In Sierra Leone, a state of emergency (SOE) was declared on 31st July 2014 and was characterised by movement restrictions, closure of schools and learning institutions, banning periodic markets, public gatherings and avoiding body contact including handshakes. Sierra Leone has recorded 8,603 confirmed cases of EVD and 3,540 deaths including a significant number of health care professionals.

The fear of EVD disease, coupled with the restrictions under the SOE within the country and the timing during the peak agricultural season, impacted negatively on the country's economy, disrupting farming activities and markets, particularly in rural areas. Furthermore,

the EVD devastated the health care system. At the Peripheral Health Units (PHUs) that provided a basic package of essential health and nutrition services, fear of EVD infection by both health care professionals and community members rendered many PHUs non-functioning during the peak of the crisis. The loss of a significant number of health care professionals contributed to a reduced confidence in the health care system. Traditional practices, including burial rites, were banned as a means of preventing Ebola transmission.

The Sustainable Nutrition and Agriculture Promotion (SNAP) programme is a multi-year assistance programme (MYAP) supported by USAID and has been implemented in four districts (Kailahun, Koinadugu, Bombali and Tonkolili) of Sierra Leone since June 2010. The goal is to reduce food insecurity and increase resilience among vulnerable rural populations in target districts. The SNAP programme has two strategic

objectives: (i) reduce chronic malnutrition among children under-fives and (ii) enhance livelihoods for vulnerable people, especially women and youth. SNAP intervention areas are outlined in Figure 1 (see map).

The SNAP programme is implemented by a consortium of three partners:

- ACDI/VOCA (www.acdivoca.org) is the primary partner engaged in agricultural livelihoods, village savings & loans associations, direct distribution activities and monetization, and gender mainstreaming.
- International Medical Corps (IMC) provides health, nutrition and WASH services including integrated management of acute malnutrition (IMAM); hygiene promotion at peripheral health units (PHUs) and communities; training and capacity building of health and nutrition service providers; and implementation of social and behavior change activities.

- Opportunities Industrialisation Centres International¹ is engaged in youth livelihoods, literacy, numeracy and vocational trainings.

The Government of Sierra Leone (GoSL) Ministries involved in SNAP include Agriculture, Forestry & Food Security; Health & Sanitation; Finance & Economic Development; Social Welfare, Gender & Children's Affairs and Youth Employment & Sports. The District Health Management Team (DHMT) is the focal point for SNAP at district level.

The EVD outbreak affected rural areas where the SNAP programme was being implemented. This article describes the SNAP programme prior to the outbreak, the changes that took place in response, and how the programme is transitioning back during recovery.

Programme approach and beneficiary targets prior to EVD outbreak (June 2010-May 2014)

In order to reduce chronic malnutrition (stunting) among children under-five, SNAP targeted 50,064 mother-child units through the 'preventing malnutrition in children under two (PM2A)' approach, specifically through the mother care group (MCG) model. A total of 350,448 household members were reached with health and nutrition messages/services in 18 chiefdoms in Bombali, Koinadugu, Tonkolili and Kailahun districts. The entry criterion for the programme is pregnancy, with graduation when the child reaches 24 months.

The MCG sessions were animated by Lead Mothers (LMs) with the SNAP programme supporting about 2000 LMs. Four modules were rolled out during the MCG sessions including: early initiation of, and exclusive breast feeding, appropriate complementary feeding, essential hygiene actions, and family planning. In conjunction with the LMs, a total of 615 men have

been voluntarily promoting standard health seeking behaviours in their communities. A formalised approach for engaging men as partners, especially in promoting improved reproductive health and hygiene practices, has been initiated.

In order to enhance livelihoods for vulnerable people, especially women and youth, 45,377 individuals directly benefited from farm and non-farm training opportunities and Farmer Field Schools formed into clusters with links to value chains. Adult literacy/numeracy, vocational training, village savings and loans associations (VSLAs) were also part of the initiative to support livelihoods.

The nutrition component of the SNAP programme was carried out through the MCG which promoted optimal IYCF practices, essential hygiene and family planning. There was active screening and referrals of children with severe acute malnutrition (SAM) to the nearest outpatient therapeutic feeding programme run by the Ministry of Health/UNICEF. Training was conducted for DHMT staff on nutrition, health, and community integrated management of both neonatal and childhood illnesses (IMNCI) approaches. In addition, food aid distributions targeted pregnant and lactating women to prevent chronic malnutrition in children under 2 years. The monthly food distribution comprised a mother/child ration of vegetable oil, bulgur wheat, and lentils in the hunger/lean season, and corn soya blend (CSB), vegetable oil and lentils at other times.

Health activities involved promoting antenatal care (ANC), support to delivery at the health facility, prenatal care (PNC), information on sexual reproductive health rights (SRHR), and family planning. Construction of WASH facilities included installing hand washing stations, latrines, and incinerators for proper disposal of medical waste. Basic hand washing stations – tippy taps – were provided at household level. Agriculture/

livelihoods involved support to farmer field schools, seed inputs and training in improved agronomic practices as well as access to credit through establishment of village savings and loan groups. Vocational skills support focused on literacy, numeracy and life skills for mothers/caregivers in the PM2A.

Revised programming due to EVD outbreak

The EVD outbreak started in Kailahun district, one of the SNAP operational districts and spread rapidly through the rest of the country. All of the SNAP intervention districts were badly hit by Ebola, including one operational chiefdom in Koinadugu, which was the last district that was affected. During the EVD outbreak (June – December 2014), new activities were implemented and existing activities adapted to support the emergency response and help SNAP beneficiaries recover from the shock of the EVD outbreak. Existing structures and staff, volunteers and community health workers, as well as village and WASH health committees, all worked to implement activities.

Due to the state of emergency and the ban on public gatherings, food distributions under the PM2A programme were stopped at the end of July 2014. Food aid commodities were redirected to provide food aid to quarantined households, an important component of stemming the spread of the virus.

One important development related to the integrated management of acute malnutrition (IMAM). A self-screening approach using mid upper arm circumference (MUAC) and EVD standard operating procedures were developed. The MUAC self-screening is done by each mother/caregiver for children 6 -59 months. SNAP supported training of LMs and cascaded the self-screening training to other mothers on the use of the MUAC tool. The LMs collected monthly nutritional data on children screened



Figure 1 SNAP intervention areas

Chiefdom Targeted Chiefdom

Koinadugu

- 1 - Neya
- 2 - Mongo
- 3 - Follofaba Dembalia (Dembalia Musala)
- 4 - Wara Wara Bafodia
- 5 - Kassunko
- 6 - Diang
- 7 - Neini

Tonkolili

- 8 - Kalansogia
- 9 - Kafe Simira
- 10 - Yoni

Bombali

- 11 - Sella Limba
- 12 - Sanda Loko
- 13 - Gbanti-Kamaranka

Kailahun

- 14 - Yawei
- 15 - Penguia
- 16 - PejeWest
- 17 - Mandu
- 18 - Kissi Tongi

Key

- District Capital
- SNAP Head Office
- SNAP Field Office

¹ <http://www.oici.org>

for reporting. Children identified as MAM or SAM were referred to the peripheral health units (PHUs) for verification and receipt of nutrition care/support. A balanced ration of food aid commodities was used to provide appropriate foods to address MAM.

Additional new/adapted activities included:

- Social Mobilisation: Community sensitisation was carried out using mobile teams and community radio. EVD WASH committees disseminated EVD prevention messages and actions to take if a suspected EVD case was found in a community.
- Provision of basic protective supplies to PHUs: chlorine, detergents, soap, buckets, hand sanitisers, disposable gloves etc. were provided.
- EVD contact tracing and active follow up. Training and support was provided to the DHMT for contact tracing, data management and reporting.
- Psychological first aid training of staff and partners.
- Training of DHMT in nutrition, health, c- IMNCI approaches adapted in the Ebola context.
- Rehabilitation of WASH facilities at PHUs: hand washing, latrines, incinerators. This was rolled out before the EVD outbreak but was utilised greatly in preventing EVD infection.
- Food Aid to EVD quarantine homes (see above).
- MCG sessions focused on Module 3 'essential hygiene actions', especially proper hand washing.

Post EVD outbreak

Since January 2015, with the EVD outbreak under control and the number of new cases declining, the SNAP programme has entered into a recovery phase (see Figure 2). Activities to June 2016 have involved:

- A return to the spectrum of MCG activities,



promoting IYCF, essential hygiene and family planning.

- Promoting the resumption and utilisation of PHU services (including antenatal and postnatal care) with support from lead mothers and men as partners.
- Nutrition self-screening (by mothers) of children (6-59 months) has continued using the MUAC tool and EVD standard operating procedures (SOPs). Referrals of MAM and SAM to PHUs for nutrition care services.
- Building capacity of WASH and village health committees to ensure that WASH facilities are functional at health facility and community levels.
- Village savings and loans maintained and proceeds shared (no new groups formed) to enable beneficiaries to buy food on local market.
- Development of culinary recipes for use in MCGs cooking demonstrations. The recipe

book includes important complementary feeding and weaning foods recipes. The culinary recipe book will be used for MCG cooking demonstrations and cooking at household levels.

Discussion

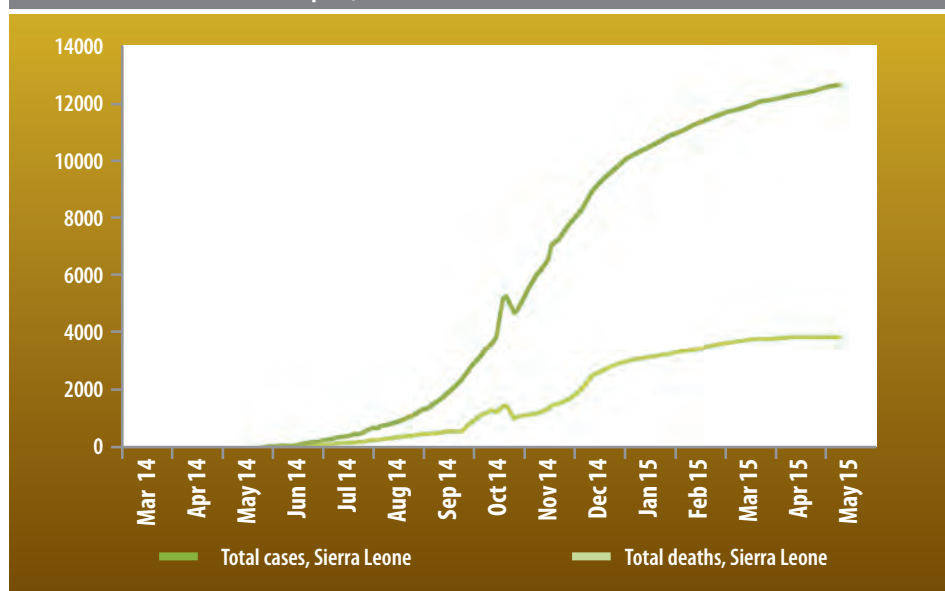
The SNAP 'development' programme successfully adapted and harnessed capacity to respond to a challenging emergency context.

Extreme infection control measures gave rise to the 'no touch' policy in nutrition screening. Use of MUAC for nutrition self-screening and case identification of children 6-59 months by mothers/careers and supervised by LMs was instrumental in continuing community-based screening of children for MAM and SAM. Feedback from mothers and caregivers on using the MUAC tapes has been positive. Mothers/carers contribute to the measurement of nutrition status of their children and feel part of the decision making process surrounding their children's health. The process developed is user friendly: illiterate mothers can effectively use the MUAC tapes and feel confident about translating the colours (green-normal, yellow- MAM, red - SAM) into their local language. LMs can effectively complete self-screening data collection tools, which makes monitoring of the entire process easier and can provide effective follow-up to ensure that children are getting proper nutrition and their health status is improving over time. Given the advantages, this innovation in self-screening will continue in the SNAP programme post-EVD outbreak.

Because of the EVD response, there is now increased awareness about hand washing and hygiene practices, especially using tippy taps at households and community levels. Tippy taps and or hand washing stations (veronica buckets) are readily available in public places and households for hand washing.

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Figure 2 Total suspected, probable, and confirmed cases and deaths of Ebola virus disease in Sierra Leone, March 25, 2014 – May 24, 2015, by date of WHO Situation Report, n=12706



Source: www.cdc.gov



ACEF, Nigeria, 2015

Challenges in addressing undernutrition in India

A SQUEAC survey

By Ajay Kumar Sinha, Dolon Bhattacharyya and Raj Bhandari



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FLAIR (Forum for Learning and Action with Innovation and Rigour) is a forum of expert individual researchers and practitioners, as well as organisations, which was formally registered as a Society in June 2013. It draws from the experience and expertise of the founding individuals and organisations. FLAIR creates, nurtures and operates the spaces for learning by organising and/or facilitating consultative processes, seminars, lectures, etc. It works through (a) participation in the processes of policy and programme formulation via research and development of protocols and standardised operating procedures (SOPs) based on a combination of learning from grassroots and inputs from sector and subject experts, (b) programmes in the social development sector that interface with Information and Communications Technology (ICT).

The context

The Global Hunger Index¹ (a composite of under-five mortality rate, prevalence of underweight in children and proportion of undernourished) for South Asia, East and Southeast Asia remains “serious” and warrants continued concern (see Figure 1). Although India’s 2014 GHI score fell to 17.8, it remains in the ‘serious’ category. The progress in reducing child malnutrition (underweight²) in India has been commendable, decreasing from 43.5% in 2005-6 to 30.7% in 2013-14. However, India is still ranked 120th among 128 countries with data on child undernutrition from 2009 to 2013; much work is needed at national and state levels so that a greater share of the population can enjoy nutrition security. India ranks highest out of all countries with respect to annual incidence

of deaths of children below 5 years; in 2012, there were 1.4 million deaths amongst children under the age of five years³.

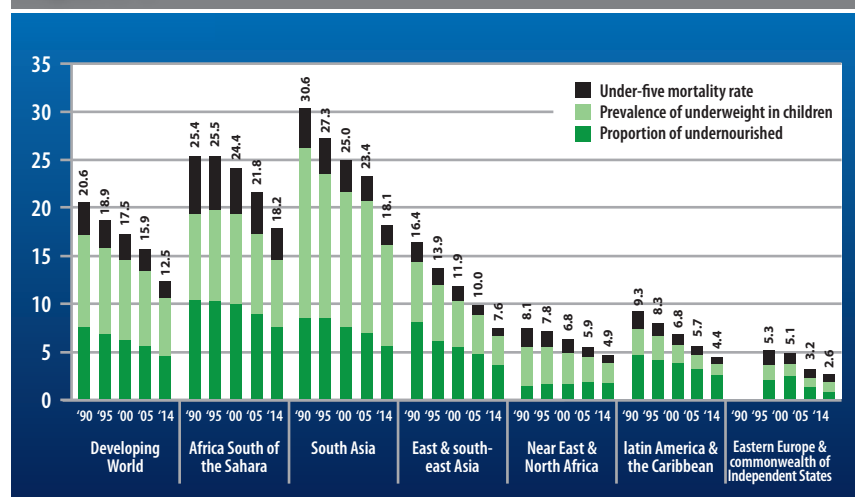
The prevalence of severe acute malnutrition (SAM) (weight for height <-3 z-scores) is estimated to be 7.9% in India (as per the National Family Health Survey

¹ The Global Hunger Index (GHI) is designed to comprehensively measure and track hunger globally and by country and region. It is calculated each year by the International Food Policy Research Institute (IFPRI). The GHI ranks countries on a 100-point scale. Zero is the best score (no hunger), and 100 is the worst, although neither of these extremes is reached in practice. Visit <http://www.ifpri.org/>

² Weight for age <-2 SD. This data is for children under 5 years of age and is provisional as reported by the Global Hunger Index (GHI), see: <http://www.ifpri.org/sites/default/files/publications/ghi14factsasia.pdf>

³ Levels and trends in Child Mortality, Report 2013, by UNICEF

Figure 1 Global Hunger Index – performance of various regions over the years



(NFHS) 3, 2005-06), translating to approximately seven million children under 3 years of age with SAM (see Table 1). At the present rate of progress, the country is unlikely to meet the Millennium Development Goals related to eradicating hunger and malnutrition and improving maternal and child health⁴. Whilst more recent data on malnutrition prevalence is available, these data are challenging to interpret. Variations in target age-group and survey timing, different references/standards⁵, lack of qualitative information to aid interpretation of prevalence figures and lack of serially consistent data to track

change all hamper analysis and conclusions. With these limitations in mind, the latest malnutrition prevalence data comes from the District Level Household Survey – 4 (DLHS 4), conducted in 2012-13. However, as not all the data have been analysed, in this article we only compare SAM prevalence (WHZ < -3) between DLHS 4 and NFHS 3 in the three best performing and three worst performing Indian States (see Table 2). It is important to note that while NFHS -1 and NFHS -2 assessed children under 3 years, both NFHS 3 and DLHS 4 assessed children under 5 years.

Severe wasting is considerably higher in DLHS 4 and indicates prevalence at a phenomenal 'emergency' level of 20% (34% global acute malnutrition) in the state of Maharashtra, for example. There is a lack of contextual data to help explain this extreme prevalence; in fact, a number of smaller surveys have not indicated any increase in prevalence of SAM for children less than 3 or 2 years of age and in some cases have shown a decline, such as the Comprehensive Nutrition Survey in Maharashtra (CNSM) in 2011⁷. Our field experience is that wherever Governments have worked with an integrated and comprehensive approach that combines addressing care and feeding practices with food based initiatives, there have been positive results for nutrition. But, without an intensive Government programme, nutrition insecurity takes its toll, especially on poor and marginalised families. Positive results seen in the CNSM could be attributed to good programming practices for pregnant women and lactating mothers and good infant and young child feeding (IYCF) practices. Although the CNSM does not show nutrition improvement compared with NFHS 3, this may be related partly to differences in the target age group surveyed.

During our field experience of working in Maharashtra and other States of India, we have observed that Governments of late have been working on multiple fronts to address under-nutrition. The Government of Maharashtra has taken a number of steps to reduce malnutrition with interventions focusing on pregnant mothers and the -9 to 24 months age group. Examples of state initiatives are included in Box 1. The results of this can be seen in a substantial reduction in measures of malnutrition including stunting and wasting prevalence between 2006 and 2012, as per the 2012 CNSM. Overall, it appears that there has been progress in programming for improvement of nutritional status of young children under 2 years of age. Less may have been achieved for the 2-5 years age group; however, strong conclusions cannot be drawn due to lack of data – in particular, a data subset for children below 2 years or 3 years from DLHS 4.

Factors to improve nutritional status of children in India

It is commonly accepted that the factors to address which will lead to improvements in nutritional status of children in India are a) nutritional status of women preconception and during pregnancy; b) infant and young child feeding (IYCF) practices; c) dietary intake of children and lactating mothers; and d) availability of safe, clean drinking water, sanitation and hygiene

Table 1 Prevalence of malnutrition amongst children under 3 years in India

	Stunting (Height-for-age < -3)		Wasting (Weight-for-height < -3)		Underweight (Weight-for-age < -3)	
	%	Number	%	Number	%	Number
India	22	19.601 million	7.9	7.04 million	15.8	14.077 million

Source: NFHS 3 (2005-06) and Census of India 2011

Table 2 Performance of the best and worst States of India in terms of severe stunting and severe wasting

	NFHS 3 (2005-06)		DLHS 4 (2012) ⁶	
	Children < 5 years		Children < 5 years	
	Severe stunting (height for age < -3)	Severe wasting (WHZ < -3)	Severe stunting (height for age < -3)	Severe wasting (WHZ < -3)
Maharashtra	19.1	5.2	14.7	20
Haryana	19.4	5	15.4	18.6
West Bengal	17.8	4.5	19.8	15.2
Tamil Nadu	10.9	6.4	11.8	13.9
Kerala	6.5	4.1	9.4	10.8
Himachal Pradesh	16	5.5	18.1	10.0

Note: NFHS 3 uses NCHS references, DLHS 4 uses WHO Growth Standards

Box 1 State initiatives to address malnutrition in Maharashtra

- Addressing malnutrition issues in Mission Mode through Rajmata Jijau Health and Nutrition Mission (The Mission).
- IYCF and infant and young child nutrition (IYCN) as an integrated package through the Breast-feeding Promotion Network of India (BPNI), addressing anaemia among adolescents and linking with the Health and Education Department.
- Micronutrient drives through National Rural Health Mission (NRHM), such as biannual de-worming (12- 59 months) and vitamin A supplementation (9-59 months) rounds which have ensured a coverage of >75% among children under 5 since 2007.
- Take Home Rations introduced which makes it convenient for working mothers and adolescent girls.
- Janani & Shishu Suraksha Karyakram, free delivery services, free transport and food, free antenatal care (ANC) check-ups during pregnancy, weekly visits of gynaecologists to primary health centres (PHCs) for check-up of pregnant women, free iron and folic acid (IFA) tablets for pregnant women – all geared towards improvement in maternal health.
- The Supplementary Nutrition Programme (SNP) guidelines have been revised so that expenditure per child and the calories allocated have increased. Severely underweight children between 6 months to 3 years old are provided with 950 kcals and 23-28g of protein. The revised cost is Rs 9.00 per day per beneficiaries⁸.
- Models of Village Child Development Centres (VCDCs) have been developed with funding support from the NRHM to allow identification of SAM and moderate acute malnutrition (MAM) by measuring weight-for-height in addition to weight-for-age.
- Home based VCDC for home based management of SAM and MAM children, the 'anganwadi' model and the 'muthhi bhar dhanya' model; the latter invokes donation of food grains by the village community to the households that have malnourished children.
- Regular training programmes on child care, nutrition, care during illness etc. involving Integrated Management of Neonatal and Childhood Illnesses (IMNCI), IYCN, Home Based Newborn Care (HBNC), breastfeeding etc. funded by the NRHM.
- Raising awareness about the importance of 10 essential interventions, e.g. breastfeeding, complementary feeding, etc and about ICDS services including the television series 'Deshache Dhan' on the ICDS services and the monthly newsletter 'Aamchi Anganwadi' on the latest schemes, anecdotes and stories from the field.
- Other innovations, such as the malnutrition free village campaign implemented by The Mission, the crèche scheme operational in six tribal districts through Gram Panchayat and the mobile Anganwadi project for migrated population.

Source: Annual Project Implementation Plan, 2012-2013, ICDS, Dept of Women and Child Development, Government of Maharashtra

⁴ GHI, The challenge of Hidden Hunger, 2014

⁵ NFHS-3 uses NCHS references, while DLHS 4 and CNSM (cited later) use WHO Growth Standards.

⁶ District Level Household and Facility Survey (DLHS), round IV, 2012-2013

⁷ For example, Comprehensive Nutrition Survey in Maharashtra, CNSM 2012, <http://www.iipsindia.org/pdf/CNSMFACTSHEET%20-%202012.pdf>

⁸ Annual Project Implementation Plan, 2012-2013, ICDS, Dept of Women and Child Development, Government of Maharashtra

facilities. All these factors are associated with social grouping and the income categories of the households to which the children belong.

(a) Nutritional status of women

Children born to short, thin women are more likely themselves to be stunted and underweight (low weight for age). Data shows 21.5% of children in India are born with low birth weight (LBW), i.e. below 2.5 kg. Anaemia remains a critical public health problem affecting 51.2% of women⁹ and 49.4% of children aged 6-35 months¹⁰ in India. Anaemia begins in childhood, worsens during adolescence in girls and is aggravated during pregnancy. The prevalence of anaemia is high because of low dietary intake of iron (<20 mg/day) and folic acid; poor bio-availability of iron (3-4% only) in the phytate and fibre-rich Indian diet; and chronic blood loss due to infectious diseases (faecal iron loss in the context of parasitic infections)¹¹ or consecutive child births¹². Data shows that only 46.6% of mothers in India have consumed 100 IFA tablets as prescribed during pregnancy¹³.

(b) IYCF practices

The risk of increased morbidity and mortality due to pneumonia and diarrhoea is higher for infants who are not exclusively breastfed¹⁴. According to NFHS 3 (2005-06), while breastfeeding is nearly universal in India, very few children are put to the breast immediately after birth. Only one-quarter of last-born children who were ever breastfed started breastfeeding within the recommended half an hour of birth, and almost half (45%) did not start breastfeeding within one day of birth. Fifty-seven per cent of mothers gave their last-born child something to drink other than breastmilk in the three days after delivery. Only 69% children below two months of age are exclusively breastfed. Exclusive breastfeeding drops to 51% at 2-3 months of age and 28% at 4-5 months of age. Overall, slightly less than half of children under six months of age are exclusively breastfed¹⁵.

NFHS - 3 (2005-06) also shows shortcomings in complementary feeding practices amongst both breastfed and non-breastfed 6-23m children. Only 21% of breastfed and non-breastfed children are fed appropriately according to all three recommended IYCF practices¹⁶, which varies widely among the states. Appropriate feeding practices are followed most often in Kerala and Sikkim, but even in these two states a large percentage of children are not fed appropriately according

to all three IYCF practices. Other states with much better than average feeding practices are Goa, Manipur, Himachal Pradesh, and Delhi. Compliance with all recommended feeding practices is lowest in Andhra Pradesh and Maharashtra, where only 1 in 10 children are fed according to all three IYCF practices¹⁷.

(c) Food intake

In spite of India's rapid economic growth, there has been a sustained decline in per capita calorie and protein consumption during the past 25 years¹⁸. Deficiencies in micronutrients such as vitamin A, beta-carotene, folic acid, vitamin B₁₂, vitamin C, riboflavin, iron, zinc, and selenium influence the vulnerability of a host to infectious diseases and the course and outcome of such diseases.

(d) Issues of safe drinking water, sanitation and hygiene

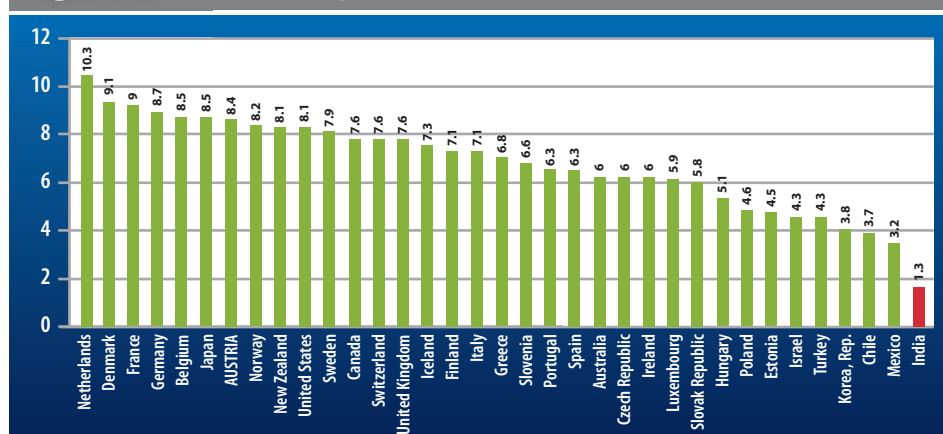
Research suggests that an unhygienic environment, combined with high population density, creates a perfect storm for diseases to thrive and malnutrition to flourish in India. Residents of nearly 59.4% of the country's rural homes defecate in the open¹⁹, exposing children to infectious diseases such as typhoid and diarrhoea, which reduces nutrient absorption. Madhya Pradesh, Bihar and Jharkhand have both the highest percentage of homes having no toilet facilities²⁰ and highest child malnutrition prevalence. Conversely, states like Kerala, Manipur, Mizoram and Sikkim, where 80% or more of the rural population have access to toilets, have the lowest levels of child malnutrition.

The effects of child undernutrition among the different social groups are reflected in higher neonatal mortality, child mortality, U5 mortality rate (U5MR), LBW, etc. amongst the scheduled population (both Scheduled Caste (SC) and Scheduled Tribes (ST)²¹) compared to children of higher castes. The calorie intake of the poorest quartile continues to be 30 to 50% less than the calorie intake of the top quartile of the population in India²².

Existing nutrition interventions in India

The Indian government has rolled out and expanded several programmes that target a mix of direct and indirect causes of undernutrition amongst mothers and children. *Direct* nutrition-specific interventions include food supplementation programmes under the Integrated Child Development Services (ICDS)²³ and Mid-day Meals (MDM)²⁴. The National Rural Health Mission (NRHM) aims to address micronutrient deficiencies through immunisation, IYCF, IFA distribution, communicable and non-communicable disease control programmes, etc. and pursues convergence between water, sanitation, education, nutrition and health programmes though implementing comprehensive programmes. *Indirect* causes of undernutrition are addressed through initiatives such as the National Rural Employment Guarantee Scheme (a rural jobs programme) and reforms, in several states, to the Public Distribution System for improving household food security among the poor. Recent sanitation and hygiene initiatives by the Indian

Figure 2 Public Health expenditure, OECD countries and India (% of GDP, 2013)



Source: Compiled from country-wise statistics on WHO estimates of expenditure on health as % of GDP (2013), <http://www.who.int/countries/en/>

⁹ DLHS III 2007-08

¹⁰ NFHS III

¹¹ Two common parasitic infections are Giardia Lamblia and Hookworm infection.

¹² Toteja GS, Singh P. Micronutrient profile of Indian population New Delhi: Indian Council of Medical Research; 2004

¹³ DLHS III

¹⁴ Black, Robert E., and others, 'Maternal and Child Under-nutrition: Global and Regional Exposures and Health Consequences', The Lancet, vol. 371, no. 9608, 19 January 2008, pp. 243-260.

¹⁵ NFHS 3 (2005-06), Vol. I September 2007, (http://www.rchiips.org/nfhs/NFHS-3%20Data/VOL1/India_volume_1_corrected_17oct08.pdf)

¹⁶ WHO recommended IYCF practices are: Breastfed children of 6-23 months to be fed three or more food groups daily and a

minimum number of times according to age (twice a day for 6-8 months and at least 3-times a day for 9-23 months); Non-breastfed children aged 6-23 months to be fed milk or milk products, at least four or more food groups, and four or more times a day.

¹⁷ Ibid

¹⁸ Hunger, Under-Nutrition and Food Security in India, N C Saxena, IIPA, New Delhi, 2011

¹⁹ 69th round NSSO survey report on drinking water, sanitation, hygiene and housing condition in India

²⁰ <https://sanitationupdates.wordpress.com/2012/03/16/india-census-more-people-have-a-mobile-phone-than-a-household-toilet/>

²¹ The Scheduled Castes (SCs) and Scheduled Tribes (STs) are official designations given to various groups of historically disadvantaged people. The terms are recognised in the

Constitution of India and the various groups are designated in one or other of the categories. During the period of British rule in the Indian subcontinent, they were known as the Depressed Classes. In modern literature, the Scheduled Castes and Scheduled tribes are referred to as Dalits and Adivasis respectively. SCs and STs have been among the most disadvantaged sections of our society due to their socio-economic exploitation and isolation over a long period of time.

²² National Sample Survey Organisation. Nutrition Intake in India 2011-12, Report No. 560, NSS 68th Round (July 2011 - June 2012)

²³ ICDS is the programme initiated with increased emphasis on the provision of supplementary feeding and preschool education to children of 3-6 years.

²⁴ initiated to provide a cooked meal with 300 calories and 8-12 grams of protein to the school children

Government, such as the ‘Swachh Bharat Mission’ that involve construction of toilets in rural areas to eliminate open defecation are also important. However, current interventions do not address structural and systemic causes of India’s malnutrition; they have poor coverage and miss important sections of the undernourished population. For example, ICDS does not recognise SAM and focuses supplementary feeding only on the 3-6 year old population.

Financing food and nutrition programmes

Malnourished children require more health

services and more expensive care and treatment than well-nourished children. Yet, India has one of the lowest health spends as a proportion of gross domestic product (GDP). Public expenditure on health in India was 1.3% of GDP in 2013, ranking well below the OECD²⁵ average of 6.7% (see Figure 2). The overall total expenditure on health in India stands at 4%, but it is mainly due to the contribution of the private sector (see Figure 3). As per a recent study on ‘Budget analysis of Food and Nutrition Programmes in India’ (forthcoming publication)²⁶ by FLAIR, the share of expenditure on schemes²⁷ in the Union Budget for achieving nutrition se-

curity averages 11.83% of the total country budget and only 1.63% of GDP % (between 2012-13 and 2015-16), which is inadequate given the extent of malnutrition in India (see Table 3).

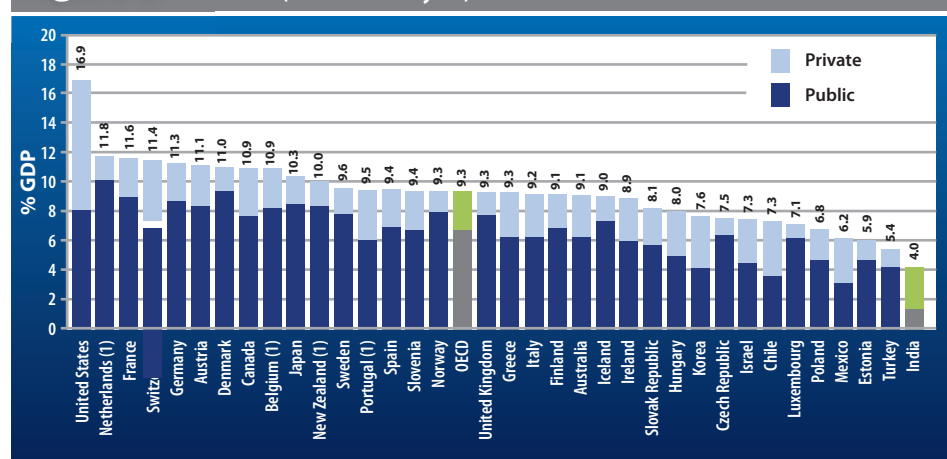
Crucially, large amounts of public finance meant for preventing and treating undernutrition through interventions under the NRHM have also remained unspent in India. Interventions such as the National Iodine Deficiency Disorders Control Programme and Reproductive and Child Health Project show under spend by 76% and 69% respectively for the financial year (FY) 2012-13. This is compounded by the overall inadequacy of funding for nutrition schemes. For example, in FY2015-16, only 57% of required funds were allocated for the MDM scheme for school children, while only 34% of necessary funding for the ICDS scheme was allocated by government in the same year²⁹.

The burden of undernutrition is higher amongst children belonging to socially disadvantaged groups. There is a provision for earmarking allocations in the Government Budgets for these groups through the Special Component Plan (SCP) and Tribal Sub Plan (TSP). However, the Union Government has not been fulfilling SCP and TSP guidelines for earmarking Plan allocations for SCP and TSP in proportion to their representation in the population and allocations are still far below the required 17% and 9% respectively (based on 2011 Census)³⁰. The share of allocation under SCP and TSP in total plan allocation in the Union Budget stands at 5.02% and 2.42 % respectively (as an average of FY 2012-13 to 2015-16)³¹ (see Figure 4).

Micronutrient related schemes and schemes for disease control to combat malnutrition are budgeted under the NFHM in the Ministry of Health and Family Welfare in all the States. Here again, as reflected in Figure 5 and below, there has been massive under-expenditure in these programmes:

- India: National Iodine Deficiency Disorders Control Programme and Reproductive and Child Health Project shows under spending by 76% and 69% respectively.
- Bihar: 78.1% and 49% of allocated funds for ‘Care of Sick Children and Severe Malnutrition’ and ‘Management of diarrhoea and acute respiratory infection (ARI) and

Figure 3 Health expenditure (public and private) as a share of GDP, India and OECD countries (2012 or latest year)



(1) Total expenditure excluding capital expenditure.

Source: OECD Health Statistics 2014;WHO Global Health Expenditure Database

Table 3 Public Finance for Food and Nutrition Programmes in India (Rs. in crore²⁸)

Food and Nutrition Schemes	2012-13 Revised Estimates	2013-14 Revised Estimates	2014-15 Revised Estimates	2015-16 Budget Estimates
Direct Nutrition Interventions*	114,161.14	131,487	151,248	142,615.6
Indirect Nutrition Interventions				
i) Interventions from Food and Civil Supplies other than Food Subsidy**	621.98	368.59	5	3
ii) Interventions from Agriculture***	11,158.91	10,694.2	12,283.07	8,150
iii) Drinking water and sanitation interventions#	13,000	12,000	12,100	6,236
iv) Rural livelihood and employment programmes##	31,987	35,600	35,186.42	37,204
TOTAL- FOOD AND NUTRITION SECURITY, (Rs. in crore)	170,929	190,149.8	210,822.5	194,208.6
UNION BUDGET , (Rs. in crore)	1,430,825	1,590,434	1,681,158	1,777,477
Food and Nutrition Security as a proportion of total Union Budget (%)	11.9	12.0	12.5	10.9
GDP at 2011-12 prices, (Rs. in crore)	99,88540	11,345,056	12,653,762	14,108,945
Food and Nutrition Security as a proportion of GDP (%)	1.7	1.7	1.7	1.4

*Includes ICDS, NNM, Nutrition Education Scheme, NIPCCD, SABLA, SAKSHAM, MDM, Interventions under National Health Mission, Food Subsidy and Nutrition related programmes in Union Territories (UTs)

**Includes subsidy on maintenance of buffer stock of sugar, subsidy on import of edible oils, re-imbursement of shortages in handling of imported fertilisers by FCI, Village Grain Banks

*** Includes NFSM (central share and CSS), Price Stabilisation Fund for Cereals and Vegetables, Rashtriya Krishi Vikas Yojana (RKVY), NHM /Mission for Integrated Development of Horticulture

#Includes National Rural Drinking Water Programme and Swachh Bharat Abhiyan

Includes MGNREGS, NRLM

Source: Demand for Grants (Expenditure Budget-Vol II), Union Budget of various years from following Depts: i)Dept. of Agriculture and cooperation, Demand no-1; ii) Dept. of WCD Demand no-108,iii) Dept. of Food and Public Distribution, Demand no-18, iv) Ministry of Drinking Water and Sanitation, Demand no-30,v) Dept. of H&FW, Demand no-48,vi) Dept. of School Education and Literacy, Demand no-59,vii) Ministry of Labour and Employment, demand no-62,viii) Dept. of Rural Development, Demand no-84

²⁵ As of now, 34 countries have signed Convention on the Organisation for Economic Co-operation and Development (OECD)

²⁶ Ajay Kumar Sinha and Dolon Bhattacharyya, Budget analysis of Food and Nutrition Programmes in India, FLAIR, 2015

²⁷ All schemes taken from Detailed Demand for Grants, Government of India, and various Ministries; those relevant are footnoted in Table 3.

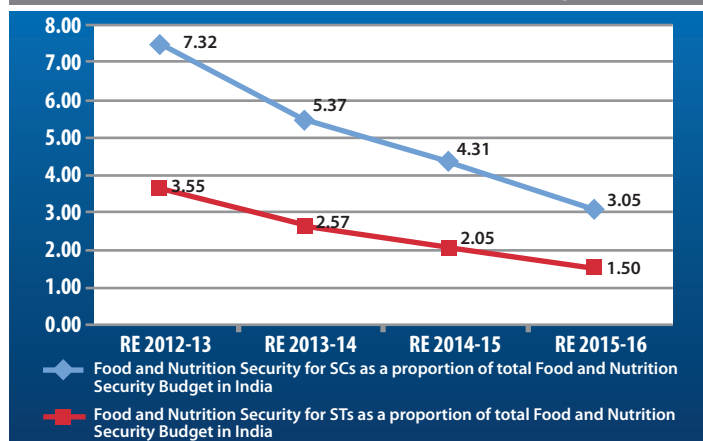
²⁸ Crore is equivalent to 10,000,000 rupees or 1,00,00,000 in the Indian system

²⁹ Ibid

³⁰ As per census 2011, share of SCs and STs in total population calculated as 17% and 9% respectively

³¹ Ajay Kumar Sinha and Dolon Bhattacharyya, Child Under-Nutrition and Public Finance for Food and Nutrition Security, FLAIR WORKING PAPER – NUTRITION FINANCE (version3), June 2015 (http://www.flairindia.org/documents/Reports/discussion_paper/Health%20and%20nutrition/FLAIR_working_Paper_Version%203_Policy_and_Budget_for_food_and_nutrition.pdf)

Figure 4 Trend in percentages of Food and Nutrition Programmes for Scheduled Caste (SC) and Scheduled Tribes (STs) under the Special Component Plan (SCP) and Tribal Sub Plan (TSP) in total Food and Nutrition Budgets



RE: Revised Estimates; BE: Budget Estimates

Data source: Demand for Grants (2012-13, to 2015-16), Various Ministries, Government of India.

Micronutrient Malnutrition' were unspent in 2012-13.

- Madhya Pradesh: Programmes such as the National Iodine Deficiency Disorders Control Programme, IYCF Programme, and the Micronutrient Supplementation Programme shows underspend by 33%, 27% and 73% respectively.

Thus we see that the crucial public finance meant for preventing and treating undernutrition as part of NFHM interventions are not only inadequately financed but that a substantial proportion of funds that are allocated remain unspent. The main reasons are inadequacy of infrastructure (so certain services cannot be delivered or scaled up), vacancy of staff and worker positions (thus activities are not implemented), delay in submission of utilisation certificates³³ and delay in release of funds.

Priority areas

A major gap in India's capacity to address undernutrition in India is the absence of programmes to both prevent and treat cases of childhood SAM. Energy dense food that is soft or crushable, palatable and easy for children to eat through community based management of acute malnutrition (CMAM) need rapid scaling up in India. Operations research using energy dense food fortified with Type 2 micronutrients

(magnesium, phosphorus, sulphur, lysine) is needed. Reductions in stunting are better achieved through interventions such as IYCF micronutrient supplementation for vulnerable children; access to high quality food; health care; safe water sources and basic sanitation. IYCF and CMAM should be conceptualised and planned as two integral parts of a single programme to prevent and treat undernutrition in its range of forms.

Quantifying need and determining impact of interventions is critical. However, in India, tracking programme performance over time is compromised by surveys that gather data on different child age groups. For example, CNSM (2012-13) collects data for children under 2 years of age, whilst NFHS 3 (2005-06) and DLHS 4 (2012-13) collected data for under-fives. DLHS 3 was conducted in almost the same reference period (2007-08) as that of NFHS 3 (2005-06), but DLHS-3 did not give information on any of the three indicators of malnutrition. DLHS 4 and CNSM are also of the same time reference period (2012-13), but the age group of children covered is different. As a result tracking change (improvement or decline) is hugely challenging.

Early identification and treatment of wasting may play a role in prevention of stunting in particular contexts. Programmes could be designed and directed to reduce wasting and stunting with preventive food based approaches. Policy, programme and finance should address the issue of wasting and stunting in an integrated way and attempt to bridge the divide between the two categories; it is unfortunate that neither the Ministry of Women and Child Development (WCD) nor the Health Department records length/height of children during growth monitoring promotion (GMP). The continuum of care has to be established and encompass pre-conception, during conception, natal and post-natal management of small for gestational age (SGA) babies, IYCF, complementary feeding, early detection of severe undernutrition by growth monitoring, disease prevention and treatment and care practices. Improvement in Maternal Health is also a priority action. Mid upper arm circumference (MUAC) standards appro-

prate for Indian children, should be used in community screening. Considering the high rate of small for gestational age (SGA) and preterm babies, there is an increased risk of children growing with Metabolic Syndrome, which is likely to triple the burden of malnutrition in future generations.

Finding solutions to malnutrition requires traversing many pathways and integrating interventions in multiple sectors including agriculture, food distributions, feeding and care practices, disease control, hygiene and sanitation and public health programmes for disease control. In India, these interventions and pathways fall under the portfolios of at least seven different ministries, e.g. Ministry of Agriculture, Ministry of Food and Public Distribution, Ministry of WCD, Ministry of Health and Family Welfare, Ministry of Water and Sanitation, Ministry of Rural Development, Ministry of Urban Development and Poverty Alleviation. Specific attention to socially marginalised groups comes within the remit of three more separate ministries, i.e. Ministry of Social Justice and Empowerment, Ministry of Tribal Affairs and Ministry of Minority Affairs. This requires a tremendous effort at coordination. Achieving positive nutrition outcomes is therefore contingent upon effective coordination between these ministries.

In order for nutrition problems to be addressed effectively, India may well need a Nutrition Mission that has the authority and system to coordinate an integrated approach between the myriad of actors implementing nutrition-specific and nutrition-sensitive programming and holds various stakeholders, including government, to account for actions and inaction.

For more information, contact: Ajay Kumar Sinha, email: ajay.s@flairindia.org C-102, J. M. Orchid, Sector 76, Noida – 201301, U.P., India. Website: www.flairindia.org Email: info@flairindia.org

³² Ibid

³³ Utilisation Certificates are sent by State Governments to the Union Government for the release of funds for the next quarter. These are essentially financial reports showing usage of funds.



National CMAM consultation organised by FLAIR and Save the Children, New Delhi

Strength in Numbers

By Saul Guerrero



Saul Guerrero is the Director of Operations at Action Against Hunger UK. He has been working in acute malnutrition policy and practice since 2003. Prior to joining Action Against Hunger, he worked for Valid International in the research and development of CMAM, supporting the pilot and roll out in over 15 countries in Africa and Asia. He is a co-founder of the Coverage Monitoring Network (CMN) and currently oversees the implementation of multiple information and knowledge management initiatives in nutrition and the wider humanitarian sector.

What is the real burden of acute malnutrition worldwide? How much funding currently goes to acute malnutrition? How much would it cost to treat acute malnutrition at scale? How many children die from acute malnutrition every year? Which countries have made the greatest progress in providing treatment to children suffering from acute malnutrition in the last decade?

These questions are essential to launch, coordinate and monitor any large-scale effort to tackle acute malnutrition. Yet, these questions are difficult or impossible to answer at present.

There are many questions about acute malnutrition and not enough answers.

Our efforts to scale-up nutrition and to influence global debates require that we are able to address these questions with confidence. But it also requires that we are in a position to address new and emerging strategic and tactical questions about how we tackle the problem of acute malnutrition at scale.

At present, some of the answers can be found in the myriad of initiatives that exist; UNICEF, WFP, GAIN and the Global Nutrition Report have all contributed a wealth of data and information on acute malnutrition. Their initiatives and those of others are providing crucial insights and analysis that take us far beyond where we were a mere decade ago.

Global nutrition information initiatives dealing with acute malnutrition are not taking us far enough.

However, current initiatives are not taking us far enough because they provide answers but do not empower us to ask our own questions. Without access to the data behind these reports and initiatives, gaps remain unclear and we are unable to aggregate data to deliver the kind of comparative analysis (let alone the data mining) that we can and should be doing. There are three commonly cited, but often misunderstood reasons.

The first is ownership. Who owns nutrition information? National Governments? United Nations (UN) agencies? The agencies that generate the data? Many international donors explicitly state that data generated with tax-payers money

belongs to the public. And yet it is not, in part because we – the people – do not demand that data are released. Today it is virtually impossible to access the existing datasets that stipulate the burden of acute malnutrition or the performance of services treating it at national level without entering into (often complicated) agreements about its use. These agreements act as a barrier to critical and participatory analysis and there is little empirical evidence to suggest that they are needed. We have a lot more power to decide how data are used than we realise and we need to exercise that power.

The second is risk aversion. How can the misuse of nutrition information be avoided? Acute malnutrition is a political issue and data tells its own story about the success of public health policy and practice. National governments and other nutrition stakeholders are understandably concerned about the risks involved in full data disclosure. But are we working with them to adopt a more open and transparent stance, driven by constructive efforts to improve programming? Our own experience in collecting and sharing national level data (including the coverage data from Mali used in our latest article published in issue 49 of *Field Exchange*¹) shows that national authorities may be more open to sharing (potentially sensitive) data than we are supporting them to be.

The third is leadership. Who should lead global efforts to aggregate and facilitate access to information on acute malnutrition? The UN agencies (UNICEF, WHO, WFP, UNHCR) have a delegated responsibility. But are we – the partners, advisors and donors – supporting and encouraging them to do so? The emphasis on mandates and responsibilities has not been used to empower them, but instead has, more often than not, been used to justify inaction on the part of those of us who can play a more defining role. We can all do a lot more to lead this process than we have done to date.

All of these elements have shaped access to information on acute malnutrition in the past, but they should not define how this information is managed and used in the future.

Over the past few years, Action Against Hunger has collaborated with a wide range of nutrition stakeholders worldwide to implement

nutrition information initiatives that have openly but responsibly shared data on acute malnutrition. Our experience has demonstrated that nutrition stakeholders – from governments, to UN agencies to non-governmental organisations (NGOs) – are ready to share and work in a collaborative manner. The inter-agency collaboration to estimate the burden of kwashiorkor (Putting Kwashiorkor on the Map²) has shown that this kind of collaboration and data-sharing can be achieved across multiple agencies if the objective is clearly defined and shared. Similarly, the collaboration between Action Against Hunger, UNICEF, Ministry of Health (MoH), Children's Investment Fund Foundation (CIFF) and other partners in Nigeria (described in this issue) proves that greater openness, far from proving detrimental, has actually catalysed discussions (and increased funding) for a new generation of nutrition initiatives designed to improve performance and scale-up efforts.

The time has come to set acute malnutrition data free.

Freeing data on acute malnutrition requires a series of changes, but above all, it requires a space that frees what is already there. We need an inter-agency initiative to aggregate acute malnutrition data on a scale never before seen; an openly available, non-proprietary space where information on acute malnutrition can be accessed and used by all. A platform founded on fundamental commitments to improve:

1. Our understanding of the magnitude and scale of the problem of acute malnutrition;
2. The quality and standardisation of information on acute malnutrition, and;
3. Access and utilisation of information on acute malnutrition.

We need to deliver something that carefully complements existing initiatives and platforms rather than undermine them. We can turn this ambitious vision into a reality, right here, right now. But to do so we need to recognise that our strength will be in numbers, that our success will depend on our ability to join³ with others and rally the nutrition community to this cause. We are willing to take a first step and transfer all acute malnutrition information currently managed by Action Against Hunger UK to this initiative effective immediately.

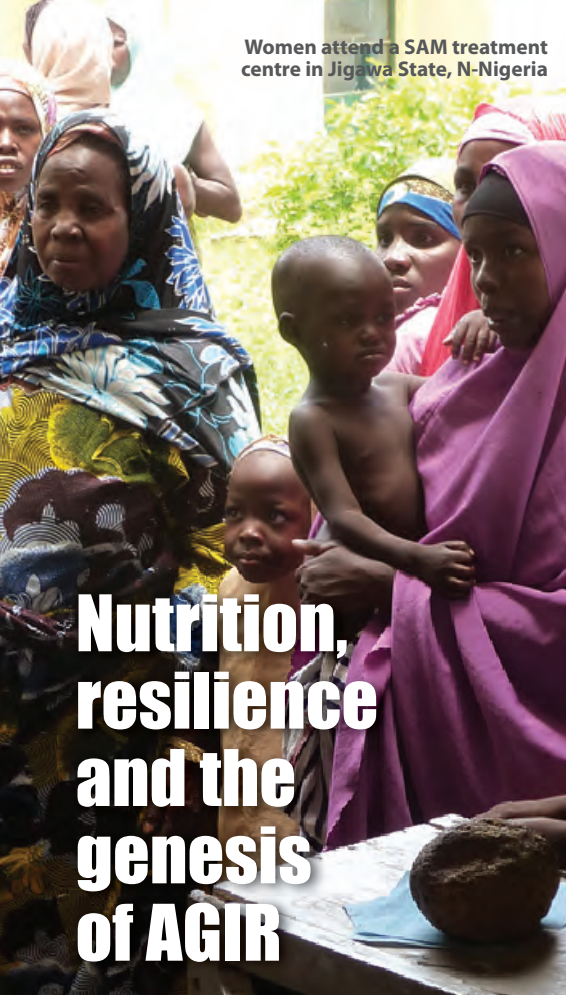
Who's next?

If you are interested, contact: Saul Guerrero, email: s.guerrero@actionagainsthunger.org.uk

¹ Sophie Woodhead, Jose Luis Alvarez Moran, Anne Leavens, Modibo Traore, Anna Horner, Saul Guerrero. Measuring coverage at the national level in Mali. *Field Exchange* 49, March 2015. p85- 89 online edition.

² <http://www.cmamforum.org/Pool/Resources/Putting-kwashiorkor-on-the-map-CMAM-Forum-2013.pdf>
<http://www.cmamforum.org/Pool/Resources/Putting-Kwashiorkor-on-the-Map-Phase-Two-Information-Sheet-Nov-2014.pdf>

³ MSF has recently introduced a new policy of sharing humanitarian medical data. For more information about their policy see: <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001562>



Nutrition, resilience and the genesis of AGIR

By Jan Eijkenaar



Jan Eijkenaar has been ECHO's Technical Assistant in support of a resilience approach and the roll out of the AGIR Alliance from September 2012 to

April 2015, based in Dakar. This followed a six-year assignment for the establishment and coordination of ECHO's Sahel Plan in response to food and nutritional insecurity in the West Africa Sahel region. An engineer by training, he has worked in humanitarian emergency aid from the late 1980's and as an independent evaluator, mainly on the African continent. His expertise and interest covers project and programme design and M&E, strategy and policy work on early response planning, nutrition security and resilience as well as promoting synergies between humanitarian aid, development work and governance.

Sincere thanks and gratitude to all the great persons and professionals who continue to contribute so much to nutrition care, innovation and equitable access to adequate basic services - fundamental to the notion of resilience and the success of AGIR - in the communities and generously across the sectors at all levels in the West Africa Sahel region. The insight and support of so many ECHO colleagues, partners and counterparts have been invaluable. This article reflects the professional experience and opinion of the author and not necessarily that of the European Commission.

FLAIR, India, 2014

The 2012 Sahel crisis and AGIR's early beginnings

The Global Alliance for Resilience Initiative (AGIR) is still in its relative infancy; launched in Ouagadougou in 2012, it is expected to run over 20 years until 2032. Yet it has already achieved much. It marks the first common understanding of the persistent and profound causes of vulnerability in the Sahel and West Africa region. It is a political recognition by the region and the world that fundamental and long lasting measures must be put in place to benefit this highly at risk population affected by food and nutrition insecurity. AGIR is framed in terms of 'resilience building' and sets an ambitious political target of 'zero hunger'.

In a region facing enormous challenges, including the probable doubling of the West Africa Sahel population over the next 20 to 25 years from the current 370 million, and staggering malnutrition prevalence that may permanently affect up to half of the future generation, AGIR is an essential undertaking. Every year in the Sahel, since at least 2012, some 20 million people face serious to extreme food and nutrition insecurity and around 1.5 million children¹ under the age of five years are expected to be admitted to severe acute malnutrition (SAM) treatment programmes.

Heightened interest in the concept of 'resilience' for the Sahel region of West Africa really began following a field mission to Niger and Chad that ECHO² organised for the EU Commissioner for Humanitarian Aid, Kristalina Georgieva, in January 2012. The severe food and nutrition crisis in the Horn of Africa throughout 2011 was beginning to abate. African leaders at the September 2011 Nairobi Summit were calling for a fundamental change in the approach to responding to these severe recurring crises. Key international actors, including the European Union (EU), USAID, the World Bank and the United Nations (UN), had started to build a high-level initiative. Eventually named SHARE – Supporting Horn of Africa Resilience – it aimed to "close the gap" between relief and development, enhance resilience and promote long-term solutions.

By late 2011, the food and nutrition security outlook for the Sahel and West Africa region looked bleak. Even though there was some disagreement about the likely scale and severity of a 2012 food and nutrition crisis in the Sahel, a joint mobilisation plan by ECHO and DG DEVCO³ at the end of 2011 allowed for the early mobilisation of planning, preparations, pipelines and resources of implementing partners and other donors. It led to an unprecedented Sahel regional emergency response of 1.13 billion USD by the end of 2012.

With both the shadow of the 2011 crisis and the Nairobi call for building resilience - rather than investing in costly repeated relief - still fresh in her mind, the EU Commissioner focussed on an early large crisis response and on generating political interest in a resilience building approach for the West African Sahel region. By that time, ECHO had entered into its 6th annual regional Sahel Plan to combat malnutrition aimed at saving lives at scale and lobbying for a durable reduction and prevention of malnutrition.

ECHO's approach, activities, partner-network and expertise that it had built up and established since the Niger nutrition emergency of 2005 provided a platform and opportunity to explore the resilience concept for the Sahel region. Meanwhile DEVCO, who were already involved in a resilience approach in the Horn, extended its interest in applying a 'resilience lens' to the West Africa Sahel region. Meanwhile, the first signs of preparation for the 11th European Development Funds⁴ (EDF) were on the horizon. The timing was therefore right for ECHO's continued efforts to lobby for a Linking Relief to Rehabilitation and Development (LRRD) approach so that prevention and treatment of malnutrition at scale would be funded by development co-operation and national government budgets. This is similar to the 'resilience' approach with its inherent goal of eventual phase-out and exit from fluctuating humanitarian funding that had done little to address structural chronic crisis needs.

In effect, the energy and interest behind the regional food and nutrition Sahel response converged, resulting in preparations for the set-up of a resilience initiative in West Africa. However, the particularly strong regional links, interdependencies and economic integration in West Africa compared to East Africa were very clear from the outset. The presence and role of three West African regional organisations (ROs) - CILSS (Permanent Interstate Committee for Drought Control in the Sahel), ECOWAS (Economic Community Of West African States) and WAEMU (West African Economic and Monetary Union) - was a significant factor in facilitating a resilience approach in the region.

¹ This is a planning figure that is regularly compiled by the UNICEF WCARO Dakar Regional Office using data provided by its regional network of national nutritionists, government services and international agencies. The figure is based on a combination of prevalence figures, population estimates, incidence estimates and coverage realities/ assumptions.

² European Commission's Directorate-General for Humanitarian Aid and Civil Protection

³ European Commission's Directorate-General for International Cooperation and Development

⁴ The EDF is the EU's main instrument for providing development aid to African, Caribbean and Pacific (ACP) countries and to overseas countries and territories (OCTs).



CILSS: Permanent Interstate Committee for Drought Control in the Sahel; CEDEAO or ECOWAS: Economic Community Of West African States; UEMOA or WAEMU: West African Economic and Monetary Union; SWAC/OECD: Sahel and West Africa Club, part of the Organisation for Economic Cooperation and Development; RPCA: Food Crisis Prevention Network (organised and facilitated by SWAC twice a year and since 2013 permanently hosting the official AGIR meetings); JRC: Joint Research Centre (an EU service involved in scientific and analysis work as well as mapping, including Food Security and livelihoods analysis in developing countries).

With the 2012 crisis in full swing, the hunger-gap approaching and public and political interest high, swift guidance was needed to establish a feasible, robust, politically supported AGIR in the region. The aspiration was also to avoid another short-lived, external, donor-driven and ultimately unsustainable 'big plan'. The Sahel and West Africa Club (SWAC/OECD), part of the Organisation for Economic Co-Operation and Development (OECD) in Paris and created in 1976 as an international solidarity group for the West Africa Sahel, was willing and able to broker political acceptance and commitment by the region in a short time. The three RO's therefore agreed to take the lead as the concept gradually took shape in the form of an Alliance - the 'Alliance Globale pour l'Initiative Résilience' - AGIR. At that point, important questions remained about the nature of AGIR and how to set it up.

The making of AGIR

AGIR was formally presented at a high level meeting organised by the EU Commissioner in Brussels on 18 June 2012. At that event, an agreement was reached to launch a multi-stakeholder platform led by CILSS, ECOWAS and WAEMU for the West Africa Sahel region called AGIR. The principle aim of AGIR was to push resilience higher up the political agenda and to "encourage greater donor support for sustainable action to strengthen the resilience of the most vulnerable populations". A series of meetings and outputs were to be achieved before the end of that year, in particular the formulation of a Regional Road Map for AGIR.

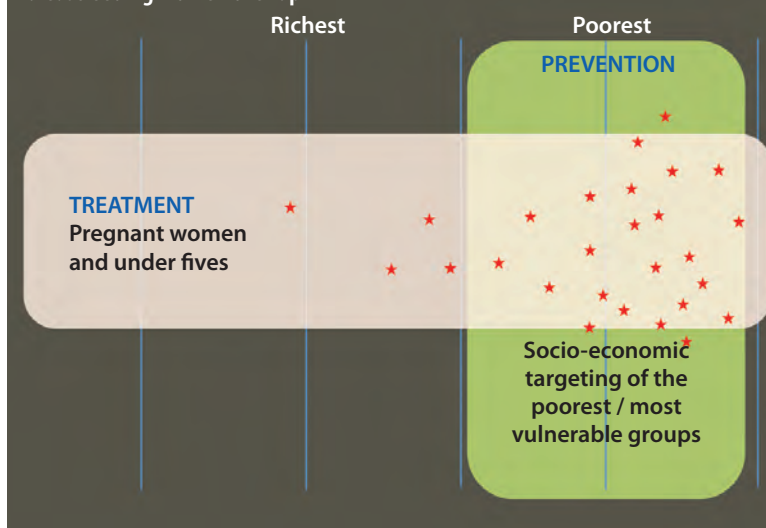
The first AGIR meeting of the three RO's took place in Abidjan on 10 September 2012. The meeting resulted in an official joint position paper on how to approach resilience as part of the regional process of formulating the direction and content of AGIR. The initial vision was to prioritise agricultural production and the development of regional and national agricultural policies. This single-sector focus was a logical

continuation of regional food-security priorities that preceded AGIR emanating from the Regional and National Agriculture Investment Plans that are rooted in NEPAD's Comprehensive Africa Agriculture Development Programme (CAADP, 2003) and the regions own subsequent agricultural policy ECOWAP (2005).

Although not really changing the RO's own strong preference for a dominant agriculture focused orientation of AGIR, the series of extensive consultations with all actors – including civil society organisations, the private sector and international non-governmental organisations (INGO's) - that followed in October and November that year proved that the process and group of stakeholders as a whole was strong enough to resist the imposition of a single viewpoint.

The first really decisive meeting involved AGIR's Senior Expert Group (SEG) that took place on 7 and 8 November 2012 in Paris at SWAC/OECD. The EU's delegation, which is the lead donor for the international community in support of AGIR, emphasised the need for a political vision and approach to address the structural drivers of food and nutrition crises focussing on very poor households. With considerable support from other donors (USAID), the UN (notably UNICEF), civil society organisations and INGO's, the meeting managed to get social transfers, livelihood support and social protection (Pillar 1) as well as nutrition and healthcare (Pillar 2) adopted as two of the four strategic objectives of AGIR for building resilience. Equally important was consensus about the priority target groups of AGIR. These were identified as groups who lacked the most basic resources for the protection of their lives and livelihoods and those most at risk of impaired personal development and capacity to be resilient to future threats of malnutrition and associated morbidity. AGIR's targeting of the latter category, all children under the age of 5 years and in particular the under 2's and all pregnant and breastfeeding

The bulk of the problem is where the very poor, under fives and pregnant and breastfeeding women overlap



'Resilience' in the Sahel first concerns the very young and unborn and their mothers, those in households and communities with very poor livelihoods and in particular where there is overlap of these groups.

women, was recognition of the view that a person's health and capacity to learn, develop and be resilient starts from conception. It also reinforced a formal link with the 1,000-Day Initiative and Scaling Up Nutrition (SUN) Movement.

Resilience priorities and benchmarks

A first draft Regional Road Map was quickly written-up by SWAC/OECD and circulated in order to inform the core principles of the political Joint Statement of AGIR. At this point there was little time left before the official launch of the AGIR scheduled to take place in Ouagadougou at the 28th RPCA (Food Crisis Prevention Network) meeting in early December. This high level meeting was to be attended by representatives from the West Africa region, several African and Western countries, the EU, the USA, the UN and other international and regional organisations.

The next decisive moment occurred on the evening of the drafting of the final text before the launch of AGIR on 6 December 2012, when a small team including the EU, USAID, France, UNICEF, WFP and UN OCHA, as well as the three RO's and SWAC/OECD, finalised AGIR's formal Joint Statement of principles. This political declaration by the region still lacked quantitative targets for measuring AGIR's success. Pressed for an answer and just having signed a commitment to start working towards achieving 'Zero Hunger' in the West Africa region, ECOWAS proposed 'Zero Hunger in 20 Years' as the target. Appropriately ambitious and matching the level of urgency in the Sahel, this was adopted as AGIR's main stated political purpose. This launched the Alliance, which in the words of SWAC/OECD, "is neither an initiative nor a policy. It is a policy tool aimed at channelling efforts of regional and international stakeholders towards a common results framework".

⁵ New Partnership for Africa's Development, see <http://www.nepad.org>

Table 1 AGIR objectives and performance and impact indicators

SPECIFIC OBJECTIVE/PILLAR	PROCESS-PERFORMANCE INDICATORS	RESULT-IMPACT INDICATORS
Overall Objective: Structurally reduce, in a sustainable manner, food and nutritional vulnerability by supporting the implementation of Sahelian and West African policies – ‘Zero Hunger’ in 20 years	1. Alignment of strategies, policies and programmes with the AGIR Resilience Results Framework; 2. Establishment of a multi-stakeholder and multi-sectoral platform combining measures to enhance resilience, and of mechanisms/frameworks for recording the results achieved by all AGIR stakeholders: financial mobilisation of states, institutions and partners in order to achieve the AGIR Results Framework; 3. Establishment of a methodological framework for taking into consideration and strengthening the role of women in food security and nutritional strategies and policies; 4. Significant increase in the share of public and private investment in structural responses to food and nutritional insecurity.	1. Prevalence of global chronic malnutrition less than 20%; 2. Decrease in the percentage of people structurally vulnerable to food and nutritional insecurity; 3. Significant increase in the coverage of food and nutritional needs by regional agricultural production (level of regional food self-sufficiency); 4. Change in the Global Resilience Index of vulnerable households, families, communities.

Table 2 Pillar 1

Pillar 1: Improve social protection for the most vulnerable communities and households in order to secure their livelihoods	1. Formulation and implementation of programmes & appropriate safety net mechanisms (number of countries that have formulated and implemented coherent food and nutritional social safety net programmes); 2. Effective establishment and functionality of the Regional Food Reserve; 3. Number of rural municipalities or local structures with functional local mechanisms providing solidarity in addressing food crises.	1. Significant increase in the proportion of vulnerable populations accessing basic social services (health, education, hygiene-water-sanitation); 2. Significant increase in the proportion of vulnerable populations that have increased their incomes and been able to invest thanks to social transfers; 3. Significant increase in the proportion of vulnerable populations with access to a balanced diet, especially during lean periods and price volatility; 4. Decrease in seasonal and inter-annual variations in the prevalence of overall acute malnutrition; 5. Reduction of at least 50% in the proportion of vulnerable populations in areas liable to major risks and shocks seeking food aid and humanitarian assistance.
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Table 3 Pillar 2

Pillar 2: Strengthen the nutrition of vulnerable households	1. Formulation and implementation of structural programmes for: i) access to nutrition and health services; ii) prevention and treatment of diseases with high morbidity, mortality; iii) reproductive health; 2. Formulation and implementation of specific programmes focused on infant and young child feeding; 3. Integration of nutritional issues in other sectoral development policies: i) nutritional objectives and outcomes clearly formulated in sectoral policies; ii) an established and appropriate institutional position on nutrition; 4. Introduction of legal and financial frameworks for the implementation of nutritional priority actions in the countries.	1. Prevalence of global chronic malnutrition among children under 5 years less than 20%; 2. Prevalence of global acute malnutrition among children under 5 years less than 5% throughout the year; 3. Rate of child mortality less than 2 deaths per 10 000 children per day, and decrease in the prevalence of diseases with high morbidity and mortality; 4. Increase in the percentage of pregnant mothers and children up to 24 months (first 1 000 days of life) having a balanced diet; 5. Significant progress on spacing of births and increasing the age of first pregnancy.
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The last vital element to finalise the AGIR Regional Roadmap was identifying and defining indicators for its overall aim and the four underpinning pillars as an example of a measurement framework and as a reference for all subsequent national AGIR roadmaps (now called National Resilience Priorities (NRP-AGIR, or PRP-AGIR in the French acronym).

Held in Lomé in March 2013, just some weeks before the 2013 RPCA in Paris and adoption of the AGIR Regional Roadmap, both ECHO and DEVCO were part of a small drafting team led by the three ROs and SWAC. With input from the UNICEF expert, vital nutrition indicators and benchmarks were included as main success criteria (Result-Impact Indicators) notably for the Overall Objective and for the 1st and 2nd Pillars, in the document (see Tables 1, 2 and 3).

The 20% chronic malnutrition prevalence ceiling is a critical benchmark (overall and Pillar 2) as is the 5% global acute malnutrition (GAM) rate ceiling throughout the year (Pillar 2). Another key impact indicator is the one describing a significant increase in the proportion of vulnerable populations with a balanced diet, especially during the lean periods and periods of price volatility (see Pillar 1, Table 2).

At this point, AGIR had become equipped with a workable toolbox, a balanced set of four strategic objectives and a clear target population.

It had ambitious political aims over a realistic timeframe that matched the immense food and nutrition security challenges faced by the region. It also had a reference and measurement framework. All of this had been accomplished in less than 10 months. It represented a major shift from the previous dominant view and priority given to food production and availability, adding vital dimensions of household economy, malnutrition prevention and the priority target groups for building resilience and reducing

chronic and acute crisis needs. The AGIR Alliance represents an unprecedented opportunity for the Sahel and West Africa region. The proposed process, principles and parameters to get AGIR implemented and eventually obtain results and achieve impact is a major innovation for the region. It now remains of paramount importance that all 4 AGIR Pillars receive equal and well-coordinated support.

Challenges ahead

At the AGIR Regional Roadmap’s adoption ceremony at SWAC/OECD in Paris early April 2013, DEVCO announced an allocation of at least 1.5 billion Euro of 11th EDF Funds for resilience building by way of a ‘Food and Nutrition Security and Durable Agriculture’ sector focus that will be applied to all West Africa Sahel countries. Even though the modality of EU development cooperation is currently changing towards one of broader ‘state building contracts’ rather than more precise sector support, the way that these funds are used for the benefit of the NRP-AGIR will be a measure of the national ownership of AGIR.

This demonstrates how it was hoped AGIR would prove useful, i.e. by ensuring the utilisation of existing funds and programmes in such a way as to orient them to specific objectives and target groups. AGIR is effectively an Alliance that aims to focus the work of actors, policies, programmes and initiatives towards building resilience in order to achieve impact. AGIR therefore is not another fund or initiative, it’s a federating principle.

This ambitious undertaking therefore puts an enormous responsibility for coordination on the shoulders on certain actors, notably AGIR’s international donor support group - the Platform of Technical and Financial Partners (PTFP-AGIR) led by the EU - the ROs and the (16 of the 17 CILSS/ECOWAS countries’) national governments that are engaging in AGIR who are in the process of drafting their own budgeted National Resilience Priorities.



AGIR has identified four priorities to reach ‘Zero Hunger’. Success depends on common analysis for joint action and effective targeting to eventual adequate scale

AGIR in practice: the Communes de Convergence approach in Niger

It is still very early to find examples that demonstrate the impact of activities included in the PRP-AGIR process. Niger's PRP-AGIR, formally adopted in March 2015 as the first National Resilience Priorities document in the region, is integrated into Niger's national 3N initiative "Nigériens feed Nigeriens" to further strengthen 3N's resilience dimension. There is a perfect match between the AGIR roadmap and 3N Initiative particularly in terms of the fundamentals: vision, aim and objectives, pillars, targets and modes of implementation approaches. The 3N Initiative is therefore an appropriate framework for the implementation of Niger's NRP-AGIR ambitions.

With this perspective in mind, the "Communes de Convergence" ('coming together in local municipalities') approach was initiated in early 2014 under the 3N Initiative. Designed and launched by 3N's High Commissioner, with the support of international Technical and Financial Partners (PTF in French) and notably several UN agencies, it is considered a to be a first comprehensive practical application of Niger's NRP-AGIR. The approach aims to embody 3N's cardinal principle that the municipality must be the entry-point for action, from identification, planning and implementation to monitoring, completion and evaluation of interventions. The Communes de Convergence approach thus also reinforces the process of decentralisation of governance, given that decisions made closer to where people live are more in tune with their realities and concerns.

Communes de Convergence involves communities, actively and voluntarily from the outset, ensuring that local development priorities contribute to the strengthening of the resilience of vulnerable groups by design and that the Municipal Development Plan (PDC in French) will be aligned to that effect. Priorities include improving agro, forestry, pastoral and fisheries productivity and increasing access to basic social services, nutrition, essential foods, etc.

Thirty-five municipalities have been identified so far for progressive deployment of an initial pilot phase of three years. The goal is to eventually cover all 255 municipalities of Niger. Studies and baseline surveys, as well as a mapping of the presence and capacity of a variety of potential stakeholders everywhere in Niger, were among the criteria for selecting the first batch of municipalities. This joint analysis process involved a series of workshops with the participation of all key stakeholders, including government services at all levels and those involved in implementing projects and programmes in the area.

Out of the 14 key indicators that inform the baseline survey, at least eight directly relate to nutrition and nutrition security. The ambition is to achieve full multi-sector coverage by the collective of actors in the area, as this is considered a prerequisite for the construction of feasible and successful alternatives to recurrent crises, food shortages, cyclical indebtedness of many households, malnutrition and dependencies on short-term aid.

The main working principles include (i) a full effective ownership by the municipality and a budget and capacity available to perform these tasks, (ii) the proper identification of gaps at local governance and technical service levels and the initiative to propose and find solutions, (iii) effective coordination, monitoring and evaluation of actions, of planned investments in the community and their articulation to cover all sectors in synergy, (iv) the inclusion of cross-cutting issues - including gender, population and social cohesion - by all stakeholders, as well as (v) the promotion of a practice of effective multisector implementation by and for all actors.

The Communes de Convergence approach is as much a consultation framework, offering space for dialogue and information and experience exchange in the municipality, as it is a framework for mobilising the necessary funding for the implementation of the selected activities. Backed by strong contributions from the municipal budget, the other part of the funding is sought from PTF's and implementing organisations and their programmes underway in the area. Chaired by the mayor, the framework includes state and non-state actors, project and programme representatives and the municipal councillors.

With thanks to Mamoudou Hassane, HC3N and AGIR, Niger.

This is where a main challenge for the success of this still young and fragile Alliance is situated; at the level of national co-ordination. An inclusive process of national dialogue to design, implement, monitor and steer National Resilience Priorities for the benefit of those persons most at risk and affected by food and nutrition insecurity needs to be driven pro-actively and on a permanent structural basis. Widely different sectors and ministries will need to engage, coordinate, design, plan and implement joint approaches on all relevant (community, district, province, national, regional, etc.) levels. This is a huge task.

Aware of these immense challenges, the PTFP-AGIR support group confirmed a sterling commitment to AGIR at the occasion of the RPCA meeting of Abidjan in November 2013, in particular to support the crucial national coordination of AGIR. Unfortunately, progress is slow. Few donors have mobilised dedicated expertise 'on the ground' to support national processes to engage successfully with a resilience focus.

International political interest in resilience and AGIR seems to be waning too. For several important international actors, AGIR may have become just another in a sequence of initiatives without an overarching political significance and ambition. Other policy priorities, such as security, terrorism and migration, are gaining more traction and attention as well. Fortunately, this may not affect AGIR too greatly as it has been politically anchored in the region from the outset.

Also unclear is the extent to which development partners embrace the pro-active culture of a rights-based aid. Such an approach requires a high level of mutual accountability, as declared in Paris in 2005, and a need to address the deep inequalities that underpin a lack of resilience. There is also a question over donors' internal coherence with regard to their own inter-sector coordination and the thrust of their wider development policies that should at the very least 'do no harm' to AGIR's target groups. One new food and nutrition security programme supported by several PTFP-AGIR members is raising concerns over the increasing private sector control of food and agricultural systems that may negatively impact on poor rural agriculture communities .

All information on AGIR is regularly updated on its official website hosted and managed by SWAC/OECD at <http://www.oecd.org/site/rpca/agir/>

More details on the progress of National Resilience Priorities, on-going in almost all countries of the West Africa Sahel region, is posted at <http://www.oecd.org/site/rpca/agir/nrp-agir.htm>



Jan Eijkemaar, Mali, 2008

Fooding in the Khyber province in 2010



Amjad Jamal/WFP, Pakistan, 2010

From Kigali to Istanbul the long way round: personal reflections on 20 years of humanitarian accountability

By Andy Featherstone



Andy Featherstone is an independent consultant with over 20-years of experience in strategic and operational management of international programme, policy and research work at country, regional and headquarters level. Having spent 15 years working for NGOs, including a decade with

Oxfam, Andy has spent the last seven years working with partners across the humanitarian sector to assist them to learn from their work and improve their practice. Andy has a passion for strengthening the accountability of the humanitarian system to those it seeks to assist.

In less than a year, humanitarian leaders from across the world will meet in Istanbul to discuss the state of the system during the World Humanitarian Summit. Vying for space on a packed agenda will be the vexed issue of how agencies can better account for their actions to the people they work with. While it took one of the greatest crises in living memory to place humanitarian accountability on the collective agenda, the journey since then has been far from easy. The account below offers some personal reflections on the progress and pitfalls that have been encountered along the way.

Accountability to affected people has come a long way since it grabbed the headlines as a consequence of the criticisms made in the Joint Evaluation of Emergency Assistance to Rwanda (JEEAR); while the unprecedented nature of the catastrophe justified a similarly unprecedented scale of response, the mix of UN agencies, NGO's faith-based organisations and do-gooders offered a complex mosaic of assistance, the effectiveness of which was patchy. As one of many people that worked in the region, I witnessed some extraordinary efforts to save lives and provide assistance to those affected by the violence, but I also recognise that the diversity in the response presented challenges and the lack of collective standards for the provision of assistance meant that some of those in need faced a lottery.

The years that followed witnessed considerable reflection from within the sector

which resulted in some important milestones such as the launching of the Sphere project and several years later, the creation of the Humanitarian Accountability Project (HAP), mandated to bring a voice to people receiving assistance. As the team leader for the 2002 HAP field trial in Afghanistan, I was given a broad mandate to spend three-months in Herat to work with agencies based there to pilot a range of accountability initiatives. The trial was met with a lot of enthusiasm although when it documented negative feedback from displaced people who had been provided with little information and uneven assistance, some of the enthusiasm was replaced by concern about HAP's legitimacy and authority; "who are these people speaking with our project participants and raising concerns? How dare they interfere with our programme!" A range of different approaches to strengthen accountability were tested and the findings from the field trial contributed to the decision taken in Copenhagen in

2003 to formally launch the Humanitarian Accountability Partnership International.

Two-years later in 2005, the package of measures designed to strengthen the effectiveness of humanitarian response by ensuring greater predictability, accountability and partnership was launched; the 'clusters' that were rolled out as part of the reforms and which quickly became a part of the humanitarian landscape placed renewed emphasis on the coordination of humanitarian assistance, but humanitarian reform was silent on issues of accountability to affected people which remained a niche issue, albeit one that was gaining support from a growing coalition of NGOs.

Despite humanitarian accountability being reliant on the passion and commitment of a few individuals and a handful of agencies, there was a rapid growth in approaches, tools and resources used to strengthen the provision of information and the participation

Dolo Ado camp, Ethiopia, during the 2011/12 Horn of Africa crisis



Jiro Ose/WFP, Ethiopia, 2012

of affected communities and to elicit and respond to their feedback. Undertaking an evaluation of an NGO response to Cyclone Nargis which swept across Myanmar's Irrawaddy Delta in 2008 killing in excess of 130,000 people, I was struck by the zeal which existed within the implementing agency for us to engage with affected people; accountability was made a central pillar of the evaluation, significant investment was made in facilitating community discussions with men, women and children, and at the end of the process, a comic strip was produced and disseminated across the Delta to feedback on the findings.

However, broader uptake across the sector continued to be inconsistent and complex crises in fragile states highlighted the limited capacity that existed to replicate accountability practices in contexts where remote management was necessary such as in the displacement crisis in the Khyber Pakhtunkhwa Province of Pakistan in 2009 where the deficit in the quality of assistance was heightened by the anonymity of those that provided it. Humanitarian aid had been stripped of its face, its voice and its ears as agencies struggled to balance the depth of the need with the threat of violence. Rather than viewing disaster-affected communities as partners in the humanitarian endeavour they were often treated as passive recipients. For humanitarian assistance to be accepted and understood there was a need to strengthen community engagement in the design and delivery of projects, rather than merely handing out packages from the back of trucks. Humanitarian accountability should have been seen as a means of strengthening the response rather than a complicated encumbrance.

The challenge of meeting accountability commitments to communities was further tested during the 2011-12 response to the Horn of Africa food crisis. Despite the im-

plementation complexities agencies faced, it did prompt concerted efforts to explore how humanitarian accountability commitments could be achieved in remotely managed programmes which resulted in some innovative practice. One agency I evaluated had established a web of complementary approaches to communicate with and listen to those receiving assistance which included a telephone hotline, third party monitoring, a rigorous partner reporting regime and site visits when security and access permitted. There were doubtless gaps in coverage and missing voices, but it was encouraging to observe the steps that had been taken to remove some of the distance between those providing assistance and those receiving it.

While there was an acknowledgement that humanitarian accountability was the 'right thing to do', as well as being a moral obligation, there was a concern that too little was known about its contribution to the success of projects. There was a feeling that there must be a link between the two, but the evidence was weak. With a small budget for the development of a methodology

and two pilot studies with communities in Kenya and Myanmar in 2013, I spent several months seeking to fill this gap by assessing the contribution that agency engagement with communities made to the relevance, effectiveness, efficiency and sustainability of their projects. The results were compelling; a modest investment by agencies in sharing information, involving project participants in the design and delivery of programmes and ensuring a means to listen to and act on their feedback brought a significant return, not only in terms of participant satisfaction and engagement in the project, but also in far more tangible ways linked more closely to the effectiveness of development and humanitarian projects. Accountability to affected people wasn't just an obligation, it also improved project performance.

So when the Transformative Agenda was unveiled, the inclusion of accountability to affected people or AAP was met with much enthusiasm. The emphasis placed on accountability has brought more resources and a more 'corporate' face to efforts to communicate with communities and to account to affected people, but has it strengthened community engagement? The recently published inter-agency study of AAP in the Philippines Typhoon Haiyan response suggests that there is still room for improvement; by focusing on agency agendas rather than eliciting broader community concerns and by an over-reliance on a mechanistic approach to 'being accountable' rather than engaging with communities, agency efforts might be getting in the way of their ability to hear people's most important concerns. With the World Humanitarian Summit less than a year away, there is an important opportunity for the sector to reflect on these and other lessons in order to offer a compelling vision of what needs to change to fully and finally achieve the ambitions outlined in the JEEAR 20 years ago.



Paul Wyatt/WFP, Myanmar, 2012

Cyclone Nargis impact in Myanmar in 2012

Dear ENN,

If there is one thing that we have learnt from the current Ebola virus disease (EVD) outbreak it is that regardless of infection status, Ebola comes bringing bad times for mothers and infants. More than a year into the EVD emergency that has affected mainly Guinea, Liberia and Sierra Leone, I thought it would be of interest to review some of the experiences and issues related to work within Ebola Treatment Centres (ETCs) and the impact of the disease at a wider community level.

Since the beginning of the crisis, many colleagues in the nutrition sector have tried to answer difficult questions on en-net¹: Is the virus transmitted via breastmilk? When it became apparent that it was, the next question was for how long was the virus transmittable after recovery? Evidence was continuously being generated and shared in a context that was changing continually itself. Recommendations were often obsolete shortly after becoming official guidelines. In November 2014, the National Viral Haemorrhagic Fever (VHF) pocket guidelines, developed by WHO, took on the recommendations from the Infant Feeding and Ebola Interim Guidance produced by several expert agencies² a month earlier, recommending the continuation of breastfeeding when both mother and infant were confirmed EVD cases. Breastfeeding "outweighs any possible benefits of replacement feeding. It is therefore recommended the infant remains with the mother and is breastfed..."

However, some non-governmental organisations (NGOs) argued that these recommendations were wrong and that the repeat re-infection risk was too high. These organisations ensured that in their clinics, all neonates born to Ebola positive mothers, or mothers and infants that tested positive at the centre, were separated. In these cases, all the infants were given breast milk substitutes (BMS). Recent email exchanges highlighted that reports UNICEF received have indicated that in a couple of instances, infants and children who were **not** separated from their mothers had worse outcomes. This has not been demonstrated to date with sufficient evidence. If a mother has EVD and the neonate also tests positive, the fear amongst field workers is that breastfeeding (which would likely result in cross-infection) will have a high probability of aggravating the infant's condition, further compounding the problem. If this is the case, then discontinuation of breastfeeding in maternal/infant positive cases may be a sensible approach, despite the outcome being ultimately the same; the death of the neonate.

It has been several months since the pocket guidelines were issued in November 2014. With the epidemic slowing but still dangerous, an updated version of these guidelines will be published shortly. It is likely finally to include the recommendation to avoid all breastfeeding from the onset of symptoms and to use artificial feeding. They will also note that a specific period for the virus to disappear from breastmilk or semen cannot be calculated safely, as demonstrated with the last case in Liberia that was sexually transmitted six months after the infection source has survived Ebola. The only way to be sure of the safety window is to periodically test survivors, although this will probably exacerbate the climate of fear and stigmatisation in affected communities.

Few cases of 2 and 3 year old children surviving have been recorded, and there have been no cases of survival of infants under 6 months (I consulted with GOAL, MSF Spain, IMC, and Save the Children in Sierra Leone who drew upon their regional experiences in their feedback; I thank for the time and information shared). Therefore it is currently impossible to obtain any significant baseline data.

The psychological implications of separating mother and baby have been discussed, as have the challenges of negotiating with mothers who refused to allow their baby go to another ward and preferred to stay with them. A partial spontaneous solution has been to engage survivors to care for these infants with minimal Personal Protective Equipment (PPE), as they were local, eager and could not be infected with Ebola again. These survivors have been a great asset for the care of infants and children in the ETC, and many decided to stay or returned to help after finding reintegration in their own communities a challenge due to stigma. These dilemmas ultimately fall within a child protection discourse and have been tackled differently depending on the area. Engaging survivors in childcare can help the mother to feel more confident – her infant is being fed and cared for by a woman from her community who can go back and forth in the ward so the mother can see her infant; whether mothers in this situation hold and are concerned regarding misbeliefs and taboos regarding survivors, as witnessed in the general community, is unknown. Further support approaches must be developed and shared. We are facing moral/ethical issues every bit as important as medical ones and there are no easy answers, just hard questions.

The efficacy of alternative infant feeding methods³ in relation to risk of mother/baby

contamination has been discussed endlessly by nutrition partners, with the realisation that there is no safe option for both health workers in the ETC and the patients. Feeding utensils and human contact both carry high risks of contamination. GOAL opted for a syringe with a feeding tube attached to it as the first choice, considering this to be the safest way of feeding an infant in these circumstances.

Risks and impact at household and community level are also considerable and perhaps not given the attention they deserve. Returning survivors can infect those in their households and communities and the fear of this is long-lasting. Ebola has impacted the way people relate to each other and in turn, behave. Its wider impact on breastfeeding practices will be felt long after the outbreak is over, in part due to the rapidly changing advice that was disseminated among the population and also the misinformation and taboos that surround such an aggressive disease, which have had a negative impact across the entire population so that EBF rates have declined.

As one expert shared on en-net⁴: "Current understanding is that the virus can be transmitted by breastfeeding, and in the case of confirmed maternal infection, breastfeeding is contraindicated (PAHO, WHO). However, this does not capture the whole problem. Many infections present the same way and there will be lots of suspected cases that turn out to be something else. There is a fear that anxious mothers with these early symptoms will stop breastfeeding and not restart when they are confirmed Ebola negative, "in case" it turns out to be Ebola". Also, pregnancy seems to have an impact on the way the disease presents itself, with confusing symptoms or none at all. An asymptomatic mother would die after delivering a healthy baby that tests negative but dies of the infection a few days later (or even weeks - one infant born in an MSF centre, whose mother passed away, survived the infection for 19 days). There is still much that we do not know about Ebola and the transmission reservoir for this virus.

Whilst waiting for a vaccine to use at scale, we must acknowledge there is an urgent need for research to answer key questions

¹ <http://www.en-net.org/question/1445.aspx>

² Guidance produced through informal consultation involving UNICEF technical advisors at HQ, regional & country levels; WHO Infant and Young Child Feeding and Ebola specialists; CDC Atlanta; Ministry of Health and Social Welfare Liberia; in-country staff working as part of the Ebola response; en-net technical forum respondents and the ENN.

³ Bottle feeding, finger feeding, glove feeding, syringe feeding, etc.

⁴ <http://www.en-net.org/question/1445.aspx>

more than one year into the biggest haemorrhagic fever outbreak in history:

- How long do survivors take to become free of any trace of the virus? How different is it for the various body fluids (sperm, milk, blood... etc.)?
- How long after interrupting breastfeeding is it recommended to wait before resuming? Is the safest recommendation to terminate breastfeeding permanently?
- Is there an impact on subsequent pregnancies for survivors? When will it be safe to become pregnant again?
- Does separating the mother and infant when they are both infected make any difference in survival outcomes?
- Does the cross contamination risk outweigh deprivation from maternal immunisation?
- What support can be provided to a mother who refuses to be separated from her baby in an ETC? How can separation be made more bearable for both of them?

- Does the use of infant formula have any impact (positive or negative) on the chances of survival of infants infected with EVD? How does this compare with breastfeeding?
- How different will breastfeeding practices in the general population be after the outbreak compared to the pre-outbreak baseline?
- In those with altered breastfeeding practices, what kind of behaviour change approach will be necessary to help the communities, and especially pregnant and breastfeeding women, to overcome the fear and taboos that have arisen from this outbreak and how this fear was managed at the time?

I also have to ask myself and colleagues the most ethically challenging question of all; how important is it to dedicate funding to infected subjects that have no chances of survival? Would it be a better use of resources

to focus on providing assets and psychosocial support to the survivors and the rest of the uninfected community who have had to bear increasing poverty as a result of the outbreak?

This is surely a key question and one that merits consideration. A significant criticism of the Ebola response has been that it largely ignored the health and other needs of the remainder of the population. This lack of support contributed to intra-community tension and conflicts and exacerbated stigma for survivors. The effects of the quarantine are expected to create a harsher than usual hunger gap for those communities that missed the cultivation window, whilst the subsequent rise in market prices of these foods will in turn affect the wider population of the affected countries.

Yours sincerely,
Óscar Serrano Oria

Roving Nutrition Advisor
GOAL Ireland

Dear Editors,

I'd like to highlight an issue regarding expired infant formula, prompted by a news report in Lebanon . Twenty tons of expired infant formula was found near a plantation in Karm Saddeh in the north Lebanon district of Zghorta. Authorities launched an investigation into its source, involving both health ministry officials and the police.

In studying the regulation of infant formula, I have consistently failed to discover what happens with outdated formula. What is supposed to happen? What actually does happen?

These questions came clear to me years ago when I was with a group of nutrition experts in Nepal, wandering the streets after a conference. We went into a little kiosk where one of our group picked up a box of powdered formula. He peeled back an innocent-looking sticky label and pointed out that it covered the printed "use by" date.

What do stores, wholesalers, and manufacturers do with their outdated formula? Do stores send it back to the wholesalers, and from there does it go to the manufacturers? We can make guesses about this, but what do we actually know? We might assume that somewhere along the way, outdated formula is discarded, but we don't really know that. Apparently some of it is used in feed for livestock, but what proportion of it is used that way? Where does the rest of it go? Shouldn't that use be tracked and regulated? Is there any national law against selling outdated formula anywhere? What are those laws, and what is the history of their enforcement?

In the U.S., infant formula is the only food product that is required to have a printed "use-by" date on the package. According to the U.S. Food and Drug Administration, after this date, it should not be fed to infants. However, the FDA does not say what is to be done with the product after that date. There are no rules, and thus no enforcement.

Some foods are still safe to use after their use-by dates, but of course they all deteriorate, and the risk of contamination increases over time. For infants, all of whom are highly vulnerable, the risks are high. The harm due to the use and misuse of infant formula are well documented. It is not only safety that matters. Infant formula's nutritional adequacy, already compromised when the product is

new, deteriorates steadily over time. As food safety experts know, a key factor in ensuring food safety is trackability, so any questionable product can be traced to its source. There should be a systematic way to track the disposition of outdated formula, especially if it is exported.

It might be useful if more people were to document the expired formula problem in different countries more thoroughly.

Regards,
George Kent

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Contributing to the Infant and Young Child Feeding in Emergencies (IYCF-E) response in the Philippines: a local NGO perspective

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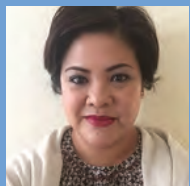
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KMI IYCF-E efforts in the Post-Haiyan response.

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Location: *Philippines*

What we know: The Philippines is prone to natural disasters. Recent emergencies have challenged meeting the needs of both breastfed and non-breastfed infants. National capacity and reactivity is critical to early frontline support in acute onset emergencies.

What this article adds: In response to Typhoon Haiyan (2013), an existing national NGO (Health of Mother and Child) mobilised an informal but wide network of experienced volunteers to support national IYCF-E efforts. Primary activity was frontline support to breastfeeding mothers in reception centres, development of Women and Infant Child Friendly Spaces (WICS) and advocacy and action regarding donations of breastmilk substitutes. Social media was heavily used. Pasteurised breastmilk was coordinated and successfully delivered via cold chain to targeted infants. Limited capacity and resources mean impact data is lacking; however insightful models of action through case studies are provided. The authors flag that support to non-breastfed infants (20% of under 1's in one assessment) was a significant gap in both the national and international led response.

The Philippine archipelago is prone to natural disasters; hydrological events alone average to 25 tropical cyclones a year. A quarter of our population lives below the poverty line, and a recent series of both natural and man-made emergencies has amplified weaknesses in our disaster response. With climate change, mega-disaster scenarios similar to Typhoon Haiyan (local name Yolanda, 2013) should be anticipated here and in other countries.

With lessons learned from volunteer work during typhoons Ketsana/Ondoy (2009) and Bopha/Pablo (2012), our non-governmental organisation (NGO) *Kalusugan ng Mag-Ina* (Health of Mother and Child), Inc. participated in post-Haiyan nutrition responses. KMI is a non-stock, not-for-profit NGO working to promote and protect the health of the mother-child dyad through research, policy development,

IYCF interventions in local or grassroots disaster responses: anecdotes

and programme implementation. We convened a network of volunteers, acted as an implementing partner for international NGOs (INGOs), and later contributed technical support to the national nutrition response through participation in the National Nutrition Cluster Technical Working Group (TWG). This article focuses on interventions for infants and young children in emergencies and learning and recommendations are highlighted.

Infant and young child feeding: the Philippine context

In 1986, the Philippine Milk Code (Executive Order 51) was legislated. Among other things, it prohibits donations of infant formula, breastmilk substitutes, feeding bottles, artificial nipples and teats during emergencies. The law bans indiscriminate distribution of these products as they put infants at greater risk of illness and death.^{1,2} Implementation of the law is poor at best. Local governments lack applicable operational guidelines for implementation of IYCF in emergencies. Messaging is often limited to promoting breastfeeding and limiting formula milk donations; poor understanding by the general public leads to the perception that the law is harsh and irrelevant. Post-Haiyan, this created a barrier to service delivery such that there was palpable pressure from multiple sectors to allow formula donations.

Toddler formula is widely marketed in the Philippines, being incorrectly perceived as exempt from Milk Code restrictions and a necessity both by health care providers and the general public. Well-meaning souls donate toddler milk assuming that it will be fed only to toddlers, not realising that mothers in low-resource settings will give any available milk to their young infants whether toddler milk or even coffee creamer. Diluted preparation of milk powder is common to make the powder last longer, contributing to both acute and chronic malnutrition. This puts infants at even greater danger post-disaster when clean water is not available, bottles cannot be cleaned, and congestion and lack of toilet facilities in evacuation centres make for extremely harsh environments.

In the Philippines, only 34% of infants under 6 months are exclusively breastfed. Also, only 34% continue to breastfeed until two years of age³.

The Philippine health system

To understand the challenges of implementing an effective emergency IYCF response, it is important to understand the structure of the Philippine health system. In 1992, the Philippines devolved the management and delivery of primary health services from the central Department of Health (DOH) to locally elected provincial, city and municipal governments in order to allow mid-level managers greater autonomy in decision-making, facilitate resource allocation based on local priorities and improve the management of local health services⁴.

The DOH maintains its leadership through health policies, technical assistance and regulation, with its regional health offices providing guidance to local gov-

¹ Adhisivam B, et al. Feeding of infants and children in tsunami affected villages in Pondicherry. *Indian Pediatr.* 2006 Aug;43(8):724-7.

² Hipgrave DB, et al. Donated breast milk substitutes and incidence of diarrhoea among infants and children after the May 2006 earthquake in Yogyakarta and Central Java. *Public Health Nutrition.* 2012 Feb;15(2):307-15.

³ The State of the World's Children, UNICEF, 2014.

⁴ Overview of devolution of health services in the Philippines. *Rural Remote Health.* 2003 Jul-Sep; 3(2):220.

⁵ <https://www.facebook.com/bayanihanIFE>

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Nanay Bayanihan: A Woman, Infant and Child (WIC) or Mother-Baby Friendly Space

At about seven days post-landfall, we received a distress call from volunteers at the Villamor Airbase, the transit area for typhoon survivors who had been airlifted from Eastern Visayas to Metro Manila. "Mothers with small infants are being handed bottles with milk powder as they deplane! What should we do?" We contacted the relief organisers and briefed them on the importance of a Woman, Infant and Child (WIC) friendly space where mothers could support, protect and promote IYCF-E. Camp management then designated a WIC space, which was prepared, operated and promoted through word of mouth and social media. Volunteers from both private and public sectors converged and became known as Nanay Bayanihan (NB or "Mothers Helping Out Mothers"). What started out as woven mats laid out over cardboard sheets under a tree evolved into a modular steel framed shelter generously built by a private donor. The area served as a haven to weary and hungry mothers and children.

Over November 15-21, 98 children aged 0 to 5 years were referred to us. In the first 48 hours or so of our operations, marshals were not yet systematically directing all mothers with young infants and children to our tent yet. As such, this total of 98 reflects only those that arrived at our NB tent. Among those 0-6 months of age, 83.3% were breastfeeding (42.9% were exclusively breastfeeding, 40.4% were supplementing with infant formula). Among all infants 0-1 year of age, 79.9% were breastfeeding.

The NB WIC space was staffed by volunteers including lay personnel, breastfeeding mothers, peer counsellors, and health professionals, 24 hours a day. NB tent managers conducted daily orientation with materials made available via the group's Facebook account⁵. Each incoming flight was met by camp marshals who screened the arrivals for families with infants and young children. Families were registered at the social welfare desk then invited to the NB WIC space, with knowledge of their case worker. Mothers and their children were encouraged to rest and given warm food and water, hygiene materials and clothing. Oral vitamin A was administered. Trained counsellors and health professionals inquired about the mothers' feeding practices from before and after Haiyan, and provided support, counselling and affirmation to those already breastfeeding. Counselling tools on infant and complementary feeding developed by the DOH-National Nutrition Council (NNC) were utilised for non-breastfed infants who were predominately fed infant formula. Volunteer wet nurses shared personal insights with fellow mothers, particularly those struggling with breastfeeding. Whenever feasible, mothers were referred to an IYCF counsellor at their final destination. Given our limited capacity, it was not possible to systematically gather quantitative data.

Figure 1 Call for volunteers for the Nanay Bayanihan (NB or "Mothers Helping Out Mothers")



WHAT: We have created a Crèche for Yolanda moms and babies 0-2yrs
WHY: So there will be a proper place of rest, for feeding, cleaning up the children, changing diapers and even playing with them. It is a comfortable place where families can wait and be counselled.
WHO: Mothers are urged to volunteer. You will be working with breastfeeding advocates, health care workers, DSWD, DOH and other organizations associated with IFE Core Group.
WHERE: it will be at the VILLAMOR AIR BASE in a specified area where our tent is set up
HOW to help: Please choose a shift and sign up bit.ly/NanayBayanihan
 We are also accepting donations for clothing, toys, toiletries, ecobags etc.
 For more information, check out facebook.com/bayanihanIFE
 Please CALL or TEXT BING 09178622782 or JENNY 09177003625

ernment units. However, the implementation of DOH policies across the islands is variable, depending on each local government unit's independent commitment to health. At the city/municipal level, primary health care services, such as breastfeeding and nutrition interventions, are delivered through Health Offices' midwives that supervise barangay (village) health stations. Not unusually, one midwife may be in charge of several villages. There is also a designated Nutrition Officer per locality, which may or may not be part of the Health Office. Midwives heavily rely on barangay health workers (BHW), community volunteers often chosen for their leadership potential or/and political affiliations. Volunteers who assist specifically with nutrition services are called barangay nutrition scholars (BNS).

The integrity of the health care delivery system is vulnerable to large scale catastrophic events where even local health workers become victims. Rescue workers are often unfamiliar with local policies so NGOs like ours address this by providing technical assistance to meet immediate needs and assist in capacity rebuilding thereafter. Much of KMI's work post-typhoon Haiyan focused on IYCF interventions at local or grassroots levels.

The Cold Chain Project

Although not a primary strategy, the provision of pasteurised donor breastmilk proved helpful in the absence of mechanisms to address non-breastfed babies' needs. Donor breastmilk on standby weakened this loophole in our promotion of IYCF-E practices. Volunteers attended to mothers whose breastfeeding had been disrupted. NB reinvigorated a campaign for donor human milk. The response from donors and from milk banks at the Dr. Jose Fabella Memorial Hospital, Philippine General Hospital, and Philippine Children's Medical Centre was overwhelming. When volunteer wet nurses were not available, the pasteurised donor milk was cup-fed to priority recipients, e.g. orphans, sick infants, or hungry infants whose mothers needed relaxation support. Due to limited capacity with staff stretched to their limits in the response, it was not feasible to gather data systematically.

Donor breastmilk was also airlifted on military planes for 40 infants, some preterm babies in the Neonatal Intensive Care Unit (NICU) but mostly older diarrhoeic infants at the Eastern Visayas Medical Centre (EVRMC) in Tacloban which had made an urgent call for donor milk. Through the network of individuals and organisations, a generator was procured and sent to EVRMC. The need for donor breastmilk was addressed through multiple agencies (Armed Forces of the Philippines, DOH, NGOs, hospitals). It was feasible to collect, transport and store pasteurised breastmilk in a cold chain meeting the requirements of survivors without needing to solicit formula donations. In the transit areas, where mother-infant dyads' stay was short term, the pasteurised donor milk was used for any young infant that needed to be fed acutely (whether exclusively breastfeeding, exclusively formula feeding or mixed feeding), after consent, via cup feeding. It was also used for the mothers who needed to be relactated using drip drop and cross nursing techniques. In the recipient hospital in Tacloban (EVRMC), the pasteurised donor milk (requested by the hospital chief) was fed via tube or cup feeding to mostly older formula feeding infants being treated for gastroenteritis in their paediatric wards. We also highlighted the shortage of breastmilk in referral hospitals, and the existence of mother support groups.

Monitoring of 'Milk Code' violations

The NB tent became known as the babies' and children's tent, and as such the default recipient for food and clothing donations but also unsolicited powdered milk and feeding bottle donations. Donors who brought in breast milk substitutes (BMS) and feeding implements were diplomatically informed on why these were not helpful and that the items would be turned over to the DOH NCR office for inspection and disposition. NB convenors granted interviews to trimedia journalists and reporters who flocked to the NB tent, always emphasising breastfeeding protection and the dangers of BMS.

Nutrition interventions in the National Disaster Response

The National Nutrition Cluster led by the DOH-NNC and UNICEF, is activated during times of emergencies. There are four technical working groups: Assessment and Monitoring, Advocacy and Communications, Community Management of Acute Malnutrition (CMAM), and IYCF-E. Post-

Figure 2

This 3-day old newborn, unfortunately separated from her mother, was brought to the NB tent where she was nourished by wet nurses. Whenever there were no wet nurses, she was cup fed with pasteurised breastmilk.



Dr Maria Asuncion Silvestre, KMI, Philippines, 2013

Figure 3

Mother support groups helped raise awareness on IYCF-E. Here, mother employees of the Bangko Sentral ng Pilipinas (Central Bank) carefully pack pooled breastmilk donations before pasteurisation at the PGH and sending to EVRMC.



Claire Mocoop, Bangko Sentral ng Pilipinas, Philippines, 2013

Figure 4

Prior to the NB tent, BMS, etc were included in the general distribution of provisions for infants and young children. Volunteers, including doctors, convinced those who packed these provisions of the dangers of BMS. Most BMS donations were eventually "centralised" through the NB tent, hidden from sight, and then turned over to the DOH. Well-meaning donors were informed that BMS are unnecessary, assuring them that there were qualified people helping NB babies.



Dr Romelei Alfonso, KMI, Philippines, 2013



Dr Romelei Alfonso, KMI, Philippines, 2013

Haiyan, nutrition cluster counterparts were activated simultaneously in three regions. Sub-regional coordination hubs were further activated. As was the general experience among different clusters, coordinating these bodies proved challenging due to the unprecedented magnitude of destruction, as well as human resource limitations.

The government released its strategic plan, Reconstruction Assistance on Yolanda (RAY), to provide overall guidance for implementation of recovery and reconstruction programmes in Post-Haiyan areas. There was no recommendation specific to nutrition⁶ until Day 41, when the final report indicated under-five malnutrition prevalence as a health outcome to be monitored⁷. Among 126 teams deployed by the DOH Health Emergency Management Bureau (HEMB) within the month following landfall, only one had a specific nutrition function⁸. Because local health workers were victims themselves, few could return to work quickly. Nutrition interventions (e.g. Rapid Nutrition Assessment, IYCF and breastfeeding support) were performed mainly by dedicated staff of NNC and partners deployed by the Nutrition Cluster.

During the rehabilitation phase, health care providers from barangay to municipal levels underwent various training activities from the different clusters. Implementing partners had to complete all activities before funds expire, often resulting in simultaneous trainings and competition for participants. In our experience as implementing project partners, local health officers expressed appreciation for trainings but also, their difficulty to absorb everything and compromises they had to make in order to attend. At some point, local executives requested minimisation of out-of-office days of local health staff, as service delivery was compromised in their absence⁹.

Rethinking intervention strategies

As an active partner of the NNC, we emphasised the following:

- **Operationalising IYCF-E in WIC Spaces as Mother-Baby Friendly Spaces**

With an unprecedented 13 million people displaced, the capacity of local and national support systems to provide food, water and shelter was overwhelmed post-Haiyan. The need for WIC spaces was sorely felt in heavily congested evacuation centres. We recommend the early delineation of women and child-friendly spaces following the initial census taking. Specific steps towards integrating services for women and children can then be outlined to allow for their expedited and efficient delivery, and for monitoring indicators. Mothers of young children should not have to queue up for food and water supplies. While Department of Social Welfare and Development's Camp Management Guidelines call for a WIC space, services are yet to be harmonized with IYCF-E strategies. The capacity of international coordinating staff on IYCF-E is also variable. The implementation of mother-baby friendly spaces, if any, still lacks functionality standards. For example, during Haiyan, one of the tents put up by an implementing partner was nicely constructed but utilisation was poor. One frontline responder observed it was too hot inside.

As such, we recommend standardisation of recommendations between the Health and Social Services Departments.

Health and nutrition services for pregnant women and their newborns are part of a continuum. A survey conducted in affected areas after the typhoon reveals that an alarming 14% of infants aged 0-23 months were never breastfed¹⁰. The design of the survey captured infants born before, during and after typhoon Haiyan. This reflects a gap in basic maternal and newborn care. Furthermore, essential birthing services were unavailable until much later when tents and mobile vans were set up to provide obstetric services. Safe births and breastfeeding initiation rates could have been increased by creating WIC spaces with basic birthing supplies should transport to a health facility not be feasible just yet.

⁶ National Economic and Development Authority (NEDA), 2013. Reconstruction Assistance on Yolanda (RAY): Build Back Better. Manila. (<http://www.gov.ph/downloads/2013/12dec/20131216-RAY.pdf>)

⁷ NEDA, 2013. Reconstruction Assistance on Yolanda (RAY): Implementation for Results. Manila. (http://www.neda.gov.ph/wp-content/uploads/2014/10/ray_ver2_final.pdf)

⁸ DOH-HEMS Health Situation Update No. 7 as of December 6, 2013.

⁹ Minutes of the Region 8 Nutrition Cluster Meeting, January 24, 2014.

¹⁰ Source: Nutrition Survey Using the SMART Method in Typhoon Haiyan-affected Areas of Region VI, VII and VIII. The Philippines: 03 February – 14 March 2014. (<http://www.humanitarianresponse.info/operations/philippines/document/nutrition-survey-using-smart-method-final-report>)

The Busuanga experience

While most relief and media attention was focused on the Visayas, nine days post-first landfall, we participated in a "medical mission" to Busuanga, a site of Yolanda's sixth and last landfall, where no medical groups had been deployed before. With 2 surgeons, 1 obstetrician and 3 other doctors, 2 nurses and a pharmacist, we conducted the IYCF-E efforts, bringing cups, syringes and pasteurised donor milk along with medical supplies. We first networked with their municipal health officer and his wife, a nutritionist. Because we were to travel by small boats between islands, we arranged to leave most of our back-up donor milk in the health unit's vaccine freezer and transport aliquots of milk with us in coolers. At our base island, we bought out all the available vegetables for distribution to families with older children. We worked with the nutritionist and the "barangay nutrition scholars" to ensure sustainability, doing individualised feeding assessments and demonstrating methods to support relactation, i.e. the drip-drop method, tandem nursing, cup and syringe feeding, hand expression and proper storage of breastmilk. We counselled them on appropriate complementary feeding, handed out vegetables, and advised them to plant the seeds.

Figure 5

Travelling via motorised outrigger boats meant we had to schedule our departure times with the tides, so our IYCF-E sessions had to be brief and efficient.



Dr.Romelei Alfonso, KMI, Philippines, 2013

Figure 6

We worked with the local nutritionist (far right) and village nutrition scholar (far left). This mother delivered 3 days before Haiyan and came to us asking for formula thinking she did not have breastmilk for her 11-day old. Upon exam, her breasts were engorged and her baby poorly attached. After assisting on proper positioning, she experienced her baby feed calmly for the first time. We taught her hand expression. Now convinced of her adequate milk supply, she committed to tandem breastfeeding her recently weaned 2 year old and newborn, with tears of relief (this is a common reaction we get from mothers when they first visualize their breastmilk through hand expression. Hand expression is an empowering skill for mothers). Individualised breastfeeding support should be timely and delivered skilfully.



Dr.Romelei Alfonso, KMI, Philippines, 2013

In implementing WICs, frontline staff should be careful in communicating about their target groups. Bottle-feeding mothers may be inadvertently excluded because “calls” are addressed to “Pregnant and Lactating Mothers”. Aiming to report official numbers of this high-risk group is critical nevertheless, formula-fed children can be “systematically” excluded from counting, especially when families have already left evacuation centres, effectively marginalising this high-risk group even more.

- **Reengineering capacity building**

Essential competencies to IYCF-E implementers include skills in hand expression of breastmilk, alternative feeding methods such as cup feeding, relactation, and knowledge on the sourcing and preparation of appropriate complementary foods. Successful IYCF-E cannot be limited to counselling on exclusive breastfeeding and complementary feeding as the needs of non-breastfed and mixed-fed infants demand attention. The ideal IYCF-E response should be widespread and coordinated rather than dependent on a few local experts working reactively.

IYCF practices should be robust so that exclusive breastfeeding and appropriate complementary feeding are “pre-positioned” proactively. KMI promoted integration of IYCF-E in “normal” programming through the standard Essential Intrapartum and Newborn Care (EINC) or First Embrace¹¹ workshops. This notably included, training for 42 priority municipalities in the Haiyan corridor and in major medical, midwifery and nursing schools, and end-referral hospitals nationwide.

- **Responding with sensitivity to local context and cultures**

While regulation of BMS is important post-disaster, this is easier said than done. It is difficult for health managers and the general public to fully appreciate the risks of formula feeding and to discourage or not distribute untargeted BMS supplies, if safeguards and systems of support are not in place for babies who do not breastfeed. In the absence of clear frameworks and safeguards, as was the case in this humanitarian response, “regulating” people often works only to burn bridges.

Social media and strong leadership from existing mother support groups e.g. LATCH and Breastfeeding Pinays, facilitated the convergence of volunteer mother support groups, a valuable resource for the government during times of disaster. There must be a mechanism for nurturing, sustaining and recognising their contributions to augment local health workers and government responders.

Reflections of a national organisation

The efforts reflected in this article were exerted by a lean organisation comprised of a network of committed volunteers, coordinated by at most six people – again volunteers - at a given time. Much of the activities we undertook were to fill locally unrecognised gaps in support of the national efforts and human resources spread out really thinly at that time. Our attempts to secure funding for relief efforts (related to WIC and “breastfeeding missions”) at the height of response were unsuccessful due to many constraints, including the manpower needed to develop proposals and solicit support. We subsequently secured funding from UNICEF in the rehabilitation phase to strengthen and capacitate birthing facilities in 42 municipalities. In the latter capacitation project, we incorporated an IYCF-E module targeting health officers and midwives.

Although we tried, we have little data to support our experiences in terms of numbers, coverage, and impact of the interventions. Our working in a very limited setting with capacity constraints, permitted showing models for action but not data on impact. We have worked in transit areas and there was no feasible way to track the outcomes. Our visits to communities were brief.

Through our work, we observed systems gaps that we feel are important to mention. In the Haiyan response, there were no specific actions for non-breastfed babies. Their needs must be met acutely to reduce “tension” but in ways that comply with the Milk Code by exhausting safer viable options like relactation, wet nursing and provision of donor milk as mainstream interventions. Otherwise, in the absence of official channels of support, families will source out BMS donations elsewhere, as observed in this crisis.

Figure 7

Cross nursing and “drip and drop” method for relactation. The mother in blue was formula feeding her 3-month old (not in the picture). The mother in pink allowed her own newborn to suckle onto the breast of the mother in blue while dripping some of her own milk in order to stimulate milk production. Wet nursing is a culturally acceptable practice locally.



Dr. Romelei Alfonso, KMI, Philippines, 2013

Figure 8

Mothers and caregivers are taught how to cup feed young children using pasteurised breastmilk. Mothers are also taught how to hand express breastmilk if they need to be away from their children.



Dr. Romelei Alfonso, KMI, Philippines, 2013

Figure 9

These 7-month old twins were referred for nutrition counselling. The infant is learning to cup feed expressed breastmilk. Though exclusively breastfeeding, the mother thought her breastmilk was only good until 6 months. Before Haiyan, the mother started bottle feeding with full cream powder milk (not infant formula), for which the father spent 500 pesos (~11 USD) weekly. Upon counselling and examination, the mother still had breastmilk and decided to continue breastfeeding. They were also helped to understand complementary feeding practices.



Dr. Romelei Alfonso, KMI, Philippines, 2013

¹¹ <https://www.facebook.com/UnangYakap>
http://www.wpro.who.int/topics/reproductive_health/maternal_child_health_brochure.pdf?ua=1

Conclusion

Though perceived as the most vulnerable, the exclusively breastfed infant is the most food-secure post-disaster. While IYCF-E and nutrition initiatives mention breastfeeding in policy and strategy frameworks, there is lack of direct interventions and capacity building for practical skills for its protection, promotion and support. Robust IYCF practices should be “pre-positioned” so that impact of post-disaster IYCF-E responses can be maximised. Our post-Haiyan experiences at the grassroots level supplied proof of concept activities that can be models for programming and implementation of national emergency responses.

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Figure 10

Compostela Valley, Typhoon Bopha response. During the WIC launch, there were no formula-feeding mothers present. Was it because the call specified “pregnant and lactating women”?



Dr. Romelie Alfonso, KMI, Philippines, 2012

Figure 11

Positive and diplomatic interpersonal communication, with clear messages backed up by evidence, is an effective approach to raising awareness for IYCF-E. Our collective initiatives attracted several mainstream media features to promote IYCF-E to the general public.



Nanay Bayanhan, Philippines 2013

Cebu experience

We received an appeal for breastmilk on social media from a paediatrician in Cebu City, the largest transit area post-Haiyan. We thus airlifted pasteurised donor milk from Manila to the military hospital there. Donor milk was stored in BPA-free cups so it could be fed to recipients after thawing. The milk was directed to priority recipients at the Cebu hospitals and at the EVRMC in Tacloban. We delivered a donated freezer to the Cebu Provincial Hospital, the referral hospital for hardest hit municipalities in Northern Cebu. Being an MBFHI (Mother and Baby Friendly Hospital Initiative) hospital with high exclusive breastfeeding rates, the staff declined the donor milk. They had also confiscated and surrendered formula donations from a foreign medical group. We also visited a Cebu City orphanage and evacuation centre, and at the latter, met with social worker camp managers, educated them on IYCF-E and mother-baby friendly spaces.

An important gap: IYCF-E operational guidelines

Frontline health workers asked, “now that BMS donations are prohibited, what will I do with infants already formula feeding before the disaster?” This provoked heated discussions among donors, health workers and lay volunteers, many of whom lacked practical skills in breastfeeding counselling and support for complementary feeding. Hence, drafting of the national IYCF-E operational guidelines became one of the priorities of the National Nutrition Cluster. At the time of writing this article, the draft operational guidelines await review approval from the DOH.

The draft outlines ways of managing formula donations: return to donor, reusing ‘suitable’ milk (e.g. by pre-mixing with fortified blended food for blanket supplementary feeding, institutional support for other vulnerable groups, animal feeds, as ingredient for other foods that can be distributed), and destruction of ‘unsuitable’ products.

It was recommended that only qualified health/nutrition workers trained in breastfeeding counselling and infant feeding dispense formula to caregivers, after safer alternatives have been explored and formula feeding risks have been discussed with carers. Procurement and distribution of formula should only be a last resort, through responsible Regional Health Offices, and regulated according to set standards.

Figure 12

Mother volunteers put up a space for weary survivors in a transit area in Cebu, though without special enclosures or structures, it focused on delivering peer-to-peer IYCF support. Their efforts were recognised upon patch-up with the Regional Nutrition Cluster.



Mylene Santana, Cebu Mother Support Groups, Philippines, 2013

Timely expansion of nutrition development activities in repose to an acute flooding emergency in Malawi



Flooding

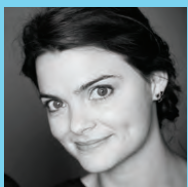
Alexia Webster/Concern Malawi, Malawi, 2015

By Natasha Lelijveld, Elizabeth Molloy, Jennifer Weiss, Gwyneth Hogley Cotes



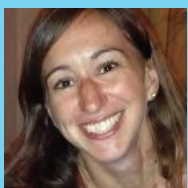
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Location: *Malawi*

What we know: Scale up of CMAM services at country level relies heavily on health system capacity that may be already overburdened. Surge response in emergencies and to seasonal peaks in malnutrition is necessary in many contexts but an added challenge.

What this article adds: Malawi was affected by severe flooding in early 2015 prompting cluster activation, including nutrition. Concern and UNICEF quickly responded in Nsanje district to support existing CMAM services to meet increased need but exposing weaknesses in doing so. Despite longstanding investment, services were not up to standard, not truly integrated and unable to surge to respond; volunteers were successfully used in the short-term to help compensate for already overburdened staff. Integration was also lacking in INGO led activities. Better preparedness, support for 'true' integration and stronger inter-sectoral (including cluster) coordination and communication would have strengthened the response.

In early January 2015 heavy rains, four times the monthly average, caused the most severe flooding seen in Malawi for over two decades. The floods affected 15 districts and an estimated 638,000 people countrywide. At least 174,000 people were displaced in the three most affected districts: Nsanje, Chikwawa, and Phalombe. Nsanje District, already amongst the poorest districts in the country, was the worst affected, with an estimated 170 deaths as of January 17th 2015, and a joint district assessment identified 15,274 households (approximately 84,000 individuals) who had been displaced or suffered severe damage.

In the days and weeks following the flooding, internally displaced persons (IDPs) gathered in makeshift camps, looking for shelter and support. Floods had washed away houses, crops and livestock, leaving families with limited access to food or income.

By February 2015, 19 camps had formed in Nsanje district, housing around 400-500

households each. Management of the camps was complicated with no one organisation taking full management responsibility. Additionally Malawi does not have a standing cluster system, and instead activated clusters (including shelter, logistics, food security, WASH, protection, education, and nutrition) soon after the emergency under the coordination of the Malawi Government and Humanitarian Country Team with support from UNDAC (UN Disaster Assessment and Coordination). The donor response was rapid and adequate; in this instance, funds tended to be channelled through NGOs and UN agencies rather than the Malawi government.

The destruction of bridges and roads by floodwaters meant that much of Nsanje district was cut off and difficult to access. IDPs whose homelands were located on seasonal floodplains were prevented from returning home and the process of their relocation to less risky land remains uncertain due to tensions with host communities and confusion over land ownership.



Nutrition volunteers participating in training on MUAC assessment

flood water levels fluctuating greatly day by day following rain or periods of sunshine, it proved difficult to access the six camps in the eastern part of the district, which had been cut off by flood waters and hosted the greatest population of IDPs. WFP operated a passenger helicopter from mid-January until March 23rd. Following the end of helicopter operations, the WFP-led logistics cluster developed innovative ways to access Nsanje's eastern bank camps, such as the use of an airboat to navigate the fluctuating water levels of the River Shire. Malawi, being a land-locked and resource-limited country, does not have necessary transportation equipment, such as boats and helicopters, needed to respond to major flooding. This limitation needs to be considered and better planned for in similar situations in the future.

Secondly, the existing health infrastructure in Nsanje district, which this nutrition programme supported, suffered from a number of challenges. Malawi was one of the first countries to embrace and roll out CMAM programmes nationally and provides CMAM services in more than 80% of facilities. However, as the CMAM activities are delivered as a separate clinic one day per week, it appeared to be seen as an 'add-on' to routine health services rather than an integral component of routine child health services and was often deprioritised by health staff. Routine screening and community outreach, which is intended to be done by HSAs, was rarely done. This made the nutrition response to the flood more difficult, with the need to recruit and train additional volunteers to handle community screening. From the period 2010 to 2013, several specific initiatives that aimed to support the scale-up of CMAM came to an end, such as NGO-supported nutrition programmes and the CMAM Advisory Service. There seems to have been a general erosion of the programme affecting training, supervision and resources following the reduction of these support services. For example, replacing broken weighing scales with functioning ones in health centres was slow to happen and there were reports that fuel for supervisors to make visits to rural health centres was lacking.

The HSAs, a fundamental part of the CMAM programme and overall health system, were actively involved in responding to needs of the flood-affected population, but lacked skills and

knowledge in delivering emergency health and nutrition activities. This emergency response highlighted the many responsibilities delegated to HSAs and their large workload meant that some tasks were not prioritised, as was the case with CMAM surveillance. It quickly became clear as nutrition activities began to be implemented that the HSAs would not be able to play as large a role as imagined due to their already high workload and volunteers were recruited to support with screening and referral. There are many opportunities for better integrating nutrition activities into routine health services in Malawi, such as twice-yearly Child Health Days, outpatient clinic visits and iCCM (Integrated Community Case Management). A Health Facility Assessment conducted by Concern in 2014 found that nutrition actions such as screening and counselling are rarely carried out as a part of sick child visits or other routine maternal and child health contact points. If CMAM services and nutrition actions were better integrated into routine child health services, this could ease the burden on health personnel, particularly HSAs.

There is a need to work with the health system to better plan for increased resource requirements during both emergencies and also during routine spikes in malnutrition during the lean season. The CMAM Surge model, piloted by Concern Worldwide in Kenya, is an approach to strengthening the capacity of health service providers to identify and respond to surges in caseloads; it could be applied in other settings to improve routine CMAM activities and better prepare the health service for emergency response. The CMAM surge model employs capacity-based response thresholds that trigger support based on existing health system capacity. The model aims over time to improve health system capacity to manage spikes in cases of acute malnutrition. The support components align with the WHO's health system building blocks, including elements for health workers, information and leadership.¹

As a result of the heavy workload of HSAs, the camp-based nutrition volunteers took on a more prominent role in this intervention. The motivation of the volunteers was higher than expected and the nutrition programme not only aimed to prevent and treat malnutrition, but gave other members of the camp a meaningful

role in their new camp society. IDP camps can be boring and demoralising places and these volunteers were grateful for the activity and status that came with MUAC screening and IYCF messaging. Although this method was successful, it could have been improved had the volunteers been integrated with other services. There were missed opportunities to combine MUAC screening and IYCF messaging with either the vitamin A campaign or the camp health clinics run by Médecins Sans Frontières (MSF). Despite the merging of the health and nutrition clusters, due to low numbers of agencies participating in the nutrition cluster, opportunities for coordination were unexploited, with health clinics seeing many women and children without screening for malnutrition.

Coordination and communication could have been improved throughout the emergency. Co-ordination with both government officials and other organisations was initially strong immediately following the flooding however it quickly tapered off as the weeks passed, with information being shared in an ad-hoc manner rather than through formal structures. Although the joint health-nutrition cluster continued to be active, meetings became less frequent and more poorly attended. Additionally, communication to and from the national level clusters was inconsistent. Access to accurate and relevant data was also an issue both before and during the nutrition response; however the simple tally sheet used by nutritional volunteers proved an invaluable source of data and was an adequate stand-in for a costly nutrition survey.

Conclusion

Many children in Nsanje District in Malawi are experiencing their first 1000 days during an emergency flood crisis. The risk of malnutrition due to loss of resources and threat of infections is high; therefore the importance of preventing heightened levels of malnutrition throughout the 1st 1000 days is urgent. Concern Worldwide, with support from UNICEF, responded to this need by setting up support for health centres, CMAM screening and referral and IYCF outreach messages within 12 days of the emergency. Better integration of nutrition services into routine services could result in a more sustainable CMAM programme. In addition, better inter-sectoral coordination and communication would have strengthened the response and improved efficiency of activities, with opportunities for 'piggy-backing' interventions maximised. Exploring a model for strengthening surge capacity in health facilities, as used by Concern Worldwide in Kenya, could strengthen both data management and the health facilities in their capacity to respond to sudden increases in caseloads, such as this flood emergency.

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¹ For more detail on the CMAM Surge model, see Field Exchange issue 47: Regine Kopplow, Yacob Yishak, Gabrielle Appleford and Wendy Erasmus (2014). Meeting demand peaks for CMAM in government health services in Kenya.

Nutrition programme coverage: implementation strategy and lessons learnt from Chad

Households census with numbering, Sila Region Flooding

Hermann Ouedraogo, Chad, 2013

By Hermann Ouedraogo, Ismael Ngnie-Teta, Mahamat Bechir, Esaie Diongoto Domaya, Adama N'Diaye, Paola Valenti



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This article was developed through contacts made by the ENN's Nutrition Exchange editorial team.

Location: *Chad*

What we know: In general, programmes undertake distinct nutrition surveys and coverage assessments to ascertain programme performance.

What this article adds: An integrated SMART-SQUEAC single survey was implemented in Chad with the aim of economising on time and costs but bearing in mind one sampling constraint (the SMART PPT approach risks underrepresentation of small villages in the coverage assessment). Malnutrition prevalence and coverage data proved of high quality, small villages were represented in this instance, and there were substantial cost savings (103,916 US\$). It will be necessary to work out and reconcile appropriate samples, identify eligible children (age versus height cut-offs), consistently define SAM (coverage assessment based on MUAC/oedema; SMART survey based on WHZ/MUAC/oedema) and consider logistics (increased field workers and supervision).

Introduction

The SMART¹ methodology was developed to improve the quality and timeliness of nutrition survey results. Similarly, the SQUEAC² methodology has emerged as the tool for assessing coverage of programmes that implement community-based management of acute malnutrition. Needs assessments, monitoring and evaluation typically require both a nutrition survey to determine needs and a programme coverage survey for assessing performance and refining strategies. Integrating both methodologies in a single survey, while keeping high level data quality, appears highly desirable from a resources-saving perspective. This article describes implementation strategies and lessons learnt from running an innovative

integrated SMART-SQUEAC single survey in crisis-affected regions of Chad.

Context

Malnutrition is endemic in Chad. Between 2000 and 2010, the prevalence of chronic malnutrition (stunting) among under five-children increased from 28% to 39% and the prevalence of global acute malnutrition (GAM) increased from 14.6% to 16% (MICS 2000 and 2010 data). The Sahelian part of the country is the most affected. This critical nutritional situation has led the Ministry of Public Health in Chad to establish an integrated programme of man-

¹ Standardised Monitoring and Assessment of Relief and Transition

² Semi Quantitative Evaluation of Access and Coverage

agement of acute malnutrition in the 11 Sahel regions, and a twice-yearly nutrition survey to reinforce the nutrition surveillance system.

In 2013, the programme was running 463 outpatient treatment centres, of which 95% were integrated into the national health system, and 32 inpatient treatment units at district hospital level. Admissions are based on three independent criteria: presence of bilateral pitting oedema, mid-upper arm circumference (MUAC) below 115 mm, and weight-for-height z-score (WHZ) below -3. More than 350,000 children under five years of age have been admitted and treated in these centres since 2010. Outpatient dietary treatment is based on the provision of ready-to-use therapeutic food (RUTF) for home consumption.

Following three years of implementation, a programme coverage survey was warranted. This timing coincided with the second of the twice-yearly nutrition surveys due (covering the lean season). We arrived at the decision to combine the two surveys after weighing up advantages with possible inconveniences. We concluded that as long as the survey sample was

representative demographically and that the survey was cost-effective and saved time, this would largely outweigh the only possible inconvenience, i.e. the first stage selection of villages, with probability proportional to size, did not fit the coverage survey method (see further explanation later).

Method

The integrated survey was conducted using the SMART methodology for assessing nutritional status while for the coverage assessment, an adapted (SQUEAC) methodology was used. It involved a cross-sectional survey with a two-stage cluster sampling, including anthropometric data collection to determine the prevalence of acute malnutrition (nutrition survey) and identification of cases of severe acute malnutrition (SAM) for coverage-related interviews (coverage assessment).

Planning: Sample size calculation and selection was made separately for each region. For the anthropometric and mortality survey, the ENA (Emergency Nutrition Assessment) software June 2013 version was used. The equations described in the SQUEAC manual were used to

calculate the minimum number of SAM cases to include in the coverage assessment. The overall sampling frame consisted of the list of 4739 enumeration areas (EAs) established in 2009 by the national statistics bureau (INSEED), with the number of households per EA. For each of the 11 regions surveyed, the sample was selected using two-stage cluster sampling. First, the clusters were drawn by probability proportionate-to-size (PPT) cluster sampling. In each selected cluster, all children with height below 110 cm in all households were included in the coverage assessment. In practice, during the households' enumeration in the selected clusters, MUAC and oedema measurements on these children allowed the identification of all SAM cases. Secondly, a systematic random selection of 18 households per cluster was conducted to serve as a sample for the nutrition and mortality survey. MUAC, oedema, weight and height measurements were performed on children aged 6 to 59 months from these selected households.

Data collection and analysis: Data collection was carried out from July 8th to August 31st, 2013, by 10 teams, each consisting of two measurers, one interviewer for mortality, one inter-

Table 1 Description of a typical working day of a team in selected clusters

	Enumeration of households and identification of SAM cases for the coverage assessment	Selection of households and nutrition /mortality survey	Data and equipment checkup and wrap-up meeting assessment
Time	0900 - 1200	1300 - 1600	1600 - 1700
Time allowance	3 hours	3 hours	1 hour
2 x Measurers	→ Tools calibration. → MUAC measurement and oedema diagnosis on all eligible children.	→ Weight, height and MUAC measurement and oedema diagnosis on children aged 6-59 months in selected households.	→ Help with anthropometric data entry. → Discussion on data quality. → Repetition of measurement where requested by the supervisor.
1 x Interviewer for coverage assessment	→ Help with MUAC measurement and oedema diagnosis. → Identification of SAM cases.	→ Interview of the mothers of SAM cases.	→ Focus group discussion.
1 x Interviewer for mortality	→ Numbering households.	→ Interview in the 18 selected households.	→ Review of mortality questionnaires.
1 x Supervisor	→ Presentation of survey team and objective, request of consent. → Households enumeration.	→ Selection of households. → Supervision of anthropometric measurements, interviews and group discussion	→ Anthropometric data entry. → Discussions with the team and recommendations for improvements. → Data compilation and archiving. → Anthropometric data entry. → Discussions with the team and recommendations for improvements. → Data compilation and archiving.
Travel time	1 hour travel from base to village, 1 hour travel from village to base 1 hour travel from base to village, 1 hour travel from village to base		

Table 2 Distribution of villages according to number of households per region

Regions	Number of households				N
	<50 (%)	50-99 (%)	100-149 (%)	150+ (%)	
Barh El Ghazal	83.5	11.2	1.8	3.6	224
Batha	60.2	24.7	4.3	10.8	93
Guéra	52.2	27.5	4.3	15.9	69
Hadjer Lamis	77.2	11.7	1.2	9.9	172
Kanem	86.6	8.4	4.2	0.8	262
Lac	88.2	7.7	2.0	2.0	246
Ouaddai	51.2	23.8	10.0	15.0	80
Salamat	47.9	14.9	13.8	23.4	100
Sila	47.3	25.7	5.4	21.6	74
Wadi Fira	70.9	21.6	4.0	3.5	199
N'Djamena	0.0	0.0	5.0	95.0	60

Table 3 Criteria for anthropometric data quality and SAM prevalence (MUAC <115mm and/or oedema) per region

Regions	Age-ratio ¹	Sex-ratio ²	SMART flags (%) ³	SD ⁴	Global quality score ⁵	SAM prevalence, nutrition survey		SAM prevalence, coverage assessment	
						%	95% CI	%	95% CI
Barh El Ghazal	0.93	1.01	0.4	0.96	2	0.4	0.1-1.5	2	1.3 - 3.2
Batha	0.94	0.97	0.2	0.97	0	2.1	1.2-3.5	1.2	0.8 - 1.9
Guera	0.92	0.97	1.1	0.98	0	0.9	0.3-2.3	0.6	0.4 - 1.0
Hadjer Lamis	0.94	1.02	0.4	0.96	1	0.7	0.2-2.3	2.1	1.5 - 2.9
Kanem	0.89	1.02	0.4	0.97	0	0.9	0.4-1.9	1.3	1.0 - 1.8
Lac	0.9	1.01	0.6	0.99	2	1.1	0.4-3.1	1.5	1.0 - 2.2
Ouaddai	0.91	0.91	0.2	0.93	1	1.5	0.8-3.0	1.6	0.9 - 2.7
Salamat	0.93	0.98	0.7	0.93	0	1.5	0.9-2.6	1.7	1.2 - 2.4
Sila	0.8	1.15	1	0.98	1	1.3	0.6-2.9	1.6	1.0 - 2.8
Wadi Fira	0.93	1.02	0.4	0.98	3	0.7	0.3-1.8	1.8	1.2 - 2.6
N'Djamena	0.93	1.03	1.6	1.03	2	1.1	0.6-2.2	1.4	1.0 - 1.9

¹ Ratio 6-29/30-59 months; should be close to 0.85; ² Ratio boys/girls; should be close to 1.00; ³ Should be below 2.5% (SMART penalises from 2.5%); ⁴ Standard deviation, should be close to 1.00; ⁵ 0-5, Excellent; 6-10, Good; 11-15, Acceptable; >15, Problematic.



A field team with the village guide before households census, Barh El Gazal region

viewer for coverage assessment and one supervisor. Table 1 describes a typical work day for the team. Data were collected using a questionnaire comprising a mortality section, a section on health and anthropometry, and a coverage assessment section. Nutritional indices were calculated using the WHO 2006 reference population with ENA software (version September 2013); data quality was assessed using the plausibility report produced by this software. Coverage rates were calculated using the Bayes SQUEAC calculator (version 3.01).

Challenges and lessons learnt

Technical

Sampling: To select clusters for coverage assessments, SQUEAC recommends the Centric Systematic Area Sampling (CSAS)-based technique or the use of a list of EAs. If a list is used, simple or systematic random selection should be used rather than the PPT technique that might lead to an under-representation of small villages. Under-representation of small villages is likely to skew coverage rate towards overestimation, since small villages are assumed inaccessible and remote from large cities where health centres are generally established. However, in the surveyed regions, EAs are generally composed of several villages of different sizes, up to 19 villages for a selected cluster in Lac. In all regions, there were villages made up of only one household. This shows that even small villages were well represented in this survey. More than half of the villages had less than 50 households, as shown in Table 2.

Eligibility criteria: To determine the prevalence of acute malnutrition, the inclusion criterion was age 6-59 months. Age determination is very tricky in this context where birthdate is known accurately for less than 10% of children. Events calendar provides valuable assistance for age determination, but it takes time and is impractical to apply to a large number of children. For the coverage assessment, a simple proxy criterion of height below 110 cm was preferred (no minimum cut-off). However, as a proxy of child's age this can lead to inclusion bias, particularly in regions with high prevalence of stunting, where children older than 59 months may be included. However, SAM is very rare among children whose age is close to 59 months, hence there is a low risk of inclusion. Furthermore, this height criterion is also used by the programme, which includes children with ages of 59 months or below or those with heights below 110 cm.

Definition of SAM for coverage assessment: The programme admissions are based on three independent criteria, in this case, presence of bilateral oedema, MUAC < 115 mm, and WHZ < -3. Complementary analysis of data from previous surveys showed that 76% of children aged 6-59 months with WHZ < -3 had MUAC ranging from 115 to 168 mm and were therefore not detected as SAM by MUAC measurement alone. Ideally, a second weight and height measurement would have been used in children with MUAC 115-168 mm in order to detect all SAM cases as per the programme definition. However, such weight and height measurements proved too time-consuming to be performed on such a large number of children. For the coverage assessment, the only criteria used were presence of bilateral oedema and MUAC < 115 mm. In these circumstances, the sample size becomes more difficult to achieve, leading to a risk of bias affecting coverage rates – probably over-estimation. Indeed, it is likely that MUAC-based SAM coverage is higher than that of WH-based SAM, because of the prioritisation of MUAC measurement by community volunteers, leading to greater detection and referral of MUAC-based SAM cases.

Data reliability and validity: Data in Table 3 indicate excellent quality sample selection and anthropometric measurements. Furthermore, the prevalence of SAM (defined as MUAC < 115 mm and/or oedema) resulting from measurements in selected households in the nutrition survey, were close (with overlapping 95% confidence intervals) to those from the coverage assessment. With respect to external validity, the prevalence and trend of acute malnutrition were as expected given the prevailing context, i.e. agricultural production and food security. Similarly, coverage rates were within the expected limits, taking into account the results of recent assessments in some regions, as well as field observations.

Operational

Fieldworkers' selection, training, and team composition: In preparation for the deployment of 10 teams of five people (one more than is usual for a SMART team), a total of 50 to 60 people required training. Since potential fieldworkers did not require interview and focus group discussion experience, some training sessions were longer than planned, i.e. role-playing interviews. Piloting separate training sessions for staff involved in mortality interviews and in coverage interviews could provide more insight into the ideal training strategy.

Logistics and supervision: SQUEAC integration with SMART involved an additional person in each field team, as well as additional forms for SAM enumeration, interviews and discussions. Therefore, more suitable training and more practice on anthropometric measurements were needed. The standardisation test was more difficult for children and their caretakers because of the higher number of measurements to be performed on each child. Vehicles adapted for the transportation of 5-member teams were also required. The need for supervision level was increased, justifying the permanent presence of the supervisor with the team. This form of 'integrated supervision' allowed for follow up of households and SAM enumeration in phase 1. This meant that workload could be more easily shared by moving back-and-forth between mortality and coverage interviewers (see Table 3 on organisation on a typical day).

Duration: The average duration of data collection was estimated at 51 days per team for a simple SMART survey, rising to 53 days with integration of SQUEAC. Additional time needed was due to reassessment of the number of households to investigate per day, which decreased from 20 to 18 per day per team; in turn, this resulted in an increase in the number of villages from 404 (i.e. 41 per team) to 430 (i.e. 43 per team). Also, one rest day per week was allowed for each team.

Cost

The cost for data collection, excluding logistics (vehicles and fuel), was 137,796 US\$ for the simple SMART survey whereas the integrated survey cost 163,107 US\$ — a difference of 25,311 US\$. This added cost was due to the 10 additional people admitted to training, the extra person in each of the 10 teams, the second village guide to accompany the coverage interviewer, the two additional days for data collection and five additional days for data entry. A simple SQUEAC survey conducted in similar conditions would have cost 78,363 US\$, i.e. there was an overall savings of 53,052 US\$ for doing both surveys. If logistic costs are included, the total costs were 243,666 US\$ and 268,977 US\$ for the simple SMART survey and the integrated survey, respectively. A simple SQUEAC survey conducted in similar conditions would have cost 129,227 US\$. Conducting an integrated survey, rather than two distinct surveys, has therefore allowed a total saving of 103,916 US\$.

Conclusions

SMART and SQUEAC survey methodologies can be combined in a single survey while maintaining a high quality for prevalence and coverage data, as well as substantially saving programme resources. It will be necessary to work out and reconcile appropriate samples, identify eligible children and to define SAM. Similarly, logistic arrangements need to be carefully considered in order to accommodate the increased number of fieldworkers and supervision workload.

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Simplifying the response to childhood malnutrition:

MSF's experience with MUAC-based (and oedema) programming

By Kevin P.Q. Phelan, Candelaria Lanusse, Saskia van der Kam, Pascale Delchevalerie, Nathalie Avril and Kerstin Hanson



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Location: *Global*

What we know: MUAC and WHZ are commonly used anthropometric criteria for admission to CMAM programmes. WHO recommends that the specific anthropometric indicator used to confirm SAM should also be used to assess nutritional recovery. MUAC is a simpler, faster and more immediate measure that identifies malnourished children at higher risk of death. There is limited evidence on outcomes of untreated children with low WHZ (but acceptable MUAC).

What this article adds: From 2007 to the present, MSF has operated MUAC (and oedema) only based CMAM programming in a number of challenging emergency contexts. MUAC thresholds for admission varied from <115 mm to <125mm with differing prescribed lengths of stay according to contextual factors, e.g. prevailing mortality, presence of other credible nutrition actors, access constraints, and available resources. Outcomes for recovery, mortality, and defaulters surpassed SPHERE Minimum Standards in most programmes. Consequently, MSF recommends MUAC-based (and oedema) programming for most of its emergency responses, with ongoing review. Further research is needed on appropriate MUAC thresholds and how to ensure low WHZ only children receive appropriate nutrition support.

Globally, undernutrition is one of the single greatest threats to child survival, associated with 3.1 million child deaths each year – a half million from wasting – or 45 percent of all worldwide child deaths.¹ Among those fleeing war and violence, both internally displaced persons (IDPs) and conflict-affected populations have highest rates of mortality and malnutrition, higher than among refugees.²

Since the successful introduction of outpatient nutritional rehabilitation in 2005, MSF has treated more than two million children for severe acute malnutrition in both acute emergency and chronic settings. More recently teams have increasingly explored strategies that are effective and yet simple to deploy, especially in situations with access constraints and limited health personnel. It was with this objective that teams in Upper Nile adopted MUAC (Mid upper arm circumference)-based programming in response to a dramatic situation unfolding in April 2014 in South Sudan's Upper Nile State. Conflict sparked thousands of families to flee their homes. Illness and dramatic food insecurity combined to cause an expected spike in childhood malnutrition. Ongoing insecurity and severe logistic constraints drastically limited access – for aid workers and displaced alike.

To address acute malnutrition, emergency teams from Médecins Sans Frontières (MSF) adopted a simplified protocol in which Mid-Upper Arm Circumference (MUAC) was the only anthropometric measure used by therapeutic feeding programmes for admission, monitoring and

discharge of malnourished children. (Bilateral pitting oedema is an independent criterion for malnutrition treatment regardless of anthropometry.) The usual admission criteria of MUAC <115 mm was expanded to admit all children with MUAC <125 mm, and children were discharged as cured when achieving MUAC >125 on two consecutive measurements (in addition to a minimum three-week stay in the programme.) Over the course of 22 weeks, more than 4,600 children were admitted for treatment, of which 1,395 were admitted in the initial five weeks of the intervention. All children with severe complications were hospitalised.

To date, MSF has also run such MUAC-based programmes in Titao and Yako (2007-2011), Burkina Faso; Bihar (2009-present) and Chattisgarh (2013-present), India; Gedaref, Sudan (2010), Yida (2012), Agok (2012-2013), and Upper Nile (2014-present), South Sudan; northern Mali (2012); Bokoro (2014) and Masakory (2011-2012), Chad; Bangui and Bossangoa (2014-present), Central African Republic (CAR); and Bolomba-Equateur (2014-2015) and Bili-Bas Huele (2015-present), Democratic Republic of Congo (DRC). This article shares experiences and lessons learned from this programming.

¹ Bhutta ZA, Das JK, Rizvi A, Gaffey MF, Walker N, Horton S, Webb P, Lartey A, Black RE. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*. 6 June 2013. DOI: 10.1016/S0140-6736(13)60996-4

² Centre for Research on the Epidemiology of Disasters (CRED). People affected by conflict: Humanitarian needs in numbers. 2013. <http://cred.be/sites/default/files/PAC2013.pdf>.

Use of MUAC as the sole anthropometric measure for admission, management and discharge

While further research is needed, there is a growing body of evidence that MUAC is safe and effective as the sole anthropometric criterion (along with oedema) used to identify, manage and discharge children requiring severe acute malnutrition (SAM) treatment.³ MUAC has been shown to be an as good as or a better predictor of mortality than weight-for-height z-scores (WHZ) <-3 or WHZ <-3 combined with MUAC, with an inherent age bias that targets younger children who are at highest risk of death.^{4,5,6,7,8}

Data analysis from MSF programmes in Burkina Faso and India showed that MUAC gains closely paralleled weight gain, suggesting that MUAC would work well for monitoring and discharge.^{9,10} A recent study from Malawi also showed that children with MUAC ≥ 125 mm on two consecutive visits were safe for discharge, with acceptable negative outcomes at three months post-discharge.¹¹ The World Health Organisation (WHO) recommends that “[T]he anthropometric indicator that is used to confirm severe acute malnutrition should also be used to assess whether a child has reached nutritional recovery.”¹²

In an MSF programme in Gedaref, Sudan, using MUAC for discharge resulted in children with lower MUAC at admission having a longer duration of treatment and a higher percent of weight gain than children with higher MUAC.¹³ In the Burkina Faso programme, switching to >124 mm MUAC instead of 10% weight gain for discharge resulted in a 36% increase in length of stay for the most malnourished and a 38% reduction in length-of-stay for the least malnour-

ished.¹⁴ In other words, the most malnourished received the most treatment in both programmes. (Even though the WHO no longer recommends using 10% weight gain for discharge, this sharp reduction in the length of stay for the largest group of less malnourished children carried substantial operational and financial benefits).

One of the major concerns related to MUAC-only programming is the potential exclusion of children with MUAC >115 mm, but WHZ <-3.¹⁵ MSF has addressed this concern in some instances by increasing the MUAC threshold for admission. The threshold was, for example, increased to 120 mm in northern Burkina Faso and Bokoro, Chad and to 125 mm in Upper Nile, South Sudan (described above). This increases the number of children who benefit from therapeutic feeding while reducing the potential exclusion of children who are MUAC and WHZ discordant. In Dhaka, Bangladesh, MSF monitored children with MUAC > 115 mm but WHZ <-3 and found almost all of the children (93%) either improved in nutritional evolution or maintained a status-quo after three months' follow up, without receiving any nutritional treatment¹⁶. Few needed admission to a nutritional programme, although several had medical conditions that required hospitalisation irrespective of nutritional status, and only one death (from TB) occurred. More evidence on MUAC and WHZ discordant children is needed, especially for contexts in Africa.

Outcomes and practical lessons from MSF's MUAC-based programming

Outcomes for recovery, mortality, and defaulters exceeded the Minimum Standards set by SPHERE in most of the MSF MUAC-based programmes reported here (see Table 1). High recovery rates (88 – 90%) were achieved in the

programmes in northern Burkina Faso, northern Mali, and Yida, South Sudan with lengths of stay in the order of 30-45 days. Of the children who died in the Burkina Faso programme from 2009-2011, nearly half had MUAC ≤ 110 on admission, stressing the importance of early identification. Many programmes were confronted with high default rates. In Bihar, India, however, most of the children who defaulted did so after obtaining six weeks' worth of benefits from the programme.¹⁷ Teams there also identified risk factors for default (including more severe wasting on admission, commuting from outside of the programme location, and not having been referred by an Accredited Social Health Activist, among others) to help improve delivery of services. High default rates in Upper Nile, South Sudan and Bangui, CAR were attributed to continued population movements due to ongoing insecurity, and would have likely been high no matter the anthropometric measure used. Defaulting occurred more often among children in the moderate acute malnutrition (MAM) category, suggesting that adherence is perceived as less important once caretakers see their children noticeably improve.

Using MUAC as the sole anthropometric measure carried with it several practical advantages. Because MUAC is simpler and faster than WHZ (which requires two measurements and a calculation) it can facilitate better coverage, better management and earlier case detection at community level, as has been shown in Bangladesh when using active MUAC-based case detection.^{18,19} Agencies like Alima and Befen are even showing that mothers can successfully use MUAC for screening at the household level.^{20,21} With WHZ there are also questions over having different tables for girls and boys, whereas MUAC is gender neutral.²²

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⁴ Myatt M, Khara T, Collins S. A review of methods to detect cases of severely malnourished children in the community for their admission into community-based therapeutic care programmes. Food and Nutrition Bulletin. 2006 Sep; 27 (3 Suppl): S7-23.

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⁸ Briand A, Khara T, and Dolan C. Wasting and stunting – similarities and differences: Policy and programmatic implications. Food and Nutrition Bulletin, vol. 36, no. 1. 2015 (supplement).

⁹ Goossens S, Bekele Y, Yun O, Harczy G, Ouannes M, Shepherd S. et al. Mid-Upper Arm Circumference Based Nutrition Programming: Evidence for a New Approach in Regions with High Burden of Acute Malnutrition. PLoS ONE 2012; 7(11): e49320. doi:10.1371/journal.pone.0049320.

¹⁰ Burza S, Mahajan R, Marino E, Sunyoto T, Shandilya C, Tabrez M, Kumari K, Mathew P, Jha A, Salse N, and Mishra KN.

Community-based management of severe acute malnutrition in India: new evidence from Bihar. Am J Clin Nutr First published February 25, 2015, doi: 10.3945/ajcn.114.093294

¹¹ Binns, Paul et al. Safety of Using Mid-Upper Arm Circumference as a Discharge Criterion in Community-Based Management of Severe Acute Malnutrition in Children Aged 6–59 Months. Oxford, England: Valid International 2014.

¹² World Health Organization. Guideline: Updates on the management of severe acute malnutrition in infants and children. Geneva: WHO; 2013. www.who.int/nutrition/publications/guidelines/updates_management_SAM_infantandchildren/en/index.html

¹³ Dale NM, Myatt M, Prudhon C, Briand A. Using mid-upper arm circumference to end treatment of severe acute malnutrition leads to higher weight gains in the most malnourished children. PLoS One. 2013;8(2):e55404.

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programmes in an urban slum in Dhaka, Bangladesh? Trans R Soc Trop Med Hyg. 6 February 2013.

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Table 1 Programme outcomes for MSF MUAC-based interventions

Programme (Year)	Northern Burkina Faso (2009-2011)	Bihar, India (2010-2011) ²³	Gedaref, Sudan (2010)	Yida, South Sudan (2012)	Northern Mali (2012)	Upper Nile, South Sudan (2014)	Bangui, CAR (2014)	Bosongoa, CAR (2014)	Bokoro, Chad ^a (2014)	Bolomba, DRC (2014-2015) ^a
MUAC admissions criteria*	< 120 mm	< 115 mm	< 115 mm	< 125 mm (WHZ -3 if MUAC 125-135 mm and height >85 cm)	< 125 mm	< 125 mm	< 125 mm	< 115 mm	< 120 mm	< 120 mm
MUAC discharge criteria	≥ 124 mm and min 3-week stay	≥ 120 mm	> 125 mm for 2 consecutive measurements and min 4 week stay	≥ 125 mm and min 4 follow-up visits	≥ 125 mm and min 4 week stay	>125 mm for 2 consecutive measures, and min 3 week stay	>125 mm for 2 consecutive measures, and min 3 week stay	> 115 mm transferred to Supplemental Feeding Programme	≥ 125 mm	≥ 125 mm
Admitted TFP (ATFC ^b only)	26,049	4,401	2,030 (939)	2,566 (2,029)	1,664 (1,571)	4,650 (4,352)	1,059	1852	2,375 (2,275)	940
Recovery TFP (ATFC only)	91.60% (NA)	57.40% (NA)	NA (82.0%)	89% (NA)	88.3% (89.2%)	61.2% Malakal 66.1% Melut (59% Malakal 65% Melut)	NA (45.7%)	66.4%	76.2% (71.1%)	81% (+9.8% discharged <125mm with 2 weeks ration at closure of programme)
Default TFP (ATFC only)	4.8% (NA)	36.2% (NA)	NA (15%)	5.4% (NA)	10.3% (NA)	35.8 Malakal 32.6 Melut (33% Malakal 5% Melut)	NA (51.9%)	10.5%	13.4% (11.9%)	8.10%
Death TFP (ATFC only)	1.1% (NA)	0.8% (NA)	3.6% (1%)	1.4% (NA)	1.3% (NA)	1% (0% Malakal 1% Melut)	NA (0%)	0.2%	1.6% (0.5%)	0.3%

It was easier to implement and to train community health workers in the use of MUAC, relieving limited health structures and personnel of additional pressures. However, the reluctance of more experienced staff to only use MUAC proved to be a particular challenge because they were unsure of what would happen to children with low WHZ who may not be admitted. In a long-term programme in Masakory, Chad, training community health workers to manage treatment by MUAC (and oedema) helped improve coverage among families who live prohibitively far from health centres. And using the same criteria for screening as well as admission can help reduce “rejected” cases (i.e. children screened and referred based on MUAC but not admitted for treatment based on WHZ). This characteristic of MUAC-based programming may have even greater importance in settings of chronic malnutrition because of the negative perceptions such inconsistencies can create in a community.²³

MUAC is also more adapted to community-based care, particularly in situations with severe access constraints for aid workers and caretakers alike, high food insecurity, or limited qualified staff dealing with multiple health priorities. Reaching children earlier on the spectrum of acute malnutrition prevents a slide into the most life-threatening form of SAM, potentially reducing the need for hospitalised care. Such a focus on preventive efforts has been reported to relieve pressure on overwhelmed doctors and nurses working in areas with limited medical capacity and many causes of illness²⁴.

In the context of emergencies or population displacement, using MUAC as the sole anthropometric criterion facilitated a better flow of patients at the health structure level, reducing the time needed per child to identify the malnourished. The additional materials for measuring WHZ, like height boards and weight-for-height tables, insert extra, onerous steps in the screening

and management that can introduce error. Of course accuracy questions arise with both types of anthropometric measurements. For MUAC, the strips can be pulled too tightly, left too loose, or misplaced on the child's arm, whereas with WHZ, dehydration can affect the accuracy of weight or height measures^{25,26} (as can wriggling children), scales may not be properly calibrated, and errors can occur in calculation. Thus continued training and supervision is required for both. Supervision is simpler with MUAC, though, which is especially important during early stages of an intervention when staff are limited and less trained.

Notably, it is relatively easy to shift MUAC thresholds for admission or discharge according to context. Where there were high levels of under-5 mortality or severe food insecurity with few other actors present, using expanded criteria to treat SAM and MAM enabled teams to cover the most vulnerable children in both groups without needing to set up two different projects with separate products, criteria, and statistics, reducing the burden on the teams and staffing needs.

Moving forward

Based on the growing body of evidence and these experiences, MSF currently recommends that its teams use MUAC-based (and oedema) programming for most of its emergency responses. Although it requires continued discussion about benefits, risks, and costs, MUAC can

be safe and effective as the only anthropometric measure for admission, management, and discharge. Further research is called for, especially on the question of appropriate MUAC thresholds and how to ensure those with low WHZ but not eligible by MUAC receive appropriate nutrition support.²⁷ For the moment, MSF will continue to adjust MUAC thresholds for admission according to contextual factors like prevailing mortality, presence of other credible nutrition actors, access constraints and available resources.

Building on these experiences and gathering more evidence about how to safely simplify the management of acute malnutrition will be important in the coming years, especially with situations like the one encountered in Upper Nile – conflict, displacement, difficult access, and limited personnel dealing with various health needs – becoming more common in contexts like CAR, DRC, South Sudan, northern Nigeria, Somalia, and elsewhere. While the benefits of a simpler, more decentralised approach is particularly relevant for improving coverage to prevent malnutrition-associated mortality or further deterioration into SAM in conflict settings, it also has clear implications for an improved response in areas of Africa (like the Sahel) and South Asia where recurrent emergencies result in high burdens of acute malnutrition.

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saskia.vd.kam@amsterdam.msf.org

²³ Guerrero S, Myatt M, Collins S. Determinants of coverage in Community-based Therapeutic Care programmes: Towards a joint quantitative and qualitative analysis. *Disasters* 2009; 34(2):571-585

²⁴ War, Drought, Malnutrition, Measles — A Report from Somalia. Jean-Clement Cabrol, M.D.N Engl J Med 2011; 365: 1856-1858 November 17, 2011 DOI: 10.1056/NEJMp1111238

²⁵ Mwangome MK, Fegan G, Prentice AM, Berkley JA. Are diagnostic criteria for acute malnutrition affected by hydration status in hospitalized children? A repeated measures study. *Nutr J*. 2011 Sep 13;10:92. doi:10.1186/1475-2891-10-92.

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Agency profile



Name:	Start Network
Address:	Start Network, c/o Save the Children, 1 St John's Lane, London EC1M 4AR, UK
Email:	info@spring-nutrition.org
Website:	http://www.start-network.org/
Year founded:	2013
Director:	Sean Lowrie
No. of HQ staff:	12
No of staff worldwide:	12

Jeremy Shoham interviewed Tanuja Pandit from the Start network for this issue's agency profile slot

More and more people are affected by humanitarian crises around the world and these are increasing in complexity and frequency. This trend is expected to escalate as increased population density, climate change and globalisation collide in a turbulent second decade of the 21st century. People in humanitarian crises need more appropriate assistance than they currently receive. Faced with an inevitable escalation in demand for its services, the international humanitarian aid sector must confront a 'perfect storm': increasing and changing humanitarian need, complex systemic bureaucracy, decreasing humanitarian space, and a reactive business model that prevents evolution.

What is the Start Network?

The Start Network is a collaboration of 24 humanitarian non-governmental organisations (NGOs) set up to connect people in crisis to the best possible solutions. Research estimates that a majority of human losses occur in

small scale humanitarian crises. In larger scale 'intensive risk' crises, the international system is usually triggered, although the appropriateness of the assistance provided is often in question. These questions revolve around:

- the extent to which the affected population can influence assistance being provided to them;
- the degree to which humanitarian aid can adapt to any specific crisis context;
- the extent to which humanitarian aid or organisations can take advantage of new innovations to improve their response;
- whether international organisations undermine local crisis responders; and,
- whether, and to what extent, incumbent aid organisations can work with others to increase the scale of assistance being provided.

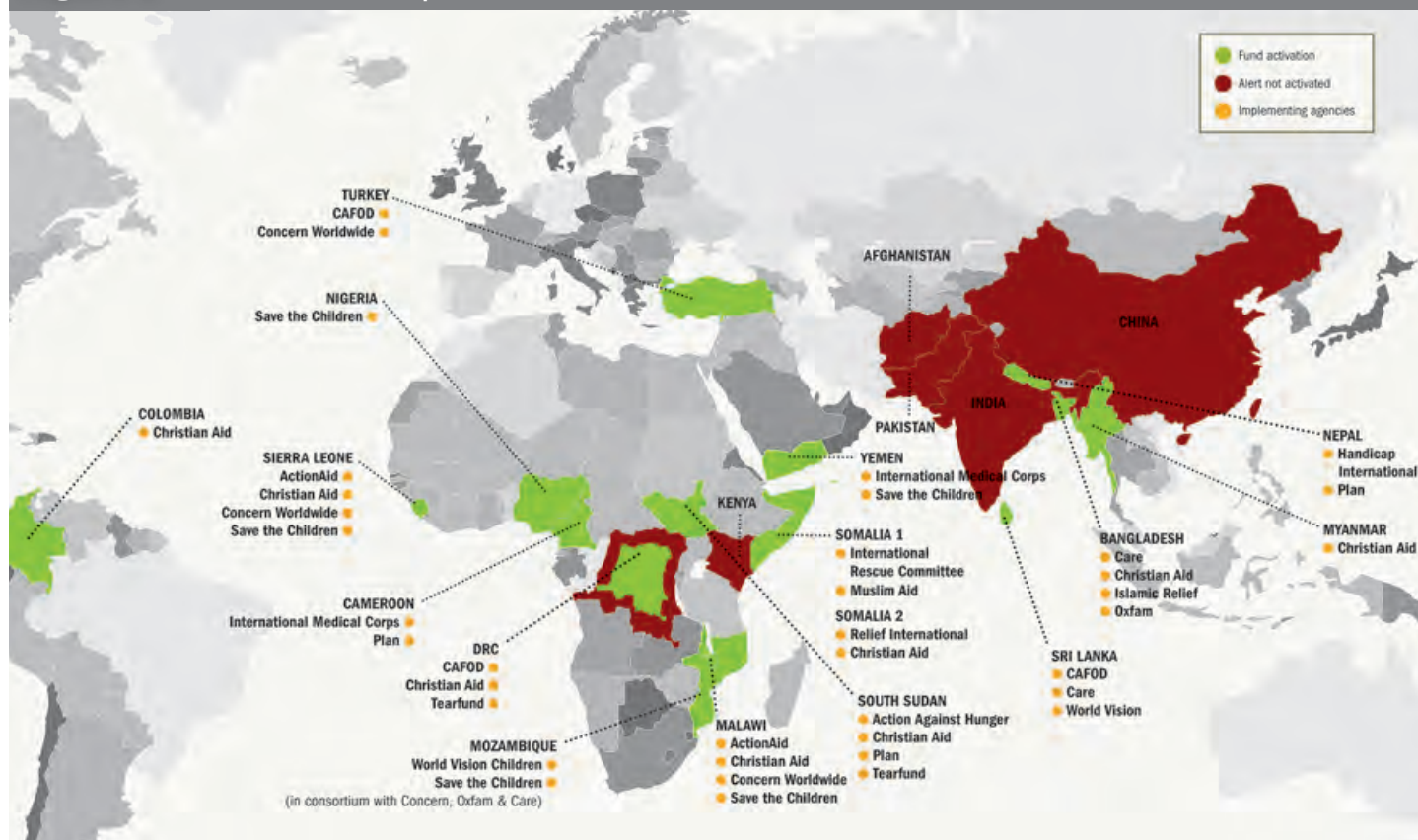
¹ <http://www.start-network.org/why>

² Please see more information in The Start Fund Report, available here: <http://www.start-network.org/wp-content/uploads/2015/05/Start-Fund-Annual-Report-2015.pdf>

Figure 1 Start Fund mechanism



Figure 2 Start Fund activations, April 2014 - March 2015



For example, as the numbers of refugees and displaced people continues to escalate in the Middle East, with no apparent end in sight, a substantially different scale and set of humanitarian needs is emerging. The question is whether the current humanitarian system is set up to tackle them. People need humanitarian assistance that is appropriate for their needs. That could mean assistance that reaches people in small ‘below the radar’ events; rapid assistance that is provided immediately after a crisis onset; or assistance that is provided in the early stages of a slow onset crisis. Ideally, this assistance will be flexible and could include information, cash, goods or services, as well as being anticipatory and responding to shifts in risk before crises emerge.

Start Fund: Development of new business models and financial mechanisms for crisis response by NGOs

The Start Fund, a rapid response global pooled fund, is currently backed by three sovereign governments (DFID UK, Irish Aid and the Dutch Government), see Figure 1. The Fund has been alerted for 36 emergencies, allocating £6m of funds since April 2014, and has signed agreements for £34m in funding over the next three years (see Figure 2 for overview of activations).. Launched on 1 April 2014, the Start Fund is a collaboration to create a multi-donor

The Start Network works to shift the centre of humanitarian gravity so decision making and leadership take place at the front line and affected people are empowered to improve their lives. The principles of decentralisation and diversification set out in its Declaration of Intent¹ speak to ensuring local actor involvement and representation rather than primarily focussing on or serving the needs of international agencies. In making this mandate reality, Start delivers programmes and brokers collaborations working through three pillars: Start Fund, Start Build and Start Labs.

pooled fund for global humanitarian action. The Fund allows fast response to both rapid onset emergencies and spikes in chronic crises where agencies on the ground need to react quickly. It can be activated within 72 hours and covers the needs of small scale emergencies for the first 45 days. In the first 12 months, the Start Fund reached over 1.2 million people. Tanuja noted that most Start Fund responses are multi-sector and some will include a nutrition element. The recent Start Fund report lists the number of beneficiaries by sector over the 12 months to March 2015². While water, sanitation and hygiene (WASH) and health were undoubtedly the biggest sectors, nutrition sensitive programming was estimated to have reached 57,000 beneficiaries.

The Network’s vision for the Start Fund is a multi-donor pooled fund of £100m a year. The Start Fund is also developing new financial models for humanitarian response to ensure that crisis funding is not just an after-the-fact event but that it can anticipate and respond effectively based on forecasted events. Currently under development are a bridging loan facility for early response and a parametric drought insurance mechanism³.

³ Parametric insurance is similar to normal insurance, in that in return for a yearly premium (calculated by expected frequency and severity of an event) a pay-out is received if the event takes place. However a key difference is that instead of making payments on the basis of losses measured after an event, it makes the payments automatically based on pre-agreed triggers. For more information, see: <http://www.start-network.org/news/start-trial-new-parametric-insurance-model-hif-funding/>

Start Build: Strengthening civil society capacity through decentralised, modern and effective capacity building initiatives

The humanitarian capacity gap (i.e. the gap between the capacity that currently exists in the humanitarian system and the capacity that is required) is ever widening and requires new investment, new relationships, new actors and new partnerships, as well as new capacities, skills and behaviours to help connect people in crisis with the best possible solutions. The Start Build stream is concerned with this endeavour and embraces a philosophy of subsidiarity where humanitarian action is as local as possible and as international as necessary. This stream has approval for £26m of investments from DFID, in a portfolio of 13 collaborative capacity building programmes, each one a mini consortium consisting of members and non-members and dealing with common capacity challenges.

Start Build has developed a portfolio of capacity strengthening projects where local capacity is prioritised and decision making takes place as close to the front line as possible. Focus on mitigation, preparedness and response capacity will help ensure that outcomes are more sustainable. This portfolio of work aims to support international NGOs evolve from the delivery of material assistance towards a role that is as much about response as it is about brokering, facilitating and supporting local organisations.

These collaboratively designed and managed projects are part of the DFID initiated capacity building project (DEPP) which is a groundbreaking three year programme that will invest £40 m in disaster and emergency preparedness. It is intended to significantly improve the quality and speed of humanitarian response in countries at risk of natural disaster or conflict related humanitarian emergencies. It will do this by increasing and strengthening the capacity of the humanitarian system at all levels, although support will be weighted towards training and development for local humanitarian workers at national level. National preparedness systems, particularly around communication, will also be strengthened.

Start Labs: Evidence, enquiry, learning and experimentation, creating platforms for partnerships and learning

Start Labs activities strive to be a catalyst for innovation, i.e. impact investing. The premise is that the funding environment created by existing donor mechanisms acts as a buffer against competition and provides obstacles to collaboration and to change within the humanitarian community. The financing mechanisms being developed and prototyped by Start are only part of the story. Start will also seek to seed frontline innovations around the world through the Start Beta stream that sits in this space. Beta is about identifying, funding and promoting the small

scale innovators who can make a difference to humanitarian response. Funding for this work will come from non-traditional donors, either private philanthropists or foundations interested in promoting innovation.

Funding, membership & governance

The Start Network is currently funded by three bilateral donors (DFID UK, Irish Aid and the Dutch Government), annual membership fees and occasional project grants from foundations. The plan is to scale up Fund, Build and Labs substantially over the next three years. The Network, which is currently located in the Save the Children UK's London offices, will soon spin off as an independent legal entity and further internationalise. This May, five new western and non-western NGOs joined the Network. The Start Network is planning to further expand, with a new membership window opening in Autumn each year. Criteria for new member acceptance include commitment to the Core Humanitarian Standards, financial sustainability and good governance.

Members' participation in the Network is in addition to their 'day jobs'. Even so, they devote significant time to the development and scaling up of the Network by participating on the Board, in the Members' Assembly and on various governance committees for Start Fund. The Start Network is governed by a Board of Trustees made up of member and independent representatives and an Assembly principally made up of Humanitarian Directors. The Board is scheduled to meet six times a year, is responsible for the governance and strategic direction of the Network, and makes recommendations to

the Assembly for ratification. The Assembly currently meets quarterly to discuss Network-wide matters.

The Start Network aims to create structures and agreements that enable the Network to fulfil its commitment of connecting people in crisis to the best possible solutions. Start Fund responses are underpinned by a Consortium Agreement and a Start Fund agreement so that the Fund can respond within 72 hours of being alerted to a crisis. There are light governance structures for the Committees that handle these responses and these are continuously streamlined and improved to reduce transaction costs.

The Start Team

The Start Team is a lean secretariat of around 12 staff with an ambitious vision and a desire to work entrepreneurially to effect change and to establish and grow the Network. This team of independent brokers is moving on multiple fronts and is helping the Network members to navigate opportunities, work collaboratively and deliver insights to the sector. The Start Network believes this way of working with its members will change a humanitarian system that is currently not fit for purpose. There are also a number of specialist advisors who support this work on the development and prototyping of financing solutions and advocacy work.

The Start Network's vision for the future is for a diverse and collaborative humanitarian sector in which international and local agencies work together in managing crises, continually seeking ways to fully engage beneficiaries in the response. The ENN fully concur with the Start Network's vision and wish them well in their endeavours.



Start Fund

Handicap International, Nepal response



Summary of Field Exchange user survey findings

The ENN extends thanks to Alex Bycroft Masters student, at Oxford Brookes University, UK who undertook a Field Exchange citations review, included in this summary, on a voluntary basis.

An online user survey of Field Exchange (FEX) was carried out between March and May 2015. A request to participate in the survey was sent to FEX readers by email and on the ENN website, with a link to the survey online. There were a total of 138 respondents to the survey. Overall, 91% of respondents were satisfied or very satisfied with FEX. More detailed findings of the survey are as follows.

Nearly half of respondents were based in Africa, just over a quarter in North America and Europe and 20% in Asia (see Figure 1). Most respondents worked in nutrition (66%), emergency nutrition (33%), infant and young child feeding (38%) and health (30%) sectors¹. A minority worked in water, sanitation and hygiene (WASH) (3.6%), agriculture (3.6%) and cash (2%) programming. Of 119 respondents, 38% were working with international non-governmental organisations (NGOs), 15% government, 13% academic institutions and 6% local NGOs. Others were independent consultants/self-employed (12%), students (5%) or were working with civil society (1.7%) or private sector (6.7%).

FEX was read for personal learning and updating knowledge by 82% of respondents and to keep up to date with research by 50%. The re-

spondents reflected an established readership, with 60% having read FEX for three or more years (see Figure 2). Topics that respondents reported learning most about (113 answers) were infant and young child feeding (28%), community based management of acute malnutrition (CMAM) (26%), emergency nutrition (20%), survey/coverage methodology (10%) and cash programming (9%).

Most respondents (73%) said that there are no topics, programmes or contexts missing from FEX. Of those that said that there were areas missing (27%), there were a wide range of suggestions including nutrition and HIV, transition from emergency to development programming, nutrition sensitive agriculture, stunting prevention and nutrition and advocacy.

In terms of the usefulness of each of the different types of articles in FEX, respondents rated field articles as the most useful, followed by research, evaluations, news, views and editorials; agency profiles were rated as the least useful. Seventy-four percent of respondents (of 110 answers) felt that the length of FEX is 'just right' while 83% were happy with the current frequency (three times per year). In terms of the level of technical detail of FEX editions, most respondents (78%) said it was just right,

whilst 15% said it was too detailed and 7% not detailed enough. FEX editions can have either mixed content or be thematic. When asked which they prefer (of 110 answers), 47% reported that they prefer mixed editions, 46% found both equally valuable and 7% preferred thematic editions.

“Through FEX I learn from other agencies’ experience in dealing with field level challenges in similar contexts and adopt a similar approach for successful programming.”

Employee of an international NGO

An important question related to print or online content; 65% (of 110 respondents) were satisfied with the online facility and 25% were very satisfied with it. Respondents were asked within which formats they read FEX; 78% reported reading FEX in print; 28% read individual articles online and 23% read the whole issue online. Of those that did not read articles online, 70% said it was because they prefer print copies and 22% said they had limited/too costly/no online access. It is interesting to see that, in this

¹ More than one response possible.

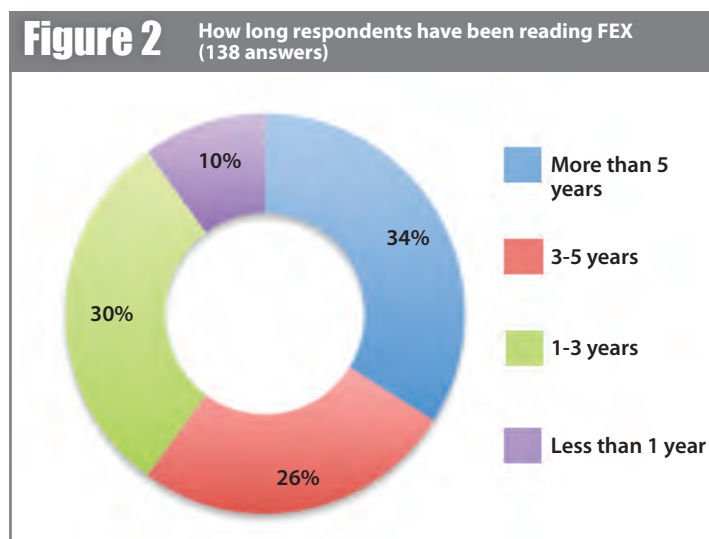
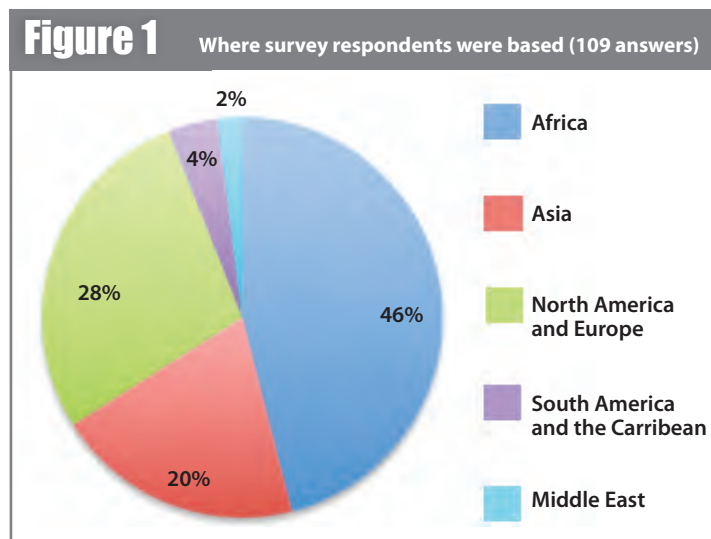




Figure 3 What proportion of FEX do respondents read (111 answers)

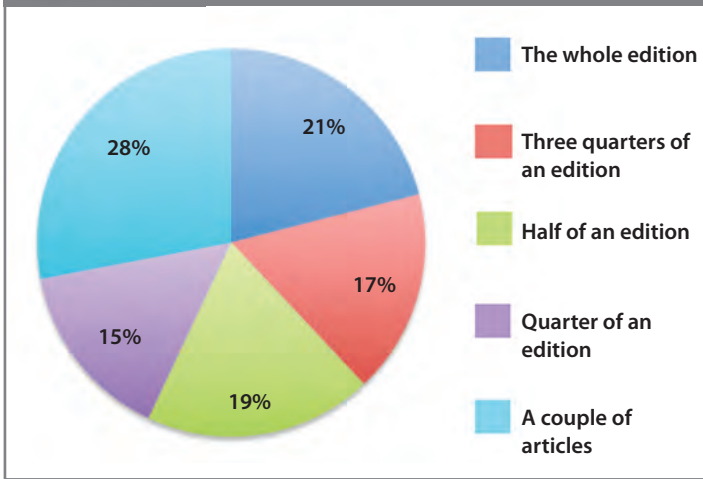
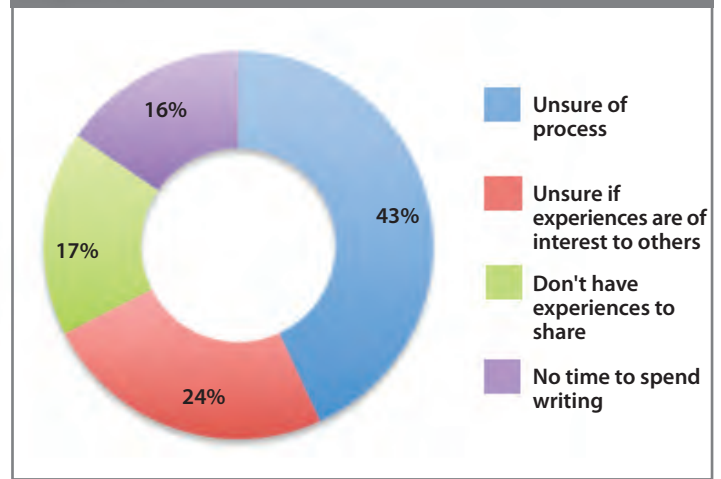


Figure 4 Reasons for not contributing an article to FEX (91 answers)



digital age, print copies of FEX remain valuable and useful to our audience. It is also important to note that this online survey will be biased towards those with accessible internet access.

Respondents reported that FEX has had a 'good' or 'large' impact on their organisation or work in a number of ways: information knowledge (82%), information awareness (76%), transfer of knowledge/strengthened intellectual capacity (65%), networking with others (51%), and collaboration with others (45%). Furthermore, 67% reported that they had applied FEX sourced evidence in field practice, while 46% reported that content had influenced strategy and policy. An additional average of 29% respondents reported 'some' impact.

Of 110 respondents, 15% reported having ever contributed an article for FEX. Of these, the majority (89%) said that they received adequate support from the editorial team. Sixty-three percent of respondents said that they have

"FEX provides evidence-based practice that we would otherwise miss." Employee of an African-based academic institution

recommended others to share their work through FEX. When asked the reason for not writing an article (91 respondents), 43% were unsure of the process and nearly one quarter of respondents were unsure regarding the value of their experience to others (see Figure 4).

Most respondents valued the "public good" nature of FEX; 55% of respondents (of 109 answers) felt that FEX should be free to all, while 39% felt it should be free to those working in lower income countries and only 6% of respondents said it should be paid for by subscription.

Most (90%) of respondents reported that they are satisfied with the way in which the ENN communicates with them about FEX. When asked in which format they would like to receive information from the ENN, 80% of re-

spondents said they would like to receive information by email, 60% via FEX, 34% via the ENN website, 14% via Face book and 6% via Twitter

Citations review

To complement the user survey, from April to June 2015 the ENN undertook a review to explore how the ENN produced resources are cited and used in the development of a range of external publications. The review was conducted on a voluntary basis by a Masters student.

This study found that, between Jan 2010 and June 2015, 62 works (articles, publications or reviews) produced by the ENN were cited 128 times in 93 journals, reports and theses. ENN peer-reviewed articles were the most frequently cited (10 articles cited 55 times), followed by field articles (34 articles cited 44 times), write-ups of ENN research and reviews (nine write ups cited 17 times) and FEX news and views pieces (three articles cited four times).

ENN authored works have been cited most commonly in peer-reviewed journals, as well as in organisational reports and academic theses. The peer-reviewed journals within which the ENN works were cited, were wide-ranging and influential publications (including The Lancet medical journal) and mostly focused on nutrition, food and health topics.

The topics/themes of the ENN works most frequently cited (in order of the most frequent) were malnutrition in infants less than six months; the double burden of malnutrition; CMAM; supplementary feeding; aid effectiveness; infant and young child feeding; cash programming; and wasting and stunting.

This small review indicates that the ENN publications are both well-read and well regarded by academics and peers, and have been used to contribute to the evidence base of effective nutrition and food security research, policy and programming.

ENN response

The number of field articles per edition has more than doubled in recent years meaning the

edition has inevitably grown in size; we have questioned amongst ourselves whether it may be too big for our readers to digest but this seems not to be case.

We will continue to publish a variety of innovative programme experiences and research on the key topics that are important to people (e.g. IYCF, CMAM, coverage and cash) and will consider the suggestions made by respondents for new topics. Some of these suggested topics are already planned for inclusion in upcoming issues; FEX 51 will be a thematic issue on nutrition-sensitive programming. Stunting (and linkages with wasting) is a key area of ENN research interest; we will be opening a stunting thematic discussion area on ENNs online forum, en-net, in the near future.

Other actions that we will take stemming from this feedback include;

- Developing a guide on how to write an article that will include an outline of the support the editorial team can offer. This is included in FEX 50 and is also available on line at www.ennonline.net/fex.
- Our recent online versions of FEX have been produced in A4 format to facilitate easier home printing and online viewing; this will continue.
- We have included agency profiles in FEX since the publication began, but perhaps this survey shows that they are less relevant for our current audience with field articles and research more valued by readers. We will review the agency profile slot.

Overall we are delighted that our readers appear to be satisfied with FEX. We will strive to continue to publish articles that are interesting and useful to our audience and that will ultimately have a positive impact on their work and the sector as a whole. We will continue to fund raise to ensure that we sustain our model of free access to print and online content for all. We sincerely thank all those who took part in the survey.

Feedback on FEX is welcome at any time. Send your observations and suggestions to: Marie McGrath, Co-editor, marie@ennonline.net



Summary of en-net user survey findings

By Tamsin Walters, en-net moderator

In April and May 2015, the ENN undertook a user survey of en-net. An online survey was distributed to ENN's mailing list and an invite to participate posted on the en-net and ENN websites. There were in total 289 responses. The following is a summary of the main findings and ENN's reflections on them.

Awareness and use of en-net

Over half of the respondents (57%) who use en-net have registered and set up a profile. Of those who are not registered users, but view en-net discussions, their main purpose in using en-net is "to learn about the field experiences of others" (70% of 45 responses). Seventy-nine per cent of 107 respondents said they had recommended en-net to others.

Among registered users, 81% had signed up to keep up with the latest debates and issues in nutrition in emergencies; 65% to keep aware of the latest guidance on technical topics (people could tick more than 1 option); while 16% signed up purely to ask a specific question after which they have not used en-net much at all.

In terms of obstacles to the use of en-net, 70% of 46 non-registered respondents stated that nothing prevented them from using en-net. Where something did, lack of or poor internet access was the most common reason cited, followed by not having enough time.

For registered respondents a similar 70% (of 101 respondents) said nothing put them off using en-net. However, lack of time, followed by the consideration that questions seem to be adequately responded to by others were the primary reasons that put some people off contributing.

A very small number of comments criticised the occasional response from users with inadequate expertise to advise others, and en-net technical experts providing inaccurate advice or dominating responses and raised the need to encourage differing opinions by academics.

The purpose of en-net is to provide an open platform to encourage sharing of experience, as well as providing best practice advice. ENN is continually seeking to engage more people and the sharing of more experiences through en-net. We will continue to promote the site widely and encourage greater participation of experienced nutritionists to respond to questions, calling in our Technical Moderators as necessary when conflicting advice is provided or there has been a lack of response to a particular question.

En-net content: its relevance and value to those working in nutrition in emergencies

Seventy per cent of 141 respondents (non-registered and registered) stated that en-net had provided significant added value to their work; with a further 28% noting a small added value. It is clear from the varied responses that people value both the

shared experiences of people working in the field as well as inputs by experts in technical areas. Knowledge, experience and guidance from en-net are being used in programming and training as well as research and policy development.

Users who had posted a question were asked whether the response directly influenced their work or study: 68% of 40 respondents replied positively.

Forty-one percent of 44 non-registered users responded that there were additional topics that they would like to see on en-net. A smaller percentage (28%) of registered users said there were additional topic areas they would like to see. The suggestions by both groups were very varied and it is difficult to pick out common themes.

There were requests for more discussion on livelihoods and agriculture/nutrition links. There is an existing forum area for livelihoods, which is currently poorly used. There may be an opportunity to direct this more towards nutrition/agriculture links as there is increasing global interest in this.

Several requests for discussion of cross-sectoral or integrated programming were raised, including DRR/nutrition, WASH/nutrition, cash, nutrition and health, multisector programming and coordination.

In the light of these comments and the evolving global interest, ENN will close down the forum area on livelihoods and set up a new area for nutrition sensitive programming where a variety of issues can be discussed. If there proves to be substantial interest in specific sectors, such as WASH or food security, further forum areas can be set up to focus more exclusively on such topics.

Reference materials and research papers were sought alongside many requests for training opportunities, links to online training courses and capacity development materials, e.g. "sharing video lectures and tutorials from field findings". We will further examine how we can develop the "Upcoming trainings area" and host links to online courses/opportunities.

Another area of request was around community mobilisation, community awareness-raising and how to conduct programming in the community. Currently, if these types of questions are not specific to particular programmes, they can be raised in the cross-cutting issues forum area. We will promote this area further to ensure users are aware of this option.

A few comments also highlighted the need to keep adapting en-net in the light of the changing global policy dialogue and challenged the specific emergency focus: "Topics should better reflect the change in the environment in recent years"; "Recognise that management of acute malnutrition is not only an issue during periods of acute emergency with significant external resources available" "I think the word "emergency" should be kept out to talk about nutrition in and out of emergencies".

ENN is seeking to address these issues more broadly. However, en-net aims to adapt to the

needs of its users and accommodate the most pressing areas of discussion and debate. Therefore we hope to encourage a more inclusive dialogue through new forum areas to include nutrition sensitive programming, stunting prevention and nutrition contextual analysis.

Mechanism and user-friendliness of en-net

Nearly one – third (29%, 108) of respondents visit en-net weekly to view discussions; a further 15% report visiting the site on a daily basis. One fifth (21%) rarely visit the website as they read the discussions in their inbox, whilst 18.5% infrequently visit the site.

Most (94%) of 105 respondents find en-net to be user-friendly and 77% of 107 respondents find the amount of emails they receive to be just right; 17% find them too many. Some of the latter did not appear to be aware that there is an option to select notification of questions only. To address this, we will prepare a notification with a reminder of the available functions of en-net.

Again, most (94%) of 31 people who had asked a question said it was posted to the forum in good time; 84% said their question was answered in good time; 81% said they received a useful and adequate response. Of those who did not, the issues were non-response to a question, being provided with links to an old document, and receiving an opinion from the technical moderator but nothing more. The en-net moderators endeavour to ensure that questions are responded to by peers or by a technical moderator. However, we will seek to tighten up our mechanisms to ensure all questions receive a useful response.

Ninety-three percent of 41 respondents said they would use en-net again to post a question.

Forty-two per cent (of 110 respondents) said they had been alerted to a training opportunity or job vacancy of interest through en-net. Of the 15 respondents who provided further detail, seven described training opportunities and eight job vacancies.

Overall summary

In conclusion the survey was extremely positive and reflects that en-net continues to be relevant to its users and provide a useful service, encouraging debate and sharing information that can be practically applied in programming, as well as policy development, training and research.

However, there is room for improvement in some areas and the respondents to this survey have provided the en-net team with very helpful guidance and suggestions to move forward and continue to maintain a forum that responds to its users' needs and keeps pace with the global agenda.

We welcome feedback and suggestions on en-net at any time. Contact: Tamsin Walters, en-net moderator, email: tamins@ennonline.net



NUTRITION EXCHANGE

Summary of Nutrition Exchange user survey findings

In April - May 2015, an evaluation of the ENN's publication, Nutrition Exchange, was conducted through an online survey. Nutrition Exchange is an annual publication produced in three languages (English, French and Arabic) in print and e-copy. It targets those working in the nutrition and related sectors at national level and features both original content and summarised Field Exchange and other material. Key findings are presented here.

Where are our readers located?

A total of 159 respondents completed the survey. Of the 136 respondents who indicated which country they were working in, most were in Africa (65%) while others were working in North America/Europe (14%), Asia (13%), Middle East (5%) and South America/Caribbean (1%). In response to what type of organisation they work for, 32% (of 138 respondents) were working with international non-governmental organisations (NGOs), 15% government, 12% United Nations (UN) agencies, 11% academic institutions and 8% local NGOs. Others were independent consultants/self-employed (7%), students (5%) or were working with civil society/private sector (4%).

"I have adopted a number of research ideas from other countries (shared in Nutrition Exchange) and contextualised them to my own current programming"

Local NGO worker

Use of Nutrition Exchange

Respondents primarily use Nutrition Exchange for personal learning (68% of 140 respondents); to keep up to date with news (54%) and research (46%); and to understand how other agencies are dealing with challenges or programming in specific contexts (32%). Nutrition Exchange is also shared and used to build capacity of staff and local partners.

Interest of readers

All types of Nutrition Exchange content (programming experiences, research and news/events) were identified as valuable (140 respondents). Respondents suggested that additional information on the following topics would be useful: infant and young child feeding (IYCF) including complementary feeding; stunting prevention; nutrition programmes for adolescents, adults and the elderly; and experiences from governments on mainstreaming nutrition at policy level.

Contributing to Nutrition Exchange

Sixteen per cent of 140 respondents have contributed to an article published in Nutrition Exchange. Respondents reported the following benefits from writing up their experiences for publication: sharing their experiences more widely through the publication; improving their writing skills; and increased visibility of their organisation and its work. For respondents who have not contributed to Nutrition Exchange, the main reasons (reported by 112 respondents) why they have not were that they were unsure of the process; had no time; were unsure if their experiences are valuable to others; and lack of confidence in their own writing skills.

Access and reading preferences

Half of the respondents received print copies and half received only electronic copies of the publication. Many receiving only an electronic copy did not know it was possible to receive a print copy. Regarding preferred frequency of the publication, more than half of survey respondents (54% of 129 respondents) were happy with an annual publication while 45% requested more frequent publication, the majority suggesting twice a year or quarterly publications. Regarding how respondents would like to receive information from the ENN in the future, 76% (of 123 re-

spondents) requested regular news updates via email from ENN, 54% were interested in keeping up to date via the ENN website while 12% expressed interest in receiving news via Facebook.

Overall a majority of respondents (95% of 129 respondents) were satisfied with the publication. Suggestions for improving the publication included increasing contributions from government staff and more information on nutrition in development contexts.

A word from the Nutrition Exchange editorial team

Nutrition Exchange aims to be a publication written by national actors for national actors so we are pleased to see this re-emphasised in this survey. Please encourage those working in government and in civil society organisations to get in touch with us about writing up their experiences of nutrition programming.

"We use Nutrition Exchange to inform our practices and the programmes we implement."

INGO worker

The editors have developed a short guide on how to publish a short article in Nutrition Exchange, available at [http://www.ennonline.net/subscribe/Nutrition Exchange](http://www.ennonline.net/subscribe/Nutrition%20Exchange) or contact the editorial team who will support you to write an article via valerie@ennonline.net.

Summaries of published research and programmes on the topics identified in the evaluation will be prioritised for the Nutrition Exchange issue. Additionally, a call for readers' experiences and learning around these topics will be issued later this year.

Currently, ENN funding is for an annual publication of Nutrition Exchange. However, in 2016, ENN is likely to be producing Nutrition Exchange twice per year. We will also explore other ways to capture and disseminate learning and will notify our readers of new developments. Please view ENN's newsroom for continual updates in the sector <http://www.ennonline.net/newsroom>

To receive a free print copy of the Nutrition Exchange issue, please register at [http://www.ennonline.net/subscribe/Nutrition Exchange](http://www.ennonline.net/subscribe/Nutrition%20Exchange)

ENN knowledge management support to the SUN Movement



ENGAGE • INSPIRE • INVEST

The ENN has recently secured funding from DFID to support knowledge management (KM) for the SUN Movement during the next phase (SUN 2). This programme will run until 2020 and the work will focus on lesson learning related to scaling up nutrition programmes in fragile and conflict affected states. In order to carry out the work, the ENN team will expand to include a global KM coordinator and two regional KM staff (one in Africa and one in Asia). This team, supported by ENN technical directors, will prepare an ENN KM

action plan for 2016-2020 in consultation with the SUN Movement Secretariat (SMS) and DFID. We anticipate that learning from this project will appear in both Field Exchange and Nutrition Exchange regular issues (content is already in development for issue 51), in addition to one special Field Exchange issue and one additional Nutrition Exchange edition each year devoted to SUN experiences. ennet will also develop thematic areas specifically related to this project.

Updates on this work will feature on our website, www.ennonline.net

The ENN is planning a special edition of Field Exchange that will be devoted to nutrition sensitive programming and related policy and research (NSP). While Field Exchange has routinely included field articles on NSPs in the past, the aim of this special issue is to bring together a fuller body of work that allows lesson learning and identification of where there are knowledge gaps, both in what to do in NSP and how to do it in the field.

A guest editorial panel (Jody Harris, IFPRI (International Food Policy Research Institute)¹ and Aaron Buchsbaum, consultant for the SecureNutrition² platform) will support the regular editorial team.

Issue 51 will be published in December 2015. We are currently seeking articles to feature in the edition.

Box 1 How do we define nutrition sensitive programming?

In the 2013 Lancet series, NSPs are defined as interventions or programmes that address the *underlying determinants* of foetal and child nutrition and development, which include food security; adequate caregiving resources at the maternal, household and community levels; access to health services; and a safe and hygienic environment. Most importantly, these NSPs *must incorporate specific nutrition goals and actions*. Furthermore, NSPs can serve as *delivery platforms for nutrition-specific interventions*, potentially increasing their scale, coverage, and effectiveness.

Examples of potential NSP sectors include; agriculture and food security; social protection; water, hygiene, and sanitation; early child development; maternal mental health; women's empowerment. Interventions themselves may be *single sector* in nature, with explicitly stated nutrition objectives, or may be *multi-sector interventions* aiming to converge on affected populations. A key element of any such programming is that *nutrition objectives are clearly stated* and that there is some articulation of a *conceptual basis for assuming impact on nutrition*, e.g. formulation of causal pathways or theories of change.

Article requirements

All articles should fall within the definition of NSPs outlined in Box 1 involving single or multi-sectoral programming. Our populations of concern are not limited to pregnant and lactating women and young children but include other population groups, e.g. older people. We are also interested in programming experiences where nutrition sensitive components have evolved (e.g. nutrition objectives have been added to a programme rather than planned from the outset).

Suggested themes include but are not limited to:

1. Formulating nutrition objectives for different sectors
2. Creation, adaptation, and/or use of relevant frameworks and theory of change
3. Monitoring and evaluation, either for impact or for process/intermediate outcomes
4. Successes and challenges in working across sectors from an institutional perspective
5. Challenges and successes in field-level implementation
6. Intersection of programme learning or knowledge management and nutrition sensitive programming
7. Implementer reflections on pros/cons/concerns with NSP overall. This might include learning around programme design.
8. Funding challenges around NSPs

None of these themes are mutually exclusive and field articles could cover a number of areas and other themes, if the author believes they represent important learning. Our suggestions for themes are not exhaustive and if an article doesn't seem to fit thematically with ours, please still consider writing something. There may well be themes that we have not considered. If unsure, pick up a phone or email us (contacts below).

It is important that authors document the details of programme experience which have informed the learning. All articles should therefore describe the country context for the programme and a brief chronology of the programme itself. We are interested to hear not only success stories but where programming did not achieve intended objectives; this is powerful learning.

Process of article development

1. Original articles (field articles, research, views)

Submit a short (up to 400 words) abstract on your idea for an article. Include information on:

- a) The context (country, programmatic)
- b) Type of nutrition-sensitive programming (single or multi-sectoral, and which sectors).
- c) Which theme this article will speak to (listed above or additional theme)
- d) Highlight 3-4 key lessons learned

Based on your abstract, we may ask for more information or have a phone call with you to explore the details. Based on our review, the ENN may invite you to write an article for the edition of around 2500 words.

The ENN editorial team can support the write-up process, e.g. providing feedback on early drafts. If you would like to discuss an idea you have before developing an abstract, send us an email and we can explore this with you. (See below more details on how we can support you to write an article).

2. Research, evaluation and news

If you wish to feature a research or evaluation summary, share any original report with us. The ENN can prepare summaries for review by the contributing author, or the author can prepare a summary and submit to the editorial team. For news items, send us relevant online links or relevant content (news pieces may be up to 400 words). Letters should be sent to the contact below.

Contacts

All submissions should be sent to Marie McGrath, Field Exchange Co-editor, marie@enonline.net or UK: +44 (0)1865 249745.

Deadlines for submission

All content must be finalised by early November. Closing date for abstracts is 15 October 2015.

¹ www.ifpri.org

² www.securenutritionplatform.org

How to write an article for Field Exchange

There are different ways of developing an article for Field Exchange, depending on what suits you.

The editorial team (Jeremy & Marie) can have a call with you to discuss an idea you might have. On the basis of this, we can help you flesh out the framework for an article. We can then support you to write it, for example providing feedback on drafts or editing content.

You can submit a short abstract (e.g. 400 words) outlining a proposed article. This should include what you think the key lessons are for others in a similar situation. We will make suggestions – in writing or on a call – and again can support you to develop the full article if you wish.

You may have an existing internal report that describes a programme experience but don't have the time to turn it into a field article or research piece. We can help. Send us the original report and we will review its potential. We can develop an article and then share it with you for review and additions (e.g. elaborating on lessons learned and discussion).

Sometimes we receive fully written articles for consideration. We will review and seek any clarifications and sometimes make suggestions for extra information.

Where an article specifically challenges a standard approach to programming or refers to another agency (for example), we may seek a postscript from an external reviewer or the agency in question that will accompany the article. We feel it is important to share all relevant experiences but ensure there is fair balance.

When you submit an article for Field Exchange, you will complete a simple author form that includes your biographical details and any acknowledgments.

We also request headshots of the authors and programme pictures to accompany the article (we can also find pictures from other sources if this is difficult for you).

The length of a field article varies from 2000-4000 words; our ideal is around 2500 words. We can help to edit down longer articles so submissions

of up to 4000 words are acceptable. Other types of article (e.g. research summaries, views pieces, etc) are expected to be shorter. Please submit abstracts/articles in a word document.

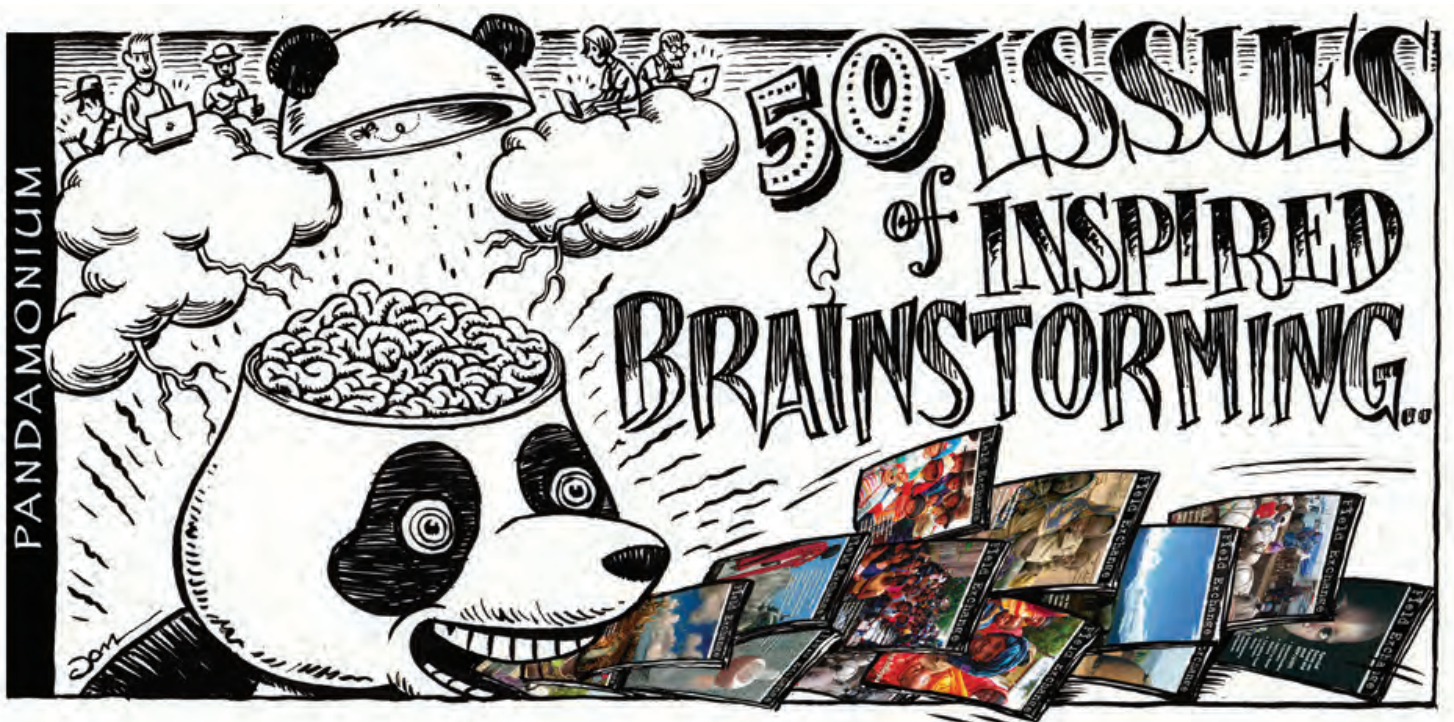
If you have an idea for an article, or an abstract/full article to share, please contact Marie McGrath, marie@enonline.net

We welcome submissions of – or ideas for – field articles, research, evaluations, news, views and letters at any time. **Field articles** are detailed accounts of programming experiences, challenges and lessons learned. **Research** may be original field research or summaries of relevant research. Relevant **evaluations** may be original or summary content. **News** pieces are short articles highlighting or summarising initiatives or resources related to nutrition, e.g. key meetings, training, guidelines, assessment tools, etc. **Views** articles share a particular individual or agency's perspectives. **Letters** responding to previous articles or raising new issues are always welcome.

People in aid



Participants in the Transforming Nutrition Summer School at IDS, July 14-18th, UK)



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Cover

Jan Eijkenaer, Mali, 2008

The opinions reflected in Field Exchange articles are those of the authors and do not necessarily reflect those of their agency (where applicable).

The Emergency Nutrition Network (ENN)

grew out of a series of interagency meetings focusing on food and nutritional aspects of emergencies. The meetings were hosted by UNHCR and attended by a number of UN agencies, NGOs, donors and academics. The Network is the result of a shared commitment to improve knowledge, stimulate learning and provide vital support and encouragement to food and nutrition workers involved in emergencies. The ENN officially began operations in November 1996 and has widespread support from UN agencies, NGOs, and donor governments. The ENN enables nutrition networking and learning to build the evidence base for nutrition programming. Our focus is communities in crisis and where undernutrition is a chronic problem. Our work is guided by what practitioners need to work effectively.

- We capture and exchange experiences of practitioners through our publications and online forum
- We undertake research and reviews where evidence is weak
- We broker technical discussion where agreement is lacking
- We support global level leadership and stewardship in nutrition

Field Exchange is one of the ENN's core projects. It is produced in print and online three times a year. It is devoted primarily to publishing field level articles and current research and evaluation findings relevant to the emergency food and nutrition sector.

The main target audience of the publication are food and nutrition workers involved in emergencies and those researching this area. The reporting and exchange of field level experiences is central to ENN activities. The ENN's updated strategy (following mid-term review in 2013) is available at www.ennonline.net

The Team



Jeremy Shoham and Marie McGrath are Field Exchange Co-Editors and Technical Directors.



Carmel Dolan and Emily Mates are Technical Directors.



Peter Tervet is ENN's Senior Finance Manager, based in Oxford.



Chloe Angood is a nutritionist working part-time with ENN on a number of projects and supporting Human Resources.



Thom Banks is the ENN's Project Operations Manager based in Oxford.



Clara Ramsay is the ENN's Finance Assistant, based in Oxford.

The ENN welcome Judith Fitzgerald, our newest recruit, who has replaced Charlotte Roberts as the Operations and Mailing Assistant at the ENN.



Phil Wilks (www.fruitysolutions.com) manages ENN's website.



Orna O'Reilly designs and produces all of ENN's publications.



The ENN team would like to say a big thank you to Charlotte Roberts, who has moved on to pastures new in a new full time position in Oxford. A wonderful organiser, she played a key role in sorting ENN meetings, resource mailings and travel, patiently accommodating our ever changing requests. We wish her every success and look forward to guest appearances at ENN Christmas parties.



Departure of Arabella Duffield from Trustee Board

The ENN would like to heartily thank Arabella Duffield, who stepped down from the Trustee Board in July 2015, for her longstanding support of the ENN. Arabella joined the Board on ENNs first registration in the UK as a charity in 2005 and has been with us since through 'thick and thin'. We wish her the very best.



Anna Taylor joins the ENN Board of Trustees

The ENN are delighted to welcome Anna Taylor to the Board of Trustees. Anna joined the Food Foundation as its first Executive Director at the beginning of June 2015, after five years at the Department for International Development (DFID). At DFID, Anna led the policy team on nutrition and supported the delivery of the UK's global commitments to tackle undernutrition. Before joining DFID, Anna worked for a number of international organisations, including Save the Children and UNICEF, working on international nutrition policy and supporting programmes in a wide range of contexts in Africa and South Asia. In 2014, she was awarded an OBE for her work to address the global burden of undernutrition. She did a MSc in Human Nutrition at the London School of Hygiene and Tropical Medicine in 1994.

Field Exchange supported by:

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