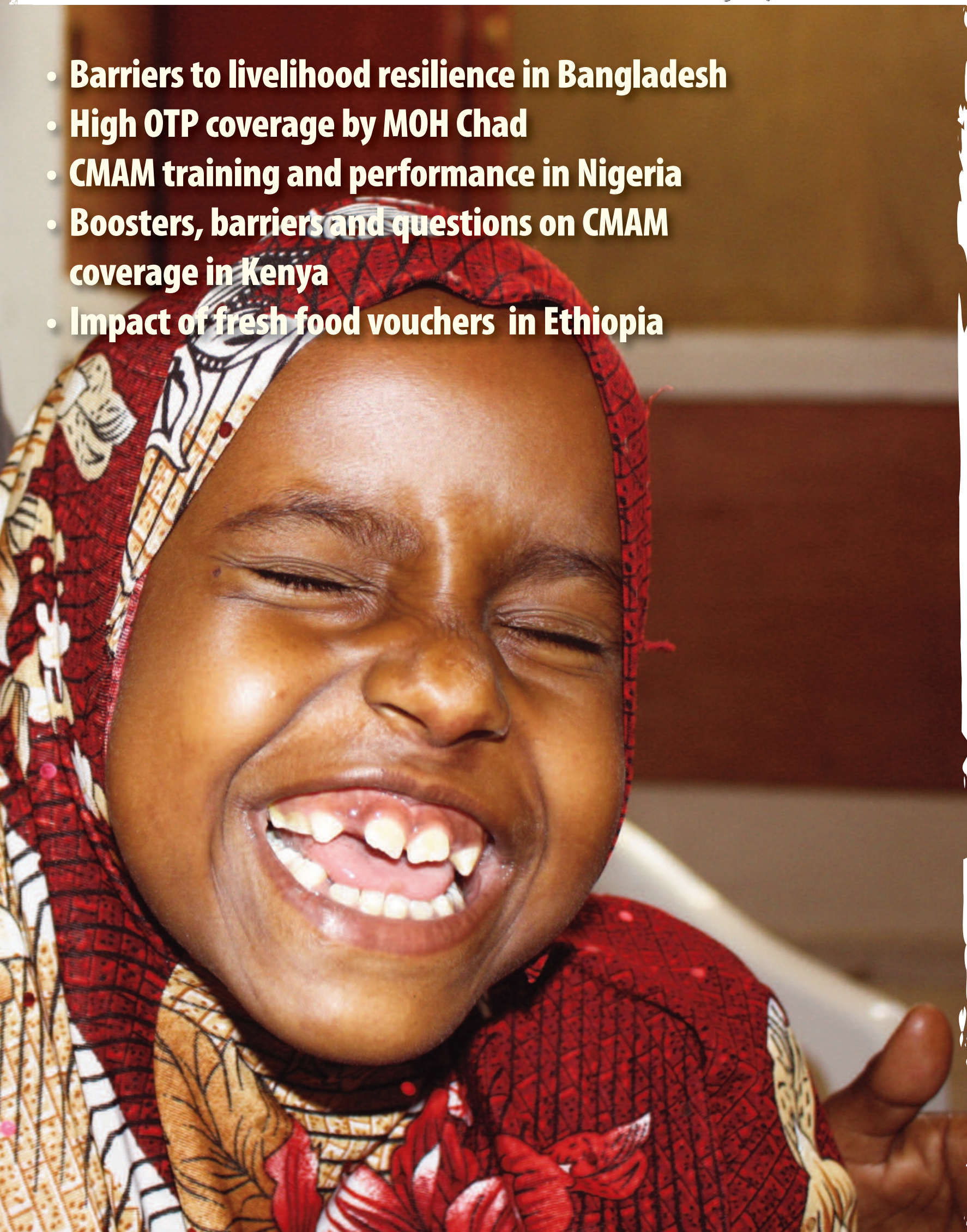
May 2013 Issue 45

ISSN 1743-5080 (print)

Field Exchange

Emergency Nutrition Network



- Barriers to livelihood resilience in Bangladesh
- High OTP coverage by MOH Chad
- CMAM training and performance in Nigeria
- Boosters, barriers and questions on CMAM coverage in Kenya
- Impact of fresh food vouchers in Ethiopia

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From the Editor

The year 2013 promises to be an important year for the nutrition aid community and those whom it serves. Since the launch of the Scaling up Nutrition (SUN) movement in 2010, the Hunger Summit in London 2012 and other events and initiatives, nutrition – or rather the problem of undernutrition – has (at last) been receiving unparalled national and global attention. This year is proving to be a very important year for governments, civil society, donor organisations, UN agencies, businesses and foundations to deliver on this momentum. Targets and resource pledges to enable actions at the national and local levels to reduce stunting, acute malnutrition and micronutrient malnutrition are evolving. By the end of 2013, there will have been numerous high level forums, meetings and conferences where advocates, decision makers and implementers will have gathered to demonstrate their commitment to what we should all consider to be the realisation of nutrition justice, i.e. the eradication of undernutrition in all its forms now and in the future. This editorial casts a spotlight on the achievements and challenges relating to treatment of acute malnutrition and what the ENN have learnt from a recently completed review about the financing and systems landscape currently in place and the adjustments that will be needed if greater scale up is to be achieved. The review was undertaken by the ENN as a follow up to the 2011 CMAM Conference in Ethiopia, and was funded by Irish Aid and CIDA. We believe that the findings from this review raises important issues and want to use this editorial to share these, in the hope that the lessons can be usefully learnt by the nutrition community and beyond.

The review involved country case studies from Kenya, Ethiopia, Malawi and Nigeria, in-person and telephone interviews with donors, UN agencies and foundations involved in CMAM financing, programming and research, grey literature review and donor feedback on initial findings.

The context for the review is that today, CMAM programmes are being implemented in over 65 countries, yet UNICEF estimates indicate that only 2 million of the estimated 20 million severe acute malnutrition (SAM) cases are currently being treated. Moderate acute malnutrition (MAM) treatment through supplementary feeding programmes (SFPs) is not monitored globally but does not appear to have kept pace with the scaling up of SAM treatment. Furthermore, coverage for in-patient care (IPC) for complicated acute malnutrition is also not monitored and therefore, global coverage is unknown. Many countries with very high caseloads of acutely malnourished children – such as Bangladesh, India, Nigeria and Indonesia – have very low CMAM coverage. Should CMAM be scaled up in these high burden countries, global coverage of treatment would substantially increase. Key findings from the review are as follows:

The current conceptual, terminological and programmatic demarcation between acute malnutrition and chronic malnutrition (the latter often referred to as stunting) undermines programming coherence and sustainability. Acute malnutrition is a condition that is endemic to many poor, emergency-prone and fragile country contexts, but is often viewed as an emergency problem. Furthermore, there is emerging evidence that acute malnutrition has a significant impact on stunting so that unless acute malnutrition is addressed in all contexts, efforts to reduce stunting in the critical 1000 day window will be undermined with concomitant impact on human and economic development. There is therefore a pressing need for longer term funding for acute malnutrition treatment and to broaden the conceptual understanding about the benefits of addressing both forms of undernutrition through common or inter-linked policies and treatment and prevention programmes. This will have implications for the current funding modalities for programme scale up.

As yet, there is no agreed vision for how the current level of CMAM programming and financing will be sustained and increased. Meeting the full costs of CMAM programming is generally beyond the reach of many governments of high burden countries. A large proportion of CMAM programming costs are due to the high cost of ready to use therapeutic food

Md. Rafiqul Islam, Bangladesh, 2012

Successful homestead gardening in Satkhira, Bangladesh

(RUTF). The efforts to increase local production of RUTF have not substantially lowered cost. It is widely agreed that effective new formulations are needed (some work is ongoing) to substantially lower costs. Until such time, however, countries with low budget allocations for nutrition will require considerable external donor funding. To avoid the risk of losing the hard won gains for effective treatment of acute malnutrition, a clearer vision and financial commitment to sustain and increase levels of CMAM programming is needed.

The SUN Secretariat is working with many governments to support national and aggregated global costings of scale-up for nutrition programming (often including CMAM). It is vital that donors and governments continue to work together to determine realistic financing strategies for implementing these plans. In most cases this will undoubtedly require 'front-loading' of donor and possibly private sector support. Over time, though, governments should be able to take increasing responsibility for financing CMAM, as programmes that prevent acute malnutrition have effect and reduce the acute malnutrition burden.

Historically, the majority of CMAM financing has been through humanitarian funding mechanisms. Recently, even though CMAM is increasingly being scaled up in non-emergency contexts, humanitarian resources continue to be deployed. This type of financing is not ideal for sustainable programming. In particular, it has led to 'stop-start' programming, poorly integrated programmes and undoubtedly has higher transaction costs for both government and their partners. Some donors are recognising the limitations of financing in this way and are employing alternative mechanisms in chronic emergency settings – such as multi-year humanitarian financing or pooled emergency and development funds. This type of financing should help build greater nutrition resilience in these settings.

In emergencies, as well as non-emergency contexts, financing for CMAM is typically channelled through the UN and non-governmental agencies. This review has found that by-passing government channels for CMAM financing can prevent government nutrition stakeholders from building up sufficient political capital within their treasury departments, with the result that budget allocations to nutrition are perpetually marginal. This review urges key stakeholders to not only improve tracking of CMAM financing to obtain a clearer picture of the proportions allocated through humanitarian and development mechanisms but also, the arrangements through which financing is channelled. Furthermore, consideration of financing mechanisms that pass directly to governments for scale-up of CMAM (and nutrition more generally) through pooled or matched finds is emphasised. Impediments such as lack of financial transparency and accountability can be obviated through a variety of mechanisms. Such funding arrangements are currently recommended in various international consensus statements, such as those concerning Aid Effectiveness.

Three UN agencies currently have global roles and responsibilities for acute malnutrition in non-refugee settings; UNICEF for the treatment of SAM, WFP for MAM and WHO for IPC. This tri-partite architecture is unique for a single health condition. A major challenge is the lack of geographic and programming convergence of the three agencies. In practice this can mean that children who have recovered from SAM and progressed to a state of MAM are either discharged without follow-up treatment or where resources permit, are kept for longer in SAM treatment until they recover fully. There is currently no mapping of the extent to which this happens but interviews conducted as part of this review indicate that this may be a widespread occurrence. There is also no mapping of IPC coverage. However, WHO are known to lack operational capacity and resources in many countries.

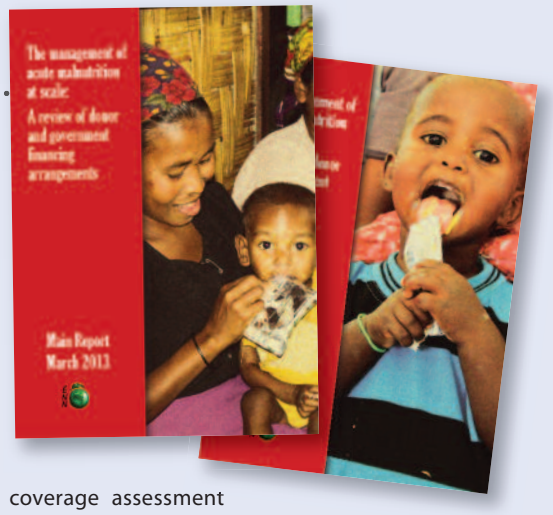
These findings raise questions about the accountability for programme coherence when different agencies are required to treat a sliding scale of severity of the same health condition, the transaction costs for this arrangement and, whether there would be cost and programmatic gains if one agency had oversight and responsibility for the management of acute malnutrition.

The summary and full reports of this review are available on the ENN website and ODI will be publishing an edited version as one of their HPN papers.

Now back to this issue of Field Exchange that contains its usual wide range of material. Given the themes emerging in global discussions, one field article is particularly topical, tackling a combination of resilience, chronic poverty, climate change and disasters in Bangladesh. Caitlin Macdonald, Peggy Pascal and Dany Egreteau from Solidarités International share the experiences of an agro-based community heavily reliant on the natural environment for income generation and livelihood options. The transition from rice production to largely externally controlled shrimp farming has moved land control and economic gains away from the local farmer, with these negative consequences potentiated by increased soil salinity due to farming methods and repeated disasters (flooding). In describing priority actions, the authors observe that the existing method of reactive, short-term aid delivery in this emergency prone region is insufficient in the current circumstances. The complexities of this situation require a long-term approach designed to strengthen community resilience, as well as recovery and adaptive capacity to the changing environment.

An article by Pankaj Kumar and colleagues at Concern Worldwide in Ethiopia describes the success of a short term intervention using fresh food vouchers to improve dietary diversity amongst children and pregnant and lactating women. Increased availability of fresh food on markets was enabled by the project which, coupled with the vouchers and health education sessions, enabled access to fresh foods. The challenge for the community is to sustain this improved pattern of consumption.

Coverage of CMAM programmes – a familiar topic to Field Exchange readers – is covered in a number of articles and research pieces. An article by Casie Tesfai at IMC is distinctive in describing high OTP coverage achieved by a Ministry of Health (MOH) led programme in Chad. This is attributed to good awareness of the community regarding CMAM, a strong, motivated community volunteer network, and active participation and CMAM leadership by MOH leaders at district level. Another research article from Chad by the same author and colleagues (Ruwan Ratnayake and Mark Myatt), describes a matched case-control study to undertake a causal analysis of SAM as part of a SQUEAC coverage assessment. This is an evolving area with the authors raising some challenges, e.g. limitations of using matched controls to detect differences that do not vary at community level, and around complications in assessing IYCF practices retrospectively. However, the approach appears to be a feasible addition to the SQUEAC



coverage assessment method that can help identify risk factors which in turn inform programming priorities. Another field article describes the 'Boosters, Barriers, Questions' approach to organising and analysing SQUEAC data, collecting and triangulating qualitative and quantitative information to inform programming. You can look forward to further articles on the theme of coverage assessment in issues 46 and 47, planned by the Coverage Monitoring Network.

A number of other articles in this issue of Field Exchange pick up on the challenges of measuring programme impact or conducting operational research. This is well described in a summary of a published article by Bridget Fenn who led on an evaluation of a SCUK programme in Ethiopia. In this evaluation, the hygiene component of the WASH intervention appeared to have a strong impact on stunting but only cautious conclusions were possible due to many limitations in research design. One of the strong recommendations made is that quality operations evidence-based research needs integration at project design stage, adequate funding and academic partnerships. The ENN empathises with the challenges of operational research having, with OFDA funding and in partnership with SCUK, just completed research on MAM interventions in Niger and Chad. Even with considerable investment in research expertise from the outset, this has proved immensely challenging in terms of methodology and implementation but with interesting findings that we look forward to sharing with you soon.

As we went to press, we heard of the release of the report on mortality rates during the Somali famine of 2010-12, which casts a long shadow over the effectiveness of humanitarian response systems. We have included a summary along with the essence of an online blog written by Andy Seal and Rob Bailey on the subject that raises a critical political dimension to the famine, which has not been a significant part of the discourse since these events and warrants urgent further discussion in the context of future complex emergencies. We urge you to contribute to the conversation on their blogspot (see the article for the weblink). This last minute addition to our pages contrasts harshly with our cover picture of a young, laughing girl in Somalia, when you think that over half of the estimated quarter of a million deaths (or more) was amongst children under 5 years. We haven't changed it, a reminder of the immense human loss the country has borne.

Finally, a reminder on the upcoming urban themed issue of Field Exchange due out in July 2013. All contributions or suggestions should be sent to marie@ennonline.net

Yours

Carmel Dolan
Marie McGrath
Jeremy Shoham

Any contributions, ideas or topics for future issues of Field Exchange? Contact the editorial team on email: marie@ennonline.net

Mortality in Somalia during food insecurity and famine (2010-2012)

Women and children wait for assistance from the drought/famine in Dolo, southern Somali

WFP/Siegfried Modola, Somalia, 2011

The report summarised below on mortality rates during the Somali famine of 2010-12 casts a long shadow over the effectiveness of humanitarian response systems. An online blog written by Andy Seal and Rob Bailey is appended as a form of post-script as it raises a critical political dimension to the Somalia famine which has not been a significant part of the discourse since these events and warrants urgent further discussion in the context of future complex emergencies (Ed).

Location: Somalia

What we know: Southern and central Somalia was affected by severe food insecurity and famine in 2010-2012 with excess mortality. Mortality estimates to date have not covered the entire affected population or the full period during which food security emergency and famine conditions occurred.

What this adds: The study estimates that 258,000 (244,000 to 273,000) excess deaths attributable to the emergency occurred in southern and central Somalia (October 2010 - April 2012 inclusive). Of these, 52% (133,000) were among children under 5 years old. More than 90% of estimated deaths occurred inside south and central Somalia. Excess mortality began to increase in late 2010, well before humanitarian relief began to be mobilised. A timely and adequate humanitarian response was absent.

A report commissioned by FEWS NET and FAO/FSNAU on the mortality among populations of southern and central Somalia affected by severe food insecurity and famine during 2010-2012 has just been published[1]. The report contextualises the famine which followed a prolonged period of drought resulting in the poorest harvests since the 1992-1993 famine. The effects of the drought were compounded by various factors including decreased humanitarian assistance and increasing food prices. Furthermore, this emergency occurred against a backdrop of heightened insecurity and persistent high levels of acute malnutrition, and affected populations whose resilience mechanisms had already been weakened over the past few years by a protracted crisis featuring a combination of armed conflict, natural disasters and adverse economic conditions. The evolving humanitarian emergency situation was detected in a timely way by existing early warning systems run by the United Nations Food and Agriculture Organisation's Food Security and Nutrition Analysis Unit for Somalia (FAO/FSNAU) and the USAID-funded Famine Early Warning Systems Network (FEWS NET). By July 2011, based on criteria established by the multi-partner Integrated Food Security Phase Classification (IPC, an analysis template used globally for deterâmining relative severity of food insecurity), the United Nations declared famine in several regions of Somalia. Based on further data and information collected on food security and nutritional status, disease and mortality, additional regions were designated as famine-affected over the subsequent two months. As a result of this emergency, during 2011 large numbers of people were internally displaced within Somalia or migrated to already overcrowded refugee camp complexes in Dollo Ado (Ethiopia) and Dadaab (Kenya). Measles, cholera and other epidemics, which typically accompany situations of greatly deteriorated nutritional status of the population, were also reported from nearly all affected regions.

The authors assert that there is consensus that the humanitarian response to the famine was mostly late and insufficient, and that limited access to most of the affected population, resulting from widespread insecurity and operating restrictions imposed on several relief agencies, was a major constraint. Based on numerous individual surveys conducted throughout southern and central Somalia by FAO/FSNAU and partners, and in the refugee camps by various other agencies, it was assumed that the impact of these combined events on human health would be severe. Indeed, the surveys indicated that both death rates and the prevalence of acute malnutrition among children were well in excess of emergency thresholds and far surpassing any value observed in Somalia during the previous five years, at least. However, the estimates of mortality from available surveys did not cover the entire affected population, nor the full period during which food security emergency and famine conditions occurred. During the emergency, the United Nations did not issue real-time death toll estimates. In 2012, improved conditions presented an opportunity to take stock of lessons learned and document the effects on health and mortality of exposure to severe food insecurity and malnutrition during 2010 and 2011. Therefore, this study was commissioned by FAO/FSNAU, with substantial technical and financial support from FEWS NET.

The study provides estimates of overall and excess mortality over a period of 19 months between October 2010 and April 2012, during which time severe food insecurity and famine conditions prevailed. The analysis considered the 28-month period from April 2010 to July 2012 inclusive. The starting point for the analysis was determined by when the prevailing food security situation first began to deteriorate, while the end point reflected more pragmatically the timing of when this study was conducted. In practice, harvest and market data indicated that by July 2012, food security in nearly all regions of southern and central Somalia had returned to pre-emergency levels.

The study sought to quantify deaths that occurred above and beyond the number expected in the absence of the emergency

[1] Checchi. F and Robinson. W (2013). Mortality among populations of southern and central Somalia affected by severe food insecurity and famine during 2010-2012. A study commissioned by FAO/FSNAU and FEWS NET from the London School of Hygiene and Tropical Medicine and the Johns Hopkins University Bloomberg School of Public Health, 2 May 2013.

(also known as excess deaths or excess mortality). Excess mortality can be estimated by combining three pieces of information: (i) the total death rate (i.e. number of people dying per population and per unit time) during the emergency period; (ii) what this death rate would have been if the emergency had not happened (this is also known as 'baseline' mortality); and (iii) the population living in the affected areas. Excess mortality is then given by the difference between the total and baseline death rates, multiplied by the population living in the region of analysis. These pieces of information were not immediately available for Somalia due to lack of systematic birth and death registration and incomplete tracking of population movements, and hence, had to be estimated. The study used a variety of previously collected data and statistical techniques in order to do so.

The 2010-2011 drought and crop failure affected mainly southern Somalia (Bakool, Banadir, Bay, Gedo, Hiran, Lower Juba, Middle Juba, Lower Shabelle and Middle Shabelle regions), and to a lesser extent, the central regions of Galgadud and Mudug, as evident from multiple data sources. All of these regions were included within the analysis, as well as the 11 refugee camps around Dollo Ado, Ethiopia and Dadaab, Kenya. For the purpose of analysis, the population of each of the included regions were classified into the major livelihood types present in the region (pastoralist, agro-pastoralist, 'riverine' or agriculturalist, internally displaced (IDPs) and urban), thereby creating 42 separate 'strata' within Somalia, plus a further 11 strata consisting of each refugee camp in Ethiopia or Kenya.

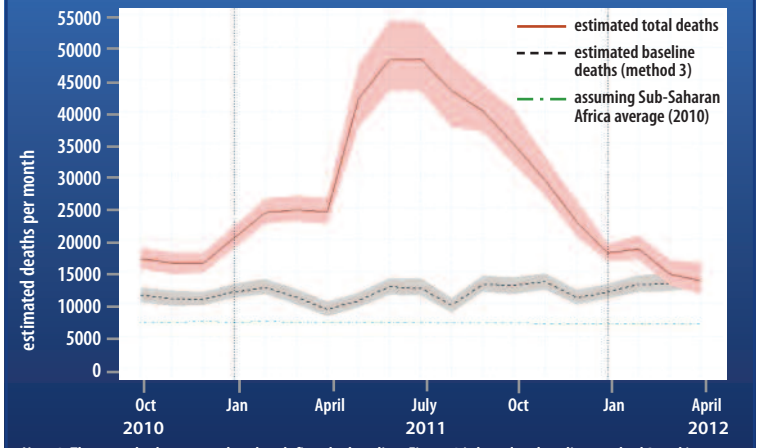
Key findings

Based on the most plausible set of population denominator data, the study estimated that 258,000 (244,000 to 273,000) excess deaths attributable to the emergency occurred in southern and central Somalia between October 2010 and April 2012 inclusive, of which some 52% (133,000) were among children under 5 years old. The highest estimated death tolls were in Banadir, Bay and Lower Shabelle regions. The full toll of the emergency is easier to visualise when considering the percentage of the population estimated to have died as a result: these are about 4.6 percent overall, peaking in Lower Shabelle at 9 percent for all ages and at 17.6 percent among children under 5 years old.

Prior to 2011, available surveys done in Somalia yielded a crude death rate for all ages (CDR) and an age-specific death rate for children under 5 years old (U5DR) that remained consistently below 2 and 4 deaths per 10,000 people per day respectively, though many of the values recorded were already indicative of emergency conditions. In southern and central Somalia (but not in the rest of the country), a striking peak in recorded mortality is apparent in July-October 2011, with individual survey CDRs and U5DRs reaching 5-6 and 10-15 per 10,000 per day respectively, and a CDR value of around 2.5 per 10,000 per day for southern and central Somalia, as estimated for all strata combined through direct and indirect methods. By contrast, the counter-factual baseline CDR was estimated to oscillate between 0.5 and 0.8 throughout the period, while the Sub-Saharan Africa 2010 average was 0.37. A higher baseline in southern and central Somalia compared to regional averages likely reflects underlying factors related to the chronic crisis, including inappropriate feeding practices, limited access to health infrastructure, inadequate water and sanitation services, armed conflict, etc.

As shown in Figure 1, excess mortality visibly began to accrue in October 2010. Between May and October 2011 inclusive, greater than 20,000 excess deaths per month (i.e. the difference between total and baseline deaths in Figure 1) were estimated to occur in southern and central Somalia. While this is considered the main famine period, it should be noted that excess mortality in the population began to rise well before, as conditions deteriorated over time, including in areas where famine was not declared.

Figure 1: Estimated number of deaths per month during the emergency, compared to deaths that would have occurred if the emergency had not taken place



Note 1: Three methods were explored to define the baseline. Figure 1 is based on baseline method 3 and is detailed in the report (see footnote 1).
Note 2: Shaded areas indicate 95% percentile intervals around the point estimates. Mortality that would have resulted from a death rate equal to the Sub-Saharan average is also shown to facilitate interpretation. Note that baseline death tolls are slightly imprecise as they do not account for varying death rates during the period.

In Dollo Ado and Dadaab refugee camps, excess mortality estimates ranged between minus 1000 to +5700 and minus 1300 to +8800 respectively, suggesting that either fewer or many more deaths occurred in these camps than would have if no emergency had occurred. Due to limitations in the available mortality and population data, no single best estimate can be provided for the camps, though most of the uncertainty range clearly falls within the positive region, indicating that many excess deaths (probably in the thousands) may have occurred in these camps as well.

Conclusions

This study suggests that severe food insecurity and famine in southern and central Somalia over a 19-month period in 2010-2012 resulted in a very large death toll, with a majority of excess deaths among children under 5 years old and a peak in excess mortality during mid-late 2011, which coincides with the declared famine period.

The estimate of about 244,000 to 273,000 excess deaths is similar to that for the 1992-1993 famine in Somalia. However, percent mortality during 2010-12 was about half, the population affected was larger and the definitions of famines were not consistent in the two events. Peak death rates were similar to those observed in other recent famines in Ethiopia and South Sudan. Excess child deaths, as estimated by this study, are about two to three times the annual amount in all industrialised countries combined. More than 90% of estimated deaths occurred inside south and central Somalia, where internally displaced people and riverine populations, particularly in Lower Shabelle, Bay and Banadir regions, were disproportionately affected. Notably, excess mortality began to increase in late 2010, well before humanitarian relief began to be mobilised and possibly earlier than previously recognised.

The study relied on a unique dataset of more than 200 nutrition and mortality surveys conducted by FAO/FSNAU and partners in difficult conditions within Somalia using a mostly standardised approach. These were complemented by rich data on food security and other variables generated by the FAO/FSNAU and FEWS NET. Findings are highly dependent on the accuracy of mortality survey data, variables used for statistical modelling, and population denominators, which could only partly be assessed. Estimates for the refugee camps should be considered far less robust, as they are based on investigator assumptions rather than a formal statistical approach.

These findings place the 2010-2012 Somalia emergency among the most severe affecting humanity over the last decades, at least using a mortality metric. They broadly illustrate the potential health effects of drought and large-scale food insecurity in the absence of a timely and adequate humanitarian response. This evidence should be used to ensure such deficiencies never occur again in the future. These estimates provide renewed justification for ensuring that adequate humanitarian assistance reaches all populations in Somalia, and for vigorously pursuing a resolution to the ongoing armed conflict.

WFP/Siegfried Modola, Somalia, 2011

Children under 5 years accounted for over half of the deaths


WFP/Siegfried Modola, Somalia, 2011

Children under 5 years accounted for over half of the deaths

Famine in Somalia and the failure of data driven humanitarianism

Summary of blog[1]

A recently published blog discusses the limitations of data-driven humanitarian efforts and the lessons learned from the 2011 Somalia famine.

In May 2012, the UN Secretary General published a report on 'Strengthening of the coordination of emergency humanitarian assistance of the United Nations.' The report identified the need to "…build systems to support data-driven humanitarian decision making,, noting that "…the current humanitarian system often struggles to furnish timely and consistently reliable information and analysis in order to provide an appropriate response." Perhaps there was a certain irony that the UN report was published just three months after the end of the famine in Southern Somalia. One year on from its officially declared end, we reflect on what has been learnt from the various evaluations of the response to the famine, and what that says about the limits to data-driven humanitarian decision making.

The 2011 famine in Somalia was the most recent to afflict humankind and one of the best documented. It affected extensive parts of Southern Somalia and is thought to have cost the lives of tens of thousands of people, while hundreds of thousands more fled across the border into Kenya and Ethiopia.

Did, in fact, the famine occur because data from this conflict-affected country were just not available and the famine was impossible to predict? Would more data have driven a better decision making process that could have averted disaster? Unfortunately, this does not appear to be the case. There had, in fact, been eleven months of escalating warnings emanating from the famine early warning systems that monitor Somalia. Somalia was, at the time, one of the most frequently surveyed countries in the world, with detailed data available on malnutrition prevalence, mortality rates, and many other indicators. The evolution of the famine was reported in almost real time, yet there was no adequate scaling up of humanitarian intervention until too late.

So, if a lack of data and forecasting was not the problem, what did allow this health catastrophe to happen? Unsurprisingly, there is no single answer, with a number of different factors contributing to the aetiology of the famine and the lack of timely and effective humanitarian action. These factors included the political and military actions of authorities within Somalia, in neighbouring countries, and other states; the decision of key international donors not to fund the necessary interventions; and failure of the humanitarian system itself to respond in a sufficiently independent way. The geopolitical agendas of multiple actors were not aligned with the need to prevent famine. For example, the legislation enacted by the US under the PATRIOT Act and the actions of the Office of Foreign Assets Control introduced widespread concern within the humanitarian community that organisations or individuals could be prosecuted under US law for undertaking humanitarian work in areas administered by al Shabaab, named as a Foreign Terrorist Organisation by the US State Department but the effective administrative authority in large areas of Southern Somalia at the time. Fear of litigation by governments reduced the speed and extent of responses that could have prevented the development of famine.

The deeply antagonistic relations between al Shabaab and Western donors, such as the US, resulted in a highly politicised operating environment for humanitarian agencies that relied on donors for their funding, and al Shabaab for their access to affected populations. In circumstances such as these, the strict neutrality and impartiality of agencies is crucial to their ability to operate effectively and safely. In Somalia, the UN was neither neutral nor impartial – it had a political mandate to support the Somalia Transitional Federal Government with which al Shabaab was at war. As a result, the UN-led cluster system of humanitarian agencies was viewed with deep suspicion by al Shaabab. It banned many agencies from operating in Southern Somalia; a decision which ultimately proved to have catastrophic consequences. The UN-led cluster approach offers important advantages in situations where the political agendas of donors and national authorities are aligned. However, in complex emergencies such as Somalia, characterised by conflict and multiple and opposing political agendas, there is a fundamental mismatch between the design of the cluster system – which emphasizes partnership with national government – and the need of humanitarian agencies to achieve both actual and perceived neutrality.

Returning to the report of the Secretary General, data should, of course, drive humanitarian decision making, and the system needs to constantly evolve and improve to meet new challenges and utilise new opportunities provided by remote sensing, crowd sourcing, mobile technologies, and whatever comes next. But when push comes to shove, politics trump data. Had the humanitarian system been better insulated from political agendas in 2011, famine in Somalia could have been avoided. Politics was the driving force that led to both the development of the famine and the response failure. Reform continues to be urgently needed as complex emergencies, with their complex geopolitical back stories and competing agendas, show no sign of diminishing.

Visit and contribute to the blog at:
http://blogs.plos.org/speakingofmedicine/2013/04/04/famine-in-somalia-and-the-failure-of-data-driven-humanitarianism/

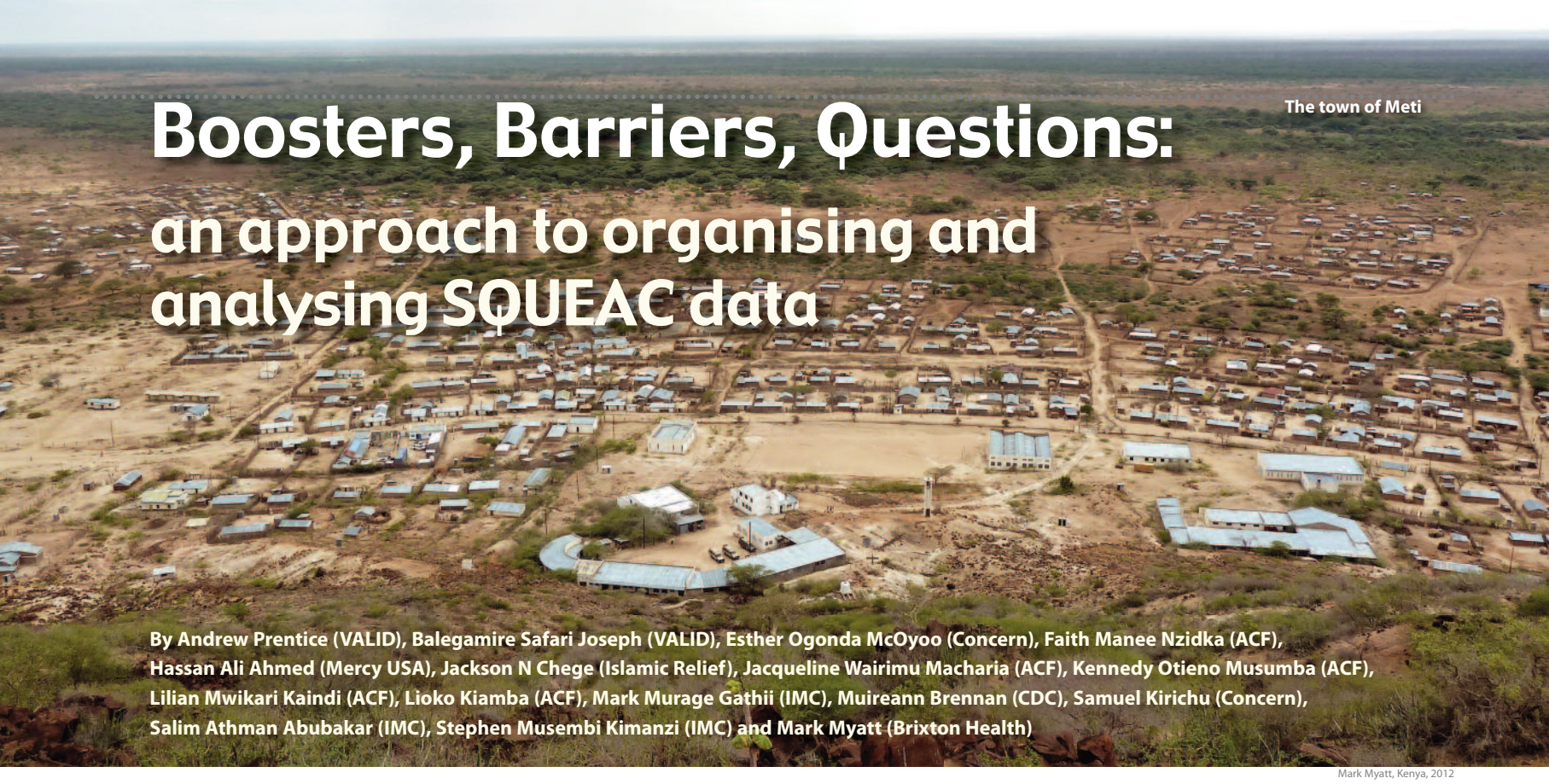
[1] Seal.A and Bailey.R (2013). Famine in Somalia and the failure of data driven humanitarianism. PLOS/Blog, Monday May 6th, 2013 http://blogs.plos.org/speakingofmedicine/2013/04/04/famine-in-somalia-and-the-failure-of-data-driven-humanitarianism/.


Jiro Ose/WFP, Ethiopia, 2012

Somali refugees in Buramino camp, Dolo Ado, Ethiopia (2012)

Boosters, Barriers, Questions:

an approach to organising and analysing SQUEAC data



The town of Meti

Mark Myatt, Kenya, 2012

By Andrew Prentice (VALID), Balegamire Safari Joseph (VALID), Esther Ogonda McOyoo (Concern), Faith Manee Nzidka (ACF), Hassan Ali Ahmed (Mercy USA), Jackson N Chege (Islamic Relief), Jacqueline Wairimu Macharia (ACF), Kennedy Otieno Musumba (ACF), Lilian Mwikari Kaindi (ACF), Lioko Kiamba (ACF), Mark Murage Gathii (IMC), Muireann Brennan (CDC), Samuel Kirichu (Concern), Salim Athman Abubakar (IMC), Stephen Musembi Kimanzi (IMC) and Mark Myatt (Brixton Health)

Box 1: Triangulation by source and method

It is important that the collected qualitative data are validated. In practice, this means that data are collected from as many different sources as possible. Data sources are then cross-checked against each other. If data from one source are confirmed by data from another source, then the data can be considered to be useful. If data from one source is not confirmed by data from other sources then more data should be collected, either from the same sources or from new sources, for confirmation. This process is known as triangulation.

There are two types of triangulation: **Triangulation by source** refers to data confirmed by more than one source. It is better to have data confirmed by more than one type of source (e.g. community leaders and clinic staff) rather than just by more than one of the same type of source. Type of source may also be defined by demographic, socio-economic, and spatial attributes of informants. Lay informants such as mothers and fathers are sources of differing gender. Lay informants from different economic strata, different ethnic groups, different religious groups, or widely separated locations are also different types of source.

Triangulation by method refers to data confirmed by more than one method. It is better to have data confirmed by more than one method (e.g. semi-structured interviews and informal group discussions) than by a single method.

You should plan data collection to ensure triangulation by both source and method. The BBQ approach is designed to help you do this.

Data collection using triangulation is a purposeful and intelligent process. Data from different sources and methods should be regularly and frequently compared with each other. Discrepancies in the data are then used to inform decisions about whether to collect further data. If further data collection is required, these discrepancies help determine which data to collect, as well as the sources and methods to be used.

This article outlines an approach to organising and analysing collected data and for planning further data collection during a SQUEAC coverage assessment. The approach, known as 'Boosters, Barriers, Questions (BBQ)' involves examining the collected data for boosters (i.e. anything that might act to support coverage) and barriers (i.e. anything that might act to undermine coverage) – see Figure 1. The approach was developed during a Coverage Monitoring Network (CMN)[1] training on the SQUEAC coverage assessment methodology in Kenya in October and November 2012.

The BBQ approach uses three panes to record (1) boosters, (2) barriers and (3) issues arising that require further data collection (questions). A fourth pane acts as a key to symbols that are used to indicate data sources and data collection methods. Figure 2 shows the parts of the BBQ tools and explains their purpose.

A large hand-drawn BBQ tool, such as is shown in Figure 3, proved useful for managing a SQUEAC investigation. The BBQ tool provides a summary of the current state of the investigation and serves as a focal point when deciding data collection needs and dividing tasks between team members. The collaborative focus provided by the BBQ tool facilitates team building and improves the quality of the investigation.

[1] See news piece in this issue about the CMN Project

Figure 1: The boosters and barriers model of programme coverage

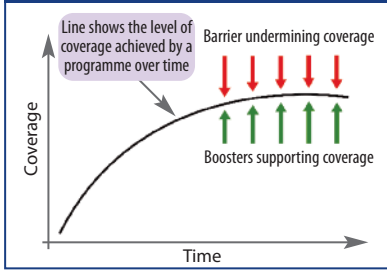


Figure 3: A hand-drawn BBQ tool from day four of a SQUEAC investigation

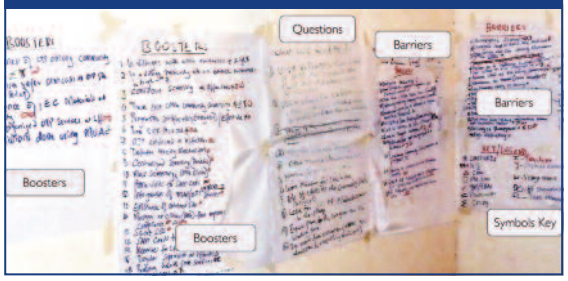


Figure 2: Components of the BBQ tool

Boosters	Questions	Barriers
List boosters to coverage here at the end of each day of data-collection..	Use this section to list uestions and issues that need to be resolved by additional data collection. These should include findings that have **not** been confirmed by triangulation	List barriers to coverage here at the end of each day of data-collection..
Mark each **booster** with symbols that indicate the sources and methods that were used to collect the data. This allows you to check that findings have been validated using triangulation by source and method. Any findings **not** confirmed by triangulation should prompt an entry in the central **Questions** section.	Record issue, data source, and method to be used to collect data.	Mark each **barrier** with symbols that indicate the sources and methods that were used to collect the data. This allows you to check that findings have been validated using triangulation by source and method. Any findings **not** confirmed by triangulation should prompt an entry in the central **Questions** section.
This list will tend to grow over time.	This section will require frequent redrafting.	This list will tend to grow over time.
Periodically check whether findings may be combined and redraft as required.	**Key/Legend**	Periodically check whether findings may be combined and redraft as required.
	Use this section to list the symbols used in the **Boosters** and **Barriers** sections to indicate sources and methods.	

When using the BBQ tool, each of the listed boosters and barriers is tagged with symbols that indicate the different sources of data supporting each finding (e.g. programme staff, carers of severe acute malnutrition (SAM) cases, community leaders) and the different methods used to collect the data (e.g. structured interviews, semi-structured interviews, informal group discussions). The use of these symbols allows the easy identification of findings that have, or have not, been validated using triangulation by source and method – see Box 1, Box 2, and Figure 4.

Findings associated with different sources and/or methods can be treated as validated. Figure 5, for example, shows a barrier "Mothers go to traditional healers who are not linked to the programme" revealed by in-depth interviews with carers of SAM cases in the programme and several informal group discussions with traditional birth attendants and traditional healers.

Findings associated with few sources of data and/or few methods of data collection are candidates for further investigation. Specific questions for further investigation are listed in the central 'Questions' section of the BBQ tool. Figure 5, for example, shows a potential barrier "Only person who can identify malnutrition is the Community Health Worker" revealed by a single source/method (i.e. informal group discussion with carers of young children in communities) and required, therefore, further investigation by collecting data from different sources and/or similar sources using different methods.

As the investigation proceeds, the BBQ tool is redrafted to (e.g.) combine similar findings and remove invalidated findings. Figure 6 shows the result of redrafting the BBQ tool shown in Figure 3 to combine similar findings. Note how some of the findings related to barriers have been combined using diagrams showing cause and effect linkages between barriers.

Figure 4: Illustration of how triangulation by source and method may (e.g.) be used to investigate the spatial pattern of coverage

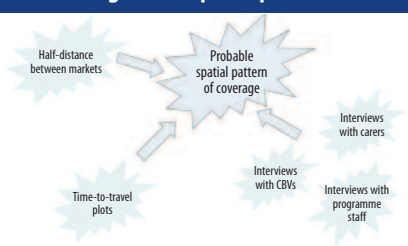
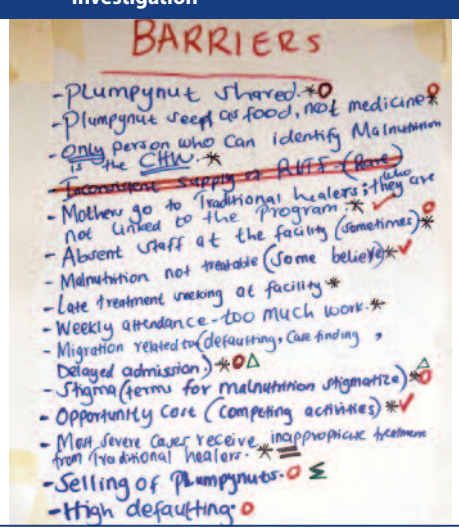


Figure 5: The barriers pane from a SQUEAC investigation



Box 2: Example of using the BBQ tool for triangulation by source and methods and hypothesis formation and testing in SQUEAC assessments

On the first day of collecting qualitative data, one of the teams found that carers of young children living in villages near health facilities delivering integrated CMAM (iCMAM) services were more aware of the iCMAM programme than carers of young children living in villages further away from health facilities delivering iCMAM services. This information, collected using informal group discussion with carers of young children in their home villages, was not confirmed by information collected by other teams. This finding was, therefore, placed in the 'Questions' section of the BBQ tool. To confirm this finding, questions were developed and incorporated into interview guides for semi-structured interviews intended to be administered to other sources (i.e. teachers and villages leaders and elders) on the following day.

On the second day of collecting qualitative data, information collected using semi-structured interviews with teachers, village leaders and village elders confirmed the original finding that distance was negatively associated with awareness of the iCMAM programme. The finding had, therefore, been confirmed by triangulation by both source and method:

Source	Method
Carers of young children	Informal group discussion
Village chiefs	Semi-structured interview
Village elders	Semi-structured interview
Teachers	Semi-structured interview

The collected data led to the formation of two linked and formal hypotheses:

> *Carers of young children living in villages* **close** *(i.e. within 1000 metres) to health facilities delivering iCMAM services are aware of the iCMAM programme (i.e. know it exists, know that it treats malnourished children, know that entry is decided by mid-upper arm circumference (MUAC), and know that the programme delivers RUTF).*

and:

> *Carers of young children living in villages* ***far*** *(i.e. further than 5 kilometres) from health facilities delivering iCMAM services are* ***not*** *aware of the iCMAM programme (i.e. do not know it exists, do not know that it treats malnourished children, do not know that entry is decided by MUAC, and do not know that the programme delivers RUTF).*

To confirm these hypotheses, small studies were performed by two different teams on days three and four of the SQUEAC assessment. Each team travelled to two villages, one of which was located near (i.e. within 1000 metres) to a health facility delivering iCMAM services and the other located far (i.e. further than 5 kilometres) from a health facility providing iCMAM services. The EPI5 sampling method was used to select five households from each of the selected villages. The EPI5 sampling method was used because it is known to return a sample similar to a simple random sample of households. Carers of young children in each of the selected households were interviewed about their awareness of the programme. An in-depth interview guide was developed for this purpose. In addition, each team was given MUAC tapes and sachets of Ready to Use Therapeutic Food (RUTF) (two types) in order to test whether informants recognised them, reflecting an awareness of the programme.

The data arising from the small studies are summarised below:

Study team	Village name	Distance class	Distance from iCMAM facility	Number of respondents interviewed	Number of respondents aware of the programme	Number of respondents *not* aware of the programme
1	Lakole	Near	1 km	5	5	0
	Mlandanoor	Far	6 km	5	1	4
2	Bilikomarara	Near	1 km	5	5	0
	Martaba	Far	13 km	5	0	5

The summary data were analysed using the simplified Lot Quality Assurance Sampling (LQAS) testing procedure with good awareness defined as more than 50% of carers of young children being aware of the programme.

The first hypothesis (i.e. good awareness if near to an iCMAM facility) would be confirmed if more than:

$$d=\left\lfloor 10\times\frac{50}{100}\right\rfloor=5$$

respondents were aware of the programme in the near villages. The study found ten respondents who were aware of the programme. The first hypothesis was, therefore, confirmed.

The second hypothesis (i.e. poor awareness if far from an iCMAM facility) would be confirmed if:

$$d=\left\lfloor 10\times\frac{50}{100}\right\rfloor=5$$

or fewer respondents were aware of the programme in the far villages. The study found one respondent who was aware of the programme. The second hypothesis was, therefore, confirmed.

Given these results, the SQUEAC assessment team concluded that distance was a factor affecting programme awareness and was likely to be a factor affecting coverage.

The approach outlined here is typical of the SQUEAC investigation process. That is:

1. Qualitative data are collected and validated using triangulation by source and method.
2. Validated qualitative findings are then used to develop formal hypotheses which are tested using simple quantitative techniques.

These are sometime referred to as *Stage I and Stage II* of a SQUEAC investigation.

A note on samples sizes and methods: Small sample sizes are common in SQUEAC. This is because the use of prior information acts to reduce both classification and estimation error. In the example small studies presented here, the association between proximity and awareness is very marked and a naïve frequentist analysis (i.e. an analysis that discounts all prior information) testing the null hypothesis that programme awareness was independent of proximity to the programme would return a p-value of $p < 0.0001$ (one-tailed Fisher Exact Test). This is very strong evidence against the null hypothesis. An estimation approach would return a risk ratio of 10.00 (95% CI = 1.56; 64.20) with proximity as the 'risk exposure'.

Figure 6: The BBQ tool redrafted to combine similar findings

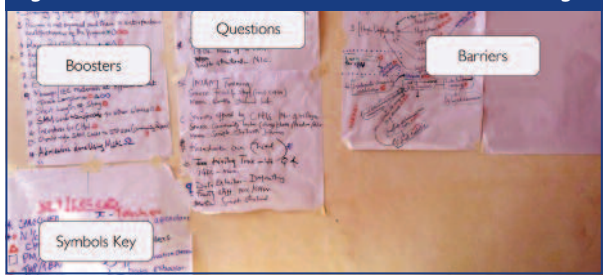
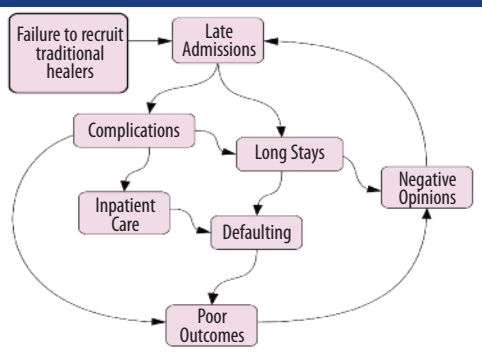
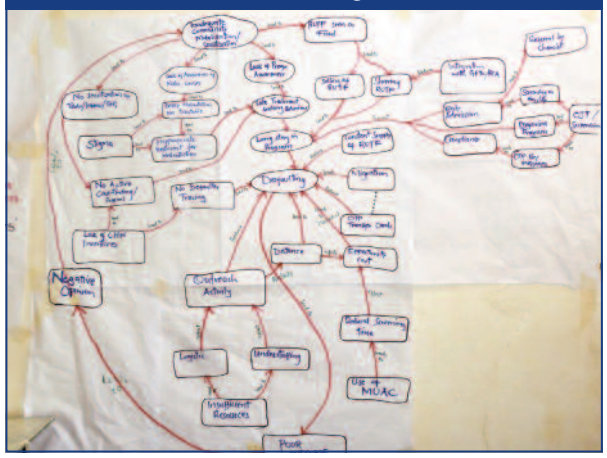


Figure 7: A concept map showing the likely conse quence of a single barrier



Note how some of the findings related to barriers have been combined using diagrams showing cause and effect linkages between barriers.

Figure 8: First draft of a programme concept map from day five of the SQUEAC investigation



Grouping findings by consequence helps with building concept maps that describe the relationships between boosters and barriers in a programme. For example, a programme's failure to recruit traditional healers as community-based case-finders may lead to late admissions, complicated cases requiring long stays or inpatient care (which may lead to defaulting), poor outcomes and negative opinions of the programme. Figure 7 shows a fragment of a programme concept map illustrating these relationships.

Figure 8 shows the first draft of a programme concept map from day five of the SQUEAC investigation. This illustrates the richness of data that arises from SQUEAC investigations and the ability of the BBQ tool to assist with data-analysis and presentation.

Sorting the lists of boosters and barriers into three categories with regard to the likely size of their effect on coverage (i.e. large, moderate, and small effects on coverage) helps with building the prior for the stage three survey.

The BBQ tool proved useful during the CMN training in Kenya and helped trainees make sense of large quantities of data from many and disparate sources. The boosters and barriers model helped trainees maintain the focus of the investigation and to plan data collection. The BBQ tool may be used as an alternative to mind-mapping or as a complement to mind-mapping.

For more information, contact: cmnproject@actionagainsthunger.org.uk

Research

The use of evidence in humanitarian decision making

Summary of study [1]

Location: Ethiopia, DRC and Philippines

What we know: Decision making in humanitarian response requires timely information and analysis and there are ongoing efforts to coordinate and improve needs assessment to inform decision making. How decisions are made in practice is influenced by many factors.

What this adds: The influence of evidence on programmatic response is limited by previously decided strategic priorities, is considered selectively by decision makers, is influenced by personal experiences and is typically used to justify rather than determine interventions. An 'automatic' response is common in chronic situations; limited response flexibility within agencies and by donors means there is little incentive or capacity to innovate according to need. The decision-making process lacks transparency and is poorly documented.

A recent paper reports the results of a study undertaken during 2012 by Tufts University to address the question of how assessments and other sources of information and analysis are used by humanitarian decision makers. The study is based on a combination of literature review, case studies (Ethiopia, Democratic Republic of the Congo (DRC) and Philippines), and key informant interviews.

The study asks three main questions. First, how do decision makers in the humanitarian sector currently use information and analysis? Second, what factors, other than information and analysis, are influential in making decisions? Third, what would enable better-informed response decisions?

In order to address these questions, the study looks first at some of the main processes of decision-making in the humanitarian sector and the factors that appear to have most influence on decisions of different kinds. It goes on to look at the way information and analysis is currently generated in the humanitarian sector—both through formal and informal means—and related questions of relevance and credibility. These two topics are then brought together in addressing the question of the use of information by decision makers and what might enable more informed and evidence-based response decisions.

In reviewing the way decisions are made in practice, the study considers the ways in which such information is used (or not) at different points in the process, which varies across different kinds of decisions in different contexts.

Findings

Overall, the study revealed high levels of diversity in the contexts for decision making, as well as in the use of information and analysis. Some patterns emerge, however. In those contexts where strong governmental systems exist, the generation and use of information is either highly controlled by government (Ethiopia) or else is dominated by government-led systems (Philippines), with international actors playing only an auxiliary role. Most of the key decisions regarding resource allocation are in effect made by local and national government officials in these cases, on the basis of national or regional plans. Domestic political factors represent a significant potential bias which risks distorting the data available. That said, there are checks in most systems. In Ethiopia for example, international actors partner with central and local government in both the assessment of need and the provision of relief. While political bias may affect which areas are prioritised for relief, major discrepancies between assessed and "stated" need are hard to disguise, and the larger international donors have a substantial influence over the recipient government in this regard. Thus, although the validity of the published data may be questionable (Ethiopia), the process of micro-resource allocation and programme design is able to a substantial degree to iron out some of the more obvious anomalies at the local level.

[1] Darcy J et al (2013). The use of evidence in humanitarian decision making Assessment Capacities Project (ACAPS). Operational learning paper. Feinstein International Centre January 2013. http://www.acaps.org/img/documents/t-tufts_1306_acaps_3_online.pdf

In contexts where government is relatively absent from humanitarian decision making, a different set of factors are at play. In the most extreme cases (Somalia, Eastern DRC, parts of Afghanistan), government systems are almost completely absent or bypassed by the international system. Here the dominant political narrative is an international one and it provides the backdrop for macro-resource allocation decisions. The biases in these cases come as much from pre-determined international strategic priorities as from domestic factors; aid is provided as much in proportion to an area's strategic significance as it is based on assessed need. This is evident in the ebb and flow of funding in response to annual appeals (Consolidated Appeals (CAP), etc.), which fluctuates more according to foreign policy agenda, like counterterrorism and stabilisation, than it does according to apparent need. This factor also affects those countries like Central Africa Republic whose international profile and related strategic priority is low. The threshold for response is correspondingly higher in such contexts.

In this second category of contexts, the data available come mainly from international agencies. In most crisis contexts, however, there is a mix of government-generated (e.g., National Disaster Management Authorities (NDMA)) and external agency-generated data and analysis. Increasingly the mainly UN-led Clusters or else government-led coordination bodies are attempting to bridge the gap between the two. Joint assessment processes are one feature of this, an attempt to forge consensus and buy-in, as well as to streamline and harmonise data collection. This has potential strengths and weaknesses from the point of view of evidence-based responses. The main strengths come from comparability of data and 'buy-in' for the process and its results. The main weaknesses relate partly to the often cumbersome and slow nature of these joint processes, and partly to the potential for 'group think' to dominate the related analysis. In this regard, independent assessment and monitoring processes (e.g. by individual agencies) continue to be an essential part of the evidential picture, often acting as early warning or corrective to the wider system, whose processes may not be responsive to significant changes at either the micro or macro level.

Despite the diversity of contexts for decision making, it is possible to draw a number of conclusions from the study.

Conclusions

Decision making

In most decision making processes in the sector, the range of options is limited by previously decided strategic priorities, resource allocation and other biases. In some cases, these are parameters set by host government authorities, in other cases, they are set more by donors and by implementing agencies. This significantly limits the extent to which decisions are open to influence by evidence, particularly where organisational incentives to generate and respond to new evidence are limited.

The extent to which decisions are 'predetermined' varies according to the type of decision. In some of the cases reviewed, the dominant political narrative and relative strategic priority given to the country/crisis in question was the factor that had by far the most significant bearing on strategic decisions about crisis response (approach, level of funding, etc.). In some cases of protracted crisis like DRC and Ethiopia, it is more about programmatic inertia: programmes 'roll' from year to year without fundamental reassessment of approach. Where programmes are more responsive to context, this tends to be at the lower levels of decision making and at the more local level of programming.

WFP/Veejay Villafranca, Philippines, 2009

Children during the floods in the Philippines in 2009

Decision makers may be highly selective in their uptake and interpretation of evidence. Personal biases, rules of thumb, and mental models – as well as a variety of (dis) incentives – may prevent individuals and organizations from responding to a situation in the way that evidence appears to demand. It is common for experienced staff to base decisions mainly on past experiences, instinct, and assumptions – even in the face of contradicting evidence. In institutional terms, this in turn leads to building agency capacity around established interventions types, which continue to be the 'preferred response' with each new crisis, irrespective of available evidence.

The use of standard predefined response packages is now being challenged, particularly in the area of food security and livelihoods. In evidential terms, this should involve combining evidence about context with historic knowledge about "what works." Yet it remains the case that very few agencies conduct a formal or structured analysis of the various options and base decisions on the evidence that points to the most appropriate response. Even when assessment is viewed as a priority for programme planning, agencies often disregard field-validated assessments as a precursor to intervention. Ultimately, the choice of response does not always involve an evidence-based, analytical process.

Current processes of decision making tend to be undocumented and untransparent. It is therefore hard to judge whether or how information and evidence have been used to inform them. In particular, key assumptions are often unstated and therefore hard to test.

Generation of evidence

Relatively few documented needs assessments are available beyond the confines of the agencies that conduct them. There has been a rise in the number of joint (multi-agency, multi-sector) needs assessments, and increased focus on the use of the Multi-Cluster Initial Rapid Assessment (MIRA) tool in rapid-onset crises. This is a significant advance, although there remains a lack of genuine multi-sectoral analysis with the result that responses remain largely "siloed." To date, there has been less progress on joint assessment in protracted crises.

Even where documented assessments exist, the link between assessment and decision making appears weak. Assessments are still largely front-loaded and used to justify proposals or appeals (Flash Appeal, CAP, etc.). It remains the case that most assessments are conducted in order to substantiate a case made for funding by a particular agency to do a particular thing. Inevitable biases result in a lack of credibility – both of the analysis and of proposed interventions based on that analysis.

Clearly, there is still room for improvement regarding the processes of data collection and needs assessment, but this is not a silver bullet for achieving improved decision making. First, larger, systemic changes must occur whereby there are better incentives for generating and using evidence in decision making. Second, ongoing assessment and situational monitoring must be more widely adopted. However, in order for this to be effective in improving humanitarian response, the wider humanitarian system must allow flexibility for agencies to adapt programmes to meet the changing needs throughout the duration of a crisis. Third, quality analysis and the use of evidence must be highly valued through increased investments in diagnostics. Fourth, the evidence base proving which humanitarian responses are most effective is extremely lacking. Investments must be made in the consolidation of evidence about what works in response to different kinds of needs in different contexts. Fifth, the way evidence is presented is often crucial to its uptake. Knowing how to present it, to whom, and in what form may be essential to informed decision making.

Microfinance institutions and a coastal community's disaster risk reduction, response, and recovery process in Bangladesh

Summary of published research[1]

A mother and child in Gopalgan, Bangladesh

Marcus Prior/WFP, Bangladesh, 2010

Location: Bangladesh

What we know already: Microfinance programmes generate income opportunities and contribute to disaster risk reduction.

What this article adds: Current microfinance programmes have limited disaster risk reduction impact around health, income, sanitation, shelter and water supply. Microfinance programme providers (often NGOs) need to develop a more holistic package of services to enhance livelihoods and modify current funding modalities and technical design to address limitations identified by clients.

Microfinance is defined as the delivery of insurance, savings, small loans and other financial services to poor people so that they can generate income opportunities, build an asset base, stabilise consumption and protect themselves against risk. Although microfinance institutions (MFIs) are of different types, non-government organisations (NGOs) are the prime providers of microfinance to the poor in Bangladesh. The government of Bangladesh has recognised coastal zones as areas of enormous potential but lagging behind in terms of socio-economic development and vulnerable to various disasters, environmental degradation and global climate change. Approximately one third of the territory of Bangladesh is defined as coastal with one half of the population poor and vulnerable to man-made and natural disasters, such as arsenic contamination and pollution, coastal flooding, cyclones, erosion, salinity and storm surges.

A recent study has explored the nature of the support provided by MFIs to clients from the most vulnerable coastal communities of Hatiya Island. Approximately 10 MFIs are operating microfinance programmes in the disaster-prone unions (lowest administrative units) of Hatiya. Four of its 10 unions are at particular risk. Consequently these four unions were selected for the study. From these four unions, a total of 110 households (55 from river erosion-affected areas and 55 from cyclone-affected areas) were randomly selected for a household questionnaire survey. However, given that more than half the population of Hatiya island are members of an MFI, this sample size seemed too small. To address this limitation, seven focus group discussions were also conducted with some 20 participants in each. Information on the socioeconomic realities of MFI clients, the nature and the type of MFI support, the contribution of MFI to disaster risk reduction, response, and recovery, and the problems and the expectations related to the MFIs was collected through the questionnaire survey and the focus group discussions.

Results from the study revealed that most MFIs have been operating in Hatiya for more than 15 years. Along with microfinance, MFIs offer different support services to their clients, including the provision of knowledge and information related to education, health, sanitation and social norms, as well as awareness-building and motivation activities pertaining to disaster preparedness, family planning and maternity and child care. The majority of clients believe that the service has facilitated disaster preparedness and recovery. There is a correlation between the number of years of membership of an MFI and the capacity of clients in the area of disaster risk reduction, response and recovery. On the one hand, overall capacity has improved but risk reduction capacity with respect to health, income, sanitation, shelter and water supply has not changed for more than half of the clients. These clients identified several problems with MFIs, such as high interest rates, a strict loan recovery system and no support during a disaster.

Based on the overall findings of this study the authors recommend that along with microfinance, MFIs prioritise disaster risk reduction activities within their regular service delivery apparatus. MFIs themselves are highly vulnerable to natural disasters because they face the problems of dislocation of members, high levels of bad debt, and liquidity crises. Some MFIs have started to adopt mechanisms to reduce the vulnerability of their clients to disasters and to facilitate disaster recovery while safeguarding their own portfolios, but this is still at a rudimentary stage. In reality, most of the NGOs that are prime providers of microfinance rarely incorporate disaster management programmes in their policy strategies.

The authors of the study suggest that MFIs should start to embrace a more holistic and multi-dimensional approach to enhancement of livelihoods, as well as modifying technical design of projects and financing modalities. A more holistic model would incorporate disaster management programmes that place an emphasis on early warning, infrastructure development, micro-insurance and risk reduction, response and recovery considerations. The livelihood diversification programmes of MFIs should focus not only on credit disbursement but also on the generation of skills and incomes that are oriented towards needs and are environmentally sound. Skills development training, the provision of marketing facilities, awareness-building and savings and assets building have to be prioritised. Wide-scale efforts related to knowledge and information dissemination, awareness building and community integration are already part of most MFI programmes but these efforts have to be modified to take account of the present context, especially the threats posed by climate change.

The authors conclude that if this package of services can be made available to MFI clients, it will contribute to the building and diversification of assets, the expansion of coping strategies and a reduction of vulnerabilities. In addition, it could eventually enhance the ability of clients to withstand, to prepare for and to recover from disasters.

[1] Parvin G and Shaw R (2013). Microfinance institutions and a coastal community's disaster risk reduction, response, and recovery process: a case study of Hatiya, Bangladesh. Disasters, Volume 37, No 1, pp 165-184. January 2013

Assessment of the PROBIT approach for estimating the prevalence of acute malnutrition from population surveys

Summary of research[1]

Location: N/A

What we know already: Prevalence of GAM is normally estimated using two stage cluster sampled surveys using the SMART method. The PROBIT method is an alternative method that estimates prevalence indirectly and requires a smaller sample size. GAM case definition may be based on weight-for-height z score (WHZ) and mid-upper arm circumference (MUAC) criteria.

What this article adds: The study confirms that the PROBIT method can estimate prevalence of GAM and MAM using MUAC or WHZ. The PROBIT method is more suited when estimating prevalence using small sample sizes (<150), e.g. sentinel-site surveillance systems. The classical method is preferred when estimating prevalence with larger samples.

The most commonly used method for estimating the prevalence of global acute malnutrition (GAM) is by conducting two stage cluster sampled surveys requiring the measurement of several hundreds of children, typically 900 children (thirty clusters of thirty children), for achieving a sufficient precision for decision making.

In 2006, the SMART (Standardised Monitoring and Assessment of Relief and Transitions) method was introduced, addressing the problems of lack of standardisation and lack of methodological rigour in the way nutritional surveys were undertaken. Despite the consistency in methodology and analysis that this method has provided for the nutrition community, there remains concern about the difficulty in obtaining usefully precise estimates of severe acute malnutrition (SAM) prevalence, the large sample size required within the constraints of security and accessibility to villages, and the cost in applications, such as surveillance by repeated cross-sectional surveys.

The classical method of estimating prevalence is to calculate the number of children meeting a case definition in the sample divided by the total number of children in the sample. In 1995, the WHO proposed the PROBIT method as an alternative method for prevalence estimation. The PROBIT method estimates prevalence indirectly using the inverse cumulative normal distribution function, which converts parameters of a normally distributed variable (i.e. the mean and standard deviation) to cumulative probability below any cut-off, which is equivalent to the proportion of individuals below the cut-off. The 1995 WHO document states that the main advantage of the PROBIT method is that it requires a smaller sample size than the classical method, however, no evidence of this is given.

The aim of a recent study was to compare the PROBIT method with the classical method for estimating prevalence of GAM, moderate acute malnutrition (MAM) and SAM using a computer based simulation approach to generate populations from real-world survey data sets and then simulate surveys sampled from these populations. Bias in the estimation of prevalence using the classical and PROBIT methods was investigated. The precision obtained for a given sample size when using the classical and PROBIT methods for estimating prevalence were compared. In addition to weight-for-height, WHO and UNICEF also recommend a SAM case definition based on mid-upper arm circumference (MUAC) of <115mm or the presence of bilateral pitting oedema. Several agencies also use MUAC ≥ 115mm and <125mm as a MAM case definition for programmatic purposes. The study also tested the PROBIT and classical methods using these case definitions.

Method

The classical method and PROBIT method for calculating prevalence of acute malnutrition were compared using computer-based simulations. First, populations were created from a database of existing surveys. Then surveys describing these populations were simulated by sampling from populations created from these original survey data sets. The database used in the analysis consisted of 560 nutritional surveys involving children aged between 6 and 59 months from thirty-one different countries, totalling 459,036 children. The surveys were carried out by eleven different organizations involved in nutrition programmes throughout the world. The surveys included measurements of weight, height, MUAC and assessment of oedema. Weight-for-height z score (WHZ) was calculated using the WHO growth standards.

Each of the 560 surveys in the database was used to create a simulated population of 17,000 children by sampling with replacement from the survey dataset. This size of population was chosen as being typical of the populations in which nutritional anthropometry surveys are commonly performed. Sampling with replacement from the survey data sets was done to create simulated populations of the desired size. Each of the 560 simulated populations was sampled using simple random sampling without replacement. Fifteen different sample sizes (fifty, seventy-five, 100, 125, 150, 175, 200, 225, 250, 275, 300, 350, 400, 450 and 500) were used for these simulated surveys. One hundred and fifty surveys were simulated for each sample size from each population. This process led to a total of 1.26 million simulated surveys: 560 populations x15 sample sizes x 150 simulations =1.26 million simulated surveys.

The study team calculated the true prevalence in each simulated population by counting the number of children meeting the case definition of SAM or MAM and calculating the ratio of this number to the total population.

First, the team calculated the prevalence using the classical method, by counting the number of children with the case definition of SAM or MAM in the simulated survey and calculating the ratio of this number to the total sample.

Second, the team estimated the prevalence with a PROBIT Method using three different PROBIT approaches. The first approach was based on the approach recommended by WHO that involved the sample median WHZ and assuming SD =1. The second approach used the sample mean and SD. The last approach involved the sample mean and SD calculated from data transformed towards normal, as explained below. Prevalence estimates for all three approaches using the PROBIT function were looked at as the cumulative probability of WHZ < -2 (GAM), WHZ < -3 (SAM) with and without oedema, and -3≤WHZ <-2 (MAM). The approach using median and SD = 1 was not applicable to MUAC because the assumption that SD =1 is only applicable to WHZ which is assumed to follow the standard normal distribution. The two other approaches of the PROBIT function were used to calculate prevalence estimates as the cumulative probability of MUAC<125mm (GAM), MUAC<115mm (SAM) with and without oedema and 115mm≥MUAC <125mm (MAM).

The team investigated the normality of distributions of anthropometric indices in the simulated surveys using the Shapiro–Wilk test. If there was evidence of non-normality (i.e. P< 0.05 for the Shapiro–Wilk test) then data were transformed towards normality using a power transformation with the transforming power found using the Box–Cox method. Bias was investigated for the PROBIT method by the estimation of mean error (true prevalence minus estimated prevalence). Precision was investigated by the 95% limits of agreement (mean (error) + or- 1.96 x sd (error)). For all methods, the half width of the 95% limits of agreement was calculated for different sample sizes based on the 150 simulated surveys. The analyses were also performed excluding children with oedema as it was suspected that oedema might bias WHZ upwards, leading to downwardly biased estimates of prevalence.

Findings

The analysis indicates that the methods using mean and SD of non-transformed and transformed data are similar, with the method using median and SD=1 inferior for both GAM and SAM but slightly better for MAM. Biases for the two PROBIT methods for GAM, MAM and

[1] Nancy M Dale, Mark Myatt, Claudine Prudhon and André Briend (2012). Assessment of the PROBIT approach for estimating the prevalence of global, moderate and severe acute malnutrition from population surveys. Public Health Nutrition/*FirstView Article*/January 2006, pp 16. DOI: 10.1017/S1368980012003345, Published online: 27 July 2012 Link to this article: http://journals.cambridge.org/abstract_S1368980012003345

SAM defined by MUAC again showed similarity between the methods using mean and SD of transformed and non-transformed data. The precision of the PROBIT methods (using the mean and SD of the survey with transformed and non-transformed data) is slightly better than for the classical method for sample sizes n<150 for GAM and SAM for both MUAC and WHZ. However, the precision of the PROBIT method (using the mean and SD of the survey with transformed and non-transformed data) is better for MAM for sample sizes n <300 for both MUAC and WHZ. The method using median and SD =1 is generally inferior to the classical method except for small sample sizes for MAM.

The main limitation of the study was that it was impractical to know the true prevalence of a large number of populations and to perform repeated surveys to estimate bias and precision of different estimators. The only feasible approach to testing the validity of the PROBIT approach was through simulation of surveys. The study confirms that the PROBIT method can estimate prevalence of GAM and MAM using WHZ or MUAC. The PROBIT method provides an estimate of prevalence that is proportional to the true prevalence with a small bias that can be corrected for by simple subtraction of a small value found of bias. The study shows, however, that the PROBIT method is inferior to the classical method for estimating the prevalence for SAM by WHZ or MUAC at sample sizes n >150, although it does seem suitable for small sample sizes which may be useful for applications such as surveillance. These results do not seem to be influenced by a bias resulting from the inclusion of cases with bilateral pitting oedema since the results are similar with or without oedema in the analysis. For WHZ, the PROBIT method of mean with observed SD of the data shows an improvement compared with using SD =1. This suggests that when choosing to use the PROBIT method, it would be useful to use the observed SD to calculate prevalence. Checking for normality and, if necessary, transforming data towards normality may further improve the estimation.

An explanation for the PROBIT method not estimating the prevalence of SAM as well as the classical method may be that perhaps the tail of the distribution of WHZ or MUAC does not follow the normal distribution and relates to children who may have other health problems in addition to primary malnutrition. One could argue that SAM children do not predictably follow the general pattern due to the fact that they are often infected or suffer from a family crisis which makes them shift in an unpredictable way.

In conclusion, the PROBIT method could be useful in sentinel-site surveillance systems using repeated small sample surveys or small spatially stratified samples so as to allow the course mapping of prevalence. The classical method should be preferred when estimating prevalence with larger samples.

Antibiotics as part of the management of severe acute malnutrition

Summary of published research[1]

Location: Malawi

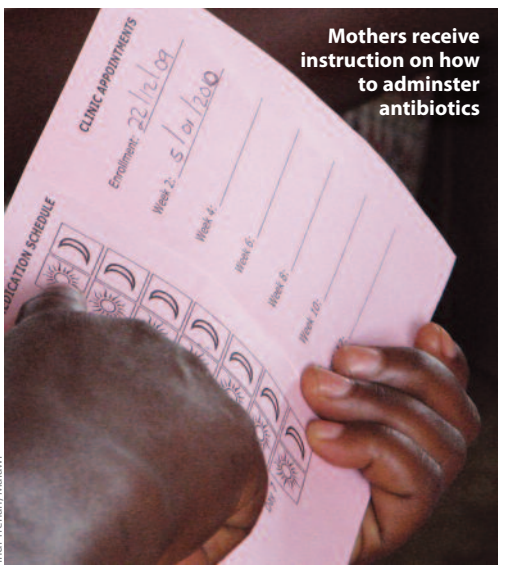
What we know already: There is a high prevalence of clinically significant infections among children hospitalised for severe malnutrition (complicated cases).

What this article adds: Routine inclusion of antibiotics as part of the outpatient management of children with uncomplicated severe acute malnutrition at high infection risk (HIV prevalent) is warranted. Further investigation of longer term outcomes and high risk groups is needed.

International consensus guidelines now recommend the use of ready-to-use therapeutic food (RUTF) in outpatient settings as the preferred management for uncomplicated cases of severe acute malnutrition (SAM). Despite the markedly better outcomes observed with this revised outpatient regimen, 10-15% of children still do not recover, even in the context of rigorously controlled clinical trials. Even modest improvements in recovery and mortality rates could mean thousands of lives saved annually. Many studies, but not all, have shown a high prevalence of clinically significant infections among children hospitalised for severe malnutrition. This observation has led to treatment guidelines recommending the use of routine antibiotic agents even for children treated as outpatients, although outpatients are presumably much less likely to have a systemic infection than are patients with complicated cases that require inpatient care. This recommendation for the use of routine antibiotics is based on expert opinion and has not been directly tested in a clinical trial.

A paper has recently been published on a prospective clinical trial to determine whether the routine administration of oral antibiotics as part of the outpatient management of SAM in children in Malawi was associated with improved outcomes.

The study enrolled children from December 2009 through January 2011 at 18 feeding clinics in rural Malawi. Each child's weight, length, and mid-upper arm circumference (MUAC) were measured. Children who were 6 to 59 months of age, with oedema (indicative of kwashiorkor), a weight-for-height z score of less than −3 (indicative of marasmus) or both (marasmic kwashiorkor), were eligible for enrolment. Each eligible child was given a 30g test feeding of RUTF under the supervision of a nurse to verify that the child was an appropriate candidate for outpatient therapy. Children who were too ill to consume the test dose in the clinic were hospitalised for inpatient management.



Mothers receive instruction on how to adminster antibiotics

Indi Trehan, Malawi

The study was a randomised, double-blind, placebo-controlled clinical trial which compared nutritional and mortality outcomes among children with uncomplicated SAM who received treatment as outpatients with or without antibiotics. One intervention group received 80 to 90 mg of amoxicillin suspension per kg per day, divided into two daily doses; a second intervention group received approximately 14 mg of cefdinir suspension per kg per day, divided into two daily doses. The dose to be given to each child was based on a rounded amount that could be given by the field research pharmacist using the markings on a plastic syringe. The control group received placebo twice daily. Caregivers were instructed to administer the study drug in addition to RUTF during the initial seven days of therapy. Baseline characteristics of the enrolled children were similar among the three groups.

A total of 924 children were randomly assigned to the amoxicillin group, 923 to the cefdinir group, and 920 to the placebo group. Caregivers for more than 98% of the children reported that the child completed the entire 7-day course of the study regimen.

Findings

Overall, 88.3% of the children enrolled in the study recovered from SAM. Children with marasmic kwashiorkor recovered less frequently and had higher mortality rates than children with either kwashiorkor or marasmus. The proportion of children who recovered was significantly lower among those who received

[1] Trehan. I et al (2013). Antibiotics as part of the management of severe acute malnutrition. New England Journal of Medicine, 368;5 nejm.org January 31, 2013, pp 425-35

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placebo than among those who received either amoxicillin (3.6 percentage points lower; 95% confidence interval [CI], 0.6 to 6.7) or cefdinir (5.8 percentage points lower; 95% CI, 2.8 to 8.7). Deaths accounted for the largest proportion of children who did not recover in each study group and for each type of SAM. The overall mortality rate was 5.4%, but the rate was significantly higher among children who received placebo than among those who received either amoxicillin (relative risk, 1.55; 95% CI, 1.07 to 2.24) or cefdinir (relative risk, 1.80; 95% CI, 1.22 to 2.64). No significant differences in the causes of death, as reported by verbal autopsy (i.e. a structured investigation of events leading to the death), were identified among the three study groups. Although the point estimates for nutritional recovery were higher and those for death were lower among children who received cefdinir than among those who received amoxicillin, these differences were not significant (P = 0.22 for recovery and P = 0.53 for death, for the comparison of amoxicillin and cefdinir by logistic regression).

Kaplan–Meier survival analysis for all children in the study showed that the time to recovery was shorter in the cefdinir group than in the amoxicillin group or the placebo group and was shorter in the amoxicillin group than in the placebo group. Similarly, children who received an antibiotic agent survived longer than those who received placebo.

Weight gain from enrolment until the second follow-up visit (or until the one follow-up visit for children with only one) was significantly higher among children who received cefdinir than among those who received placebo. Children who received either antibiotic agent also had greater increases in MUAC than did those who received placebo.

As compared with children who did not recover, those who recovered were significantly older and were more likely to have their father alive and still in the home. Among children with marasmus or marasmic kwashiorkor, those with the MUAC and the lowest weight-for-height z score at enrolment were most likely to have treatment failure or to die. Children with the lowest height-for age z score were least likely to recover. Although only 874 of 2765 children (31.6%) were tested for HIV, those who were known to be HIV-seropositive, especially if not receiving antiretroviral therapy, had the highest risks of treatment failure and death. Acute infectious symptoms and poor appetite both at enrolment and at the first follow-up visit were also associated with an increased risk of treatment failure.

Indi Trehan, Malawi

The amoxicillin used in this study cost an average of $2.67 per child. The cost of cefdinir was $7.85 but presumably would be lower if it were used on a large scale.

The results suggest that children with uncomplicated SAM who qualify for outpatient therapy remain at risk for severe bacterial infection and that the routine inclusion of antibiotics as part of their nutritional therapy is warranted. Further studies are needed to evaluate long-term outcomes of routine antibiotic use in children with uncomplicated SAM and to determine whether a specific high risk target population can be better defined.

Do children with uncomplicated severe acute malnutrition need antibiotics?

Summary of review[1]

Location: Multi-country review

What we know already: Current WHO guidelines recommend routine antibiotics for all children with severe acute malnutrition (SAM).

What this article adds: The evidence underlying current WHO antibiotic recommendations for uncomplicated SAM is weak. Randomised controlled trials are necessary including in HIV-negative, low prevalence settings.

Current (1999) World Health Organisation guidelines recommend giving routine antibiotics for all children with severe acute malnutrition (SAM), even if they have uncomplicated disease with no clinically obvious infections. The evidence behind this recommendation was recently reviewed by a team of researchers.

OVID-MEDLINE, EMBASE, COCHRANE, GLOBAL-HEALTH, CINAHL, POPLINE, AFRICA-WIDE-NiPAD, and LILACS were searched for antibiotics efficacy, bacterial resistance, and infection rates in SAM. Following PRISMA guidelines, a systematic review and meta-analysis were performed. Three randomised controlled trials (RCT), five Cochrane reviews, and 37 observational studies were identified.

One cohort-study showed no increase in nutritional-cure and mortality in uncomplicated SAM where no antibiotics were used (p.0.05). However, an unpublished RCT in this setting did show mortality benefits. Another RCT did not show superiority of ceftriaxone over amoxicillin for these same outcomes, but addressed SAM children with and without complications (p = 0.27). Another RCT showed no difference between amoxicillin and cotrimoxazole efficacies for pneumonia in underweight, but not SAM.

The meta-analysis of 12 pooled susceptibility-studies for all types of bacterial isolates, including 2767 strictly SAM children, favoured amoxicillin over cotrimoxazole for susceptibility medians: 42% (IQR 27–55%) vs 22% (IQR 17–23%) and population-weighted-means 52.9% (range 23–57%) vs 35.4% (range 6.7–42%). Susceptibilities to second-line antibiotics were better, above 80%. Prevalence of serious infections in SAM, pooled from 24 studies, ranged from 17% to 35.2%. No study inferred any association of infection prevalence with antibiotics regimens in SAM.

The authors concluded that the evidence underlying current antibiotic recommendations for uncomplicated SAM is weak. Susceptibility studies favour amoxicillin over cotrimoxazole. However, given that these antibiotics have side-effects, costs, and risks as well as benefits, their routine use needs urgent testing. With reliable monitoring, it was concluded that there is sufficient basis for placebo controlled RCTs, the only robust way to demonstrate true efficacy. Future trials should evaluate antibiotics in uncomplicated SAM in HIV negative children and in low-prevalence settings.

[1] Alcoba. G et al (2013). Do Children with Uncomplicated Severe Acute Malnutrition Need Antibiotics? A Systematic Review and Meta-Analysis. PLOS ONE. January 2013, volume 8, Issue 1, e53184

Effect of mass supplementation with RUSF during an anticipated nutritional emergency

Summary of published research[1]

Location: Niger

What we know already: Ready to Use Supplementary Foods (RUSF) are successfully used in the treatment of MAM.

What this article adds: RUSF distribution and a food protection ration to self-selected children aged 6 to 23 months during an 'at risk' period had a positive effect on wasting, anthropometric status and survival. There are study limitations to bear in mind. Contextual factors to determine use of RUSF in preventative strategies are important.

Each year in Niger, the months preceding the harvest (June to October) are associated with increased wasting among children. The region of Maradi, located in the south-central part of the country bordering Nigeria, has some of the highest rates of malnutrition in Niger. From July to October 2010, in collaboration with the Ministry of Health, Médecins Sans Frontières (MSF) and Forsani distributed supplies of Ready to Use Supplementary Food (RUSF) to registered children aged 6 to 23 months living in the districts of Guidam Roumdji and Madarounfa in the region of Maradi. The World Food Programme (WFP) also distributed protection rations to families during this period. A recently published paper reports the findings of a prospective cohort designed to monitor these interventions. The authors present a comparison of the incidence of wasting, anthropometric changes and mortality in children aged 6 to 23 months who participated or did not participate in the monthly distributions over a four month follow-up period. The study protocol was approved by the Comité Consultatif National d'Ethique du Niger, and authorised by the Ministry of Public Health of Niger.

After a community awareness campaign, a mass registration exercise was held in July 2010 to enrol children in the distribution programme. All children 60-80cm in length (aged approximately 6 to 23 months) resident in the districts of Guidam Roumdji and Madarounfa were invited to attend and be registered for the programme. Once registered, children were eligible to receive monthly distributions from July to October of Plumpy'DozH (Nutriset, Malaunay, France).

Monthly distributions of RUSF were made in pots (4 pots = 1 monthly ration per child) at sites located within walking distance from each village. At the time of RUSF distribution, nutrition assistants also screened children in attendance for mid upper arm circumference (MUAC) <115 mm or oedema and referred children to the closest nutritional treatment programme when indicated. The RUSF distribution was sometimes accompanied by WFP's family protection ration.

To follow the nutritional status of children who were registered in the distribution programme (intervention group) and those who failed to be registered (comparison group), the study team randomly selected twenty villages (ten in each district). A complete list of villages and hamlets in both districts was stratified, first by accessibility (presence of a health centre, market, paved road and modern water point within a radius of 10 km), and second by administrative status (village or hamlet). Villages were randomly selected with probability proportional to population size within the four strata. Two days after registration was closed, exhaustive enrolment was conducted independently by the study teams in each of the 20 cohort villages of all children meeting the inclusion criteria of the MSF/Forsani distribution programme by teams going from house to house within each village. Thus, within the cohorts, there were both children who were registered to receive the distribution and those who were not.

Approximately two weeks after each monthly distribution, trained nutrition assistants, independent of the staff conducting the distributions, carried out anthropometric measurements with the use of standardised methods and calibrated instruments.

During the first and last post-distribution visits, a standardised questionnaire was administered to obtain information on household, maternal and child socio-demographic characteristics. An abridged questionnaire was used at each post-distribution visit to obtain information on the major health events, including both death of the child and the extent of sharing of the RUSF and WFP ration within the household. Moreover, during each visit, the remaining quantities of distributed food were weighed and compared with the rations received.

Children aged 6 to 23 months at baseline in the cohort villages who were registered and participated in at least one of the four monthly distributions (intervention group) and those who did not participate in any of the RUSF distributions were compared (comparison group). The endpoints were wasting (weight-for-length z score (WLZ) <-2 or MUAC <125 mm), severe wasting (WLZ <-3, or MUAC <115 mm), stunting (length-for-age z score (LAZ) <-2) severe stunting (LAZ <-3) and mortality. Mortality events included all reports for which the cause for absence from surveillance visits was reported to be death, by a family member or the head of village. All data were collected on standardized forms and double entered into EpiData version 2.1 (EpiData Association, Odense, Denmark). Analyses were conducted using STATA version 10 (StataCorp, College Station, TX, USA).

Results

A total of 2,238 children aged 6 to 23 months in 2,127 household were enrolled in the cohort at baseline. None of the children in the cohort communities refused to join the study. Of the children enrolled in the cohort, 1,400 children were registered to participate in the distribution (intervention) and 838 children (comparison) were not registered to receive the supplementary food distribution. The cohort represented 4.3% of the total 6 to 23 month old population of the districts of Guidam Roumdji and Madarounfa.

All children did not receive the same number or type of distributions over the four month follow-up. Although, approximately 51% of households received Corn Soy Blend (CSB) at the first distribution, there were no further distributions of this type. Most families received only one or two distributions of the family rations. Thirteen percent of the intervention group only received RUSF once, 9% twice, 19% three times and 59% received all four distributions. Thus, 78% of the children designated as receiving the interventions (intervention group) received 3 or more distributions.

At baseline, the intervention and comparison groups differed in age and household composition. Children in the intervention group were slightly younger (p =0.004) and lived in households containing more under 5 year old children (p =0.001). There were five (0.3%) children absent at the end of the study and whose outcome was therefore unknown in the intervention group and 35 (4.2%) children in the comparison group.

The number of children with anthropometry measured in July, August, September and October were 1,392, 1,364, 1,328 and 1,221 in the intervention group and 794, 760, 707, and 597 in the comparison group respectively.

Over all distributions, 58% of RUSF was reported to be shared with other younger siblings within the same household. Almost the entire family protection ration (85%) was shared within the same household.

The absolute rate of wasting was 1.59 events per child-year (503 events/3,784 child-months) in the intervention group and 1.78 events per child-year (322 events/2,165 child-months) in the comparison group. The intervention group had a small but higher WLZ change (20.2 vs. 20.3 z; p = 0.006) and less loss of MUAC than

[1] Grellety E, et al. (2012). Effect of Mass Supplementation with Ready-to-Use Supplementary Food during an Anticipated Nutritional Emergency. PLoS ONE 7(9): e44549.doi:10.1371/journal.pone.0044549. Full article available at: http://www.plosone.org

the comparison group (22.8 vs. 24.0mm; p = 0.002) comparing pre- to post-final distributions. There was no difference in length gain (2.7 vs. 2.8cm) among groups. Fewer initially non-wasted children developed moderate wasting in the intervention group than the comparison group.

Mortality was lower for children whose households were in the intervention group than those who were not (adjusted HR: 0.55, 95% CI: 0.32 to 0.98). In total, 29 per 1000 children enrolled in the cohort died during the follow-up period. Of these, no child receiving all four distributions died, five children died who received three distributions, seven children receiving two distributions and six children receiving only one distribution.

Discussion and limitations

RUSFs are formulated to supply all of the essential nutrients, both those required to maintain body function and for normal growth. A deficiency of one or several of the functional nutrients impairs physiological or immunological function without any effect on anthropometric indices. The authors of this study argue that the benefits in terms of mortality, combined with a very modest effect upon weight and MUAC, may potentially have been due to the correction of functional deficiencies, not causally associated with anthropometric deficits, but resulting in functional changes increasing mortality risk. It is noteworthy that many of the deaths were in children that were neither moderately or severely malnourished anthropometrically, and it appeared that this group of not-wasted children benefited most from the RUSF distribution in terms of mortality avoidance. This was unexpected and would indicate that even modest amounts of those nutrients whose deficiency is not associated particularly with wasting could be implicated in the reduction in mortality. This would have major implications for targeting in such situations, and perhaps for the composition of the RUSF supplied.

The authors highlight several important limitations to these results which require discussion. First, children themselves were not randomised to receive the distributions, but were either registered or failed to be registered at the time of the initial mass registration and subsequently observed. It is unclear why some children were not registered initially, possibly caregivers were absent at the time of registration, the benefits of the programme were not adequately explained or advertised, or they felt their child did not need the RUSF on offer. As a result, differences between the intervention group and comparison group could account for the observed reduction in mortality. However, in addition to accounting for differences in the statistical analyses, baseline anthropometry of children was not significantly different between groups. The intervention group had a slightly lower, but not statistically different, mean weight-for length, they came from larger families and were younger. These are recognized risk factors for mortality, thus, the children receiving the distributions were likely to have been at higher risk of death than the comparison group. It is important also to note that the population was under very severe stress with mortality rates when expressed in conventional emergency terms of 1.7/10,000/d for the intervention group and 2.9/10,000/d for the comparison group. As children identified as severely malnourished were admitted to therapeutic programmes, in the absence of the distribution programme, mortality may have been higher. In addition, mortality in the comparison group may be underestimated as five children in the intervention group and 35 in the comparison group were lost to follow-up. If all, or a proportion, of these children were lost to follow-up because of death, the strength of the reduction in mortality with the distribution would increase. Overall, there were fewer deaths among children in the intervention group irrespective of the number of distributions received.

Fifth, it was not possible to differentiate the effect of the RUSF from the family protection rations, nor was it the aim of the study. However, the distribution of protective rations was inconsistent and almost non-existent during the fourth distribution. This coupled with the known inadequacies of nutrient composition of the family ration to meet the needs of young children contribute to the limited evidence for including RUSF in distributions.

Finally, potential errors in the child's age at recruitment or measurement errors for the anthropometric variables, despite continual training of field teams, may have reduced or

A woman and her dauguher receive RUSF distribution in Niger

Michael Goldfarb/MSF, Niger

Second, there may be unexplained differences between the intervention and comparison group. One possible hypothesis arising from these results is that families receiving the distributions have children already showing signs of deterioration, as evidenced by the presence of known risk factors at baseline. Families with children who are in better health at the time of registration may choose not to participate, highlighting the potential weakness of programmes with closed enrolment.

Third, it is possible that the severity of the situation was the reason for the extensive sharing of supplement within the family and this in turn led to the modest differences in wasting found.

Fourth, over the four month follow-up, there was no observed effect upon stunting. Review of complementary feeding interventions suggests that the effect of RUSF on linear growth has been inconsistent, with significant improvements achieved only in some settings and the acceleration of length gain may only occur after supplementation has been given for several months.

increased the statistical power to detect significant effects.

Conclusions

The authors conclude that the results of this study show that the RUSF distribution with a protection ration for the families had a positive effect on wasting and anthropometric status of children who received the distribution in comparison to those who did not. Importantly, deaths were halved for recipients compared to non- recipients. These results suggest that with similar access to health services, distributions can have a positive impact on child survival. Contextual factors will continue to be important in determining the dose, duration, period and modalities of such preventive intervention based on RUSF. Dietary supplementation with foods specifically formulated for vulnerable populations have become a component of government-run social safety net programmes. In settings of endemic malnutrition and high child mortality, the health impacts of RUSF documented through humanitarian projects may help inform decision making for longer term programming.

Impact evaluation of child caring practices project on stunting in Ethiopia

Summary of research [1]

Location: Ethiopia

What we know already: Health, nutrition and water, sanitation and hygiene programmes impact on child nutrition. Evaluation of impact of different interventions is important for programme design and adaptation and is increasingly demanded by donors.

What this article adds: In this evaluation, the hygiene component of the WASH intervention appears to have a strong impact on stunting but only cautious conclusions are possible due to many limitations in research design. Quality operations evidence-based research needs integration at project design stage, adequate funding and academic partnerships.

The Legambo Child Caring Practices (CCP) project was set up in 2004 in Legambo, South Wollo Zone, Amhara Region, Ethiopia, by Save the Children UK (SC UK). The CCP had a clear research objective to measure the effectiveness of different interventions, singularly and in combination, in reducing linear growth retardation (stunting) through improved childcare practices in children 6–36 months.

Legambo is a large rural area with fairly low population density. Within the district there are 33 villages (communities), which are further divided into smaller rural gotts (sub-villages). The CCP was run in a small area of Legambo selected because the area had homogenous demographic, socio-economic and livelihood profiles. The main livelihood in the project area is agricultural, with some agro-pastoralism. Agriculture is predominantly belg rain dependent (a short rainfall that occurs between February and May). However, since 1996, Legambo has endured a number of droughts, resulting in both loss of crops and livestock and increasing reliance on relief food. Emergency programmes have been implemented during crisis periods in Legambo, including the period of the CCP study, and have included general ration distributions to protect livelihoods and supplementary and therapeutic feeding programmes that aimed to prevent and treat acute malnutrition in children. Stunting rates, especially in the more mountainous areas of the district, remain very high with prevalence of stunting over 60 per cent in children less than 5 years.

Design

The CCP project was a controlled quasi-experimental (non-randomised) impact evaluation with a comparison group. Eleven contiguous villages, out of the total of 33, were purposefully assigned to receive one of four interventions: health, nutrition education, water, sanitation and hygiene (WASH), or integrated comprising all three interventions. A fifth group was used for comparison purposes and did not receive any of the SC UK interventions. All villages, however, were covered by the Government's Productive Safety Net Programme (PSNP) initiated in 2004, a cash or grain transfer in return for public works for selected poorest household members. In the first year of the CCP intervention, to cover the gaps in the first year of the PSNP roll-out, cash was given by the Department for International Development (DFID) (UK).

Each intervention group consisted of two villages and the comparison group consisted of three villages. The health and integrated interventions were selected because they were located close to a functioning health centre. Villages assigned the WASH intervention were those specifically identified by local authorities (with community participation) as having poor access to water sources. The remaining five villages were assigned the nutrition and comparison interventions.

The interventions were mainly educational, although free drugs and primary healthcare services were provided for the health and integrated intervention areas, and materials for the construction of pit latrines and clean water sources were provided in WASH intervention areas. Community demonstration gardens were set up in the nutrition education intervention areas. Educational messages were delivered either door to door or through community centres by trained community animators for all interventions. The health and integrated groups received home-based messages 10 days every month. The nutrition and WASH groups received home-based messages five days every month, as well as further five days centre-based education sessions.

The targeting strategy for the CCP was to some extent ad hoc due to the nature of the different interventions as well as for ethical reasons, but the interventions were generally prioritised for PSNP beneficiary households with a child or children less than 2 years or with a pregnant or lactating woman. However, in the WASH intervention areas, the whole community was targeted and in the health intervention areas, free drugs were made available for all children less than 5 years. In addition, in all of the intervention areas, no one was excluded from the education sessions or door-to-door visits. Furthermore, the CCP was not the only health education project run in the same area. The final impact evaluation of the project was carried out by an independent consultant epidemiologist.

Findings, challenges and constraints

The main finding of the impact evaluation was that the WASH arm (specifically the hygiene component) demonstrated significant improvement in nutrition. Whilst these results potentially highlight the importance of WASH programmes to improve child growth, it is important to ascertain whether this result is real or artefact.

The Legambo study faced a number of challenges and constraints. A major challenge was that the project area suffered three consecutive years of drought (2007–2009), resulting in both crop failure and death of livestock. Furthermore, at the start of the project, wasting prevalence in children aged less than 5 years exceeded 15% in all areas.

There were also significant methodological issues for the evaluation due to the effects of confounding and bias on the internal validity of the study, particularly with regard to the lack of randomisation and power. WASH clusters were selected due to demand from district officials, and the villages themselves, whilst the other intervention/comparison areas were selected by the SC UK project team. The WASH arm was different to the other intervention arms in that the same leader was present throughout the project. This individual was also dynamic and highly involved in community welfare and undoubtedly contributed to stronger community mobilisation and better 'ownership' of the intervention.

As is the case for many operations-based research projects, sample size and number of clusters were restricted to the study area. Moving out of the CCP study area would have meant moving into another livelihood zone making comparison more difficult, as well as placing extra burden on the project implementation. However, rather than use power analysis to determine sample size and attempt to minimise a type II error (to detect a difference when there is a difference), exhaustive sampling was used to maximise sample size. Sample sizes in the evaluation for children 6–36 months ranged from 919 in the comparison arm to 535 in the integrated arm; the sample size in the WASH arm was 784. Sample sizes decreased following the baseline survey for all arms (ranging from a reduction of 39.7% in the health villages to 6% in the WASH villages). Determining the sample size to adequately capture change in the prevalence of stunting using cluster sampling and where stunting prevalence is already high meant that in most cases, the sample size would probably have been too small to detect a medium-

[1] Fenn. B (2012. Impact evaluation in field settings: experience from a complex NGO programme in Ethiopia, Journal of Development Effectiveness, DOI:10.1080/19439342.2012.725085

term effect in reduction in stunting prevalence; about 10 per cent if assuming a 2 per cent decrease per year. Post-evaluation power calculations, using the SAMPSI command in Stata 11 (StataCorp. LP, College Station, TX, USA), revealed all but the WASH intervention was underpowered (power =0.90), although possibly overestimated as this calculation does not take into consideration intra-cluster correlation (ICC)).

Cluster sampling involves the sampling of a predetermined number of community groups or clusters. The number of clusters required is in part dependent on the ICC coefficient. The ICC refers to community-level similarities, that is, where responses of individuals within a cluster tend to be more similar than those of individuals of different clusters. A high ICC increases the requirement for not only a larger sample size but a larger number of clusters. For sufficient sample size and valid statistical analysis to detect an intervention effect, the preferable number of clusters per intervention arm should be six or more with the recommendation that "studies with only a few (fewer than four) clusters per arm should generally be avoided". Too few clusters increase the risk of an imbalance in the intervention and comparison arms with respect to known risk factors for the outcome of interest. The more clusters per arm enable detection of a difference due to the intervention, if any, rather than merely community-level differences not related to the study. In the CCP, the number of clusters was two (three for the comparison).

Another important design issue concerned the issue of leakage, where non-beneficiaries also benefited from the project's inputs (spill over), or where any of the study group had access to other programmes (contamination) leading ultimately to the dilution of the project effects (due to a reduction in power type II error). Spill over can be minimised by incorporating 'buffer' zones between intervention areas to prevent spill over, or dilution, of interventions to other areas (intervention and comparison). This was not the case in this project, however, for a number of reasons: the area is vast and it was thought that there is not much movement between villages and there was only one health clinic that was suitable for delivery of free medication through the CCP project, so the health and integrated intervention villages were selected for logistic reasons. This last point negates to some extent the first point as it is very likely that beneficiaries from these two villages met at the health centre.

Another issue was that due to financial and timing constraints, the evaluation survey was not done at the same time of year as the baseline survey. However, since the main outcome being measured was stunting which is a more chronic manifestation of malnutrition, this was not considered a problem, even though it was not ideal for other types of data affected by seasonality such as childhood morbidity and dietary diversity.

Implementing an operations research project requires a great deal of commitment, under-standing and continuity. The project was designed and set up to be run for five years in a remote and poor part of the country. However, the difficult conditions the SC UK staff faced contributed to high staff turnover resulting in a lack of adequate documentation, poor continuity, with gaps in knowledge between new staff replacing old staff, and overall poor implementation commitments. New staff, without a comprehensive handover with clear objectives and implementation processes to date, had a limited 'ownership' of the project and did not fully understand what was expected of them. What could have helped was a well-written and visible conceptual framework, or at least a results framework, to be referred to by all staff members.

A further challenge was that chronic food insecurity undermined any potential benefits from improved knowledge and attitudes around complementary feeding and dietary diversity and undoubtedly explains the limited impact on nutrition status (similar to the comparison arm). With hindsight, the nutrition intervention for the CCP was inappropriate and could have been adapted as more evidence came to light; nutrition counselling alone has been shown to be ineffective without resources to purchase food. In the health and integrated arms, logistical constraints resulted in the delay of delivery of free drugs until half way through the project. This may in part explain the lack of significant impact in these areas, effectively shortening the time of the intervention, but does not help explain the observed increase in linear growth retardation.

Educational messages were delivered door to door by trained community animators for all interventions. However, nutrition and WASH messages were also delivered through centre-based training five days every month, which may have helped to establish greater community involvement through regular communication and meeting. Animators in the integrated arm were possibly overburdened with having to deliver more information and this may have led to poor quality delivery. However, the quality of the delivery of educational messages was not examined, so any difference in the quality of delivery and supervisory input, examples of implementation-related effect modification, was unknown, although animators were formally tested on a regular basis on their particular messages. Through focus group discussions with animators and women and men from intervention and comparison arms, it was clear that specific messages were not restricted to specific arms and that the type of knowledge on all topics was similar throughout the CCP project, including that for the comparison arm.

Quality of the anthropometric data was determined using a scoring system, using the Emergency Nutrition Assessment (ENA) (2008) software (ENA for SMART Beta version November 2008: SMART Methodology), which involved looking at indicators such as missing/flagged data, overall sex ratio, digit preference score for weight and height measurements, SDs, skewness and kurtosis. The main problem was with the height for age z score (HAZ) SD, which for both surveys, although slightly better for the endline survey, fell outside the acceptable range (1.10–1.30). This was largely due to problems in collecting the correct ages of the children. In both cleaned baseline and end line surveys, data were similar with respect to skewness and kurtosis but digit preferencing, particularly height measurements (0.0 and 0.5), was observed more in the baseline than endline survey.

A major concern with the baseline data was that child age was collected mainly from date of birth information on registration cards rather than recorded from mother's recall of months using an 'events' calendar. In the evaluation survey, both methods to determine age were used and tested against each other. The result showed a correlation of 0.82 between the two different methods with differences ranging by as much as ±20 months in some cases. For the evaluation survey, age was analysed using the mother's recall of age in months.

The finding that the only significant impact occurred in the WASH arm could mean different things. It could be that the intervention effect was large enough, given the sample size, to have had an impact or that there were important data quality issues that needed to be addressed. Selection bias that may have occurred within the WASH arm may also have contributed to this finding.

Recommendations

It is important that non-governmental organisations (NGOs) increase their evidence base on nutrition-specific and nutrition-sensitive interventions from more robust research studies in operational environments. Improved institutional awareness is required to develop epidemiologically robust studies as well as document results systematically. Operations evidence-based research is not only important for decision-making but needs to be built into programming proposals. To achieve this and to support better institutional memory, collaborations with academic institutions are becoming increasingly popular.

Project design needs to incorporate evaluation into the design from the start as it is important that a clear hypothesis is tested from the beginning using a causal framework. Causal frameworks can then be used as a backdrop to monitoring and evaluation to determine whether interventions are successful or failing in terms of process and programmes can be altered accordingly. Research projects and evaluations need adequate funding to allow for better study design, especially to ensure randomisation and appropriate power. Building an evaluation into a real-life programme is costly and there is increasing pressure from donors to carry out [robust] impact evaluations.

The fact that in this study the WASH intervention appeared to have a strong impact on stunting is very interesting and suggests an important, and immediate, public health opportunity to tackle stunting in food-insecure areas. However, given the constraints and challenges of this operations research project, repeat studies in different food security settings should be carried out. In the meantime, water and sanitation inputs should routinely be delivered through regular nutrition programmes.

Gender impact analysis of unconditional cash transfers in south central Somalia

Summary of published research [1]

Location: Somalia

What we know already: Cash transfer programming can positively impact on nutrition and food security.

What this article adds: In challenging contexts, with good management, unconditional cash transfers can have a positive impact on gender relations, mental health and may have longer term impact on coping mechanisms.

Wide-scale cash transfer programming was implemented by the Cash Consortium (amongst others) from September 2011 onwards, after the first famine of the 21st century was announced in Somalia. Prolonged conflict and drought created a humanitarian crisis that put 2.85 million people in need of food aid and other basic necessities, the majority (61%) of whom resided in South-Central Somalia. Many of the affected population also fled to urban centres and this created large internally displaced people (IDP) camps in the capital of Mogadishu. As a result, the Cash Consortium organisations targeted four regions in South Central Somalia, all of which had been identified by the Food and Agricultural Organisation (FAO) Food Security and Nutrition Analysis Unit (FSNAU) as in need of emergency assistance. The areas were: IDP camps in Mogadishu, targeted by the Danish Refugee Council (DRC) and Action Contre la Faim (ACF), Lower Juba and Gedo was covered by Adeso – African Development Solutions, (formerly Horn Relief) and in Hiran, programmes were implemented by Save the Children.

The South Central region of Somalia continues to face challenges in terms of equality between women and men. Maternal mortality in Somalia is amongst the highest in the world, female genital mutilation/ cutting (FGM/C) rates remain extremely high (98%) and female nutrition is notoriously worse than that of men (UNICEF Statistics, 2010). Gender-based violence is reportedly high, although solid data are difficult to come across.

In recognition of certain knowledge gaps concerning the appropriateness and impact of implementing unconditional cash transfers (UCTs) at scale in Somalia, the Cash Consortium commissioned four research studies in 2012. One of the studies set out to assess the impact of cash on gender relations within the household as well as on the wider community with respect to coping mechanisms, social status and levels of conflict and violence.

The study employed both quantitative and qualitative data collection tools, including eight focus group discussions, 109 questionnaires and 31 interviews. In total, 204 beneficiaries in South Central Somalia were consulted.

Key findings

Gender consideration in humanitarian contexts is possible and despite challenging operating environments, feasible and realistic measures to improve beneficiary protection can be included in UCT planning and implementation. Approaches include engaging the community in sensitisation on targeting criteria, creating a flexible complaints procedure (for example, a hotline where beneficiaries can text or call in), ensuring staff and community members of both genders are involved in selecting beneficiaries and conducting post-distribution monitoring, limiting the time spent in travelling to cash distribution centres, limiting the visibility of beneficiaries as recipients of cash (by mobile UCT transfers) and enabling beneficiaries to have the cash collected by someone they trust (if necessary).

Some beneficiaries self-reported (without prompt) improvements in specific areas of mental health, and said they experienced "higher morale" and felt "less depressed." The findings show that social status increased for both women and men, but only along gendered lines. For example, women felt more included in social functions, while men felt more included in religious functions. Certain populations saw the greatest gains in social status. These were (in order of the importance of the proportional change): widowed and divorced beneficiaries, agropastoralists, agriculturalists, IDPs in camps, older recipients and women in general.

Beneficiaries increased their capacity to give qaaraan as a result of the cash transfer. This type of sharing was a traditional coping mechanism and protective factor that increased resilience in the face of future adversity. However, women experienced less opportunity to gain social status through giving qaaraan as the re-distribution of wealth (particularly to extended family) was mainly the job of men.

Female headed households, who were outside normative and hegemonic power structures such as marriage, can expect to gain proportionally more social status from UCTs as they hold greater control over the re-distribution of wealth and giving of qaaraan. Interestingly, the greatest shift in attitudes on women's ability to manage cash occurred in IDP camps, where there are a large number of female headed households.

Beneficiaries reported an increase in their perceived risk of theft (18%), and risk of taxation (9%). While perceptions of risk increased, actual incidences were not clearly reported (though it is very difficult to report on such sensitive issues).

Polygamous households, in which only one wife received cash, were more likely to experience intra-household conflict, and 'splitting' the cash in a polygamous household may not be feasible or appropriate. As a result, there is a need to consider how UCT programmers will approach the targeting of polygamous households in the future.

Within the household, there was overwhelming agreement (95%) on the use of cash

A woman tiedyes clothing

Picture courtesy of Adeso, 2012

[1] Wasilkowska. K (2012). Gender impact analysis. Unconditional cash transfers in south central Somalia. The Somalia Cash Consortium. 21st December 2012

[2] The Cash Consortium is a group of four NGOs (ACF, Adeso, DRC and Save the Children) that came together in mid-2011 to coordinate their aid response to the huge humanitarian needs in South Central Somalia. The Cash Consortium has had a clear emergency mandate from the start; the overall aim of the Food Assistance for Vulnerable Households in South Central Somalia project is to meet basic food and non-food needs, through the provision of unconditional cash grants. In 2011-2012, the Cash Consortium provided between 6 and 9 monthly cash transfers to over 40,000 households in the regions of Hiran, Gedo, Lower Juba and Mogadishu.

and very little reported conflict. Beneficiaries said that the cash created peace and harmony within the household and wider community, as hunger and malnutrition and the pressures of daily life were lessened. A significant factor in maintaining peace was the involvement of the Voluntary Relief Committees (VRCs) and community members.

The sensitisation of the community on targeting criteria was successful and 98% of beneficiaries surveyed knew why they had been targeted. Targeting female beneficiaries was overwhelmingly accepted by the community and women were seen as the 'rightful' beneficiaries of UCTs. This was closely linked to seeing women as the household managers and to binary distinctions between 'masculine' and 'feminine' spending.

The majority of beneficiaries (78%) said that women and men have different priorities in their spending of UCTs. This was backed by findings that female beneficiaries spend twice as much on school fees than male beneficiaries. There was solid evidence that women in urban areas (within Gedo and Hiran, but not Mogadishu) spent more on education. IDPs in camps were least likely to spend on school fees. This may be a result of the increasing number of free IDP schools, which may be enabling beneficiaries to spend their cash in other areas, such as food and livestock.

Women were said to be in control of spending on small and daily items. The belief that the cash was a relatively small amount (around $100) and intended for household expenditure ensured that women continued to control the cash unchallenged.

There was some evidence that the cash may contribute to long term outcomes that may prove transformative to gender relations. Although the main objective of the cash was to save lives and sustain the most vulnerable, some beneficiaries were able to use the cash to invest in long-term productive assets, such as purchasing goats or starting small businesses. Potentially transformative to gender relations was the use of cash to increase women's bargaining power and access to credit, reduce debts, decrease the migration of men for work and increase the time fathers spent with children.

This study shows that gender consideration in humanitarian situations is possible, despite challenging operating environments as is the case in South Central Somalia. The study also shows that many changes were gendered, but not all. Ensuring programmes consider the varying needs of different populations is crucial to minimising the risks that are specific to cash transfers, thereby improving positive outcomes for all.

Research

High levels of mortality, malnutrition and measles amongst displaced Somali refugees in Dadaab, Kenya

Summary of published research [1]

Location: Dadaab, Kenya

What we know already: Routine vaccination of children aged 6 months to 15 years, supplemented by mass vaccination campaigns, is one of the most important public health interventions among crisis-affected populations.

What this article adds: Other age groups may be affected by measles in different contexts. Early identification of unusual age-distribution of measles cases should guide vaccination policy and target groups in different settings. This will have resource implications and requires timely registration and data analysis.

Dadaab refugee camp is located in the North Eastern province of Kenya, approximately 100km from the border with Somalia, and was established in 1991. With an estimated 472,420 residents (8th July 2012), it is reported to be the world's largest refugee camp complex, comprising three camps: Hagadera, Ifo and Dagahaley. As a result of the deteriorating humanitarian situation in 2010 (caused by the continued conflict in Somalia and by the failure of rains from October to November 2010), the number of Somalis seeking refuge in Kenya (and elsewhere in the region) steadily increased. Between January and November 2011, 154,450 individuals were newly registered in Dadaab, in addition to the estimated 63,000 refugees registered during 2010. An added complication was that in 2007, the Kenyan government closed the transit and registration facilities in the border town of Liboi due to security concerns and starting in August 2008, new arrivals were no longer allocated new plots of land. Without sufficient registration facilities to process them rapidly and without ready housing, the majority of new arrivals settled in the plains surrounding the main camps.

Médecins Sans Frontières (MSF) has been working in Dagahaley since 2008, providing medical care and psychological assistance to the population living within the camp and its environs, estimated at approximately 123,833 people (8th July 2012). In August 2011, MSF activities included nutritional interventions (in- and outpatient therapeutic feeding centres and supplementary feeding programmes (SFPs)). MSF operated programmes in five health posts, six ambulatory and six supplementary centres for nutrition programmes, and a 120-bed second level hospital with a further 200 beds serving as the nutritional stabilisation centre in the hospital. In addition, a network of community health workers actively sought malnourished children and other medical emergencies for referral for treatment.

In August 2011, with a view to understanding the health status and needs of the then newly arrived population, Epicentre and MSF conducted an exhaustive survey of all households in Bulo Bacte (BB), an area of 'self-settlement' outside the camp of Dagahaley, and analysed the data collected during a measles outbreak that affected this population at the time of the survey. A recently published article presents the survey estimates of death rates and malnutrition prevalence, and the age and sex breakdown of the suspected measles cases. The implications of these findings are then discussed.

Method

All inhabited structures were visited by the survey teams and when possible, a suitable respondent was identified with whom the interviews were conducted. Respondents were members of the household aged at least 18 years and were usually the person identified as the head of the household. MSF collected information relating to mortality during the recall period in all eligible households. For any death reported during the recall period, information was collected from the household respondent regarding suspected cause or symptoms associated with the death. MSF also attempted to identify the timing of the death with the aid of a 'calendar of local events'.

Mid-upper arm circumference (MUAC) measurements were taken and the presence or absence of bipedal oedema recorded, for all children of height 67- <140 cm (proxy for children aged 6 months - 9 years) living in included households on the survey date. These data were used to calculate: a) the age-specific prevalence of severe acute malnutrition (SAM) and global acute malnutrition (GAM) for children of height 67- < 87 cm (proxy for children aged 6 – 23 months) and children of height 87- < 110 cm (proxy for children aged 2 – 4 years) and b) the proportion of children of height 110- <140 cm (proxy for children aged 5-9 years) meeting the admission criterion for entry into the nutritional programme (MUAC<140 mm). Cochran-Armitage tests-for-trends were performed to explore the effect of duration of stay in BB on prevalence of acute malnutrition. MSF also collected information on arrival dates of individuals in BB. The study population included all people living in BB. An exhaustive method was selected to allow stratification of the results by period of arrival, location, and age-group.

[1] Polonsky. J et al (2013). High levels of mortality, malnutrition and measles among recently displaced Somali refugees in Dagahaley camp, Dadaab refugee camp complex, Kenya. Conflict and Health 2013.7:1. Doi:10.1186/1752-1505-7-1 Open access at http://www.conflictandhealth.com/content/7/1/1/abstract

Findings

The surveyed population included 26,583 individuals, of whom 6,488 (24.4%) were children aged under 5 years. There were 360 deaths reported during the 177 days of the recall period, of which 186 (52%) were among children aged under 5 years. The crude death rate for the entire recall period was 0.8 per 10,000 person-days. The under-5 death rate was 1.8 per10,000 person-days. More than two-thirds of all deaths were reported to have been associated with diarrhoea (25%), cough or other breathing difficulties (24%), or with fever (19%). Measles accounted for a reported 17% of all deaths, due to a measles outbreak that occurred between June and October 2011. GAM was observed in 13.4% and SAM in 3.0% of children measuring 67- <110 cm. Among children measuring 110-<140 cm, 9.8% met the MUAC admission criterion for entry into the nutritional programme. A trend of decreasing malnutrition prevalence with length of stay in BB was observed.

These findings reflect an alarming situation. Both crude and under-5 death rates and the prevalence of SAM and GAM were at emergency levels in the outskirts of a refugee camp that was served by several international non-governmental agencies (NGOs) and United Nations (UN) agencies. The recall period coincided with an outbreak of measles in Dagahaley that began in June and continued until October 2011, and which partially explains the increasing under-5 death rate observed; 17% of all deaths were reported to have been caused by measles. As a result of the two decades-long civil war in Somalia, vaccination coverage among all ages has declined to the point that outbreaks of infectious diseases such as measles are increasingly likely. Indeed, there was a simultaneous measles outbreak among newly-displaced Somalis in Kobe refugee camp in Ethiopia and in several places in Somalia, including the capital Mogadishu. Outbreaks of measles among populations in crisis are common and well documented. The routine vaccination of children aged 6 months to 15 years, supplemented by mass vaccination campaigns, is widely accepted as one of the most important public health interventions for averting preventable morbidity and mortality among crisis-affected populations.

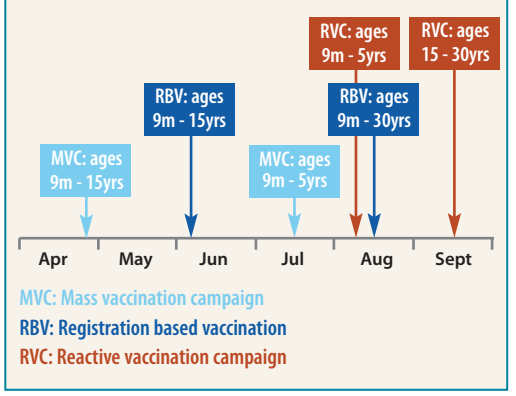
Figure 1 shows a timeline of various measles vaccination interventions conducted in BB. A mass measles vaccination campaign was organised at the end of April 2011, targeting children aged between 9 months and 15 years, with a follow-up campaign in July 2011 to vaccinate those children aged under 5 who did not receive measles vaccination in April.

When a registration centre was opened within Dagahaley in June 2011, all children aged 9 months to 15 years were routinely vaccinated against measles upon registration. In response to the outbreak, a reactive vaccination campaign (RVC) targeting children under 5 years was launched throughout Dagahaley camp in early August, and the target age group for vaccination at the registration centre was increased to 30 years. In September 2011, a RVC was organized targeting individuals aged 15 to 30 years. It is worth noting that the RVC launched in August 2011 ran concurrently with the survey described in the article. The decision was therefore taken not to include measles vaccination coverage in the survey, because the results would have had no influence over any decision to launch such a campaign and because the coverage at the end of the survey would have been different to the coverage at the start, thereby rendering the results immediately invalid. UNHCR and partner organisations assessed measles vaccination coverage in BB shortly after this campaign and reported a coverage of 83.9% (95%CI: 73.7 – 94.0%) among children aged 9–59 months. The authors argue that the measles outbreak was preventable; the essential lessons from past mass displacements should have been learned and a suitable aggressive vaccination strategy implemented at an earlier stage.

In mitigation, the population most affected were those who had recently arrived, containing a large proportion of families unregistered by camp management due to the overwhelming arrival rate of these refugees. The late establishment of the registration centre and consequently vaccination at arrival permitted the development of a pool of susceptible individuals in BB. In addition, the measles outbreak in Dagahaley was characterised by an unusual age distribution; the median age of patients recorded in the outbreak line list was 23 years, with 75% of patients aged 15 years or older, suggesting that a wider age group could have benefited from vaccination. However, the current 'one-size-fits-all' recommendations are to vaccinate all children aged 6 months to 15 years and do not take into account the context-specific epidemiology, which in this case included a highly immunologically-naïve population due to the breakdown of healthcare services arising from the ongoing political crisis in Somalia.

Early identification of the unusual age-distribution of measles cases would have helped guide vaccination policy in this setting. Indeed, the disaggregation of deaths attributed to measles by age and by month shows that age distribution of measles cases was detectable in June 2011, at an early stage of the epidemic. However, this would have required information that was not available at the time: low health facility utilisation rates and under resourced community-based surveillance of epidemic-prone diseases meant that most measles cases occurring before July were not detected. In July 2011, by which time an outbreak had been declared and active community-based surveillance strengthened, more data were available, which led MSF to advocate for a wider target age group for the RVC planned for early August. However they were unsuccessful due to the limited resources available for that particular campaign. The target age group for vaccination at registration was, however, expanded to include all individuals aged 9 months to 30 years. Owing to the failure of the August RVC to halt the epidemic, which peaked in August and September, adults aged 15–30 years were the target age group for the subsequent RVC.

Figure 1: Timeline of measles vaccination interventions conducted between April and September 2011, Bulo Bacte, Dagahaley refugee camp, Dadaab, Kenya



More recent arrivals were in a significantly worse state, which was reflected both in death rates and in nutritional status. The survey found trends of decreasing death rates with length of stay in BB, such that those residents who had arrived more than six months prior to the survey date had death rates well below the emergency thresholds, while those who had arrived within three months of the survey date had death rates which were above the emergency thresholds. Similarly, MSF found a higher prevalence of acute malnutrition and children meeting the admission criteria for entry into the nutritional programme among those children who arrived during the three months prior to the survey than among those children who arrived earlier. The same pattern was reported in a subsequent survey conducted in BB.

This apparent improvement in health and nutritional status over time may be due to the assistance gained after registration and the development of coping strategies, but may also be due in part to: a) a high concentration of deaths in the period immediately prior to the survey date (in particular, due to the measles outbreak), which may have resulted in artificially elevated death rates among recent arrivals due to the relatively low person-days contributed by these individuals (in other words, a low denominator rather than a high numerator used in the calculation of death rates), and b) higher mortality among those children with poor nutritional status on arrival since both recovery and death have the effect of decreasing the prevalence of malnutrition by removing these children from the numerator in the calculation of malnutrition prevalence. Those malnourished children who had recently arrived had had less time in which to experience either of these outcomes.

One limitation of this study is that it did not use a validated verbal autopsy technique when obtaining information on cause of death as this was not a principal objective, and therefore these results should be interpreted with caution. Furthermore, standard case definitions for measles deaths (any death within one month after rash onset) were not used; it is likely that some of the deaths associated with diarrhoea, cough or breathing difficulties and fever were in fact cases of measles.

The authors conclude that there was an unacceptably high death rate and prevalence of malnutrition in the outskirts of a long established refugee camp, albeit among a recently-arrived population. Although the levels of malnutrition may be partly explained by the poor health of new arrivals, the high mortality among refugees after their arrival in Dagahaley reflects a failure of the various humanitarian and governmental actors to safeguard adequately the welfare of this population. While the massive influx of refugees did pose enormous difficulties, outbreaks of measles and long delays before registration (which permits access to food distributions) should not have occurred. The recommendations for measles vaccination among crisis-affected populations should be revised to take into account the epidemiologic context.

MUAC as discharge criterion and weight gain in malnourished children

Summary of published research [1]

A child on admission to the Gedaref nutrition programme

MSF, Niger, 2010

In addition to guidance on admission criteria for nutrition programmes, the WHO and UNICEF 2009 Joint Statement also gave some guidance regarding discharge criteria in nutrition programmes using mid upper arm circumference (MUAC) on admission, recommending discharging children after reaching a 15–20% weight gain[2]. This was done with the intention of removing the need for height measurement and avoiding the problem of children meeting a MUAC admission criterion but having a weight for height z score (WHZ) above the discharge criterion. Using percent weight gain as the discharge criterion has the disadvantage of requiring a smaller absolute weight gain to meet discharge criteria for children with the lowest initial weight (i.e. the most severely malnourished children). This leads to shorter duration of treatment for the most malnourished children, as weight gain is higher in the most wasted children receiving appropriate treatment. Shorter treatment of the most severely malnourished is of concern and needs to be addressed. Prolonged length of stay for some children also has considerable consequences for on-going government programmes in resource scarce settings. Based on the difficulties with the current recommendation of percent weight gain for discharge and on evidence that MUAC and weight respond to treatment in similar ways, a decision was made by MSF Switzerland to use MUAC as both admission and discharge criteria in an emergency nutrition programme in Gedaref, North Sudan.

The objective of a recent paper was to evaluate the policy of using MUAC as the discharge criterion in outpatient therapeutic programmes (OTP) and more specifically to see whether it eliminates the effect of shorter treatment duration in most severely malnourished children as observed with percent weight gain.

In July 2010, MSF Switzerland, in collaboration with the Ministry of Health, launched an emergency nutrition programme in the localities Gala Alnahal and Al Guiresha in Gedaref, North Sudan. The programme treated malnourished children in a community based therapeutic feeding programme in four Stabilisation Centres (SCs) and 77 OTPs. Children aged 6 to 59 months with MUAC <115 mm and/or mild oedema had an initial assessment by a physician or medical assistant for the presence of diarrhoea, vomiting, anorexia, anaemia (based on conjunctiva pallor), and fever. The children were also checked for malaria parasitaemia using a rapid diagnostic test, and whether they had previously been immunized against measles. Children with good appetite and no severe medical complications (i.e. severe anaemia shock, sepsis, severe dehydration, anorexia, severe oedema) were classified as having uncomplicated severe acute malnutrition (SAM) and admitted to the OTP. Children in the OTP received Ready to Use Therapeutic Food (RUTF) as per WHO guidelines. All children with MUAC<115 mm with severe medical complications and those requiring 24-hour close observation were hospitalised in a SC until they were stable enough to be transferred to an OTP, following the CMAM approach. Children requiring stabilization were referred to the nearest MSF SC with transportation provided by MSF.

All children in the programme had their height, weight, MUAC and oedema checked at admission. Weight, MUAC and oedema were checked at each visit, and weight and MUAC were checked at discharge. UNICEF MUAC bracelets were used to measure MUAC to the nearest millimetre. Most children were checked every two weeks except for some children who attended the four OTP sites located beside four inpatient facilities who were seen every week.

The following criteria for discharge were required: MUAC >125 mm for two consecutive measurements plus stable weight or continuing weight gain, absence of bilateral oedema for four weeks, and clinically well and with good appetite. MUAC cut off for discharge was set at 125 mm based on evidence that there is very low mortality in children with MUAC above 125 mm.

All children aged 6–59 months with a MUAC <115 mm on admission who were discharged as cured from the OTP were included in the study. The study was limited to children admitted directly to the OTP as duration of treatment and weight gain during the stabilisation phase is mainly influenced by associated medical complications and largely unrelated to response to therapeutic feeding. This also excluded from the analysis children with severe oedema who were treated initially in a SC. These children receive a low-protein, low-energy diet at the beginning of treatment which does not allow for new tissue synthesis and weight change during these initial days and is more related to body water elimination than to synthesis of new tissues. The decision to use MUAC as discharge criteria was made by MSF for programmatic reasons.

Children were admitted into the programme from July 12, 2010 to December 11, 2010, the last patient was discharged from the programme on December 22, 2010. Anthropometric data of all children in the programme were recorded in the study database. The initial number of children meeting the inclusion criterion (MUAC <115 mm) who were cured in the OTP was 1022. Children were classified into different categories based on admission MUAC and WHZ. Duration of treatment and percent weight gain were compared across these categories. Percent weight gain was also compared for different height categories, height being used as a proxy for age in this population where accurate ascertainment of age is difficult.

Results

Seven hundred and fifty three children were included in the analysis. Just over half (52%) of the children were female and the median age was 16 months. Eighty-eight percent of the children in the programme were aged between 6 months and 29 months. Outcomes of the children in the OTP were within SPHERE standards with proportions of cured, defaulter and deaths being 82%, 15% and 1% respectively. The remaining 2% were referred to the main district general hospital for care beyond what was available from the MSF programme.

The overall median length of stay of all children in the study was 60 days (inter-quartile

[1] Dale N et al (2013). Using Mid-Upper Arm Circumference to End Treatment of Severe Acute Malnutrition Leads to Higher Weight Gains in the Most Malnourished Children. PLOS ONE. Feb 2013, volume 8, Issue 2, e55404, pp 1-7

[2] WHO, UNICEF (2009). WHO child growth standards and the identification of severe acute malnutrition in infants and children. Joint statement by UNICEF and WHO. http://www.who.int/nutrition/publications/severemalnutrition/9789241598163_eng.pdf

range (IQR) = 43; 81). Children with lower MUAC at admission had longer durations of treatment (p,0.001 Kruskal-Wallis test), with median durations of treatment in the lowest MUAC group of 75 days (IQR = 56; 97) and highest MUAC group of 56 days (IQR = 41; 75). The overall percent weight gain of all children in the study was 21% (IQR= 14; 29). Children with low MUAC also had higher percent weight gain (p,0.001 Kruskal-Wallis test), with median percent weight gain of 37% in the lowest MUAC group (IQR =28; 47) and 17% in the highest MUAC group (IQR 12; 23).

Response to treatment was independent of height at admission (p.0.05 Kruskal-Wallis test). The majority of children in all MUAC categories gained more than 15% of their weight at admission, with the highest proportion among those with the lowest MUAC (Cochran's test for linear trend = 64.120, p,0.001) Similar results for WHZ to those for MUAC categories on admission were found, with both duration of treatment (p,0.001 Kruskal-Wallis test) and percent weight gain (p,0.001 Kruskal- Wallis test) decreasing as WHZ categories increased.

Conclusions

This study shows that using MUAC as discharge criterion eliminates the effect of shorter treatment in most severely malnourished children and longer treatment for least severely malnourished, as observed with percent weight gain. The findings directly address the main concern that has been identified with using the current WHO recommendation of percent weight gain. The study also shows that as a result of the longer treatment, the most severely malnourished children, such as those with the lowest MUAC on admission, achieve a higher percent weight gain than the recommended 15%. Consistent results were obtained when children were classified according to their WHZ. Again the length of stay is longer and percent weight gain is higher for the most severely malnourished.

The authors suggest using MUAC as discharge criterion, instead of a uniform percent weight gain, as having a longer duration of treatment and a higher percent weight gain for the most malnourished is highly desirable.

Note that the pending WHO Nutrition Expert Advisory Group (NUGAG) guideline update on the management of SAM in infants and children (2013) recommends that percent weight gain should no longer be used as a discharge criterion from SAM treatment programmes. It also recommends that children admitted under one criterion are discharged under that same criterion, i.e. a child admitted under MUAC, is discharged under MUAC, a child admitted under WHZ is discharged under WHZ. (Eds)

Wasting is associated with stunting in early childhood

Summary of published research [1]

Location: Africa, Asia, Latin America

What we know already: Wasting and stunting are respectively short term and longer term conditions of undernutrition that are both multi-factorial. Associations between stunting and wasting in children in cross-sectional studies are not consistent.

What this article adds: Wasting is associated with the process of stunting in children under 2 years. Variability in weight for length z score is a risk factor for stunting. Prevention of wasting could potentially increase attained stature in children.

A recently published study argues that the associations between stunting and wasting in children are not consistently found in analyses using cross-sectional data. This is probably because wasting is a short-term and potentially seasonal phenomenon resulting from a recent insult (infection or food insecurity), whereas stunting results from a longer term multi-factorial process of undernutrition. In addition, wasting may precede linear growth retardation so that cross-sectional data may not demonstrate a concurrent relationship.

The authors conducted a study on the relationship between stunting and wasting in children. They used longitudinal data based on the supposition that instances of wasting or poor weight gain may precede linear growth retardation. The authors analysed longitudinal anthropometric data for 1,599 children from eight cohort studies to determine the effect of wasting [weight-for-length Z-score (WLZ)<-2] and variability in WLZ in the first 17 months on length-for-age Z-score (LAZ) at 18–24 months of age. Data had been collected over a period of two decades and came from Africa, Asia and Latin America. The study used the WHO Multicentre Growth Reference Study (MGRS) programmes to obtain Z-scores for the analysis. In addition, the authors considered the effects of change in WLZ during the previous 6 month period on length at 18 and 24 months.

Key findings showed that wasting at 6–11 or 12–17 months was associated with decreased LAZ. However, children who experienced wasting only at 0–5 months did not suffer any long-term growth deficits compared with children with no wasting during any period. However children with greater WLZ variability (>0.5 SD) in the first 17 months of life were shorter [LAZ = 20.51 SD (95% CI: 20.67, 20.36 SD)] at 18–24 months of age than children with WLZ variability <0.5. Change in WLZ in the previous 6-month period was directly associated with greater attained length at 18 months [0.33 cm (95% CI: 0.11, 0.54 cm)] and 24 months [0.72 cm (95% CI: 0.52, 0.92 cm)]. Children with wasting, highly variable WLZ, or negative changes in WLZ were at a higher risk for linear growth retardation, although instances of wasting may not be the primary cause of stunting in developing countries.

The study team assert that presumably, catch-up growth in length was adequate for those children who had their only wasting during the first 6 months of life, whereas time was insufficient for catch-up linear growth in those children with more recent wasting. Alternatively, perhaps catch-up growth in length does not occur as readily in older age groups and if one was to follow these children into their third or fourth year of life, one would find persistent linear deficits. Children with wasting in the first two time periods (0–5 and 6–11 months) did not differ from those children with no wasting in LAZ at 18–24 months, and this could be because of catch-up growth in these 43 children during the 12- to 17-month time period. Wasting in all three time periods appeared to have less of a detrimental effect on LAZ than wasting in the 12- to 17-month time period. The results were similar when the models were run on the subgroups of children who were stunted and non-stunted at baseline. Stunting is far more common than prevalence of earlier wasting instances can explain. It is likely that the cause of stunting in each country is due to a mixture of exposures, some having more to do with quality of diet or lack of specific micronutrients, others having to do with environmental exposures or access to treatment of infectious diseases, and only some of these potential causes would involve wasting.

Wasting is a short-term condition that is incompletely ascertained through infrequent anthropometric measurements and therefore, the findings from this study are underestimates of the actual relationships. In addition, the definition of wasting is somewhat insensitive due to the binary nature of the WLZ <-2 cut-off. A study with larger sample sizes and comprehensive follow up will allow for a more thorough investigation of the relationship between changes in weight and length in early childhood. The authors suggest that a novel way of looking at undernutrition is to consider the variability in WLZ as a risk factor for stunting. Children who vary considerably in their WLZ are presumably subject to food insecurity and seasonal infections. Thus, swings in WLZ may result in linear growth faltering. Mean LAZ was lower among children who had greater variability in WLZ, suggesting that perturbations in the weight acquisition process can have a lasting impact on linear growth.

The authors conclude that acute malnutrition in the form of wasting is associated with the process of stunting, and prevention of wasting could potentially increase attained stature in children.

[1] Richard S et al. Wasting is associated with stunting in early childhood. J. Nutr. 142: pp 1291–1296, 2012.

Determining predictors for severe acute malnutrition: Causal analysis within a SQUEAC assessment in Chad

By Ruwan Ratnayake, Casie Tesfai and Mark Myatt

The SQUEAC team looking for neighbourhood controls

IRC, Chad

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Mark Myatt is a consultant epidemiologist. His areas of expertise include surveillance of communicable diseases, epidemiology of communicable diseases, nutritional epidemiology, spatial epidemiology, and survey design. He is currently based in the UK.

The authors – especially Casie Tesfai, who conducted the training and supported the fieldwork – would like to acknowledge the contribution of the IRC in Chad, notably Alain Toe, Franck Mpoyi Ntalaja and Dr Ido Charles Gnenassi who were integral members of the SQUEAC assessment team in Mongo District. The IRC team also wishes to thank the support of the MoH in Mongo District, Guerra Region, Chad.

Following the onset of drought in Mongo District, Guerra Region of Chad, in April 2012 the International Rescue Committee (IRC) began supporting the Ministry of Health (MOH) in delivering a community-based management of acute malnutrition programme (CMAM) for the treatment of severe acute malnutrition (SAM). The interventions include an outpatient therapeutic programme (OTP), a stabilisation centre (SC), and a community-based screening and referral programme that employs 200 community health workers to undertake community-based identification and referral of SAM cases.

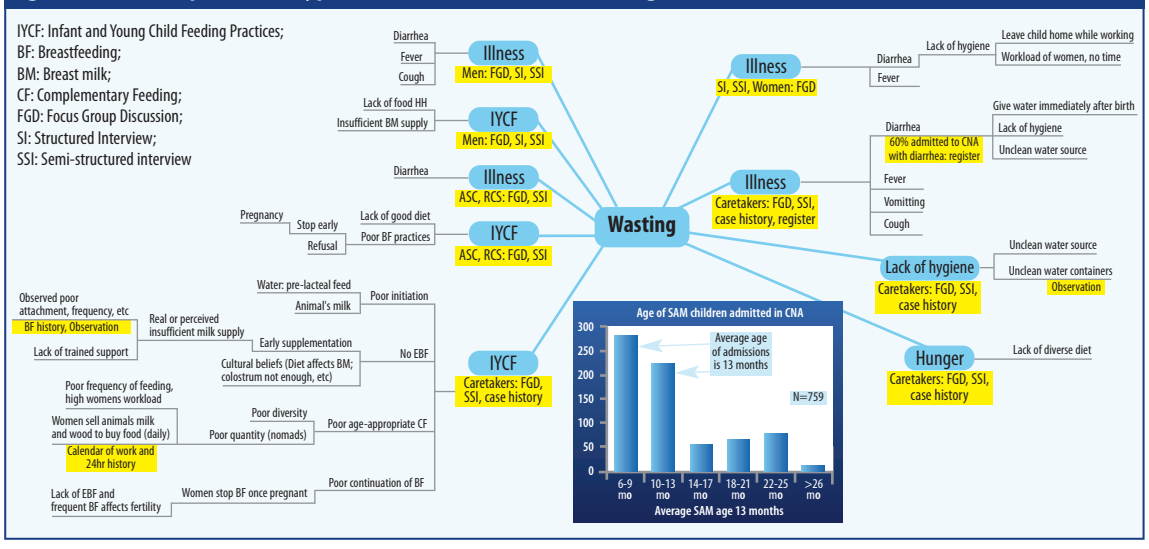
In order to better understand the coverage of the nutrition programme and the factors associated with SAM, in October 2012 the IRC pilot tested the semi-quantitative evaluation of access and coverage (SQUEAC) coverage assessment method together with a causal analysis (i.e. a matched case-control study) of risk factors for SAM in the Mongo District of Chad. This approach to causal analysis within a SQUEAC coverage assessment was piloted by UNICEF Sudan in 2012 and has been documented in *Field Exchange*[1]. The objective of the causal analysis was to identify locally important risk factors for SAM for which focused programming might act to reduce the incidence and prevalence of SAM. Current approaches to causal analysis often include qualitative approaches and a problem-tree analysis. In this article, we discuss the practical application of a more quantitative case-control approach in a rural setting and some of the methodological issues that may require further consideration.

Case–control studies: an old method applied to malnutrition

Case-control studies are commonly used in field epidemiology and seek to compare prior exposures among persons with a condition of interest (cases) and similar persons without the condition of interest (controls). One evaluates whether the ratio of the number with prior exposure (e.g. tampon usage) to the number without prior exposure differs between cases with the condition of interest (e.g. toxic-shock syndrome) and controls without the condition of interest[2]. Case-control studies are *retrospective* studies in the sense that the study starts with disease status and then investigates previous exposures. The strength and the statistical significance of the relationship between the condition of interest and a possible risk factor are described using the odds ratio and the probability (*p-value*) of observing the collected data under the *null hypothesis* of no association. Case-control studies have advantages over other study designs. They are quick and inexpensive. They are ideal for rare conditions (such as SAM) because they start by finding persons who already have that condition rather than hoping that they will turn up in sufficient numbers in a very large sample. Also, several potential risk factors can be assessed simultaneously. Weaknesses of the approach include the difficulty in finding controls that are similar enough to the cases (which can introduce a selection bias) and the need to ask persons to recall prior exposures (which can introduce error and recall bias).

[1] Nyawo M, Myatt M. Causal analysis and the SQUEAC toolbox. Field Exchange 2012;42:37-8.

Figure 1: Mind-map for local hypothesized causes of SAM in Mongo District



Methods

Following the method piloted by UNICEF Sudan, a matched case-control study was conducted alongside the case-finding and data collection done for a SQUEAC stage III coverage assessment. To define the list of potential risk factors, a participatory process was undertaken with programme staff and carers from the CMAM programme. Over a week, a mind-map of potential risk factors was made based on insights gained from analysis of routine programme data and qualitative data from focus groups and key informant interviews with programme staff and carers of SAM cases. The qualitative and quantitative findings were discussed and triangulated to produce a map of potential risk factors and their impact on SAM (see Figure 1). A structured questionnaire was constructed using standardized indicators and question sets from UNICEF and FANTA guidelines[3] that reflected the potential risk factors from the map. The questionnaire was translated into French and back translated to ensure accuracy.

Controls were matched to cases on age (i.e. within ± three months) and neighbourhood, which were considered to be potential confounders. Cases were matched to controls in order to control for confounding and because a smaller sample size is usually needed than when using an unmatched design. A sample size of 40 SAM cases with two matched controls for each case (i.e. 80 controls) was used. Box 1 contains details of the sample size calculations needed for this type of study.

Cases were defined as a child 6 to 59 months of age with MUAC < 115 mm and/or bilateral pitting oedema who was either not enrolled in the CMAM programme or had been enrolled in the CMAM programme for less than three weeks and had lived in the same village for at least two months. Controls were defined as a child of a similar age (i.e. within ± three months) to the case and who had lived in the same neighbourhood of the same village as the case for (at least) the previous two months with a MUAC ≥ 125 mm without bilateral pitting oedema and was not enrolled in the programme.

The sampling of the cases and controls was nested within the SQUEAC stage III coverage assessment. Villages were selected using the centric systematic area sampling (CSAS, quadrat) method. A community case-finding strategy was used in each village to find all current or recovering SAM cases. Once a case was found and his or her carer interviewed, two to three controls meeting the matching criteria were selected and their carers interviewed. Operationally, this meant that one team performed case-finding and interviewed the carers of cases while another team performed control-finding and interviewed the cares of controls.

The data collection team included four IRC health and nutrition staff as supervisors and twelve local staff who spoke French, Arabic and local languages. The questionnaire was kept in French and translated orally into local languages or Arabic as needed, with a common understanding of the expression of terms. The IRC Nutrition Technical Advisor led a three-day training course that focused on interviewing, MUAC measurement and approaches to finding cases and controls. Of the twenty local staff who participated in the training, twelve were selected. The teams field-tested and then modified the questionnaire. During the data collection period, the teams reviewed issues that arose in the field in the evenings. The IRC epidemiologist and Mark

Taking a case history of a SAM child in the OTP to identify possible risk factors for SAM

IRC, Chad

Box 1: Sample size calculation

The simplest approach to calculating the sample size required for a case-control study is to use the standard formula for detecting a difference in two proportions:

Sample size in the case group; Mean proportion exposed in cases and controls; Desired power; Significance

$$n = \frac{r+1}{r} \times \frac{(\bar{p})(1-\bar{p})(Z_{\beta}+Z_{\alpha/2})^2}{(p_1-p_2)^2}$$

Ratio of controls to cases; Proportion of cases exposed; Proportion of controls exposed

Common values for power and significance are:

Power	Value
80%	0.84
90%	1.28
95%	1.64
99%	2.33

Significance	Value
20%	1.28
10%	1.64
5%	1.96
1%	2.58

If we want a study with 90% power and 5% significance (these are reasonable values) we have:

$$n = \frac{r+1}{r} \times \frac{(\bar{p})(1-\bar{p}) \times 10.5}{(p_1-p_2)^2}$$

SAM is a rare condition (e.g. only 1% of children may have SAM at the time of a study). This means that it will be much easier to find controls than to find cases. In the sample size calculation presented here, we will assume that we will sample two more controls for each case.

If cases are very rare then we might use more than two cases per control.

We need to decide the size of effect that we want to be able to detect. We do this by specifying an odds ratio. For example, an effect size (odds ratio) of 2.0 is used to detect effects where exposure at least doubles the odds of being a case. In the example sample size calculation presented here we will assume that we want to be able to detect an effect size (odds ratio) of 4.0 or greater.

The table below shows the relation between effect size (odds ratio) and common-sense descriptions of the strength of effect:

Odds ratio		Strength of effect
< 0.1 †	> 10	Very strong
0.10 → 0.33	3.0 → 10	Strong
0.33 → 0.67	1.5 → 3.0	Moderate
0.67 → 0.83	1.2 → 1.5	Weak
0.83 → 1.00	1.0 → 1.2	Very weak / none

† Odds ratios < 1 indicate a protective effect:

Specifying an effect size of 4.0 means that we are interested in detecting strong effects. This strength of effect is useful for identifying targets for intervention. This is because if exposure is common and the effect size (odds ratio) is large then an intervention against the exposure will have a large effect against the disease of interest.

We need to make an informed guess about the proportion that are exposed to the risk factor in the control group. We might be able to inform our guess using data from SMART, MICS, or DHS surveys. If we were interested in diarrhoea in the previous two weeks as a risk factor for SAM we might look at the period prevalence of diarrhoea in non-SAM and non-GAM children in data from a SMART survey. In this example, we made an informed guess that 20% of controls will have had diarrhoea in the previous two weeks. This is p_2 in the sample size formula. We can use the informed guess about the proportion that are exposed to the risk factor in the control group (p_2 = 20%) and the size of effect (odds ratio) that we want to be able to detect to calculate the proportion that will be exposed to the risk factor in the case group (p_1) assuming an odds ratio (OR) of 4.0:

$$P\ exposed\ in\ case\ group = \frac{OR \times P\ exposed\ in\ control\ group}{P\ exposed\ in\ control\ group \times (OR-1)+1} = \frac{4\ (0.2)}{(0.2)(4-1)+1} = \frac{0.8}{1.6} = 0.5$$

and then calculate the mean exposure proportion:

$$mean\ proportion\ exposed = \frac{P\ exposed\ in\ case\ group + P\ exposed\ in\ control\ group}{2} = \frac{(0.5+0.2)}{2} = 0.35$$

We can now calculate the required number of cases:

$$n = \frac{3}{2} \times \frac{(0.35)(1-0.35) \times 10.5}{(0.5-0.2)^2} = 40$$

The number of controls needed is :

$$n_{controls} = 2 \times 40 = 80$$

This sample size (i.e. 40 cases and 80 controls) was used in the causal analysis study reported here.

[2] Shands KN, Schmid GP, Dan BB, Blum D, Guidotti RJ, Hargrett NT et al. Toxic-shock syndrome in menstruating women: association with tampon use and Staphylococcus aureus and clinical features in 52 cases. N Engl J Med. 1980;18;303(25): 1436-42.

[3] USAID, AED, FANTA2, UC Davis, IFPRI, UNICEF and WHO. Indicators for Assessing Infant and Young Child Feeding Practices: Part 2 Measurement. 2010. The exception was the question regarding the introduction of fluids.

Myatt (Brixton Health) provided remote technical support on study design, data-entry, and data-analysis throughout the fieldwork.

Data-entry and data-analysis

Data entry was done on-site by the IRC Nutrition Technical Advisor using Microsoft Excel. Analysis was conducted using STATA 12.0. Conditional logistic regression with backwards elimination of non-significant variables was used. This procedure is appropriate for analysing multivariate data from matched case-control studies. It should be noted that this analysis may also be conducted using free or open-source software (e.g. EpiInfo, R) as was done by the UNICEF team in Sudan[1]. Analysis using STATA was carried out remotely but very soon after data collection.

Findings

The following potential risk factors for SAM were identified and investigated:

- Diarrhoea episode in the previous two weeks (3 or more times per day)
- Fever episode in the previous two weeks
- Pneumonia episode in the previous two weeks (cough and fast breathing)
- Poor treatment seeking behaviour for ill child
- Late initiation of breastfeeding
- Giving food or liquids in the first six months
- Early weaning due to pregnancy
- Household dietary diversity score < 4[4]
- Household Hunger Score ≥ 2 (moderate/severe)[5]
- Unprotected water source

Data collection resulted in a larger sample than anticipated. A total of 62 cases and 157 controls were enrolled. There was an average of about 2.5 controls per case. This resulted in improved power compared to the planned sample size. One case and three controls were excluded because the "case" did not meet the study case-definition.

The age profile of cases (controls) comprised 74.2% (54.8%) aged 6-11m, 22.6% (41.4%) aged 12-23m and 3.2% (3.8%) aged 24-59m. Cases appear to be younger; these age breakdowns are broadly consistent with OTP data on SAM cases. Females comprised a greater proportion of cases (61.3%) compared to controls (45.2%).

Age breakdowns are broadly consistent with OTP data on SAM cases (very few >26 months).Data-analysis revealed two significant associations between fever in the previous two weeks (OR = 7.55, 95% CI = 2.64; 21.62, p = 0.000) and diarrhoea in the previous two weeks (OR = 10.72, 95% CI = 4.27; 26.88, p = 0.000) and being a SAM case.

The infant and young child feeding (IYCF) risk factor 'Giving food or liquids in the first six months' proved problematic as the practice of giving water to neonates before commencing breastfeeding was universal in the study sample. This meant that exposure was identical in cases and controls. Children younger than six months were not included so that it was not possible to employ 24 hour recall.

Discussion

Diarrhoea and fever in the previous two weeks were found to be strongly associated with SAM using a matched case-control study. Integrating this approach within the SQUEAC coverage assessment was shown to be feasible. Planning, training, data collection and data entry for both components (i.e. the SQUEAC stage III survey and the case-control study) occurred simultaneously.

The association between diarrhoea and SAM and between fever and SAM represent multiple causes that contribute, with other factors, to the development of acute malnutrition. Episodes of diarrhoea and fever are consistent with the recorded burden of illness among OTP admissions. Examination of CMAM admissions data, for example, revealed that about 60% of SAM admissions since August 2012 were admitted with diarrhoea.

The study provided evidence that could be translated into action. Recommendations relating to the prevention of diarrhoeal disease and malaria arising from this study include the community-targeted promotion of hygiene, hand-washing, use of ORS, construction and use of protected water sources, the promotion of breastfeeding, and a barriers analysis for breastfeeding (as breastfeeding is likely to be protective for diarrhoea and other infections), the regular use of insecticide treated bed-nets for children under five years of age, and appropriate and early treatment seeking for fever and diarrhoea.

The ability of the matched case-control approach to detect differences based on potential risk factors that do not vary at the community or neighbourhood level (e.g. use of an unprotected water source or a culturally-determined factor affecting IYCF) needs to be considered. Such community and neighbourhood level risk factors will not vary between SAM cases and their neighbourhood controls. Both cases and controls will (e.g.) be exposed to the same unprotected water source. These risk factors will be hidden by the neighbourhood matching process. This prevents any meaningful analysis of these risk factors. During the harvest season where food is more plentiful, dietary diversity and hunger scores may also be similar across households and act as community and neighbourhood level risk factors. An unmatched case-control design may therefore be more appropriate.

As a result of the difficult in identifying and recalling the timing of the disease episode and the onset of malnutrition, the case-control study may only show association and not cause. It is not known (e.g.) whether the case had diarrhoea prior to the onset of SAM or whether SAM came first. Importantly, given the fact that malnutrition increases susceptibility to infection and infection may underlie malnutrition, both episodes may be occurring concurrently and simultaneously[6]. More informative accounts of potential risk factors may be obtained using longer case histories with caregivers in order to determine the sequence of malnutrition and infection. This approach may introduce error or a recall bias. Causal pathways may differ between hunger and harvest seasons. Caution should, therefore, be exercised when generalising results across time. In addition, special attention to cultural practices and the local interpretation of the questions on breastfeeding is important. Importantly, asking IYCF questions for children older than five months inherently requires a recall period of six months or longer and therefore introduces a recall bias.

In summary, the matched case-control study provides a feasible and potentially useful addition to a SQUEAC coverage assessment. While designing effective interventions in nutrition practice is difficult, the identification of risk factors emphasised preventable causes of malnutrition that deserved a specific focus in this programme. The formulation of strong programme responses to investigate and address diarrhoea and fever in the community in an effective way is ongoing.

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Active and adaptive case finding: The SQUEAC team looking for SAM cases in a pastoralist hamlet

IRC, Chad

[4] Swindale A, Bilinsky P. Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide: version 2. Washington, DC: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2006.

[5] Deitchler M, Ballard T, Swindale A, Coates J. Introducing a Simple Measure of Household Hunger for Cross-Cultural Use. Washington, DC: Food and Nutrition Technical Assistance II Project, AED, 2011.

[6] Katona P, Katona-Apte J, The interaction between nutrition and infection, Clin Infect Dis. 2008;46(10):1582-8.

Assessment of agreement between a new electronic scale and mechanical suspended scale for measurement of children's weight in Ethiopia

By Asrat Dibaba, Barbara Main and Mark Myatt

MSF, Niger, 2010

Location: Ethiopia

What we know already: Mechanical spring suspended scales are commonly used for measurement of weight in children under five years of age. Use requires training and experience. Small changes in weight are difficult to measure (accuracy ±100g).

What this article adds: A new electronic scale is available that detects smaller changes in weight (accuracy ±20g), is easier to use, can be used interchangeably with mechanical scales and is of equivalent price.

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The authors declare that they have no competing interest.

The authors would like to thank World Vision Ethiopia, in particular Dr. Tilaye H/Micahel, Mr. Abiy Worku and health workers at the three health posts in Shone district, for their support during the field work. The authors would also like to thank World Vision Canada for supplying the electronic scales.

Mechanical spring suspended scales (e.g. Salter model 235-6S) are commonly used for measurement of weight in children under five years of age in many developing countries. This type of scale can weigh a child up to 25 kg and is graduated in 0.1 kg (100g) increments. Adequate training and experience is needed to correctly use this type of scale. Even with adequate training and experience, small changes in weight are difficult to measure. A more accurate and easier to use scale is needed to measure small changes in weight. The field test reported here was carried out to test a new electronic scale which may be suited to use in primary care settings and by community health workers at field level.

Method

The mechanical scale was manufactured by Salter Brecknell (model 235-6S PPW Baby Weigher). The electronic scale was manufactured by Rice Lake (model OS-25 Suspended Scale). Table 1 shows a comparison between the two scales.

The field test was conducted in Southern Ethiopia in December 2012. Weight measurements were performed on 60 children aged between 6 and 59 months who came to three health posts for Outpatient Therapeutic Programme (OTP) follow up or to access other medical services. Each child was weighed using both the mechanical and the electronic scales. All measurements were taken by experienced health workers.

Data were analysed using Bland & Altman plots. This is a semi-graphical method used to compare two measurement techniques in which the difference between pairs of measurements are plotted against the average of the paired measurements in order to assess the agreement between two methods of measurement[1].

Results

A Bland & Altman analysis for agreement was done using weight measurements from both scales (Figure 1). The solid horizontal line marks the mean difference (-0.037 kg). The dotted horizontal lines mark the 95% limits of agreement (i.e. the mean difference plus or minus 1.96 times the standard deviation of the mean difference). The mean difference was 0.037 kg. The 95% limits of agreement were -0.129 kg and 0.055 kg. Accordingly, the new electronic scale may weigh 0.129 kg above the mechanical scale or 0.055 kg below the mechanical scale. The absence of a strong pattern in the Bland & Altman plot (Figure 1) indicates that the observed differences are unrelated to the magnitude of measurement.

Conclusion and recommendations

The measurement differences found in this study are not clinically important as the large majority (i.e. 92%) of differences is within the manufacture's quoted accuracy (i.e. 0.1 kg) for the mechanical scale. This difference is acceptable in nutrition rehabilitation and growth promotion programmes, therefore, the two scales can be used interchangeably for weight measurement in children under five years. For more accurate assessment of small differences between two measurements, the digital scale is recommended for use, especially by less trained health workers at community level.

For more information, contact: Asrat Dibaba, email: asrat_dibaba@wvi.org

[1] Bland JM, Altman DG (1986). Statistical Method for Assessing Agreement between Two Methods of Clinical Measurement, Lancet 1986, i:307-310

Figure 1: Bland & Altman Plot

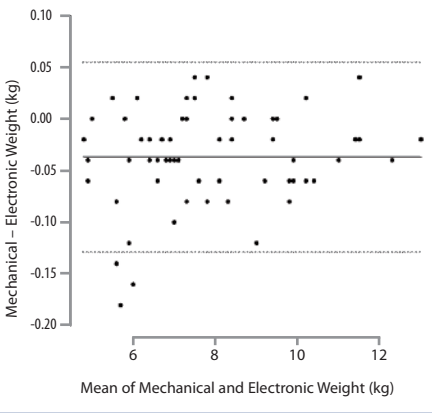

Table 1: Comparison of electronic versus mechanical scales

Attribute	Electronic Scale	Mechanical Scale	Notes
Time for stable weight	1 - 2 seconds	2 - 5 seconds	
Weight displayed after weight removed	Yes	No	Makes the scale easier for a single person to use
Accuracy	± 20 g	± 100 g	
Calibration	Electronic	Manual	Automatic for the electronic scale
Indicator display	Digital	Analogue dial	
Weight of scale	350 g	666 g	
Handheld operation	Yes	No	Electronic is easier for survey work
Power supply	2 × AA Batteries	Not required	Auto-off feature extends battery life
Operating temperature	10° C - 40°C	0° C - 40° C	
Hooks are secured	Yes	No	Bottom hook fixed in electronic scales. Use the same current accessories.
Easier for one person to use	Yes		
Cost	$75	$95	Manufacturer list price (lower prices may be negotiated)

Fresh foods for sale

AM Mayer/Concern WW, Ethiopia, 2012

An analysis of Fresh Food Voucher Programme piloted in Ethiopia

By Pankaj Kumar, Anne Marie Mayer and Elizabeth Molloy

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The authors would also like to thank Suzanne Fuhram, Sosena Mellese, Nardos Birru, Mesfin Kibret, Terefa Getachew, Charlotte Walford, Martha Yigezu and other staff from Concern's Sodo office for their assistance in providing information and reviewing this article. Additional thanks also go to all Kindo Koysha Woreda officials, Health Extension Workers, Outreach Workers and Voluntary Community Health Workers for their dedicated work to make this project a success. We also thank the beneficiaries and non-beneficiaries for sharing their insights with us.

This article describes Concern Worldwide's experience implementing a Fresh Food Vouchers programme (FFVP) linked to a targeted SFP programme (TSFP) in Wolaiyta Zone of the Southern Nations Nationalities and People's Region (SNNPR) of Ethiopia in 2012. The FFVP was implemented within a larger programme aimed at promoting longer term food and nutrition security.

Background

Wolaiyta zone[1] in SNNPR of Ethiopia is one of the most densely populated zones in the region with a population of 1,792,682. It consists of three agro-ecological zones (arable highlands, midlands, and lowlands) and is one of the most vulnerable and famine-prone parts of the region due to its chronic poverty and food insecurity caused by a combination of factors. These include high (and increasing) population density, diminishing landholding sizes, intensive cultivation leading to soil infertility, periodic rain failure, crop pests, livestock diseases, and lack of alternative income sources.

In 2011, 86,359 (53,651 male-headed and 32,708 female-headed) rural households in Wolaiyta zone faced critical food shortages for more than six months, and dependence on the government's Productive Safety Net Programme (PSNP) – a largely cash based form of social protection – was very high. The major coping mechanisms of these vulnerable communities included PSNP, begging, eating unpalatable wild fruits, and daily labour. Rural livelihoods, especially of the extreme poor, are often vulnerable to risks and shocks.

By the end of April 2012, SNNPR had received only 25 to 50% of its expected rainfall which led to a very poor harvest and resulting food shortages. Kindo Koysha is one of 13 woredas in Wolaiyta zone and is extremely vulnerable to malnutrition. It was ranked a 'no.1 hotspot' woreda by UNOCHA in 2012. A Concern WW baseline survey conducted in December 2012 found that the average household 'food gap' in Kindo Koysha was seven months. It also reported that 14% of households with children below 5 years of age in the woreda had children admitted to the TSFP in the preceding year, while 15% of pregnant and lactating women (PLW) were admitted to TSFP in the same period. Previously part of Damot Weyde, the woreda has a history of significant malnutrition prevalence; in the last ten years, Concern WW has responded through 'emergency nutrition' interventions a number of times.

Concern WW's operations in Kindo Koysha woreda

In July 2012, Concern WW began supporting Community-based Management of Acute Malnutrition (CMAM) in five woredas: Kindo Koysha, Kindo Didaye, Damot Gale, Dugna Fango, and Damot Weyde in SNNPR as part of an emergency response. This was prompted by deterioration in food security, and an increase in malnutrition prevalence rates (detected through screening on Child Health Days and an increase in the number of OTP children). Consequently, the programme targeted children below five years of age and PLW. In Kindo Koysha, this included setting up a TSFP at 20 sites, supporting government outpatient therapeutic programme (OTP) services at 26 health centres and health posts and stabilisation centre services (SC) at four hospitals, and supporting community screening and referral of acutely malnourished children and women. Concern WW focused on capacity building of woreda health staff to implement national CMAM protocols, as well as facilitating joint supervision of CMAM sites and providing logistical support.

Kindo Koysha was selected for the pilot of Concern's FFVP. In addition, an Infant and Young Child Feeding (IYCF) intervention was implemented in Kindo Koysha (and Dugna Fango). This 'Smart and Strong Families' IYCF initiative aims to empower mothers to become 'model mothers' capable of promoting positive IYCF and family nutrition messages throughout their communities. Cooking demonstrations and health education sessions are used to promote positive IYCF practices. These sessions were held at village level reinforcing IYCF messages at household level.

Most recently, through ECHO funding, Concern WW has initiated a resilience project in Kindo Koysha, which comprises a multi-sectoral approach to poverty reduction involving emergency nutrition, livelihoods, water, sanitation and hygiene (WASH) and disaster risk reduction (DRR).

The FFVP and related IYCF activities implemented in Kindo Koysha are described in this article.

Overview of Fresh Food Voucher Project (FFVP)

Concern WW's FFVP in Kindo Koysha was initiated to supplement the foods provided by the TSFP and to compensate, to some degree, for the sharing of the TSFP cereal ration at household level, while improving caregivers' knowledge and skills in using local foods to promote child nutrition over the long

[1] Ethiopia is divided into regions, which are further divided into zones, which in turn are divided into woredas. Kebeles are small village level administrative areas.

term. While the TSFP ration is calculated to provide a nutritious supplement to a child's family diet while he or she is recovering from moderate acute malnutrition (MAM), it was apparent that sharing of Corn Soy Blend (CSB)/Famix and oil among family members was widespread and this was affecting recovery rates. Complementary feeding practices were also observed to be fairly poor in the area, due to poor access to nutritious foods, as well as insufficient knowledge and skills on how to prepare them. The FFVP offered a practical means of exposing mothers to nutritious local fresh foods while actively demonstrating how to incorporate them into their children's meals.

The aim of the project was to contribute to a reduction in mortality, morbidity and suffering associated with MAM amongst children aged 6-59 months and PLW in the target area. This was to be achieved by improving dietary diversity of target beneficiaries through the provision of FFVs, which were exchanged for fresh fruit, vegetables and eggs at weekly distributions. The project was scheduled to run for three months from August – November 2012.

A voucher scheme was considered more appropriate than a cash distribution to avoid conflicting with the established PSNP. The approach used enabled the programme to address the limited availability of fresh foods in local markets and poor existing knowledge of the importance of fresh fruit and vegetables and eggs in a child's diet. Positive examples of similar schemes informed the approach. For example, Action Contre la Faim (ACF) has implemented FFVPs in differing contexts and has developed good practice guidelines based on these experiences.

The target groups for the project were children aged 6-59 months and PLW who were admitted to TSFPs in the target woreda. Based on the national guidelines, children were admitted to TSFP with mid-upper arm circumference (MUAC) between 110 mm and < 120 mm and PLW with MUAC < 210 mm. All children discharged from OTP were also admitted into the TSFP and thus the FFVP.

Process

The first FFVP distribution was made at the end of August 2012 at the same time as IYCF activities commenced. The beneficiaries received the standard TSFP ration[2], as well as a FFV. The CMAM 2012 intervention had begun 1 month prior to the FFVP as a new programme.

Prior to initiation of the FFVP activities, a market assessment (based on the Emergency Market Mapping and Analysis tool) was undertaken to assess available fresh foods in the community and to identify vendors who were already in the market and trucking foods to neighbouring towns for sale. Women's groups that sold eggs in the woreda were also identified. Potential vegetables vendors could not be identified in Kindo Koysha itself, however vendors who came from Sodo (zonal capital – 1 hour away) to the main market in Kindo Koysha were able to supply vegetables.

Subsequent discussions with woreda officials and staff at the woreda Trade & Industry office and the Marketing & Cooperative office led to the formation of a project cooperative. This allowed credit backing of the vendors and registration with a Tax Identification Number (TIN). The downside was that the members had not previously worked together and the only way to engage with vending to the project was through the co-operative, limiting possibilities for smaller venders/suppliers.

A contract was drawn up with the vendor's cooperative. In order to avoid overwhelming the existing market system, the cooperatives were contracted to provide the fresh foods at kebele (village) level. A schedule was created to ensure all kebeles were served on a weekly basis so that beneficiaries were able to access fresh food at regular basis, and efforts were made to match the weekly fresh food distribution with the fortnightly TSFP distribution. Most of the TSFPs were at the kebele level.

Vendors brought fresh foods to TSFP distribution sites on trucks or by other means, such as by donkey, when road conditions were poor. Fresh foods included eggs, mango, papaya, avocado, banana, carrot, beetroot, tomato, garlic, onion, pepper, dark green leafy vegetable, pumpkin, and oranges. Beneficiaries were provided with weekly coupons redeemable for 2 eggs, 4 kg of fruits, and 3.5 kg of vegetables. Ration size was based on the recommended daily intake for children aged 6-59 months and based on 2 to 3 children below 5 years of age per household, but also considered that sharing would occur within the household due to the prevalent food insecurity situation in the area. The ration for PLW was the same as that for children under 5 years. Table 1 demonstrates the ration size.

At distribution, beneficiaries were registered and received a voucher redeemable for a one week ration. The voucher was in Amharic and is shown in Figure 1.

During the fresh foods distribution, TSFP also took place that included health education sessions. These focused on basic nutrition, IYCF, good hygiene, care-seeking for illness, and other topics. Cooking demonstrations to explain how to prepare different recipes with the fresh foods also took place at each distribution site. Recipes showed how to mix and cook vegetables and egg with the CSB and oil rations. Additional messages were developed to address specific issues regarding fresh foods, such as how to store the foods correctly and how to wash and prepare the items. Some mothers believed that the items could not be consumed by children as early as six months of age, so messages were developed to address this specifically.

Table 1: Ration size at planning stage

	Type	Servings per day per beneficiary	Servings per month
Fruits	Mango	0.66 pcs	19 pcs
	Avocado	0.66 pcs	19 pcs
	Banana	0.66 pcs	19 pcs
Vegetables	Dark green leafy veg	200 g	6 kg
	Carrot	115 g	3.45 kg
	Tomato	155 g	3.45 kg
Animal Products	Egg	0.28 pcs	8 pcs

Vendors were responsible for weighing the items and for distribution. Quality and quantity issues were overseen by a Concern WW Outreach Worker. Some issues with the quality of products were witnessed at the beginning of the project, such as overripe fruit, or bruised vegetables. These issues were addressed and beneficiaries were also vocal in ensuring quality foods were received.

It was originally planned that beneficiaries would choose which fruits should make up their 3.5 kg and which vegetables should make up their 4 kg ration. However, this proved difficult logistically. During distribution, instead of beneficiaries choosing fresh food, vendors reported that in many cases, beneficiaries would ask the vendors to choose for them the most suitable foods, as they were unfamiliar with the foods available.

Cost of the fresh foods for the programme was on average 381 Ethiopian birr (17 euro) per individual per month. The cost included transport cost and other related costs, but excluded costs for Concern WW staff to monitor the programme.

Programme monitoring and evaluation

The programme was evaluated using qualitative assessment tools addressed to beneficiaries, non-beneficiaries, vendors, health extension workers, outreach workers, cooking demonstrator, officials at the woreda office of Cooperatives and Marketing, Concern WW staff and managers. Interviews took place during the final week of the programme (26 November 2012) in Wolaiyta.

TSFP performance indicators for children aged 6-59 months were within national (Ethiopian MAM guidelines September 2012)

[2] The standard ration is 1 litre of vegetable oil per beneficiary per month and 6.25 kg of CSB/Famix per beneficiary per month, premixed before distribution.

Table 2: Performance indicators for the TSFP for children 6-59 months

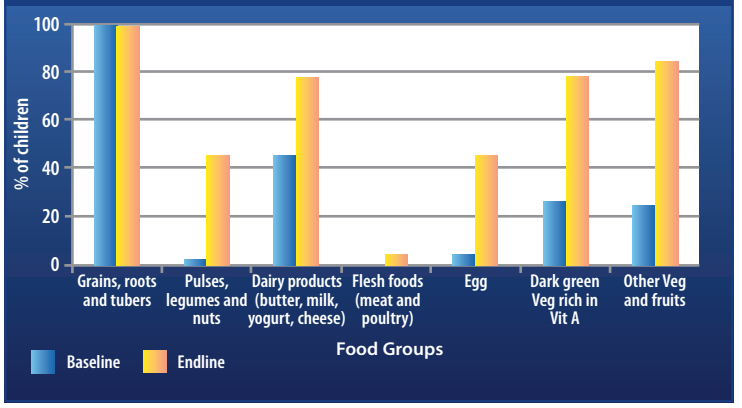
	Cure rate	Death Rate	Defaulter Rate	Non - responder	Average Weight Gain	Average Length of stay
Kindo Koysha	86%	<1%	<1%	13%	5.5g/kg/day	94 days

Table 3: Admission and discharge results for consumption different food groups

Food groups	Baseline (at admission) (n=307)	End line (at discharge) (n=260)
Up to 1 food group	29%	0.4%
1-2 food groups	48%	10.5%
2-3 food groups	53%	17.8%
More than 4 food groups	4.2%	71.4%

Figure 1: Voucher for one week's fresh food ration

Figure 1: Percentage of children who ate at least one item of the food group the previous day (24 hours dietary recall)



and international (Sphere Project 2010) standards for proportion of exits that were cured, died or defaulted (Table 2). There is no agreed national or international standard for average weight gain or average length of stay in a TSFP, but the figures are also provided in Table 2.

Monitoring of the FFVP involved baseline and endline questionnaires administered by Concern WW Outreach Workers to the caregivers of more than 250 children during their admission to TSFP and FFVP and following their discharge. The sample was evenly distributed across all five CMAM kebeles. The objective was to measure whether there was improved dietary intake (as measured by dietary diversity score) amongst the children who received support.

Individual dietary diversity score

Table 3 and Figure 1 summarise the findings on the proportion of children 6 – 59 months of age who consumed different numbers of food groups based on the baseline (at admission) and endline (at discharge) questionnaires[3].

The mean dietary diversity score changed from 1.96 at admission to 4.17 at discharge and the proportion of children who received more than four food groups increased from 4.2% to 71.4%. Children who predominantly ate from one food group at admission, increased to eating three or more food groups by discharge, with increased consumption of dark green vegetables, egg and fruits especially. Consumption of eggs typically drops from July to November because eggs are usually scarce in the market and production decreases due to the onset of the rainy and cold season. Furthermore, the production of vegetables from homestead gardens usually drops after the rainy season as water is scarce and there are no irrigation facilities. Therefore the increase in consumption of these foods is likely to be due to the FFVP. Further, consumption of legumes and fruits are generally not part of the routine diet though they are available throughout the year in the area. Thus this increase in legumes and fruit consumption could also be attributed to increased availability and promotion of these products through the FFVP.

The observed increase in consumption of dairy products (that were not supplied in the FFVP) could be due to IYCF activities leading to increased awareness; an observation highlighted through different focus group discussions, field visits and key informant interviews.

Pulse consumption also increased and may be explained by the local harvest of haricot bean (a major crop) during the months of October and November. Changes in consumption of grain and cereals like maize and barley were not observed; they remained the staple foods of the area.

Lessons learned

Planning and M&E

There appeared to be some confusion among Concern WW staff and woreda officials regarding the specific purpose of the project. Various objectives were cited, such as to reduce incidence of malnutrition, to increase dietary diversity and to reduce micronutrient deficiencies. However, provision had not been made to measure whether all of these objectives were met. The project objectives therefore needed clarification and communication to all stakeholders, as well as monitoring systems put in place to measure their achievement.

Lack of good baseline data was problematic. For example, it was difficult to attribute changes brought about by the project, as the baseline and endline studies in Kindo Koysha took place in different seasons and this influenced food availability that was not related to the FFVP.

A comparison of TSFP performance data across woredas was initially considered a plausible method to evaluate improvements in recovery rates attributable to the FFVP. However this was deemed of limited value because confounding factors, such as coverage, start of programme and factors related to agro-ecological zones could not be controlled adequately in the comparison.

Administration

All interviewed stakeholders stated that the project had run smoothly. However, some difficulties were reported with recording procedures. The paperwork involved in distributions was time-consuming with some elements unnecessary. Complicated procedures increased staff costs and reduced the time available to outreach workers for follow-up visits and supporting beneficiaries. Staff suggested that a data manager be employed to help with the administrative tasks.

Vendor system

The two vendors interviewed were both positive about the project. Both vendors and officials interviewed stated that the project had led to increased production of fresh foods in the woreda.

Vendors and Concern WW staff reported that initially payment to vendors had been delayed by a number of weeks. Concern WW staff attributed this to the extensive verification procedure involved. Fortunately, access to co-operative savings meant that vendors' credit rating was not damaged by the delay in payment.

Understanding the ways in which co-operatives function proved difficult. From discussions with woreda officials, it appears that there are co-operatives of producers, who then sell their produce to co-operatives of vendors. Whether poor farmers have an opportunity to become members of co-operatives and contr-i bute to the supply of fresh foods is not clear.

IYCF and cooking demonstrations

Beneficiaries reported finding IYCF education sessions and cooking demonstrations very useful in focus group discussions and were able to recall and describe correct breastfeeding and complementary feeding practices from IYCF sessions. Focus group participants also reported replicating recipes learned at cooking demonstrations at home. The cooking demonstrator also reported receiving positive

AM Mayer/Concern WW, Ethiopia, 2012

Food preparation demonstration

[3] The seven food groups per international guidelines consisted of cereals, grains, roots and tubers; pulses, legumes and nuts; milk and dairy products; meat & poultry; eggs; vitamin-A rich fruits and vegetables; and other vegetables and fruits. Oils and fats were not included as a food group.

feedback from beneficiaries that they were implementing what they had learned in their own homes.

Perceptions of beneficiaries

Prior to the introduction of the FFVP, few of the focus group participants regularly fed their families fresh foods. Both access and affordability were cited as barriers to eating fresh foods. Where fresh food was available (such as in Bele town, the woreda administrative centre) the cost was prohibitive, while in more rural, isolated areas, even if women could afford fresh foods, they were not available. Money is prioritised for staples when available. Beneficiaries do not produce fresh foods (although some have an avocado and/or mango tree) due to infertile/lack of land and lack of other resources. In an earlier mid-term review by Concern WW staff, beneficiaries and kebele leaders expressed a lack of awareness in the communities about the importance of fresh foods for nutrition, stating that fresh foods were only for urban people and not for rural people.

All beneficiaries from all five focus groups (sample total =25) agreed that they had learned a lot from the programme, e.g. awareness of the importance of fresh food to health. All focus group participants reported that the FFVP had a beneficial impact on their own health (in the case of PLW) and on that of their child. The participants were positive about the quality, variety and amount of fresh food provided by the programme. Four out of five focus groups reported that they had no problem with the extra time spent on the FFVP, between attending distributions and the additional time to cook separate meals for targeted beneficiaries. One focus group indicated that they were very busy cooking, fetching drinking water and firewood and that the return journey to the distribution took 4 – 5 hours. Beneficiaries' willingness to take the time to attend distributions and education sessions without complaint indicates the high value they placed on the project.

While all of the focus group participants expressed a desire to continue consuming fresh food and providing it for their families, some had reservations about their ability to do so. Four of the five focus groups cited expense as a barrier to access, while two of the focus groups in remote locations stated that fresh food wasn't available in their locality. Poor growing conditions also hindered fresh food consumption, although two participants planned to begin growing their own fresh food.

Additional observations

The qualitative assessment received no reports of the project having negative unforeseen consequences on food prices in the market. None of the non-beneficiaries interviewed complained about their lack of inclusion or reported any adverse effects of the project on themselves or others.

The introduction of the programme was timely – only 1 month after the start of the TSFP. While the end point had been planned and communicated to stakeholders, all felt it should have been extended. This was a view expressed by all groups interviewed: beneficiaries, non-beneficiaries, vendors, programme staff and officials.

All interviewed stakeholders reported being satisfied with the targeting of the project. Non-beneficiaries reported that they feel happy to see neighbours benefit and to see improvements in their children.

"We feel glad that we are excluded because this showed our children were OK and healthy".

Health Extension Workers and outreach workers noticed that the FFVP encouraged mothers to attend the TSFP. The FFV programme has altered perceptions about how malnutrition can be addressed in communities.

Lasting benefits reported by beneficiaries included learning on hygiene practices, IYCF and from cooking demonstrations, with some starting to teach the topics to other community members. Some of the foods provided allowed beneficiaries to save seeds to plant on their own land, e.g. pumpkin seeds.

Vendors had started to view local and distant markets as potential areas for future selling of fresh foods but were concerned that beneficiaries would be unable to afford to buy fresh foods after the end of the FFV programme.

AM Mayer/Concern WW, Ethiopia, 2012

Exchange of fresh food vouchers

Conclusions and recommendations

The FFVP was well received by communities and the beneficiaries reported health and nutrition benefits for their children above those from the TSFP alone. The awareness of importance of fresh foods seems to have been raised by the project – not just by the beneficiaries, but also the wider community, vendors, health workers, Concern WW staff and local government employees. This is an additional benefit and more lasting aspect of the project.

During an emergency, the FFVP is a good model for introducing fresh foods to communities that do not have money or access to markets. The project works well alongside a TSFP, which provides for energy and protein requirements of the diet. Such a project, which sources local foods for distribution as part of surge response, also has potential to provide longer lasting social and economic benefits than a distribution sourced externally.

The CMAM data was difficult to interpret as part of the evaluation because there were potential confounding factors present in the different woredas that could not be assessed adequately to control for their influence on the results. The information on cure rate, default rate, average length of stay and weight gain could be misleading. In future interventions, greater attention should be given to an evaluation design at the planning phase.

Recommendations emerging from this experience include:

- The Behaviour Change Communication (BCC) component should continue after the end of the surge response and include all groups in the community. The improved practices would build community resilience so that during an emergency, communities would have at least the awareness and understanding of good IYCF and hygiene practices. A barrier analysis should be carried out so key determinants of behaviour are understood before implementing BCC activities.
- The idea of local foods being used in emergencies could be expanded to include other local foods for beneficiaries, for example, cereals and pulses for a general food distribution. Prior to this, a full market analysis should be undertaken. FFVs complement the Productive Safety Net Programme as they target beneficiaries who are most vulnerable to adverse nutrition impacts. An extended pilot in this and one additional woreda during the following months would further help to test the viability of this model and performance of CMAM indicators (particularly TSFP indicators).
- A monitoring and evaluation plan needs to be built into the design of the next FFVP. A baseline survey that includes assessment of dietary diversity, meal frequency and anthropometry would provide more objective evidence of impact. Ideally, a control area should be included in the evaluation. If TSFP performance indicators will be used for evaluation purposes, comparison woredas will need to be selected and any potential confounding variables assessed adequately.

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Evidence-based Humanitarian Assistance Certificate

There is pressure on aid agencies to base humanitarian assistance on solid empirical evidence as well as establish field research programmes to measure programme efficiency, effectiveness and impact. A new Evidence-based Humanitarian Assistance Certificate is now on offer from Feinstein International Centre, Tufts University, US.

This programme will enhance a practitioner's ability to carry out needs assessments in the food security and nutrition fields, design and carry out field research programs to measure the effectiveness of programming, and assess the impact of programming in both short and long term humanitarian crises. Students will learn to apply data-driven methodologies to the needs assessment, program design and implementation, and programme impact assessment phases of aid projects.

The certificate programme consists of the following three courses:

Field Research Methods in Humanitarian Settings
This course will address primary data collection in field settings, particularly those characterised by conflict and forced displacement where data collection methods confront logistical and ethnical challenges. At the end of the course students will be prepared to conduct their own fieldwork, and assess the value of others field research.

Food Security and Nutrition in Emergencies
This course will support participants to develop the skills to conduct a good analysis of food security and nutrition crises, and equip participants to make evidence-based intervention choices, and implement and monitor those interventions. Students will be able to synthesise these skills for improved overall programme management and impact.

Assessing and Measuring the Impact of Humanitarian Aid
This course will explore the problems of impact assessment for emergency operations and will provide students with training in some of the most promising methodologies of impact assessment, paying particular attention of participatory assessment methodologies. The course also explains the trade-offs between conventional 'hard' quantitative approaches and methods in humanitarian situations, and 'soft' qualitative approaches and methods, leading to understanding of the benefits of mixed methods for impact assessment. Finally, through analysis of institutional constraints to impact assessment, the course provides guidance on ways to use evidence to influence policy and programming in humanitarian contexts.

Applications
Applications are accepted through June of each year for the following Sept. Tuition for the term beginning Sept 2013 is set at $2,300 and has been subsidised.
Visit **http://www.nutrition.tufts.edu/academics/certificate-programs/evidence-based-humanitarian-assistance-certificate** for application form and email: **nutritioncertificates@tufts.edu** for more details.

Shakila Tani/WFP, Afghanistan, 2004

Deworming debunked

Summary of published article[1]

A recent article in the BMJ sets about debunking certain long-held beliefs about deworming which has been hailed as a simple, cheap, and effective way of improving growth, raising brain power, and improving the educational and employment prospects of millions of children. The author asserts that according to the latest revision of the Cochrane review on the subject, it is clear that deworming alone has no effect on growth, cognitive ability or school attendance. While some studies carried out in the 1990s show impressive weight gains achieved in schoolchildren after a single dose of drugs that kill intestinal helminth worms (roundworm, hookworm, and whipworm), larger studies designed to confirm these benefits have tended to draw a blank.

Despite this, there is little sign of flagging enthusiasm for the deworming initiative, which is propelled by an alliance of international organisations, charities, and drug companies willing to supply the drugs (mainly mebandazole and albendazole) more or less for free. A bulletin from the World Health Organisation (WHO) on the millennium development goals is unequivocal. Deworming boosts the prospects of school age children earning their way out of poverty, it says. "The improvements in intellectual development and cognition that follow deworming have been shown to have a substantial impact on professional income later in life." A meeting of economists, including four Nobel Prize winners, held in Copenhagen in 2012 concluded that deworming was among the top four cost effective interventions, along with improving nutrition, treating malaria, and improving childhood immunisation. Robert Mundell, a Nobel laureate in economics and a participant at the meeting, concluded that "Deworming is an overlooked intervention deserving of greater attention and resources. This simple, cheap investment can mean a child is healthier and spends more time in school." It is puzzling, the authors feel, that he should have considered it overlooked.

GlaxoSmithKline already donates 400 million tablets of albendazole a year, while Johnson & Johnson donates 200 million tablets of mebendazole, a donation rate the two companies have promised to sustain until at least 2020. In addition, a range of charities and non-profit organisations, mainly in the US, contribute more than 100 million deworming pills a year, which they acquire either free or for a few cents a pill. Some of the charities enter the pills in their accounts as costing as much as $10 (£6; €8), making them look like hugely munificent philanthropies.

While some US charities overstate their generosity, others overstate the benefits of deworming, according to the Cochrane review. The Cochrane reviewers did identify 42 trials that met the criteria for inclusion. Excluding one for which the data are still awaited, the remaining 41 included 65,168 participants. The trials included three with 149 children who had been screened for helminth infection and treated with a single dose of deworming drugs. Although the numbers were small and the quality of the evidence low or very low, there was some evidence of improvements in weight gain, haemoglobin levels and formal tests of cognition. The evidence was weaker in trials that mimic the mass medication without screening, with either a single or multiple doses. For single doses, a positive gain in weight was reported in two trials from a single location but not in seven others published since then. Two trials measured cognition: one reported no effect, the other that deworming made cognition scores worse. The two older studies that showed weight gain also found an improvement in physical wellbeing which is not surprising since nobody has ever denied deworming has health benefits. Studies of multiple doses, which are recommended by deworming advocates, show no significant weight gain on average and no benefit to cognition. Two studies, both in Kenya, showed school attendance 4% higher, a result that was not significant. Over longer follow-up periods the results were similar: no studies showed cognitive benefits, one showed weight gains, and one showed school attendance 5% higher, which again was not significant. In almost all cases, the quality of the evidence was low or very low.

Routine deworming had not shown benefits on weight in most cases, except for three studies conducted 15 years ago or more. For haemoglobin and cognition, community deworming "seems to have little or no effect," and the evidence in relation to school attendance and school performance is "generally poor, with no obvious or consistent effect."

The Cochrane review concludes: "Our interpretation of this data is that it is probably misleading to justify contemporary deworming programmes based on evidence of consistent benefit on nutrition, haemoglobin, school attendance or school performance as there is simply insufficient reliable information to know whether this is so." These conclusions remain little changed from the earlier Cochrane review in 2000.

The charity GiveWell, which helps donors by rating other charities for value for money, also found an error in *Disease Control Priorities in Developing Countries*, a major report funded by the Gates Foundation and considered to be gold standard evidence. The report estimates that the cost effectiveness of deworming is $3.41 per disability adjusted life year, making it one of the most cost effective interventions for global health. But close examination of the figures has established five separate errors on the spreadsheet that was used to make the calculation. The true figure, based on the same data, is $326.43 – nearly a hundred times as much. Its revised figure puts deworming on the same cost effectiveness footing as treating drug resistant tuberculosis or providing family planning services, and makes it worse value for money than providing vaccination or insecticide treated bed nets.

[1] Hawkes. N (2013): Deworming debunked. *BMJ* 2012;345:e8558 doi: 10.1136/bmj.e8558 (Published 2 January 2013) Page 1 of 4

Deworming children at military healthcare facilities in a combat zone: an opportunity not to be missed?

The BMJ published a letter[1] in response to the deworming article above. This letter (summarised below) is written by members of the Royal Centre for Defence Medicine, Royal Centre for Defence Medicine, Birmingham, UK and represents an interesting perspective from medical-military personnel. (Ed)

As military practitioners with expertise in infectious diseases and surgery, the authors have followed the ebb and flow of the mass deworming debate with great interest. Although reports conflict as to whether routine deworming leads to demonstrable benefit in cognition, school attendance, and school performance, the World Health Organisation (WHO) recommends annual anti-helminthic treatment of all school-age children in areas where the prevalence is >20% or twice a year when the prevalence is >50%. Survey data indicates that prevalence of soil-transmitted helminths (STH) in several regions of Afghanistan is 20% to 50%, with some areas around Kabul >50%. A high proportion of Afghans are children and they continue to suffer the consequences of repeated infestation despite attempted eradication programmes.

Coalition military healthcare facilities have now been deployed in Afghanistan for some years. During 2012, surgical teams in the Role 3 Hospital in southern Afghanistan noticed multiple patients with evidence of worm infestation during laparotomy for abdominal trauma. The biggest deworming campaign in Afghanistan to date was undertaken in 2004, when the United Nations World Food Programme (WFP) in collaboration with the WHO, UNICEF, and the Afghan Ministries of Health and Education were able to treat 4.5 million children. However, this fell short of the total number of school age children (approximately 9 million) because a large proportion of these children do not attend any school, as circumstances mitigate against attendance. School attendance is poor primarily due to problems with accessibility and security, however, there is gender imbalance and school restriction due to poverty, with children having to work or being excluded from education due to marriage. Further measures to treat these children will need to reach beyond a school-based approach and exploit other opportunities.

Although the primary function of deployed medical assets in a theatre of war is to provide life, limb and eyesight saving treatment, humanitarian aid in the form of non-emergency treatment is also commonly provided to the local civilian population. Such aid is not limited to hospitals, but also provided at forward operating bases (FOBs) and patrol bases (PBs) by medical assets that augment combat units on the front line. Although accurate records are not available, it is estimated that thousands of children have received humanitarian aid of this kind during operations in Afghanistan from medical facilities other than hospitals. Such a widespread network of ISAF outposts with medical facilities may offer an opportunity to deworm children.

During the recent conflict, children have represented approximately 3% - 15% of the patients treated at deployed military hospitals and contribute up to 25% of the bed occupancy. These children have often sustained battle trauma including blast and missile injuries. The majority require surgical intervention with as many as 40% requiring admission to critical care. Chronic malnutrition in children is a major public health problem in Afghanistan, with a lack of adequate household food intake and suboptimal infant and young child feeding and hygiene practices contributing to poor nutritional status.

Strategic success in the current war in Afghanistan is much more complex than the defeat of an identifiable enemy. NATO has stated that its mission includes the need to "facilitate improvements in governance and socio-economic development in order to provide a secure environment for sustainable stability", and to "provide practical support for… humanitarian assistance efforts conducted by Afghan government organisations, international organisations, and non-governmental organisations (NGOs)". In 2010, the American National Security Strategy stated that there is a "moral and strategic interest in promoting global health" and that there is a need to "strengthen health systems and invest in interventions to address areas where progress has lagged, including maternal and child health", and to seek the "elimination of important neglected tropical diseases". It is therefore impossible, the authors feel, to consider the international mission in Afghanistan without also considering the current and future health of the nation, especially of its children.

The authors go on to argue that military medical facilities in Afghanistan provide an opportunity to integrate a policy of routine deworming of children into their existing programmes of humanitarian support. Such opportunistic treatment is feasible, relatively inexpensive, simple, and has a very small risk of harm. Most importantly it may improve the lives of the children who receive it – even if there is little evidence that it might help the entire population. Furthermore, as each ISAF base and outpost hands over control to Afghan security and medical personnel during the transition of power, the continuity of healthcare to the local communities can only be enhanced by the education and training that will result from this legacy.

They do not propose a population based or mass deworming programme run by the military, but rather opportunistic deworming of those patients who have had the misfortune to require humanitarian assistance. Although it is now clearer that mass deworming programmes alone are not a panacea, this proposed individualistic approach is, the authors conclude, inexpensive, simple, and achievable; it may allow these children to return home with a slightly better chance of un-hindered development and growth.

[1] Naumann. D et al (2013). Deworming children at military healthcare facilities in a combat zone: an opportunity not to be missed? 10 January 2013

UNICEF international conference against child undernutrition

Bridging the nutrition security gap in Sub-Saharan Africa: a pathway to strengthen resilience and development

Acute and chronic undernutrition rates in sub-Saharan Africa consistently rank among the highest in the world. However, several key interventions and proactive public policies have demonstrated that it is possible to tackle undernutrition

An international conference, scheduled to take place in Paris one month before the G8 Summit, aims to build on success-stories to mobilise political leaders, stakeholders working at the programmatic level and donors, to promote political and financial commitment over the long term to meet the challenge of child undernutrition.

It will bring together a wide array of participants, including Government representatives, civil society organisations, academia, donors, United Nations agencies, non-governmental organisations and the private sector. It will foster dialogue between stakeholders, facilitating sharing of experiences and lessons learned to identify the most effective strategies.

Focusing on Sub-Saharan Africa, the conference will provide an opportunity for African leaders to share region-specific challenges and experiences and chart the way forward.

Initiated by the French Committee for UNICEF, this conference is supported by the French Ministry of Foreign Affairs, Action contre la Faim (ACF), Agence Française de Développement (AFD), the Alliance for International Medical Action (ALIMA), the Bill and Melinda Gates Foundation and Médecins Sans Frontières (MSF). It will also benefit from inputs of other key stakeholders at global level and regional level in Sub-Saharan Africa.

For more information, please contact Rémi Vallet, project coordinator (consultant) or Christine Lock (assistant): nutritionconference@unicef.fr or +33 1 44 39 77 45

http://www.child-undernutrition-conference.org

En-net enters its fifth year

By Tamsin Walters, en-net moderator

As en-net enters its fifth year of operation, we thought it timely to reflect on how this relatively new resource is performing. Launched in February 2009, en-net has evolved from a forum with eight discussion areas to fourteen. While discussions are primarily peer-led so that experiences can be shared and advice provided by others working in similar situations, a team of 15 technical experts is on-call to respond to questions that receive no spontaneous answers or to clarify complex technical issues from an informed and balanced perspective. The forum is open for anyone to view and does not require registration to do so, though you can also sign up to an account to receive email alerts of new discussions or responses in your areas of interest or to post a question or response. Approximately 800 people currently have accounts.

The most popular forum areas have changed little over the four years of en-net: Assessment and Prevention and treatment of severe acute malnutrition consistently receive the most questions, followed by Prevention and treatment of moderate acute malnutrition and Infant and young child feeding interventions. This largely reflects the current focus of the nutrition community in areas where both guidance and practice are evolving.

The Announcements and nutritionists needed area is also highly frequented with 80 vacancies and announcements posted over the last year (March 2012 to end of February 2013). These posts have each been viewed between 100 and 300 times. The ENN website vacancies page is directly updated from en-net (a 2011 development), see **http://www.ennonline.net/vacancies/**

Of those identifiable, en-net site visitors came from the following countries over the past year: 17% from the USA, 15% UK, 7% Kenya, 5% India, 4% France, 4% Ethiopia, 3% Canada, 3% Pakistan, 2% Australia.

During the last three months, December 2012 to February 2013 inclusive, en-net received 37 questions, soliciting 111 responses, as well as 11 job adverts and one notice.

Recent discussions have included: the effect of micronutrients on low birth weight, safety of folic acid supplements for malnourished children, monitoring MUAC change during follow up visits and its use for decision-making, maximum theoretical value for healthy weight gain in OTP and the "normal" MUAC increase, and impact of cash transfers on nutritional status: are there negative effects and what is the evidence of positive impact?

One of the most recent developments that we've been pleased to see has been the links to specific technical discussion areas from other sites – the CMAM forum (**http://www.cmamforum.org/Briefs**), the Coverage Monitoring Network (**http://www.coverage-monitoring.org/forum/**) and the Global Nutrition Cluster website: **http://www.unicef.org/nutritioncluster/**

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

Coverage Monitoring Network Profile

What is the Coverage Monitoring Network (CMN)?

The Coverage Monitoring Network (CMN) is an inter-agency initiative led by Action Against Hunger (ACF) and includes Save the Children, Concern Worldwide, International Medical Corps, Helen Keller International and Valid International. The current phase of the initiative (July 2012-December 2013) is funded by the European Commission Directorate-General for Humanitarian Aid and Civil Protection (ECHO) and USAID's Office of Foreign Disaster Assistance (OFDA). The primary objective of the initiative is to improve (emergency and non-emergency) nutrition programmes through the promotion of quality coverage assessment tools, capacity building and information sharing. During the current phase, the CMN focuses primarily on CMAM programmes implemented with or without the support of non-governmental organisations (NGOs).

How did the CMN come about?

The CMN was developed between 2011 and 2012 in response to three key issues. First, the need to roll-out newly available methods for assessing coverage of CMAM developed by FANTA/Valid International and their partners. Such methods include the Semi-Quantitative Evaluation of Access & Coverage (SQUEAC) and Simplified-LQAS Evaluation of Access & Coverage (SLEAC). Secondly, the need to make technical support more widely available, by addressing the human resource gap and shifting the financial burden away from individual programmes. Thirdly, the common desire of partners to use coverage assessments as a means of influencing nutrition policy and practice. The goals and structure of the CMN project are designed to address these issues.

How is the CMN organised?

The CMN is comprised of a team located around the world. The support team – including the Project Coordinator, Project Finance & Administration Coordinator, and Project Assistant – operate from ACF's HQ in London. The support team coordinates the activities of six Regional Coverage Advisors (RECOs) hosted by CMN implementing organisations. RECOs also receive support from Technical Advisors in each of these agencies and are deployed on a needs-basis to any CMAM programme in any country. Additional technical oversight is provided by Valid International.

What does the CMN offer?

The CMN offers free technical support in the design, planning, implementation and analysis of coverage assessments of CMAM programmes. Regional workshops and on-the-job trainings have been organised in Kenya, Burkina Faso, Democratic Republic of the Congo (DRC) and Nepal, and additional learning events are planned for 2013. Throughout the year, the RECOs will continue to offer on-the-job, field and/or remote technical support to CMAM programmes around the world. The type and length of such support is specifically tailored to the needs and capacities of each programme. The CMN will also continue to coordinate a series of publications designed to capture emerging lessons, remaining challenges and future directions for improving access to treatment of malnutrition.

What has been the response to the CMN to date?

Since its launch in late 2012, the project has received a high response rate. To date, the project has already supported 13 different assessments with different partners. By the end of 2013, the project is expected to have supported over 55 coverage assessments in 28 countries. It is also expected to have supported over 11 different organisations and Ministries of Health around the world. The project has also served as a catalyst for national-level initiatives created and/or supported by the global CMN initiative, including platforms in Nigeria, Kenya and Pakistan.

How can organisations contact the CMN?

To discuss how the CMN can support your programme, please contact the team on **cmnproject@actionagainsthunger.org.uk**.

For the latest information, key resources, calendar of events, forum and news, visit the CMN **website www.coverage-monitoring.org** The website includes a short, simple video that explains about coverage and the aims for the CMN. Access this online or directly at the link **http://vimeo.com/57475304**

New metric on hunger and food insecurity piloted by FAO

A new, faster and more precise way of measuring hunger and food insecurity across the world is soon to be field-tested by FAO in several pilot countries.

At the moment, FAO is able to accurately monitor food availability at the national level, particularly in terms of potential energy intake, however the new indicator will measure food access at the individual level, and will provide a clearer idea of personal experiences with food insecurity. The new approach will complement FAO's existing indicator on the percentage of undernourished in the population.

The new approach – known as the Voices of the Hungry project – relies on gathering information on the extent and severity of hunger from food-insecure people, through a carefully-designed annual survey to be conducted in collaboration with polling specialists Gallup, Inc.

Under the Voices of the Hungry project, nationally representative samples of 1,000 to 5,000 people, depending on the size of the country, will be selected to answer eight questions (see Box 1) designed to reveal whether and how respondents have experienced food insecurity in the previous 12 months. The questions establish the respondents' position on a Food Insecurity Experience Scale which differentiates between mild, moderate and severe food insecurity.

Starting in March 2013, the new approach will be finalized in collaboration with major experts in the field and tested on a pilot basis in four countries – Angola, Ethiopia, Malawi and Niger. The plan is to then extend the survey to more than 160, 000 respondents in up to 150 countries covered by the Gallup World Poll and to publish updated results on each country every year. The project will run for five years and will lead to the establishment of a new FAO-certified standard for food security monitoring that could then be adopted by other household surveys.

Results of the surveys will be available in days, allowing FAO to take an almost real-time snapshot of a nation's food insecurity situation. This will be the first occasion that FAO takes on responsibility for data collection. In parallel, FAO will assist countries to include the Scale in their ongoing survey plans and programmes to ensure future sustainability.

FAO is currently holding discussions with potential resource partners in order to mobilize funds for the overall Voices of the Hungry project, while the four-country pilot project will be financed by a separate initiative.

For more information, visit:
www.fao.org

Box 1: Eight questions
During the last 12 months, was there a time when, because of lack of money or other resources:

1. You were worried you would run out of food?
2. You were unable to eat healthy and nutritious food?
3. You ate only a few kinds of foods?
4. You had to skip a meal?
5. You ate less than you thought you should?
6. Your household ran out of food?
7. You were hungry but did not eat?
8. You went without eating for a whole day?

IUNS 20th international congress of Nutrition, 15-20 Sept 2013, Granada

The IUNS 20th International Congress of Nutrition (IUNS 20th ICN) will be held in Granda, Spain, from 15 to 20 September 2013. The congress scientific programme will cover nutrition, feeding and dietetics and more than 4000 professionals in these areas are expected to attend.

The contact persons are Professors Ascensión Marcos, email: **amarcos@ictan.csic.es** and Angel Gil, email: **agil@ugr.es**

The ICN 2013 Technical Secretariat contact is Mrs. Begoña Ruiz, Phone +34 93 510 10 05, Fax +34 93 510 10 09, email: **Icn2013@viajesiberia.com**.

For more information, consult the website: **www.icn2013.com**

A consultation of operational agencies and academic specialists on MUAC and WHZ as indicators of SAM

Summary of meeting report[1]

The treatment of severe acute malnutrition (SAM) is a cost-effective, evidence-based 'direct' nutrition intervention, according to the 2008 Lancet Nutrition Series. Recent years have seen a significant scale-up of community-based management of acute malnutrition (CMAM) to treat children with SAM. Mid upper arm circumference (MUAC) is increasingly recommended to field staff as the indicator of choice for screening and admission to CMAM programming. However, uncertainty exists amongst many practitioners concerning the strength of the evidence to support MUAC only admissions and in particular, the consequences of non-admission for children who do not fulfil the MUAC criterion but do meet weight-for-height z-score (WHZ) cut-offs for SAM. This is complicated by observations that the two indicators do not always identify the same children and when they do, the proportions identified using both methods vary between regions and countries.

A consultation on the role of MUAC and WHZ was recently instigated by Save the Children UK (SCUK) and facilitated by the Emergency Nutrition Network (ENN) largely in order to address confusion amongst practitioners. ACF and UNHCR provided technical inputs and together with SCUK, funded the consultation.

The aim of the consultation was to identify common challenges, wider experiences and additional evidence regarding MUAC and WHZ use in the context of CMAM interventions, and to reach a shared understanding of the operational issues, existing and upcoming evidence and implications for programming.

This article summarises the final stage outcomes of the four-month consultation process, which involved 19 academic specialists and 10 operational organisations. The consultation sought to complement and inform the WHO Nutrition Guideline Advisory Group (NUGAG) process that was instigated in February 2012[2].

Objectives

The objectives of the consultation were:

1. To present and develop SCUK's and other operational agencies' understanding of the evidence on the utility of MUAC and WHZ in the context of treatment of SAM children 6-59 months of age in terms of:
   a. screening/referral, diagnosis/admission and coverage estimation
   b. monitoring SAM treatment progress in the individual child
   c. determining discharge
2. To improve understanding of the challenges of implementation faced by practitioners in order to inform guidance
3. To highlight knowledge/guidance gaps
4. To propose pragmatic 'stop-gap' recommendations for

[1] Mid Upper Arm Circumference and Weight -for-Height Z-score as indicators of severe acute malnutrition: a consultation of operational agencies and academic specialists to understand the evidence, identify knowledge gaps and to inform operational guidance. ENN, SCUK, ACF, UNHCR, 2012.

[2] http://www.who.int/nutrition/events/2012_NUGAG_meeting1to3Feb2012_Geneva/en/index.html

practice where there is a gap in current guidance but a demand for direction from programming staff
5. To consider practical application of recommendations

An original objective of the consultation included exploring the utility of MUAC and WHZ in the context of surveillance and prevalence estimation. However, this was subsequently considered to be beyond the scope of the current consultation (meriting a separate meeting). It was therefore dropped from discussions at the December meeting (see below) and no conclusions or recommendations are presented in this regard.

A premise for the consultation was that MUAC and WHZ are two imperfect indicators used as a proxy to assess nutritional status; there is no 'gold standard' anthropometric indicator.

Process

A discussion paper was produced by SCUK with support from the ENN and informed by discussions with Action Contre la Faim (ACF) and the United Nations High Commissioner for Refugees (UNHCR). The paper was shared with practitioners (operational agencies and individuals) in the first instance, revised to incorporate their feedback and then shared with academic specialists for input. A third version of the paper was then produced that incorporated academic specialist inputs. This informed a small meeting (31 participants, including ENN) held on the 5-6th of December 2012 to finalise the process.

Key findings on factors influencing technical opinions

It became clearer through the consultation that challenges to building a consensus of opinion around the use of indicators appeared to stem from the overall weakness of the evidence base, as well as issues relating to the diversity of contexts and situations within which programming takes place and the variety of actors involved. Of note:

- There is a dearth of published evidence on this topic and what is widely available does not answer all the questions while only providing partial answers to some of them. (The NUGAG guidance (2013) acknowledges the weak evidence base on which to base recommendations regarding MUAC and WHZ use).
- Different understanding of CMAM and how it can feasibly be carried out in any given context has a strong effect on how some of the issues are viewed, the choice of anthropometric indicator and programme strategy. For example, some consider CMAM to be a treatment for the acutely malnourished most at risk of mortality; for others CMAM is for the acutely malnourished that have any excess risk of mortality.
- Contextual features and differences add to the challenge of setting global recommendations, and in applying evidence generated in one situation to another. There is great variation in caseload profile (e.g. in terms of age and sex of those children enrolled in or eligible for CMAM programmes), as well as in the available resources and capacity to deliver programmes.

The question that was most consistently raised during the consultation was whether the evidence exists to support the exclusion of children with WHZ<-3 and MUAC≥115 from treatment.

Conclusions from the consultation

There was consensus at the December meeting on three major points:

- The primary objective of SAM management programmes is to identify and treat severely acutely malnourished children aged 6-59 months most at risk of short-term mortality
- MUAC and WHZ identify *different* children at risk of death from SAM
- On balance, MUAC appears to be the better predictor of mortality and has practical advantages. However the limitations and interpretation of the evidence base regarding this remain an area of considerable discussion.

Neither MUAC nor WHZ reveal themselves to be ideal predictors of mortality; however, of the two indicators, MUAC appears to show consistently better predictive power. Therefore, MUAC is the best anthropometric predictor of mortality currently available. The superior utility of MUAC over WHZ for community-based screening in most contexts was agreed.

The use of both WFH and MUAC together does not appear to increase the predictive power over MUAC alone[3].

An important outstanding question is whether treatment of SAM addresses the mortality risk observed and related to this, what are the responses and outcomes of children identified by different anthropometric criteria (MUAC or WHZ or both) treated for SAM.

Based on the best evidence currently available alongside practical considerations, it was agreed that the programmatic approach should prioritise MUAC in screening and admission. WHZ should be used as an additional admission criterion where feasible and where doing so does not compromise the coverage of children meeting the MUAC criterion. Six recommendations for practice were made (see Box 1), with 16 associated research priorities identified that would support improvement of future recommendations.

There remain a great number of limitations in the use of the existing evidence to answer the question "What is the most relevant strategy to identify the children most at risk and who will benefit from the treatment of acute malnutrition?"

The way forward

Actions identified at the meeting with some subsequent steps taken include:

Inform the WHO NUGAG recommendations. WHO participated in the consultation process and have been updated on the meeting and recommendations to inform the NUGAG recommendations, research needs, and an upcoming WHO manual on applying the NUGAG recommendations.

Encourage the continued conversation between operational agencies and academic specialists, including the development of potential research oppor- tunities and collaborations. An en-net forum was set up in Jan 2013 for those meeting attendees and others who wish to explore opportunities for research collaboration.

Agencies attending the meeting to develop their own internal guidance. SCUK and ACF have begun drafting internal guidance and this will be shared in due course on en-net.

Interest was expressed in a follow up face-to-face meeting in the future, ideally 'piggy backed' onto another meeting or integrated as a topic in a technical meeting. The ENN is pursuing the idea of setting up an inter-agency technical meeting and will advocate for a follow up discussion on indicators of SAM at this meeting

The full report of the consultation is available at **www.ennonline.net** Feedback is welcome on en-net, under 'Assessment' theme.

For more information, contact: Marie McGrath, **marie@ennonline.net**

Recommendations for practice

Recommendation 1:
At community level, there should be active case finding using MUAC to identify children requiring management of SAM

At health facility level (fixed or mobile), there should be systematic case finding using MUAC to identify children requiring management of SAM. If a child is not identified by MUAC, WHZ should be measured where it is feasible (capacity in terms of materials, time and trained human resources) without jeopardizing other essential health services; WHZ should be measured in particular where there are relevant clinical conditions, visible severe wasting, maternal concern and/or contextual factors (e.g. acute or prolonged emergency where more older children are affected).

Recommendation 2:
A threshold of MUAC<115mm for admission to SAM treatment applies to all children 6 months and above in all contexts.

Where WHZ is used, a threshold of WHZ <-3 for admission to SAM treatment applies to all children 6 months and above in all contexts.

Recommendation 3:
Weight gain should be used to monitor response to treatment for all children.

MUAC should be recorded in millimetres at each visit in operational research settings to establish whether MUAC monitoring can be conducted accurately and whether it is feasible for use in monitoring progress of children.

Recommendation 4:
There is no firm recommendation that can be made currently for discharge criteria, until there is more evidence from various contexts.*

Recommendation 5:
Children admitted under WHZ criterion should continue to be discharged when WHZ ≥-2 and free from oedema for 2 weeks, pending further research.

Recommendation 6:
The percentage weight gain should no longer be used as a discharge criterion.

**Current practices include discharge at MUAC >115mm when clinically well and no oedema and where there is follow up (such as to a SFP) or discharge at MUAC >125mm (NUGAG recommendation). Evidence is currently being collected to inform a recommendation on appropriate MUAC discharge criteria.*

[3] (2012). MUAC and weight-for-height in identifying high risk children. Field Exchange, Issue No 42, January 2012. p17. http://fex.ennonline.net/42/weight

S Hauenstein swan/ACF, Malawi

Global Prices, Local Diets: Reflections on repeated food price spikes and undernutrition

Summary of review[1]

Prepared by Samuel Hauenstein Swan and Jennifer Stevenson

Samuel Hauenstein Swan is Senior Policy and Research Advisor with Action Against Hunger (ACF-UK) and Jennifer Stevenson is a Policy Research Assistant at ACF-UK.

Three major food price crises since 2007 must force both practitioners and policy makers to take notice of the problem of food price volatility. However, not enough is known yet about just how severely the most economically disadvantaged, including households of undernourished children, are affected by this type of crisis. In this article we discuss the limitations of the current indicators used to measure the severity of food price crises, and argue that lessons learnt from addressing seasonal hunger can provide us with the means for effective mitigation programming at the local level.

The most common response by economically disadvantaged households following a price spike is to cut down on the quality of food. Case studies carried out by Action Against Hunger (ACF) in Sierra Leone, Ethiopia, Liberia and the Central African Republic following the 2007-2008 food price crisis[2] documented that people's overall calorific intake often remained the same, but there was frequently deterioration in people's dietary quality and micronutrient intake, with reductions in intake of meat, dairy products and greens in favour of cheaper, less nutritious foods.

Local witness statements on the effects of food commodity price increases in Monrovia, Liberia reveal some worrying patterns. Market retailers faced with higher costs are cutting the amount of food they sell for the same price, unbeknown to the consumer, for example by compressing the size of the cups foods are often sold in. As a result, women from the poorest families are unable to feed their families on the same budget. In some cases, their only option is to buy food on credit, a trend dubbed 'eat and worry later' by locals, creating an almost permanent state of debt.

While not statistically conclusive, much research supports such findings of deteriorating diets and reduced spending on essential non-food household items among the most economically disadvantaged population. Early warning systems need to be developed to document the quantitative relationship between global and local food prices, and hence access to adequate foods.

Documenting quantitative relationships

The FAO's Global Food Price Index is the indicator most commonly used to discuss food price crises. It uses a 'demand approach' which does not take into account either the income level or the share of income going towards buying food. Knowing the proportion of income spent on food, is, however, key in assessing the effect that prices have on nutrition levels. The effect of a food price increase on a high income household that spends 10% of its income on food is far less severe than the effects for a poor household spending 80% or more of its income on food[3]. The deprived household has limited options to reduce food expenditures and more often has to make cuts to non-food expenditure, such as healthcare or their children's education. Using a single price index can therefore dramatically underestimate the severity of price increases, as it does not recognise this income effect.

The Food Expenditure Ratio (FER)[4] offers a better alternative that captures the effect on income available for other vital aspects of living. The FER is defined as the expenditure needed to meet essential calorific requirements divided by resources available for non-staple food after consump¬tion of essential calorific requirements, and is measured for different population income brackets for compari¬son. Figure 1 shows that the indicator demonstrates very different impacts of food prices for different income levels.

The graph for low income households sees a far larger spike in the FER, coinciding with the 2008 food crises. This shows that food prices hit the poorest hardest because of the high proportion of their income spent on food, leaving them with few options but to reduce consumption on important non-food goods and services.

Calorific oversimplification of the nutrition dimension

The cost of staple foods is a commonly used proxy to predict whether households and its individual members access an adequate diet. Monitoring based on staple food price trends, however, has a serious bias towards calorific needs. Measuring diet by calorific intake alone does not take into account the intake of pro¬tein, vitamins and minerals or the level of absorption of food, making it a highly imperfect measure.

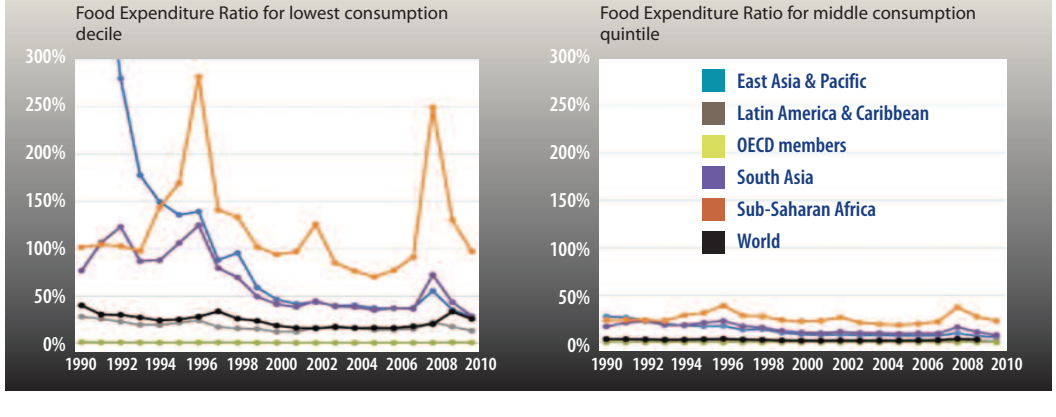
Considering these flaws, a more useful indicator would capture how the complete nutritional needs of a population are met as the cost of a healthy diet changes, especially for children under five years. The Cost of Diet Approach[5] could go some way to doing just this. It calculates the cost of a diet based on the dietary requirements needed for the ideal growth of a child (as opposed to energy only requirements) and is based on local prices and food availability, taking into account seasonal price fluctuations. It shows that a healthy diet is generally more expensive by a factor of 2 to 4 fold, than a diet measured in calories only. By combining the FER and the Cost of Diet Approach, the result¬ant indicator would consider both the effect of price changes on the income a household has to spend on goods other than food, and the cost of a healthy, nutritious diet. This would go a long way in helping us to understand how far vulnerable populations are affected by food price increases.

The final piece: comprehensive local monitoring

In addition to these issues, other nutrition and food security data should be collected all year round, rather than on an ad hoc basis to help us predict where there may be future outbreaks of malnutrition. Useful process indicators might include trends in the number of families reporting food shortages for that time period, monitoring the quality of diets, Individual Dietary Diversity Score (IDDS), school attendance (as a proxy for household level spending), in addition to the FER.

Once we build up systematic indica¬tors and monitoring, an improved assessment of the precise impact of food prices on poor populations can be made, and the information can be acted upon in a timely manner.

Figure 1: The Food Expenditure Ratio for each region of the world



[1] This article summarises arguments made by the authors in ACF's recent report: History Repeating Itself? Global food price volatility and its impact on malnutrition, ACF 2013.

[2] ACF (2008). Feeding Hunger, Feeding Insecurity. Available at http://www.actionagainsthunger.org

[3] Dorward, A,2011. Getting real about food prices. Development Policy Review, 29 (6). pp. 647-664.

[4] Dorward, A, 2012. The short and medium term impacts of rises in staple food prices Food Security, 4 (2)

[5] Save the Children, 2007. The Minimum Cost of a Healthy Diet. London: Save the Children UK

Action at the household level

Once we know how far the economically vulnerable are affected by food price spikes, there are simple interventions at the household level that can go some way to help households to maintain a healthy and nutritious diet throughout the year and in the face of higher market prices.

In Haiti, ACF has implemented a Fresh Food Vouchers programme, partly in response to rapid increases in price volatility in 2011. Families can exchange the vouchers for food and staple foods at local markets, enabling them to restore food security and simultaneously support the local economy. As a result of the programme, the nutritional status of participants and their children has increased, with improved dietary diversity scores and intakes of high quality micronutrients.

On the other side of the Atlantic, ACF's Health Gardens Project in the Kita region of Mali, has helped local women to cultivate their own vegetables, both for family consumption and for sale in markets. By giving women access to more varied diets, the project has seen great successes in reducing micronutrient deficiencies in their children and in the wider community.

Global inaction on food price volatility

Moving the focus to the global level, greater action is also needed to address the underlying trends driving greater international food price volatility.

The G20 focus on mar¬ket transparency and policy coordination since the 2007/08 food crisis has been narrow and failed to prevent grain prices increasing dramatically in 2012. Initiatives such as the Agricultural Markets Information System (AMIS), which has the mandate to create greater transparency around crop production, could be criticised for simply documenting the problems of food price volatility and production, rather than dealing with their root causes. Financial market speculation on the price of food, western policies on biofuel and land use and low grain stocks all need decisive and legally binding measures to reduce the likelihood of food prices spiking again.

We have argued in this article that a key lesson to come out of the numerous food price spikes is that current surveillance of the impact of food price vola¬tility on the poorest households is inconsistent and too scattered to allow for firm learning. Linear indicators of prices give too little indication of how different communities are affected. As well as seasonal price changes for different food commodities, the proportion of the household budget spent on food fluctuates greatly between the richest and poorest segments in communities.

The prevailing calorific measure to document the impact of price volatility, we argue, has contributed to the misinterpretation that bolstering food production is all that is needed. Three food price crises within a decade alongside stalling progress in the global reduction of hunger should be sufficient political impetus to tackle uneven distribution of access to food resources, which is the cause of much of the hunger in the world. As practitioners, our monitoring must be up to the task to identify areas of greatest need and document the progress made.

For more information, contact: Samuel Hauenstein Swan, email: **s.hauenstein-swan@actionagainsthunger.org.uk**

Download the full report at: **http://www.actionagainsthunger.org.uk**

HTP Module 23: Nutrition of Older People in Emergencies

The Harmonised Training Package: Resource Material for Training on Nutrition in Emergencies (the HTP) is a comprehensive documentation of the latest technical aspects of Nutrition in Emergencies (NiE). It is organised as a set of modules by subject, containing technical information, training exercises and a resource list for use in training course development.

Module 23 on Nutrition of Older People in Emergencies – a new module - has just been completed. It was produced and published by HelpAge International and NutritionWorks, funded by HelpAge International and in collaboration with the Global Nutrition Cluster (GNC).

The HTP and associated resources are hosted on the GNC website, **http://www.unicef.org/nutritioncluster**, the UN Standing Committee on Nutrition (UNSCN) website **http://www.unscn.org/en/gnc_htp/** and ENN website, **http://www.ennonline.net/htpversion2**

The GNC website also hosts a series of powerpoints prepared to complement the HTP modules as part of a GNC Capacity Strengthening Project, where the whole HTP package was piloted in various countries. The project report provides lessons learned from the experience in each country.
Access at: http://www.unicef.org/nutritioncluster/index_training.html#HTP

Summary of Field Exchange evaluation

From July to November 2012, the ENN undertook an evaluation of Field Exchange (FEX) use amongst its readers. The aims were to establish how FEX is used to inform programming, policy and research, to explore reader preferences for online and print access and to examine perceptions of the ENN and exposure to/engagement in other ENN activities.

The review was carried out for ENN by Bibi Tolulope Oni & Illyahna Johnson, both studying degrees in Nutrition at Oxford Brookes University, and Tara Shoham, who is studying International Development at the University of Sussex. The review was supported by Thom Banks, ENN Desk Operations Officer.

Method

The review took the form of an online survey that was highlighted in FEX, on the ENN website, ennet and Twitter. Targets were invited to complete the online questionnaire, with the option for email or phone call feedback if preferred.

Limitations

The survey was administered online which limited feedback from those with difficult online access (a key target audience of FEX print copy). While the evaluation survey was highlighted in print edition and telephone interview (ENN call back) offered as a substitute, this option was poorly taken up. An additional telephone questionnaire was planned with a sample of participants. This proved a challenge for the evaluation team to secure conversation time with targets, thus the evaluation has been largely based around the online feedback.

These findings should be interpreted as reflecting the experiences of a sub-group of Field Exchange users, biased towards those with online access.

Key findings

A total of 170 individuals completed the questionnaire, of whom 41% were based in Africa, 27% in Europe and 21% in Asia. North America accounted for 6% of respondents, Australia 3% and South America just 2% of the overall readership. Nutrition/emergency nutrition advisors/ staff were the dominant sectors of expertise of those responding; other professionals included senior management, academics and medics in areas including health, food security and livelihoods.

Use of FEX

The majority (71%) highlighted the significant contribution that FEX makes in updating their knowledge of the sector. Some of the topics in FEX which readers had learned from as well as valued most, included:

- Debates regarding assessment methodologies such as MUAC/weight-for-height
- Nutritional assessment, growth monitoring and various research methodologies such as coverage surveys, area sampling, outcome evaluation such as LQAS & SQUEAC
- New emergency nutrition product development, cash/food transfers
- Programme implementation, challenges,

progress and success of new field-based research and training materials especially in areas of CMAM, SAM and IYCF in emergencies
- Linking nutrition with agriculture and safety nets, micronutrients supplementation and fortification
- Updates on international response to humanitarian needs and awareness of other activities done by other agencies in the country and rural areas
- Useful for reading up on country-specific articles in preparation for working in the country such as what has been done and current situation.

Topics that respondents would like to see covered more extensively in FEX included child and mother malnutrition, breastfeeding, water sanitation and hygiene (WASH) initiatives, obesity in developing countries, the effects of communicable diseases on nutritional status. and articles with a broader food security scope, reflecting the links between food poverty and economic development. Outstanding challenging areas were breastfeeding support and artificial feeding in emergencies, CMAM scale-up and programming.

Respondents would welcome more experiences from parts of the world other than Africa such as the Indian subcontinent, Afghanistan, Middle East, Latin America and the former Soviet Union.

Contribution to FEX

Over one quarter (28%) of respondents had contributed written content to at least one publication of FEX. Reported advantages of doing so included the accessibility of the publication and its worldwide reach. They praised the easy process of dissemination, which has been described as "An easier, quicker way to get information out to a large key audience" and "Is a unique platform for sharing practical field experiences."

Among the 72% of subscribers that had never contributed to an article in FEX, the main reasons given were lack of time, [perceived] inadequate valuable experiences to share and limited knowledge of the submission process. A small number felt that they were not proficient in the English language skills required for writing an article.

Influence on programming, policy and research

About 40% of the respondents reported that FEX has influenced their agency programming or policy. FEX "kick-started" discussion within agencies about issues raised and acted as a catalyst for change. Experiences shared have informed the development of various projects that have yielded much success in otherwise challenging situations.

FEX was considered an important information source that was used to inform policy decisions, examples including help in amending public health policy, such as promotion of sub-contracting local partners to help reach remote areas and developing agriculture policy in response to nutrition forecasts. It has also helped inform NGOs to amend their policies to favour more sustainable programmes. Published experiences have also been used in developing, implementing and improving training packages.

There was clear consensus that FEX helped to clearly identify important areas for research and highlight important experiences gained through different programming. Overall, 37% of respondents were researchers.

"Most of my research ideas have emerged through research undertaken by FEX. This has especially included areas of CMAM, scale-up, livelihood programming, early warning, treatment and prevention of moderate malnutrition".

Of note, however, 30% of researchers reported that publishing research findings in FEX had some disadvantages, citing competing interest with other scientific/academic journals and FEX may be viewed as a less credible publication due the lack of a peer review process.

Print and online access and preference

Nearly one-third of those surveyed (32%) had been receiving print copies for 5 years or more. Sixty percent of respondents accessed FEX content online and 21% accessed online content at least once a week. Of those that did not access FEX online, half (51%) attributed this to a "preference for print copy" while 15% stated it was due to a lack of online access and 13% of readers are now accessing FEX via smart phone or tablets.

Receiving print copies of FEX was rated as the most desirable format among respondents. While acknowledging the cost implications, respondents appreciated the accessibility of print – they can read it at times convenient to them and share between colleagues. It also catered for those without easy access to computers or the internet.

Perception of the ENN

The survey feedback continually highlighted how FEX creates a platform for effective communication, sharing of ideas and personal experiences between a multitude of professional bodies, from field workers and practitioners to policy makers. Many commented on ENN's ability to bring together a network of agencies with shared interests. It is *"an impartial sharing body, useful and valued voice to lobby for open debates and policy change when it may be difficult to do so as a single agency or where there is no time to create a network of agencies with shared interests".*

Other's considered ENN has an important role in providing a vital link between the field, global activities, governing of NGOs and UN agencies and policy development:*"ENN plays a significant role in the collating experience, facilitating the process of specific technical support for different areas, research, publication and dissemination of key outcomes and lesson to be learnt. ENN plays a huge part in knowledge sharing and providing technical clarity which can be otherwise limited in the field of nutrition".*

Respondents felt that without ENN there would be a lack of open access to learning and sharing of vital information, and unawareness of detailed key experiences of programmes taking place in different countries, which are useful for knowledge management in field practices. They also identified that without ENN there would be an increase in duplicated errors in practices and programming in humanitarian and developmental work, as success stories would not have been easily distributed globally. ENN provides a window into potential gaps in knowledge. It also acts as a centralised space for those with limited access to academic libraries, as it publishes well-researched articles addressing relevant issues in one space.

Only half (53%) of respondents were aware of ENN activities other than FEX. Amongst these, the most commonly known was 'infant and young feeding in emergencies' (92%). Around half were aware of operational research, special supplement publications, meeting facilitation/ reports and en-net.

Respondents would appreciate ENN becoming involved in activities such as provision of training, organisation of seminars, regional workshops, and capacity building programmes (in southern and developing nations). Specifically, suggestions were made for more training in data analysis, access to nutrition data analysis programmes, and methods for assessing nutrition and health status aimed at researchers. More guidance on tools for CMAM and ready to use supplementary foods (RUSF) and better integration of implemented programmes worldwide was also highlighted. Sponsorships, scholarships, training certifications and awareness session were mentioned for students. It was suggested that *"ENN should engage more with local humanitarians in developing countries. As of now, more focus is given to international agencies."*

One quarter (24%) of respondents expressed interest in receiving regular updates from ENN via email including were more regular updates about jobs, consulting opportunities and research opportunities.

Conclusions

This evaluation reflects the experiences of a sub-group of FEX users and provides valuable insights into their use and opinion of Field Exchange. Findings from this evaluation will inform ENNs planning for Field Exchange in 2013 and under consideration are:
- Potential for 'early' or 'bonus' FEX content online between print runs
- Regular email updates, linking to ENNs sister publication, Nutrition Exchange, that employs this method on a quarterly basis
- Implications of format change to Field Exchange (A4) in terms of article length, layout, etc.
- Clearer guidance on the process for article submission and support the FEX editorial team can offer
- Stronger dissemination regarding FEX online access and on other ENN activities using multi-media
- Possible peer reviewed section of FEX
- Increase number of national contributors to FEX content, linking closely with Nutrition Exchange

As discussed, this evaluation had significant limitations and is not necessarily or likely representative of all print and online users. A means to evaluate more thoroughly the experiences and needs of FEX readership will be pursued by ENN in 2013 as part of a larger piece of work within ENN to strengthen monitoring and evaluation.

The ENN welcomes feedback at any time regarding FEX or other ENN activities. Any comments or suggestions you have, please share them with Thom Banks, thom@ennonline.net

Something for everyone: three perspectives from a recent coverage assessment in Pakistan

Summary of review[1]

Lady Health Worker and her husband (teacher) working as volunteers

S Guerrero/ACF, Pakistan, 2013

Interview by Saul Guerrero, ACF

Action Against Hunger, in collaboration with the Coverage Monitoring Network (CMN) Project, UNICEF Pakistan and the Nutrition Cluster and its partners, recently carried out a coverage assessment in one of its supported CMAM programmes in Sindh Province, Pakistan. The assessment, supported by Mark Myatt (independent consultant), served to provide on-the-job training on the SQUEAC method to a mixed group of non-governmental organisation (NGO) and UN staff. But what was the experience of doing a coverage assessment like for ACF staff at programme, country and HQ level? We asked them how their view of the programme has changed since the assessment and which parts of the process they would like to see integrated into their way of working.

	How has the SQUEAC changed the way you now look at the programme?	**Which part of the process are you most interested in seeing continue routinely?**
 **Shahid Fazal,** ACF Nutrition Coordinator, Pakistan	This new methodology has changed our way of thinking and has proven that evaluation of nutrition programmes can be done on a routine basis along with timely reforms. We get a clear insight into the barriers and can recognise the actual contribution of specific 'boosters'[1]. It is like turning the stone upside down and going deeper into programme planning and implementation modalities.	The tally sheets give a wonderful glance at the trends of quality indicators such as mid-upper arm circumference (MUAC) on admission, travel times, admissions and exits over time. Incorporating some of these indicators (along with the more common Length Of Stay and Average Weight Gain) will give us a qualitative image of the programme on a weekly/monthly basis.
 **Chris Golden,** ACF Deputy Country Director, Pakistan	The SQUEAC methodology, and Mark [Myatt] as a presenter, makes a persuasive case to reconsider our existing assessments and gives a new appraisal of what they teach us, but also what they don't reveal due to their structure and often limited focus. I would say this process has definitely opened the eyes of many of the people who participated in it.	The process provided the teams not only with training on the methodology of SQUEAC but also with good advice on implementing thorough assessments that will produce robust results.
 **Cecile Basquin,** ACF Nutrition Advisor, USA	Prior to the SQUEAC investigation in T.M. Khan district, it was difficult to evaluate how efficient our community mobilisation approach was. Now we know that the work of Community Volunteers is acting as an important booster to access. This SQUEAC exercise allowed us to identify what works and therefore gave us confidence we can replicate the approach. Very impor- tantly, we also learned about pro- gramme areas that need to be stren- gthened or improved, and resulted in programmatic recommendations and concrete actions points.	The SQUEAC analysis has led the team to have a more critical view on their work and now they have a different way of looking at routine CMAM data. The reflection that was done while building the hypothesis about coverage (Stage 1) is definitely something that should be done on a more regular basis and with all team members. Doing this 'brainstorming' continuously with the key determinants of coverage in mind and having this critical way of thinking regularly, is likely to contribute to increased quality and coverage, so we can only encourage it.

[1] See field article in this issue 'Boosters, Barriers, Questions: an approach to organising and analysing SQUEAC data'.

Why coverage is important: efficacy, effectiveness, coverage, and the impact of CMAM interventions

By Mark Myatt and Saul Guerrero

Mark Myatt is a consultant epidemiologist. His areas of expertise include surveillance of communicable diseases, epidemiology of communicable diseases, nutritional epidemiology, spatial epidemiology, and survey design. He is currently based in the UK.

Saul Guerrero is the Head of Technical Development at Action Against Hunger (ACF-UK). Prior to joining ACF, he worked for Valid International Ltd. in the research, development and roll-out of CTC/CMAM. He has worked in over 20 countries in Africa and Asia.

Introduction

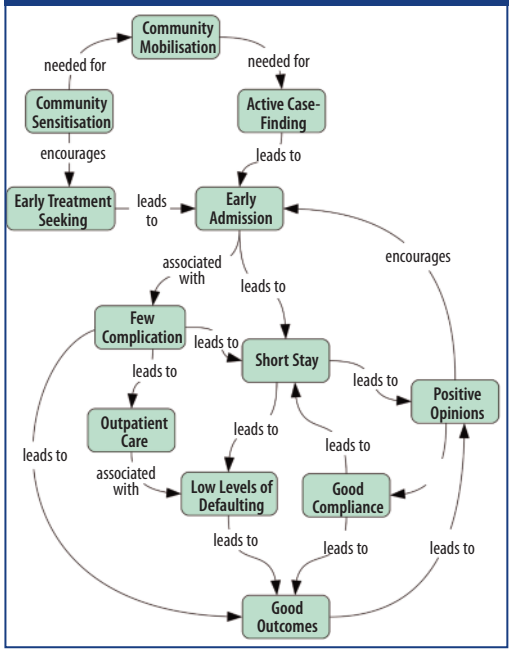
Community-based Management of Acute Malnutrition (CMAM) has reached a crucial point in its evolution. What began as a pilot study just over a decade ago, is now a cornerstone of nutrition policy in over sixty countries. In 2011, for example, CMAM interventions in these countries treated almost two million severely wasted children. As the scale-up of CMAM services continues, it must provide the level of quality that proved so decisive in CTC / CMAM displacing the previous centres-based inpatient treatment paradigm. How should the quality of CMAM services be defined? The importance of coverage has been highlighted but the rationale behind the importance attributed to coverage is seldom explained. This article describes the importance of coverage and the reasons why it should be used to assess the quality of CMAM services.

Efficacy

The *efficacy* of the CMAM treatment protocol can be defined as how well the CMAM treatment protocol works in ideal and controlled settings. Efficacy is measured by the *cure rate:*

$$Cure\ Rate\ (\%) = \frac{Number\ Cured}{Number\ Treated}\ x\ 100$$

Figure 1: Relations between factors influencing coverage and effectiveness



This is usually estimated in a clinical trial or by observing the cure rate in the set of least severe cases admitted to a CMAM programme and following the CMAM treatment protocol precisely.

The cure rate of the CMAM treatment protocol is close to 100% in *uncomplicated incident cases*.

Examples of uncomplicated incident cases are:

- Children with MUAC between 110 mm and 114 mm and without medical complications.
- Children with mild nutritional oedema and without medical complications.

The cure rate associated with the CMAM treatment protocol has changed little since it was first proposed. For example, the *per-protocol* cure rate observed for uncomplicated cases in an early CTC programme in Ethiopia was approximately 94%[1].

Effectiveness

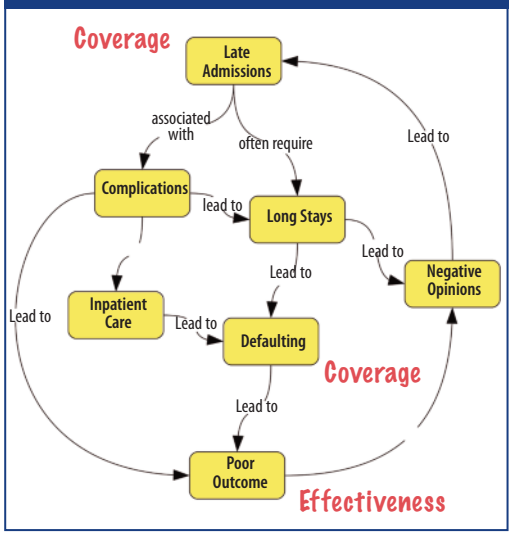
There is little room for large improvements in the efficacy of the CMAM treatment protocol. We cannot significantly change the efficacy of the CMAM treatment protocol but we can change the effectiveness of the CMAM treatment protocol. The *effectiveness* of the CMAM treatment protocol can be defined as the cure rate observed in an entire beneficiary cohort under programme conditions.

Effectiveness depends, to a large extent, on:

Severity of disease: Early treatment seeking and timely case-finding and recruitment of cases will result in a beneficiary cohort in which the majority of cases are uncomplicated incident cases. The cure rate of the CMAM treatment protocol in such a cohort is close to 100%. Late treatment seeking and weak case-finding and recruitment will result in a cohort of more severe and more complicated cases. The cure rate in such a cohort may be much lower than 100%.

Compliance: Programmes in which the beneficiary and the provider adhere strictly to the CMAM treatment protocol have a better cure rate than programmes in which adherence to the CMAM treatment protocol treatment is compromised. Poor compliance can be a problem with the beneficiary (e.g. selling RUTF or sharing RUTF within the household) or a problem with the provider (e.g. RUTF and drug stock-outs) and both have a negative impact on effectiveness.

Figure 2: A vicious coverage-effectiveness cycle



Defaulting: A defaulter is a beneficiary who was admitted to a programme but who left the programme without being formally discharged. Defaulting early in the treatment episode is the ultimate in poor compliance.

An effective programme must, therefore, have:

Thorough case-finding and early treatment seeking: This ensures that the beneficiary cohort consists mainly of uncomplicated incident cases that can be cured quickly and cheaply using the CMAM treatment protocol.

A high level of compliance by both the beneficiary and the provider: This ensures that the beneficiary receives a treatment of proven efficacy.

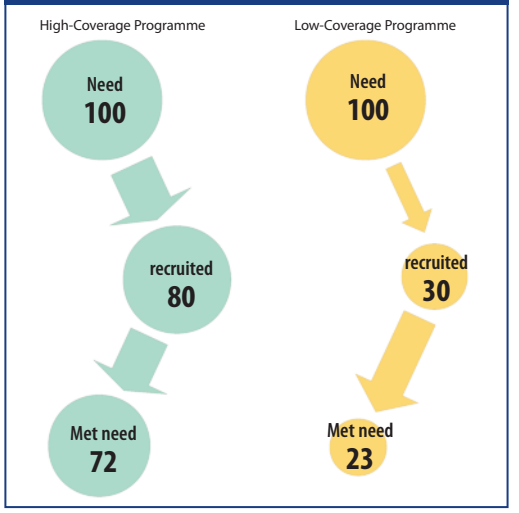
Good retention from admission to cure (i.e. little or no defaulting): This also ensures that the beneficiary receives a treatment of proven efficacy.

Impact and coverage

Meeting need (also known as impact) requires both high effectiveness and high coverage:

Impact = Effectiveness x Coverage

Figure 3: Effect of coverage on met need (impact) in two programmes



Coverage can be expressed as:

$$\text{Programme Coverage (\%)} = \frac{\text{Number in the programme}}{\text{Number who should be in the programme}} \times 100$$

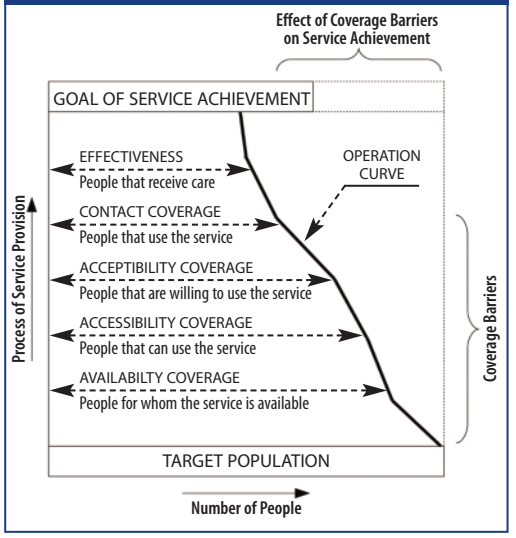
Coverage depends directly on:

Thorough case-finding and early treatment seeking: A case that is not admitted into the programme is a non-covered case. Late admissions are coverage failures because they will have been non-covered cases for a considerable period of time before admission.

Good retention from admission to cure: This is the absence of defaulting. Defaulters are children that have been admitted to the programme but leave the programme without being formally discharged, without being transferred

[1] The data for this result are taken from Table 3 (page 14) of: Collins S, Community-based therapeutic care. A new paradigm for selective feeding in nutritional crises, HPN, London, Volume 48, November 2004 which shows 440 cases discharged as cured with five deaths in cases admitted without complications or prior hospitalisation. Half of the 49 cases reported as non-recovered after four months in OTP were assumed to be uncomplicated cases. Transfers to hospital or stabilisation centre (93 cases) were classified as complicated cases. This is a per-protocol analysis and excludes defaulters (57 cases). It should be noted that this programme admitted children with MUAC < 110 mm.

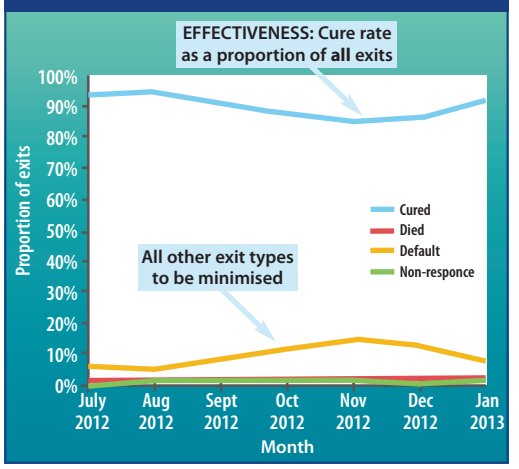
Figure 4: Tanahashi coverage diagram illustrating the effect of different types coverage barrier on service achievement/met need/impact



In the Tanahashi model of coverage, impact (SERVICE ACHIEVEMENT) is:

SERVICEACHIEVMENT = CONTACTCOVERAGE X EFFECTIVEENESS

Figure 5: Estimating effectiveness from programme exit data



Effectiveness at end of January 2013 was estimated to be 92%.
Coverage at end of January was estimated (using SQUEAC) to be 63%.
Impact can be estimated as:

Impact = Effectiveness x Coverage = 92% x 63% = 58%

Data courtesy of ACF (Pakistan)

to another service, or without having died. Defaulters are, therefore, children that should be in the programme but are not in the programme. This means that high defaulting rates are associated with low programme coverage.

Coverage also depends indirectly on:

Thorough case-finding and early treatment seeking: This ensures that the majority of admissions are uncomplicated incident cases, which leads to good outcomes *(Figure 1)*. Late admission is associated with the need for inpatient care, longer treatment, defaulting, and poor treatment outcomes (e.g. non-response after long stays in programme or death). These can lead to poor opinions of the programme circulating in the host population, which may lead to more late presentations and admissions and a cycle of negative feedback may develop *(Figure 2)*.

A high level of compliance by both the beneficiary and the provider: This ensures that the beneficiary receives a treatment of proven efficacy leading to good outcomes and good opinions of the programme *(Figure 1)*.

Good retention from admission to cure (i.e., little or no defaulting): This also ensures that the beneficiary receives a treatment of proven efficacy leading to good outcomes and good opinions of the programme *(Figure 1)*.

Coverage and effectiveness depend on the same things and are linked to each other:

Good coverage supports good effectiveness. Good effectiveness supports good coverage. Maximizing coverage maximises effectiveness and met need.

The implications of:

Impact = Effectiveness x Coverage

are illustrated in *Figure 3* and *Figure 4*. Programmes with low coverage fail to meet need (i.e. have limited impact). Programmes that seek to deliver a high impact can only do so by achieving high levels of coverage.

The key measure of programme quality is impact:

Impact = Effectiveness x Coverage

This means that monitoring and evaluation (M&E) activities in CMAM programmes should concentrate on measuring both effectiveness and coverage. Effectiveness can be measured using a simple *intention to treat* analysis of programme exits *(Figure 5)*. Over the past decade a number of low-resource methods capable of evaluating programme coverage, identifying barriers to service access and uptake, and identifying appropriate actions for improving access and programme coverage have been developed and tested. The Coverage Monitoring Network (CMN) has been established to assist non-governmental organisations (NGOs), United Nations (UN) agencies, and governments use these methods to help maximise the impact of CMAM programmes.

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Reaction to the article on the double burden of obesity and malnutrition in Western Sahara refugees

Dear editors

One of the key challenges that the nutrition community faces in this century is the double burden of nutrition. In many countries, it is found that acute malnutrition continues to pose a public health problem while overnutrition is becoming more and more of a problem as well. The article in the last issue of Field Exchange (No. 44, December 2012) on the study by Grijalva-Eternot et al[1] shows that the problem of co-existence of obesity and malnutrition even appears to be present in a refugee camp setting.

The Sahrawi camps in the desert area in the far south-west of Algeria are one of the most protracted refugee situations worldwide that has existed for over 35 years. International support has always been provided on a 'care and maintenance' basis, with most of the funding going to the food and nutrition sector. As part of a recent consultancy assignment in the Sahrawi refugee camps, I looked into the findings of some key food and nutrition studies in the Sahrawi camps[2].

These studies show that most Sahrawi refugees still depend on food aid, but that there actually is an unusually varied basket of food commodities. There is a full general ration distribution (2100 kcal p.p.p.d), complementary year-round distribution of rations of green tea and dried yeast, and a separate distribution system for fresh vegetables. An additional programme exists for provision of fresh foods during Ramadan. This is complemented by programmes for treatment of severe acute malnutrition (SAM), treatment of moderate acute malnutrition (MAM), supplementary feeding for pregnant/lactating women, targeted supplementary feeding for selected elderly and handicapped, distribution of NutriButter/micronutrient powder (MNP) in relation to the 1,000 days approach, and a school feeding prog-ramme.

It was shown in the studies mentioned above that the core of the diet is coming from food aid and the complementary nutrition programmes. The package is well-balanced in terms of nutrients. It is noteworthy that dietary diversity was rated to be sufficient. To some extent, this is because most refugees have access to additional food on top of what is provided through the aid agencies. This is through engagement in livestock keeping, bartering of food aid for other items, buying food in shops and on the market (using income from remittances and through daily labour), produce from small family gardens, and through sharing and other forms of social solidarity among relatives and neighbours.

In this situation, the ultimate solution to the problem of the double burden of malnutrition boils down to behavioural changes. The solution for addressing malnutrition among children lies in concerted intensive education campaigns on appropriate infant and young child feeding practices. Similarly, the problem of obesity and anaemia among women will have to be addressed through spreading information about what constitutes a healthy diet. Evidently, at some point in time, the Sahrawi will need to abandon their long-held tradition of fattening of women during periods of ritual overfeeding, reduce their excessive consumption of sugar, and find ways to build in low-intensity exercise in their daily life, even in a camp setting. However, as experience from elsewhere in the world shows, changing dietary and health practices is a difficult and long-term process that usually does not show quick results. In the meantime it will be necessary to continue the distribution of fortified food with various forms of micronutrient supplementation in the Sahrawi camps. Also, community based management of acute malnutrition (CMAM) is a service still required for treatment. I am not sure that we have an appropriate 'quick fix' in our nutrition toolkit for reducing obesity in non-Western settings?

Regards
Annemarie Hoogendoorn

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[1] Grijalva-Eternod CS, JCK Wells, M Cortina-Borja et al (2012). The Double Burden of Obesity and Malnutrition in a Protracted Emergency Setting: A Cross-Sectional Study of Western Sahara Refugees, PLoS Med 9(10): e1001320. doi:10.1371/journal.pmed.1001320.

[2] DARA (2009). Evaluation of the DG ECHO assistance to the Sahrawi camps 2006-2008, http://ec.europa.eu/echo/files/evaluation/2009/Algeria_Final%20report_ESRC.pdf
WFP/UNHCR/ENN (2011). Nutrition Survey Western Sahara Refugee Camps, Tindouf, Algeria, Survey conducted October-November 2010, report finalized April 2011.
UNHCR/WFP (2012). JAM Algeria, Joint needs assessment of Sahrawi refugees in Algeria, 4-11 October 2011 http://documents.wfp.org/stellent/groups/public/documents/ena/wfp249728.pdf

Transforming awareness and training into effective CMAM performance

By Maureen Gallagher and Armelle Sacher

Maureen Gallagher is the Senior Nutrition & Health Advisor ACF USA based in New York. She has worked for the last 10 years in nutrition (especially CMAM integration into health systems, community mobilisation and coverage), food security and hygiene promotion programming. She has workded in Niger, East Timor, Uganda, Chad, DRC, Burma, Sudan and Nigeria.

Armelle Sacher has worked in different cultural contexts while with ACF, including countries in Africa, Asia and the Caribbean. She has focused specially on strengthening community mobilisation and health promotion and as a graphic designer, has created adapted communication tools for illiterate people.

The authors would like to thank the Yobe State Primary Health Care Management Board (YPHCMB) health workers and communities for their commitment to CMAM and for testing and inputs into the tools developed as part of the initiative. Thanks also to ACF's Regional Training Centre experts, Paula Tenaglia and Faye Ekong, for their delivery of various trainings of trainers (ToT) and ToT manuals revisions. Thank you to Saul Guerrero and Silke Pietzsch for their contributions to the article. Finally, the authors would like to acknowledge the contribution of the European Commission Humanitarian Office (ECHO) for their support of the CMAM activities in Yobe and Jigawa States.

In February 2011, Action Against Hunger ACF International (ACF) began supporting a sustainable approach to integration of community-based management of acute malnutrition (CMAM) in three Local Government Areas (LGAs) in Yobe State, Nigeria. This was undertaken with support from the European Commission – Humanitarian Aid & Civil Protection (ECHO) and in close collaboration with the Yobe State Primary Health Care Management Board (YSPHCMB).

Since Feb 2011, the ACF approach has evolved in two phases, a basic approach followed by a revised approach, detailed below.

Phase 1: Basic Approach (February – December 2011)

A key component of CMAM, to ensure early detection, referral and access, is community mobilisation. In preparation for integrating CMAM into routine services in Fune, Damaturu and Potsikum LGAs, ACF recruited a Community Team with three Community Officers to support the health system in awareness activities and selection and training of Community Volunteers (CVs). Key activities included:

- Awareness meetings
- CV trainings
- Rapid Socio Cultural Assessment (RSCA)
- Semi Quantitative Evaluation of Access and Coverage (SQUEAC investigation)

In total, over 900 community leaders and CVs participated in awareness and training activities.

Community awareness meetings were held in all targeted health facilities, where traditional, religious and political leaders from the catchment area gathered. During the meetings, the ACF team made presentations about ACF the organisation and its mandate, about malnutrition and treatment, and described the planned CMAM activities to be implemented in collaboration with the local health system. At this stage, community leaders were also requested to select CVs from their respective communities to support the detection and referral of malnourished children to treatment. The voluntary nature of the work was explained with a strong emphasis on the importance of ensuring that all entitled children receive treatment. Discussions were also held about leaders' roles and responsibilities so that these were jointly defined.

After compiling CV lists from community leaders for the different health facilities in collaboration with the health worker, ACF conducted CV trainings in all health facilities on CMAM detection, referral and follow-up roles of volunteers. Training included sessions overviewing CMAM, the roles and responsibilities of CVs and a demonstration on how to take mid-upper arm circumference (MUAC) measurements. Materials used included photos of malnourished children, samples of Ready to Use Therapeutic Food (RUTF) sachets, MUAC tapes and flipchart/markers for brainstorming and lecture sessions. The training was participatory and conducted in the Hausa language. CVs were provided with kits for awareness and detection, including the laminated photos illustrated in Figure 1 (as per national guidelines) and a MUAC tape.

A *RSCA* was also conducted during Phase 1 for identification and understanding of key information, information channels and community perception of acute malnutrition. This led ACF to revise target groups for training (detailed below in Phase 2) and diversify locations for message delivery.

The *SQUEAC* investigation conducted in Fune LGA in August 2011 found a point coverage of 33%, which is below the target threshold of >50% coverage. One of the key barriers to access identified was limited awareness of both malnutrition and CMAM services available in the various health facilities. Discussions with the field team about barriers to coverage and observations at meetings and trainings identified a number of important issues, including:

- Low literacy rate of CVs and leaders
- Some communities (especially Kanouri women) were not proficient in Hausa
- Training of large groups of CVs prevented everyone from getting practice with MUAC measurements (more participants were present than on the original lists)
- Lack of visual materials and tools to convey messages to CVs and support their detection, referral, follow-up and awareness activities in the communities
- Need to train a wider group of stakeholders for information dissemination

As a result of the review, ACF further developed its approach (Phase 2) so that it was better adapted to the needs of CVs and communities who would then be more engaged in trainings.

Phase 2: Revised Approach (January – April 2012)

In order to broaden and strengthen CMAM community mobilisation, new activities were added:

- Training of key stakeholders (traditional birth attendants (TBAs), traditional healers and hairdressers)
- Training of trainers (ToT) in the ACF team to strengthen their presentation, facilitation and session development skills
- Development of visual materials for awareness meetings, training and community volunteers
- Preparation and practice of awareness meetings
- Preparation and practice of CV trainings with new techniques

Training of other key stakeholders was highly appreciated, especially by the traditional healers, who explained that they can help in referring children, as people often seek traditional treatment first. Religious leaders were also trained with a follow-up meeting during Friday prayer days.

A 5-day ToT was conducted with the ACF and LGA teams that involved sessions on the adult

Figure 1: Laminated photos used in training sessions in Phase 1

National Training Manual for Community Mobilisation developed by the FMOH

Figure 2: Visual materials used in trainings and meetings in Phase 2

Illustrations (Armelle Sacher/ACF), training material signs of marasmus (Gwenaëlle Garnier, Aurélia Lendi, Armelle Sacher /ACF)

Figure 3: Cards illustrating food groups used in training

Illustrations and local food (Armelle Sacher /ACF)

learning cycle, introduction to various interactive training methods, training session development, session preparation and practicals with feedback. To support those returning to field work in the challenge of applying newly acquired skills, a communication specialist worked closely with field teams – particularly in the development of visual materials for training (see pictures in Figure 2 which were printed on A2 vinyl for use in trainings and meetings). The consultant also supported teams to prepare and practice awareness and training sessions before these were conducted with beneficiaries in the field. Activities included increased role playing and new card games (see cards on food groups for Nigeria in Figure 3).

Field teams were filmed and during one-on-one feedback sessions, were given pointers for improvement and followed up to ensure progressively stronger and more effective delivery. Feedback from participants was positive as they reported greater enjoyment and understanding in trainings. Health workers felt appre- ciated as they were presented as leaders of CMAM in their areas and recognised by the communities as key to the provision of treatment.

The ACF teams were also enjoying the activities more than before as a result of interactions and use of new materials and techniques. Language issues were also addressed and new members joined the team (from three to six community officers) to ensure trainings in Kanouri and Fofoldi could be delivered. This also helped with gender balance (one male, one female community officer per LGA). CVs were provided with a CV tool kit of visual materials to support their community awareness activities in line with visual materials used during trainings, in A4 form (see a sample on how to use RUTF in Figure 4). The final kits developed for CV training (10 vinyl A2 designs) are shown in Figure 5.

A SQUEAC investigation conducted in June 2012 in Damaturu LGA, where the revised approach was implemented, indicated point coverage of 50.4%. A follow-up of Fune LGA will be done in 2013 (delays resulted because of the security situation) to evaluate more accurately possible impact of the evolved community mobilisation approach.

Moreover, a *training toolkit* for LGA and health facility workers, including visual aids, matching games, etc. supported by a facilitator's manual, was created and produced in order to support a specific ToT for community mobilization in Northern Nigeria. Trainings were conducted for Jigawa, Zamfara, and Katsina State and LGA health teams as well as partners (Save the Children, UNICEF) in September 2012.

Conclusions

The experience in the three LGAs in Yobe State has demonstrated a potential strategy to enhance community mobilisation leading to increased CMAM coverage. Strong follow-up in preparation and for delivery of trainings is vital in ensuring new skills are applied and reviewed with clear evidence of improvement captured through films and documentation. The next stage will involve strengthening techniques of LGA and health facility workers as they take on an increasing leadership role in training. In this type of programme, training is a vital activity and if knowledge, skills and attitudes are impressed through adapted learning, this will lead to improved participation and commitment of communities, thereby promoting quality and fuller coverage of CMAM. The training activities outlined here will be further complemented with theatre about CMAM on market days and radio programmes. However, it remains necessary to continuously review, re-evaluate, diversify and refine community mobilisation activities to ensure effective information adoption by communities and thus better CMAM service access for malnourished children.

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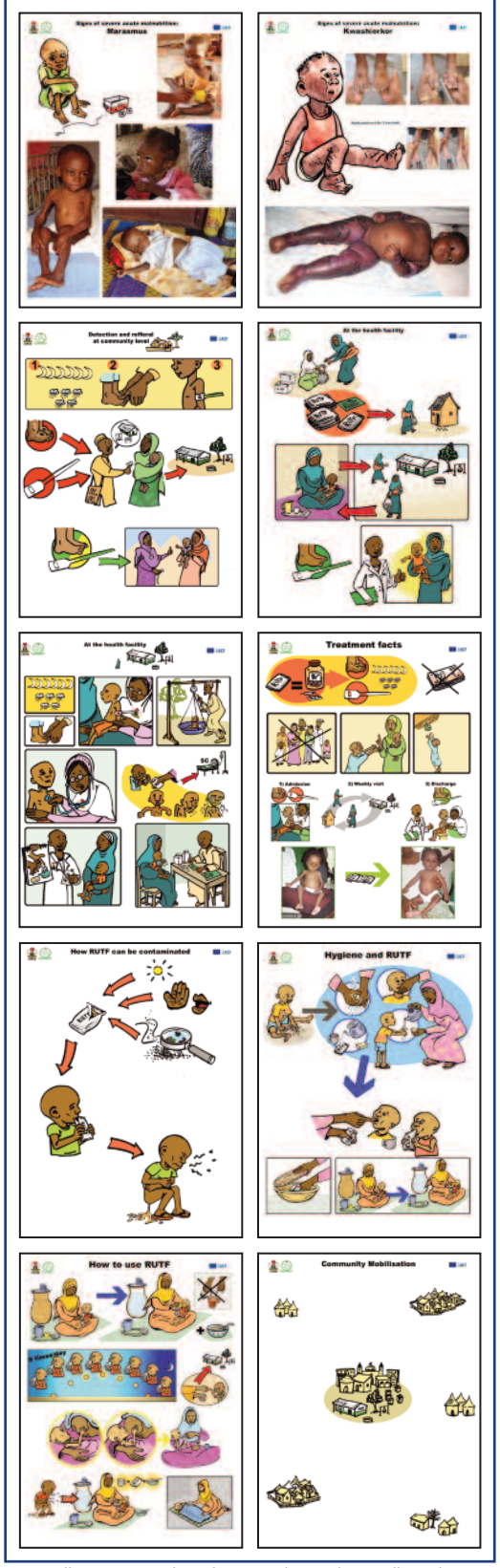
Figure 4: Illustration of how to use RUTF – part of toolkit of visual materials for Community Volunteers

Illustrations (Armelle Sacher/ACF), CMAM treatment facts (Emilie Robert /ACF)

Figure 5: CV training tools developed and printed on A2



Gwenaëlle Garnier, Emilie Robert, Aurélia Lendi, Armelle Sacher/ACF

Evaluation of CMAM Pakistan: UNICEF country case study

Summary of evaluation[1]

A flood affected community in Khyber Pakhtunkhwa province

Amjad Jamal/WFP Pakistan

CMAM has been implemented in Khyber Pakhtunkhwa province of Pakistan, with scale up in 2010 associated with the emergency response to flooding. UNICEF surge capacity support in CMAM scale up has contributed to good treatment outcomes, strengthened systems and better coordination. Future scale-up needs to address limitations in joint planning, nutrition strategy and framework for integration, technical guidance, coverage and programme performance assessment, local RUTF production and capacity. A funding gap between emergency and longer term programming hampers scale up. Improved interventions around IYCF for MAM and SAM are needed.

The Government of Pakistan (GoP) and the Department of Health (DoH) initiated the Community Management of Acute Malnutrition (CMAM) programme in Khyber Pakhtunkhwa (KP) in 2008. CMAM was scaled up following the flood disaster of July 2010 to address malnutrition and promote optimal child feeding practices. It was implemented in collaboration with UNICEF, WHO and WFP, and through implementing partners (IPs) and covered northern, central and southern districts of KP. Other child nutrition programmes included Infant and Young Child Feeding (IYCF) support and prevention and control of micronutrient deficiencies. CMAM is also implemented in Sindh and Punjab provinces.

Wasting has increased over the last decade in Pakistan, with prevalence estimated at 11.8% in 2001, 13.1% in 2006, and 16.8% in 2011. UNICEF undertook a recent evaluation to assess CMAM programme performance and gather lessons to inform scaling-up of CMAM.

The four CMAM components in Pakistan are: 1) Community outreach (screening, referral, follow-up, and community mobilisation), 2) Outpatient therapeutic programmes (OTPs) for severe acute malnutrition (SAM) without complications and involving home-based administration of ready to use therapeutic food (RUTF), 3) Inpatient treatment in stabilisation centres (SCs) and (4) Management of moderate acute malnutrition (MAM) through a supplementary feeding programme (SFP).

The evaluation criteria of relevance and appropriateness, effectiveness and coverage, efficiency and sustainability were applied to CMAM components and cross cutting issues. To accommodate time and budgetary limits, data were obtained from secondary sources, health system databases, visits to sample CMAM sites and interviews with stakeholders. Quantitative data on beneficiaries were analysed to determine whether programme targets had been met. Qualitative data also supported the analysis. Programme data were analysed for sample districts from December 2010 to November 2011.

Findings

The evaluation determined that CMAM is a relevant and effective approach in KP for addressing SAM and that effectiveness, efficiency and sustainability of the programme can be improved through implementation of a number of recommendations. The implementation of CMAM in KP has been of good quality, resulting in a high rate of cure for children admitted with SAM. While the approach is evolving toward stronger integration into the national health system, CMAM's potential is reduced by lack of government priority for nutrition and absence of a comprehensive national nutrition policy. Progress has been made in developing a Provincial Integrated Nutrition Strategy, which would be aligned to the Pakistan Integrated Nutrition Strategy (PINS) in KP. The PINS provides a strategic framework but does not have any funding attached to it.

Stronger adherence to global guidance is required for community assessment, results based planning and monitoring. There is currently no effective framework to guide integration of CMAM within the national health system. The national CMAM guidelines focus on treatment protocols and require expansion to discuss cultural adaptation, gender and equity, IYCF, and programme performance monitoring and to clarify screening, admissions and referral procedures.

UNICEF effectively provided surge capacity to expand CMAM, promoting success in meeting most Sphere standards for children admitted with SAM. UNICEF's support resulted in the establishment of a Nutrition Information System (NIS) and strengthening of the nutrition cluster nationally and provincially. However, for scaling up, UNICEF needs greater headquarters and regional support and more staff members with nutrition expertise to promote nutrition policy and provide consistent guidance to the GoP and IPs. Longer term resource allocation to CMAM is required to retain the existing human resources required for strengthening the quality of implementation, the integration and to ensure an adequate response where and when required.

The partnerships among communities, the DoH, UNICEF, WFP, WHO and IPs effectively supported CMAM services, reaching 70,000 moderately malnourished children and 14,000 severely malnourished children in selected areas of KP. Treatment coverage for children with SAM cannot be determined in KP due to lack of coverage surveys.

Initial challenges were faced in gaining community acceptance of CMAM due to the traditional seclusion of women in their homes and lack of trust in the programme. More advance sensitisation is important to inform communities, particularly leaders, about the objectives of CMAM services and to prepare for discreet home-based screening. The Social Mobilisers (SM) through Nutrition Support Committees (NSCs) were instrumental in paving the way for Community Outreach Workers (COWs) to access households. Challenges include improving skills of commu-

[1] UNICEF (2012). Evaluation of community management of acute malnutrition (CMAM) Pakistan Country Case Study. UNICEF Evaluation Office. September 2012

nity workers in using mid-upper arm circumference (MUAC), strengthening follow-up home visits of non-responders and defaulters and promoting sustainability of the NSCs. Effective follow-up of admitted children in Swat and Lower Dir can be attributed to higher incentives for COWs, well qualified IP nutrition staff, the formation of mothers' groups and involving men in the programme. Data on screening and admissions are not structured by gender, groups, areas, and relative to population changes, making analysis of coverage and outcomes difficult.

Most admissions were children of 6-23 months of age highlighting vulnerability as complementary foods are introduced. The OTPs achieved a 91.5% cure rate for SAM cases and 7.5% default rate. The SAM treatment met Sphere standards for cured, default, and death rates, however, standards for weight gain and length of stay were not achieved in all sites. A number of CMAM sites in health facilities require upgrading to ensure adequate and well ventilated spaces and designation of play areas. Procedures for admissions, discharges and referrals to SCs are not sufficiently standardised, particularly for use of anthropometric measurements and for timely medical examinations to identify complications.

MAM management performance is effectively tracked through joint IP/WFP data collection. A 95% cure rate was achieved among registered children; the default rate was 4.2%. Sphere standards were met for cured, default and death rates, however, none of the districts achieved the average weight gain standard and some districts did not achieve the length of stay standard.

The SCs established in the paediatric wards of government-run hospitals were well managed but coordination was poor between OTP and SC both for referral to the SCs and discharge back to OTPs. The SCs require immediate support to structure programme data recording, which is currently insufficient for analysis.

The Ready to Use Therapeutic Food (RUTF) imported by UNICEF is well accepted by children but efficient usage was hampered by lack of compliance to prescribed intake, sharing of products with siblings, sale of the products, and supply shortages in some centres. Monitoring is inadequate to address these problems. There is limited national production of supplementary products but little progress has been made on promoting local production of RUTF.

Nutrition cluster support, coaching and dedicated information managers in IPs facilitate NIS effectiveness and on-site monitoring has improved. However, programme data are poorly tracked in some sites and relapse data need to be collected. To steer the programme more efficiently, more emphasis must be placed on ensuring data quality and consistently analysing performance indicators, as well as undertaking regular surveys, reviews and evaluations.

The scale-up of CMAM was facilitated by pre-existing relationships among government, UNICEF, WHO, WFP and IPs, active case finding, formation of NSCs, and established coordination mechanisms. Stronger earlier joint assessments may have enhanced implementation efficiency through the Pakistan Humanitarian Response (2010); the Flood Affected Nutrition Survey (FANS) was not conducted until four months after the disaster. Joint planning for supporting the national nutrition programme is not strong enough between the MoH, WFP, WHO, IPs and UNICEF. Stronger joint planning is also needed among provincial partners (UN, IPs and DoH) for setting and revising realistic programme targets as the situation evolves.

Multi-agency emergency response strategies effectively identified potential gender issues but no community assessments were conducted to ascertain programmatic means to address these issues. The national guidelines and assessments should more effectively guide staff to ensure coverage of groups with higher prevalence, such as girls and children aged 6-11 months. Partners are increasing their efforts to reach HIV/AIDS positive people and strengthen capacity development of women community workers and staff. CMAM integration into the health delivery system and greater involvement of civil society organisations and the private sector is important to reach malnourished children living in remote, crisis-affected and food insecure areas.

CMAM integration in KP is minimal to partial; IPs are responsible for staffing, monitoring and capacity development at higher costs and less sustainability. Stronger GoP roles are needed in accountability, financing and coordination. The time for integration planning is optimal given the strengthening of provincial authority. Progress has been made in establishing Memoranda of Understanding (MOUs) and partnerships among MoH and other relevant ministries, UN agencies and IPs, and development of a nutrition response plan.

The Nutrition Cluster effectively planned for intensive capacity development of 800 health care providers and IP staff in KP with follow-up refresher training in 2011. Greater capacity development was needed for protocols and IYCF and more in-depth training for inexperienced staff. Due to diverse qualifications and experience of staff providing CMAM services, their capacity needs have to be assessed and relevant training provided, aiming for consistency in service quality across districts.

The GoP makes a significant contribution to CMAM's capital costs through provision of health facilities; support for heath staff and utilities comprises an estimated 7% of recurrent costs. The largest proportion (33%) of the externally funded recurrent costs is devoted to Ready to Use Supplementary Foods (RUSF) and RUTF. The costs per beneficiary differed by district and IP, the average costs were SFP ($21), OTP ($145) and SC ($230). Lower costs were associated with local NGO implementation due to lower cost of human resources.

The major issues for future scale-up are planning, capacity and funding. Mapping and prioritisation of target areas have not yet been fully undertaken. Joint planning is still weak for building institutional relationships to define nutrition policies and standards and indicators for integration, and set out tangible means to build DoH capacity. It may only be possible to achieve broader coverage through involvement of more local NGOs, private health practitioners and other civil society actors. The majority of stakeholders advocated for overcoming barriers to expanding national production of supplementary products and strongly promoting RUTF production. There is a funding gap between emergency and longer term programmes and a pooled common fund may help provide more consistent funding. Funds need to be secured in advance for coverage surveys, reviews and evaluations. Not enough resources are focused on prevention through IYCF counselling and promoting healthy local foods.

Recommendations

Key recommendations included the following:
Advocate for and support joint planning for development of a national nutrition and provincial strategy which outlines the strategic priorities, assigns nutrition authority and coordination mechanisms, sets out capacity needs, and makes budget commitments for nutrition interventions. A focus on multi-sectoral and integrated longer term approaches is seriously required.

Strengthen and update national CMAM guidelines to include detailed protocols for referrals and admissions to SCs, more on IYCF, inter-sectoral coordination, and guidance on addressing cultural, gender and equity issues and monitoring programme performance.

Provide technical support to the UNICEF country office to design CMAM expansion. Strengthen monitoring and advocacy at the national and provincial levels by ensuring dedicated staff with nutrition expertise for managing CMAM.

Strengthen the NIS oversight to ensure reliable and consistent collection of gender disaggregated programme data and training of staff who are responsible for data recording.

Conduct coverage surveys in KP and track coverage as part of programme performance analysis.

Given the scale of MAM in Pakistan, seek alternative approaches to ready to use supplementary products, through researching local recipes, and strengthen IYCF through increasing numbers of COWs and Lady Health Workers.

Conduct a training needs assessment for each CMAM site and provide appropriate levels of training according to staff experience and knowledge. Evaluate training periodically.

Jointly establish indicators for progressive integration of CMAM into the national health system with the government taking an increasing role in accountability, monitoring, and implementation. IPs should develop results-based plans for contributing to DoH capacity development.

Expand in-country production of supplementary foods and strongly promote the development of RUTF production, for example, by providing technical assistance to food processing companies.

Advocate at high levels to secure funding commitments for scaling up with a view to supporting permanent integration of CMAM and a national nutrition strategy with coordinated projects and programmes. Seek alternatives for fund management such as a pooled fund that reduces overhead costs.

Harvesting the rice husk in Satkhira, Bangladesh

Md. Rafiqul Islam, Bangladesh, 2012

Barriers to resilience: chronic poverty, climate change and disasters in the southwest of Bangladesh

By Caitlin Macdonald, Peggy Pascal and Dany Egreteau

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Peggy Pascal is head of the technical department at Solidarités International HQ. She is a tropical agronomist working in the humanitarian sector for the last 12 years. She has spent several years in the field in Africa and in Afghanistan working for research institutions and NGOs.

Dany Egreteau has been coordinating development and humanitarian programmes for the last six years in India, Sri Lanka, Afghanistan and Bangladesh. He supervised the recent cyclone and flood responses in the southwest of Bangladesh, as well as the six month survey from which this article was developed.

This assessment was conducted by Solidarités International in partnership with local NGO, Uttaran. The article was compiled by the authors, thanks to Julie Mayans, Food Security and Livelihoods Technical Advisor at Solidarités International for her support in the process.

Typical shrimp farm in the southwest

Caitlin Macdonald, Bangladesh, 2012

Bangladesh, a prone disaster delta

Situated amidst the vast Ganges, Brahmaputra and Meghna river basins, Bangladesh is a flat deltaic land covering an area of 144,000 square kms. Eight per cent of the country is categorised as floodplain and most areas, except the highlands, are exposed to monsoonal flooding for several months every year. With approximately 150 million people, Bangladesh is one of the most densely populated countries in the world and classified as a 'least developed country' by the United Nations.

As well as high levels of poverty, Bangladesh is at high risk of multiple, ongoing disasters. According to the World Bank, 60% of global deaths caused by cyclones in the last 20 years occurred in Bangladesh. In 2012, Bangladesh was ranked fifth in the World Risk Index for natural disasters. Two recent tropical cyclones Sidr (2007) and Aila (2009) caused extensive damage (both human and financial) to the southwest.

Solidarités International opened its mission in Bangladesh in 2007, following cyclone Sidr. An emergency response programme was launched in Mathbaria Upazila focusing on water, sanitation and hygiene (WaSH) followed by shelter, water and sanitation access recovery activities. Since August 2011, Solidarités International has been implementing two programmes in the Satkhira District, in the southwest of the country, providing food security and shelter in response to water-logging. These prog- rammes are implemented with five other international non-governmental organisations (INGOs) through the Bangladesh NARRI Consortium (National Alliance for Risk Reduction and Response Initiatives)[1]. Solidarités International has also been providing WaSH support in Cox's Bazaar District since March 2010 where large populations of unregistered refugees are living and have recently launched a food security programme in Islampur in the country's northwest. One identified strategic objective of Solidarités International in 2013 is to ensure its programmes are mainstreaming Disaster Risk Reduction (DRR) into all its activities to mitigate the effects of future natural disasters.

While natural disasters have significant impact in Bangladesh, human-induced slow-onset disasters such as excessive soil salinity are having an increasingly detrimental effect, particularly in the southwest. The objective of this study was to capture the driving factors of chronic poverty, the impacts and effects of climate change on livelihoods in the southwest coastal belt of Bangladesh, as well as to identify levels of disaster resilience and existing coping strategies being utilized. What was found was a complex array of interlinking factors which together, present significant barriers to livelihood opportunities and sustainable development for communities, and the region as a whole.

Methodology

The main survey occurred in November 2011 and consisted of 12 focus group discussions (FGDs) and 59 key informant interviews (KIIs) with Union Parishad members, women's group representatives, agriculture and fishery officers or Disaster Management of Food Ministry representatives. Two follow-up assessments utilising participatory vulnerability tools were conducted in June 2012 with FGDs and KIIs and a workshop between Solidarités International and local NGO partner, Uttaran, was held. The survey was conducted by Solidarités International and Uttaran staff in Assassuni, Shyamnagar, Dacope and Koyra Upazilas in Khulna and Satkhira Districts in the southwest of the country.

In each upazila, two types of areas were assessed: 'frontline communities' comprising those who were severely affected by cyclone and living on the coastal border, and the moderately affected areas which are more inland. The reasons behind distinguishing between these two areas were to:

- Determine the unique vulnerabilities present in each area.
- Determine the respective coping strategies of inhabitants given the areas and specifically their employment opportunities within their local environment.
- Determine the recovery capacities of communities considering their integration within different institutional environments (which could have hypothetically made a difference towards the recovery path).

A dangerous conversion from rice to shrimp production

Today, the region continues to be an agro-based community heavily reliant on the natural environment for income generation and livelihood options. Once in the rice bowl of Bangladesh, the introduction of the embankment system in the 1960s and subsequent proliferation of shrimp farming throughout the region has significantly contributed to soil salinity levels so high, rice production has been severely impacted or in many areas, is no longer possible. As shrimp production gained popularity throughout the 1990s, external entrepreneurs entered the region, buying or leasing land from small and medium rice farmers to establish large shrimp farms, moving land control and economic gains from shrimp production outside the region.

With the conversion of rice to shrimp, daily labour opportunities have decreased and many are forced to migrate outside of the region or at times, to leave Bangladesh to seek employment. Increasing salinity levels and decreased rice production (and therefore rice husk for cattle feed) has resulted in livestock rearing and homestead gardening opportunities becoming more difficult to sustain.

Many people as a result have turned to the Sundarbans, the largest mangrove forest in the world and home to the Bengal Tiger, for fishing in the rivers and bay and the collection of natural resources. This option however, poses several dangers including tiger and pirate attacks to those forced to live in the forest for several days at a time. Others with access have turned to fishing and crab fattening. As a result, people have reported smaller catches and an increased difficulty for fishermen, solely reliant on this livelihood for income, to survive. Both these coping strategies put increasing pressure on natural resources in the region with people needing to travel further into the forest for resources and fight over depleting fish stocks.

Those still involved in rice or agriculture production face decreasing crop yields and increasing pressure to convert to shrimp. Table 1 shows the negative impacts of shrimp farming

[1] http://narri-bd.org/

Table 1: Comparing impacts of shrimp and rice-prawn Gher[2] Farming System in Bangladesh

Particulars	Shrimp Gher Farming	Rice-prawn Gher Farming
Employment status	decreased	increased
Income generating	decreased	increased
Income distribution	Inequality	relatively less inequality
Social status	decreased	decreased
Livestock	negative	positive
Poultry	negative	positive
Paddy production	negative	positive
Vegetables production	negative	positive
Health	negative	negative
Ecology	negative	negative
Environments	negative	friendlier
Land degradation	negative	positive
Salinisation	negative	positive

Source: Barmon, B.K., Takumi, K, & Osanami, F., 2006, Problems and Prospects of Shrimp and Rice-prawn Gher Farming System in Bangladesh, self-published.

on livelihoods options compared to rice-prawn combined farming. Rice farmers throughout the assessed areas reported neighbouring shrimp farms intentionally flooding paddy fields with saline water, and local land disputes and community conflict were also said to be prevalent.

While salinity is having serious effects on livelihood options, it is also beginning to affect other parts of life in the southwest. Levels are so high they are now threatening safe drinking water supplies as salt water enters critical water tables. A lack of fresh water is forcing women and girls to travel greater distances to access drinking water, causing health complications and exposing them to greater risk of abuse and exploitation.

Md. Rafiqul Islam, Bangladesh, 2012

An 80 yr old farmer stands in front of leased land dedicated to shrimp farming. Their village hopes to convert to rice farming in 2013-2014 following the lease expiry.

Case Study:
Just prior to cyclone Aila in 2009 in Singhortoli village (Gabura Union, Shyamnagar Upazila), approximately 90% of village land was being utilised by large shrimp farms (50 – 110 bighas[3]/farm) with just 25 families controlling this 90%. Just under 10% of land was dedicated to small shrimp farmers and only two bighas remained dedicated to rice farming. Recently, recognizing the negative environmental effects and threat to the local drinking water supply from rising salinity, small land owners began converting land back to rice, growing Aman rice (traditionally rain-fed paddy). With access to a water table and the financial capacity to make a small investment, farmers have introduced a method of flushing the soil with fresh water prior to planting saline-resistant Aman rice varieties followed by the use of regular irrigation. As a result, the lands salinity levels were reduced, farmers' reliance on inconsistent monsoon rains decreased and when fields flooded, they could also be pumped free of water to avoid crop damage. At the time of assessment, small rice farmers were able to produce three crops per year due to these new techniques and are able to generate four to five times as much rice per bigha in comparison to what they had previously generated.

Increasing effects of climate change on livelihoods

These increasing levels of salinity and weakened embankments significantly contribute to the vulnerability of communities to risk and impact of disaster. Cyclones Sidr and Aila caused extensive damage to this already fragile environment. Cyclone Aila damaged or fully destroyed many embankments in the southwest coastal belt region, allowing salt water to inundate the land for months at a time. Many people were displaced for months or in some cases, years afterwards. Other parts of the affected areas experienced flooding twice daily with each high tide for up to two years following Aila, due to a lack of protection from the sea. During this period, communities were unable to cultivate crops and their livelihoods suffered. As Aila hit during the shrimp harvest time, 100% of export grade shrimps were washed away. As the region's main livelihood with more than 60% of people involved in this sector, the effect of Aila on livelihood security was devastating. According to Bangladesh's Department of Agriculture Extension, only a minor portion of total cropland in four Upazilas could be cultivated after Aila and approximately 70-80% crop production was lost. An estimate by the Department of Fisheries and the Food and Agricultural Organisation (FAO) indicates that production of shrimp was reduced from 2,350.14 kg/h (normal year) to 470.03 kg/h.

For an area already struggling with salinity, the inundation of lands with salt water for such an extended period of time has had devastating effects. While most embankment walls have been repaired, communities continue to face serious income and food security issues with crop production struggling as a result of soil quality and salinity and some areas still facing embankment breaches from poor reconstruction. As a result, many farmers are still only able to produce a single crop per year and many struggle to engage in supplementary income-generating activities such as homestead gardening.

The increasing effects of climate change in this already fragile environment continue to increase barriers to growth in the southwest. Rising sea-levels, as observed by communities through increasing high tide levels, not only add additional pressure on the embankment system but further enhances the penetration of salinity inland via the river and canal systems. According to interviewed farmers, rain patterns have changed in the last decade, most noticeably in the last five years. They noted dry spells, a reduction of winter season rainfall and a sharp increase and erratic pattern of monsoon rains. Increasing temperatures and erratic monsoon patterns negatively affect shrimp, agriculture (including rice) and homestead gardening. Rice farmers now struggle to predict rainfall patterns, which have resulted in reduced crop yields when irrigation is not possible or affordable. As well as this, it is predicted that natural disasters such as Aila will only become more frequent, further threatening the livelihoods of populations.

Conclusions

While there were many examples of negative coping strategies being engaged, such as migration for daily labouring, increasing reliance on natural resources, being forced into accepting unsustainable loans through informal lenders and reducing meal and nutritional intake, examples of positive adaptation were also found.

Some small land owners have begun reclaiming previously leased land to begin shrimp farming themselves. While this action brings income back to some of the poorest segments of the community, it also continues to add to the salinity problem which in the long run will only continue to have detrimental effects on the lives of everyone in this region if not addressed.

Priorities for the region

Establishing and enhancing livelihoods resilience, maintaining food security and fostering development are now the main priorities for the region. The existing method of reactive, short-term aid delivery in this emergency prone region is insufficient in the current circumstances. The complexities of this situation require a long-term approach designed to strengthen community resilience, as well as recovery and adaptive capacity to the changing environment.

To improve the resilience of livelihoods and coping capacity of this agro-dependant region, several adaptive measures should be considered:

- Education and awareness raising for farmers and homestead gardeners on benefits and accessibility of saline-resistant crop (including rice) varieties, as well as short lifecycle crops and innovative methods of farming e.g. irrigation coupled with planting Aman rice. While many communities reported being aware, or in some instances introducing these varieties already, others reported that if they understood these better, they would be willing to trial them.
- Programmes that encourage the conversion from predominantly shrimp to a more diversified agricultural system could have substantial impacts. Communities openly acknowledged the potential benefits of returning to rice farming. The reintroduction of rice would help to reduce salinity which in turn would allow vegetation and homestead gardening to flourish once more. Livestock rearing would become easier, generating cattle feed from rice husks. Straw could be used to build roofs, daily labour opportunities would increase and people would have alternatives to going to the Sundarbans for resources. Over time, with the decrease in shrimp farming, salinity, and therefore the threat to

[2] A gher is modified rice fields with high, broad peripheral dykes to be used as a shrimp pond.
[3] A *bigha* refers to the size of a piece of land. The size of a standard bigha differs per region. In Satkhira District, 1 acre = 3 bighas (approx).

safe drinking water, would decrease.
- Further research needs to be done to understand the hierarchy of what factors contribute to the vulnerability of communities in this region to disaster and climate change. Through development of a set of indicators and analysis of recovery rates in different communities we would be able to have a better understanding of not only what makes communities vulnerable but also what defines resilience in this specific context.

Fundamentally, the institutional linkage between relevant government departments such as the Ministry of Agriculture and the Department of Agricultural Extension must be strengthened down to the community level. Extension Officers such as the Sub-Assistant Agricultural Officers should be encouraged and allowed to work more closely with farmers and community generally so that the flow of knowledge and information regarding adaptive strategies filters down to community level and motivates behaviour change. Strengthening linkages and implementing sustainable knowledge sharing through increased communication between government and community will facilitate improvements in agricultural practices by farmers and increase their resilience to disaster. This will also allow them to adapt to the effects of climate change now and into the future.

Currently in Bangladesh, the agriculture industry accounts for 21% of the national economy and employs approximately 48% of the workforce.[4] The incorporation of DRR into livelihoods in Bangladesh is therefore critical to ensuring the increased resilience of Bangladesh as a nation. Solidarités International is aiming to use this study as the foundation of a new programme which will look at livelihoods resilience and food security based on institutional linkages and the development of sustainable agricultural practices in the southwest. Most recently, this study has contributed to the activities designed and adopted by Solidarités International under the DIPECHO VII Programme[5] which was launched in March 2013, integrating the issue of livelihoods into a Community-based DRR rural approach. These activities will form a template for larger programmes in the coming years.

For more information, contact: Julie Mayans, Food Security and Livelihoods Technical Advisor at Solidarités International,
email: jmayans@solidarites.org.

[4] Department of Environment, Ministry of Environment & Forests (2009). Adaptive Crop Agriculture Including Innovative Farming Practices in the Coastal Zone of Bangladesh. Dhaka: Climate Change Cell.

[5] In 1996, ECHO launched a specific programme dedicated to disaster preparedness called DIPECHO (Disaster Preparedness ECHO). See http://ec.europa.eu/echo/policies/prevention_preparedness/dipecho_en.htm

CIFF

CIFF CHILDREN'S INVESTMENT FUND FOUNDATION

Name:	**Children's Investment Fund Foundation**
Website:	**www.ciff.org**
Year founded:	**2002**
Annual income (expenditure) (2011):	**$73 million (estimated) for year ended 31 August 2012**
CEO:	**Jamie Cooper-Hohn**
No. of staff in CIFF:	**50 permanent staff and 20 consultants**

This profile was written by Augustin Flory from CIFF and is based on a set of questions about the organisation framed by the ENN (Ed).

1. Provide a brief history of CIFF – when formed, by whom, mandate/objectives, who sets the mandate?

The Children's Investment Fund Foundation (CIFF) is a philanthropic organisation that has its headquarters in London. The Foundation, which is a UK registered charity governed by a board of directors, is approaching its 10th year of grant making.

CIFF's core mission is to demonstrably improve the lives of children living in poverty in developing countries by achieving large-scale, sustainable impact. In 2008, CIFF also launched a Special Initiative on Climate Change, recognising the devastating threat global warming presented to the wellbeing of the next generation of children and that the current response to halting it was woefully inadequate.

2. What is the range of CIFF activities or programme support?

CIFF currently focuses on three priority impact areas: hunger alleviation and nutrition, child survival and educational achievement. In each of these areas, CIFF has carried out a comprehensive landscape analysis which is available on CIFF's website (www.ciff.org). These analyses identify areas where there is strong evidence of interventions that have a high impact, a large unmet need, and opportunities for CIFF to play a transformative role. CIFF is currently active in all three areas, with a particular focus on five strategic priorities: undernutrition, perinatal survival, prevention of mother to child transmission of HIV/AIDS, early learning and deworming. The Foundation is in the process of landscaping adolescent reproductive health as an additional priority impact area, and plans to consider early childhood development, economic readiness and childcare environment in the future. In climate change, the strategic priorities are climate smart urbanisation and energy transformation.

CIFF's approach is to focus on 'investments' with broader transformational opportunities. That might be, for example, through demonstrating that service delivery programmes can be implemented at national scale with high impact and in a cost effective manner; through advocacy to influence norms or global actors; through research and development to remove technological bottlenecks; or through investments focusing on evaluation or data systems when they are significant barriers. Although most CIFF investments are carried out through grants, other instruments are also used, such as loans or equity participation when more appropriate, e.g. for investments with the private sector. All investments are evidenced based, data driven, with a strong focus on impact and cost effectiveness. The preferred approach is to work with and through governments. Furthermore, CIFF only invest in programmes where there is a clear exit/institutionalisation strategy. We consider ourselves to be a very engaged partner throughout the investment life cycle.

Most of our activities are in Sub-Saharan Africa and South Asia, where the needs are greatest.

3. When did nutrition become part of CIFF's portfolio and what are the current areas of nutrition interest and activities?

Undernutrition has always been a core priority of CIFF and has become CIFF's top priority in recent years because of its overwhelming impact on child development (mortality,

morbidity, cognitive development) and more broadly, on human capacity. Undernutrition not only stunts and kills the citizens of high burden countries, it also stunts these countries' competitiveness and economic growth, and this economic dimension is often overlooked.

Our focus is explicitly on undernutrition, rather than the broader hunger, food and food security area, because food and hunger are primarily about calories, while nutrition is about nutrients, care practices and maternal and child health. Our portfolio of investments spans micronutrients deficiencies (e.g. micronutrients Sprinkles investment with GAIN in Bangladesh), stunting (e.g. stunting reduction programme with WFP), severe acute malnutrition (e.g. community management of severe acute malnutrition (CMAM) programme with the Government and UNICEF in Nigeria) and advocacy in the global nutrition space (e.g. global nutrition advocacy grant with a consortium of partners). Mainstreaming CMAM into public health services has been an early priority because of SAM's impact on child mortality and the existence of a simple proven intervention to treat it.

CIFF

4. How does CIFF operate or work to support its aims, e.g. as a funding agency, through field staff supporting country or regional programmes?

We are quite flexible about the form that investments can take. We can support governments in delivering impact, directly or through technical partners, hire consultants to support government bodies or finance specific components of programmes, as long as the investments contribute to CIFF's higher level transformational objectives. For each priority area, including nutrition, there is an advisory panel including many of the leading experts in their field.

5. Where does CIFF get its funding from and what proportion goes to nutrition?

CIFF funds through its endowment, often co-partnering on specific initiatives with other foundations, individuals and governments. CIFF is on track to be granting over $100 million annually by the end of this fiscal year. In aggregate, the Foundation has committed more than $100 million to nutrition investments since CIFF's creation and anticipates that nutrition will represent the largest element of CIFF's portfolio for the foreseeable future.

6. Does CIFF have a nutrition strategy?

Our main priority currently is to elevate undernutrition to a top economic and development priority and to bring together a coalition of partners to mobilise commitments and resources around validated and prioritised country plans to accelerate impact on the ground. Programmatically the aim is to accelerate take up of the high impact direct nutrition interventions, such as promoting good nutritional practices, increasing the intake of vitamins and minerals and therapeutic feeding that will produce tangible impact (i.e. increases in cognitive development, morbidity and mortality reduction) most quickly. The strategy is regularly reviewed and updated based on new evidence and developments as they become available.

7. How many nutrition staff are there (HQ or field) and how do they link up with other sectoral staff?

CIFF is a relatively small organisation with 50 permanent staff and about 20 consultants. The Foundation team comprises operating teams (leverage, programmes, investments, climate change, finance & operations, programmes, office of the CEO) and governance teams (that comprises advisory boards and trustees). There are small regional offices in India and Kenya and a flexible organisational structure in which staff contributes to work in different areas based on need and skills. At the moment, more than 20 staff work on nutrition who draw on the Nutrition Advisory Panel and other external nutrition expertise as needed. Staff work on different sectors and strive to link up and integrate investments across sectors whenever possible.

8. What is CIFF's nutrition vision or plans for next five years?

Our vision is to see nutrition elevated to the level of a top economic and development priority in all high burden countries and to contribute with others to changing the trajectory of the global response to accelerate the achievement of the objectives recently agreed by the World Health Assembly. This requires action at many levels: supporting the development and implementation of strong country plans; building a new coalition of partners around nutrition, involving not only the traditional government players, donors and private sector players, but a much broader constituency of partners from other southern countries that have already achieved significant progress on nutrition and the non-food private sector. We are committed to mobilising resources and commitments for nutrition globally. It will require advocacy, demonstrating that programmes can be implemented at scale in a cost effective way and building the evidence base where it is lacking.

CIFF want countries to follow the good examples of government leadership and commitment which have led to enormous progress, such as Brazil where the prevalence of stunting dropped from 37% to 7% in three decades, or more recently the State of Maharashtra, India, where the proportion of stunted children fell from 39% to 23% in only 6 years. These and many other examples prove that success can be achieved and that others can and should take action.

9. What does CIFF see as the main challenges in the nutrition sector and how will they endeavour to address these?

A key challenge is the overly narrow framing of nutrition as a technical issue, which misses the larger economic costs of undernutrition, insufficient leadership and accountability at the highest level and as a result, the misdirection of attention and lack of effectiveness in trying to solve the problem. This has resulted in responses almost exclusively addressing hunger and/or agriculture and in so doing not recognising that the problems will not be solved through an indirect focus on food security or with economic growth alone, i.e. nutrition sensitive programming. Raising caloric intake without addressing nutrient deficiencies in the early years will continue to result in many countries having virtually half their populations stunted. Furthermore, there is a basic lack of resources and generally a failure to appreciate the great value for money of investing in nutrition – which has been recognised as a best buy in development by, for example, the Copenhagen consensus.

10. How is CIFF different to other equivalent organisations or is it a unique entity?

CIFF's approach is a substantial divergence from the norm of development funding. CIFF works only where it thinks it can effect transformational change at scale and through activities and processes which will be institutionalised. To achieve impact, CIFF marries the acumen and discipline of the private sector with the appreciation of context and evidence of what works in development. On a programmatic level, this involves establishing explicit clarity around success by all partners from the outset; designing initiatives and incentives in order that they will ultimately be sustained through the public sector or through market mechanisms; modelling, agreeing and monitoring key implementation targets that will deliver the desired impact, and correcting programme design where aspects of the programme are not delivering or where greater impact could be achieved. CIFF is prepared to invest heavily in the monitoring and evaluation systems needed to make such an approach successful. CIFF also works deliberately to influence and leverage beyond its investments to build momentum for change.

11. How would you best encapsulate the ethos and culture of the organisation?

CIFF is uncompromising in its expectations of demonstrable positive change and sets clear targets for success. CIFF exclusively backs high return (impact) investments that are based on evidence or that confront a critical bottleneck: passion plus activities does not equal impact. CIFF maximises return on investment (impact) by engaging throughout the life of the investment, and working with governments and partners to leverage the investment. It's an investment, not a gift.

Name:	Canadian Foodgrains Bank
Website:	www.foodgrainsbank.ca
Year founded:	1983
Annual income (expenditure) (2011/12):	$44,259,143 ($39,544,210)
Director(s):	Governed by Board of Directors (visit website for details)
No. of staff:	33 (2 overseas)

Canadian Foodgrains Bank
A Christian Response to Hunger

The ENN interviewed Barbara Macdonald from the Canadian Food Grain Bank in the ENN's London "sub-office" (a table at the Institute of Directors in London). Barbara knows the ENN from her days as Senior Nutrition Advisor at CIDA where she was instrumental in securing funding for various ENN activities over the years – most notably reviews of evidence of effectiveness of emergency nutrition interventions including supplementary feeding programmes. After leaving CIDA in 2005, Barbara took up a post to head up monitoring and evaluation activities at GAIN and only joined the Foodgrains Bank eight months ago.

The Foodgrains Bank is celebrating its 30th anniversary this year (founded in 1983). It is effectively a partnership of 15 churches and church-based agencies working towards a vision of ending global hunger. The way the Foodgrains Bank works is pretty unique. There are over 200 'growing' projects where Canadian farming communities reserve a portion of their farming land to collectively grow a crop. The crop is then sold on the Canadian market and proceeds are donated to the Foodgrains Bank to support food assistance, agriculture and livelihoods, and nutrition projects overseas. The 'growing' projects are truly community based, i.e. different local farmers and members of local churches contribute time and resources to grow the food. Communities may grow anything from grain, apples, or pumpkins to donating lobsters from a specific trap in Canada's Maritime provinces. Funds may also be raised through cattle auctions. Church communities also raise money in other ways and pass this on directly to the Foodgrains Bank where it is then matched with funds from CIDA to support international projects. CIDA provides $25 million (CDN $) annually to the Foodgrains Bank in matching funds. In 2011/12 Canadians donated almost $12 million to the Foodgrains Bank and of that, growing projects and individual farmers contributed $5.5 million through the sale of 19,396 tonnes of food.

The funds from growing projects are kept in separate church accounts by the Foodgrains Bank, i.e. it really is a bank! These are complemented by other church fund-raising activities and donations from individuals. When a member decides to fund a project overseas these monies are then released by the Foodgrains Bank from their account and are allocated to partners and projects that a particular member wishes to support. The Foodgrains Bank therefore effectively works as a secretariat for Canadian churches and the relief and development arm of churches, and their respective communities or congregations. While staff help with the technical design and evaluation of programming, it is ultimately the church based agencies and their partners who design and implement programmes in collaboration with local communities.

Until 2008, a significant proportion of food aid from the Canadian government was still tied, i.e. it was food grown in Canada and shipped to where it was needed. The Foodgrains Bank, along with other advocacy groups, helped change food aid legislation so that food aid did not have to be procured in Canada and could be sourced locally or regionally. The legislation was changed in two phases. Food aid was 50% untied in 2005 and fully untied (100%) in 2008. Untying not only helps speed up the process of getting food aid to where it is needed but also lowers costs as there is reduced need for shipping freight.

Foodgrains Bank activities can be broken down into three types. These are international programming, public policy and public engagement. Public policy involves research culminating in policy development and advocacy at national and global level. Policy activities currently focus on monitoring implementation of the new international Food Assistance Convention, advocating for governmental support to improve food security among smallholder farmers, and climate change financing with an emphasis on adaptation. Public engagement involves deepening the engagement of Canadians in efforts to end global hunger through communications and facilitating trips to visit projects. International programming can be divided into three further types of activity;

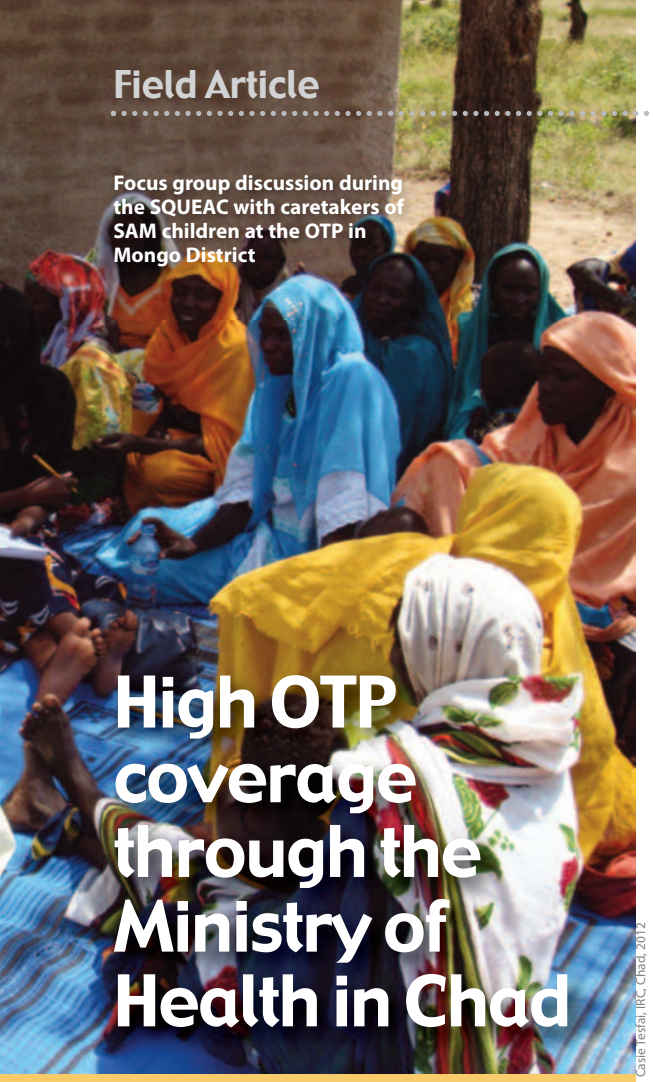
i) Food Assistance programmes – this constituted 66% of programmes in 2011/2012
ii) Agriculture and Livelihoods programmes – with a focus on soil and water conservation, low-input agriculture, and climate change adaptation. This constituted 29% of the international programming budget in 2011/12.
iii) Nutrition programming. These programmes only started around 2003-4 and currently comprise 5% of the international programming budget. Nutrition programming includes home gardening, supplementary feeding, water and sanitation, deworming, school feeding and nutrition education. There has even been one example of funding a CMAM programme (RUTF distribution) in Afghanistan.

In 2011/12, over 70% of programme resources were allocated to Africa, 24% to Asia and 4% to Latin America.

Barbara's job title is Senior Policy Advisor and she is located in the Public Policy Unit. She is the only nutritionist in the organisation. There are approximately 33 staff in the Foodgrains Bank with only two located overseas. There is a procurement officer based in Europe and a field programme advisor who provides technical support to projects and is based in Addis Ababa. All other staff are based either at headquarters in Winnipeg, Canada or in Canada's provinces where they aid in the support of growing projects and public engagement. One of Barbara's first tasks is to review and update the Foodgrain's Bank nutrition strategic framework including exploring expanding or including nutrition options within food assistance and agriculture and livelihoods programming.

Up until now, cash and voucher-based programmes have been a small part of Foodgrains Bank portfolio. This has been due to the former Food Aid Convention (FAC) – an international treaty where until recently, donors committed to provide certain amounts of food aid each year. The donor commitment is a floor or minimum amount and was previously set as an amount of "wheat equivalents". Parties to the treaty include the US, Canada, Japan, EU, Switzerland, Austria, Finland, Denmark. Recent changes to the treaty, including its renaming as the Food Assistance Convention, mean that governments can now contribute cash rather than food. In fact, the guiding principles for the FAC now encourage donors to undertake local purchase and support cash and voucher programmes where feasible. This means that the Foodgrains Bank now has the freedom to expand this type of programming, where appropriate. Furthermore, caps on certain types of programming under the FAC, e.g. micronutrient programming, have been removed.

The Foodgrains Bank appears to be a unique entity in the world of aid and there is undoubtedly an interesting history as to how it came about although that is a story that will have to be told in another article. The combination of church communities, farmers working together and matched government funding to generate resources for the poor is an inspirational model. As we said our goodbyes, I could see that Barbara was relishing the task ahead of her and the opportunities to increase the nutrition impacts of the Foodgrains Bank's work. The ENN will definitely watch developments in the Foodgrains Bank with great interest.



Focus group discussion during the SQUEAC with caretakers of SAM children at the OTP in Mongo District

Casie Tesfai, IRC, Chad, 2012

High OTP coverage through the Ministry of Health in Chad

By Casie Tesfai

Casie Tesfai is currently the Nutrition Technical Advisor for the International Rescue Committee based in New York. She has 10 years of nutrition experience mostly in Africa where she specialized in CMAM and infant and young child feeding, particularly in emergencies. She holds an MSc in Public Health Nutrition from the London School of Hygiene and Tropical Medicine.

The author would like to acknowledge the contribution of the International Rescue Committee in Chad, notably Alain Toe, Franck Mpoyi Ntalaja and Dr Ido Charles Gnenassi who were integral members of the SQUEAC assessment team in Mongo District. The IRC team also wishes to thank the support of the MoH and partners in Mongo District, Guéra Region, Chad. The author would also like to thank Ruwan Ratnayake, the IRC Technical Advisor for Epidemiology for his technical support.

The community-based management of acute malnutrition (CMAM) has three key public health determinants of impact. The first is *access*, which is the degree to which patients with severe acute malnutrition (SAM) access treatment (through the out-patient therapeutic programme – OTP) early on in the course of their disease, which leads to uncomplicated cases and results in early recovery[1].

The second key determinant of impact is *coverage*, which is the ability to reach as many severely malnourished children as possible. Coverage also depends on programme retention; from admission to cure (this is the absence of defaulting). A defaulter is a SAM case that should be in the programme, but is not. For rural areas, coverage should be at least 50%[2], which means that 50% of SAM cases in the targeted area are in the programme. Both access and coverage depend on a strong community outreach and referral programme[1].

The third key determent of impact is *effectiveness* of treatment, whereby we expect a minimum of 75% of SAM patients discharged as recovered (or cured). To ensure effective treatment, standardised treatment protocols should be followed, staff supervised and supplies available (including drugs and ready-to use therapeutic food (RUTF)). Effectiveness also depends on good coverage so that SAM patients are referred early and without complications which lead to better and faster outcomes. This also results in patient satisfaction and community acceptability[1].

Both coverage and effectiveness affect programme outcomes. If a programme has low coverage, even with adequate recovery (cure) rates, few severely malnourished children will be recruited leaving the possibility that many may deteriorate in the community[1].

IRC in Chad

Mongo District in the rural Guera Region of Chad falls in the Sahel belt across Sub-Saharan Africa where acute malnutrition levels remain chronically high. Due to critical levels of acute malnutrition and under 5 mortality rates, the International Rescue Committee (IRC) began supporting the Ministry of Health (MoH) in Mongo District, Guera Region in Chad in April 2012 in the integration of OTPs in each of the 17 MoH primary healthcare facilities (PHC) and in the Stabilisation Centre (SC) located in the Mongo District hospital. The programme was developed in accordance with the MoH and UNICEF to complement existing services to enhance the programme effectiveness and to increase coverage.

SQUEAC

OTP rural coverage in Chad was measured through the Semi-Quantitative Evaluation of Access and Coverage (SQUEAC), which covered all of Mongo District, excluding Mongo town.[3] SQUEAC relies on collecting a diversity of information, both quantitative and qualitative, from various sources and methods (triangulated) and collected exhaustively until no new information is found. Each piece of information is displayed visually (in a 'mind map') so that the complete picture of coverage is built up and new information is collected to investigate and verify different hypotheses as they are uncovered, such as reasons for defaulting. The final step of the SQUEAC is to conduct a coverage survey[4].

Average CMAM coverage

The average coverage of 13 SQUEAC coverage assessments from 2012 by the Coverage Monitoring Network (CMN)[5] was 40% with coverage in 12 assessments ranging from 14% to 59%. Only the refugee camps in Ethiopia achieved coverage higher than 75%. The average coverage of countries close to Chad, including Sudan, South Sudan and Burkina Faso, was 43% for the programmes that were assessed.[6] This is only a small example of SQUEAC coverage assessments, but what is becoming clear is that it can be challenging to achieve a high level of CMAM coverage.

Integration into MoH

There is currently notable commitment and recognition for the importance of integrating CMAM services into existing MoH structures to ensure uninterrupted services as emergen-

1 Myatt M et al. 2012. Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)/ Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) Technical Reference. FHI 360/FANTA.

2 Sphere Project. Sphere Handbook: Humanitarian Charter and Minimum Standards in Disaster Response. 2011.

3 Full report and methodology available upon request

4 See other articles in this issue of Field Exchange that describe SQUEAC.

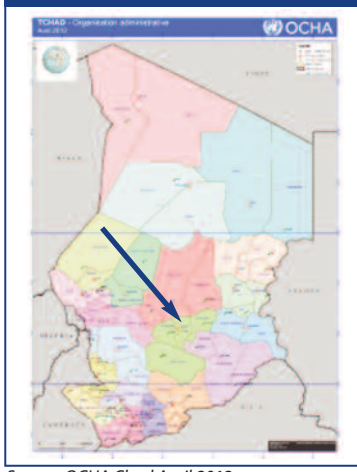
5 http://www.coverage-monitoring.org/

6 Coverage Monitoring Network (2012). Visit http://www.coverage-monitoring.org/ and see news piece in this issue of Field Exchange.

The SQUEAC team visiting a nomadic settlement through active and adaptive case finding

IRC, Chad, 2012

Location of Mongo District in Guera Region



Source: OCHA Chad April 2012

Location of Mongo District OTPs (in red) and SC (in blue)

cies abate and funding comes to an end.[7,8] As CMAM has been scaled up to more than 65 countries including Chad, community outreach – which is very important to ensure coverage – remains the weakest link. Many countries have not yet conducted coverage assessments to identify current programme barriers or whether programmes are meeting projected outcomes.[4] It's estimated that since 2009, the global scale-up of CMAM services has increased by more than 100%, where almost 2 million children have been treated for SAM. However it's estimated that this is less than 10% of the actual global SAM caseload.[9] Given the current global scale-up of CMAM, increasing coverage of existing services would reach even more SAM patients.

Support to the MoH in Chad

UNICEF supports the MoH in Mongo District through a combination of essential supplies, training, supervision and RUTF. The MoH provides a combination of essential OTP staff, essential drugs and supplies, supervision and storage. In partnership with WFP, the MoH also provides a food ration to the caretakers in the SC. It is important to note that the MoH is involved in leadership and coordination of CMAM at the district level and the nutrition focal point is involved in the activities of partners. IRC with donor support[10] provides a combination of support to the MoH which include the following key inputs:

- Technical staff for supervision and on the job training
- Trainings for MoH District staff on the national CMAM protocol
- Supervision, monitoring and evaluation and encouraging joint visits with MoH
- Supplies, materials and essential drugs
- Rehabilitation to enhance waiting areas for OTP patients
- Transport for referrals to the SC (or reimbursement of transport costs)
- Support to maintain the cold chain
- Mass sensitisation campaigns through local radio and theatrical groups to increase community awareness about the OTP programme
- Incentives for 200 community based volunteers (CBV) on a weekly basis who conduct routine screening and referral of SAM cases.

Period coverage in Mongo District

From the SQUEAC assessment conducted in Mongo District, the period coverage[11] was 74% with an OTP cure rate of 77%.[12] A total sample size of 163[13] current and recovering SAM cases were found in the coverage survey, where 123[14] were covered by the OTP.

The coverage for each OTP catchment area is shown in the map in Figure 1 of Mongo District where coverage is patchier in the northern part of the District.

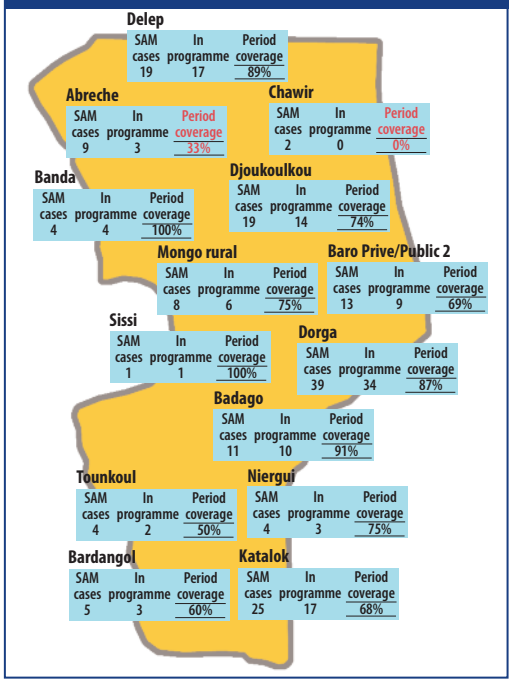
OTP access

There is strong evidence that mortality in children substantially increases at a MUAC cut-off of 115 mm and this risk increases as the MUAC gets smaller.[15] It is therefore important that children are identified early on in the course of SAM so that they have a lower mortality risk, lower complications and faster recovery. Figure 2 shows that the majority of admissions are early presenters as they are close to 115 mm and fortunately there are very few critically late admissions. Early treatment seeking and timely case finding results in a less complicated cohort of incident cases leading to faster recoveries[16], which is reflected in the short treatment episodes (average 5 weeks) and high recovery rates of the OTPs (77%).

OTP effectiveness

To ensure the OTP programmes achieve the met need of SAM patients, effectiveness is also important so that a high number are discharged from the programme recovered (cured). Figure 3 shows the OTPs in Mongo District meet the acceptable thresholds for effectiveness except during the peak in admissions from June to July, where coverage is likely to be lower. The peak in defaulting also correlates with the peak in women's labour demands as they prepare for the harvest. This is also the period when access is hindered by the rainy season which fills up the rivers and cuts off roads for the population to access the OTPs.

Figure 1: Spatial period coverage map for Mongo District



NB: 'In programme' includes both SAM cases (MUAC <11.5 cm) and recovering cases (former SAM cases that have already achieved a MUAC ≥ 11.5 cm but not yet discharged from the OTP)

Table 1: Distance and defaulting amongst OTP beneficiaries

Distance (time-to-travel)	Admissions	Defaulters	Grouped distance (time-to-travel)	Admissions	Defaulters	Defaulters/ Admissions x 100
10 minutes	205	20	≤30 minutes	276	25	9%
15 minutes	16	2				
20 minutes	7	0				
30 minutes	48	3				
45 minutes	10	3	> 30 minutes	458	24	5%
60 minutes	97	3				
90 minutes	69	5				
120 minutes	93	2				
150 minutes	21	0				
≥180 minutes	168	11				

Figure 2: Timeliness of admissions – Mongo District OTPs

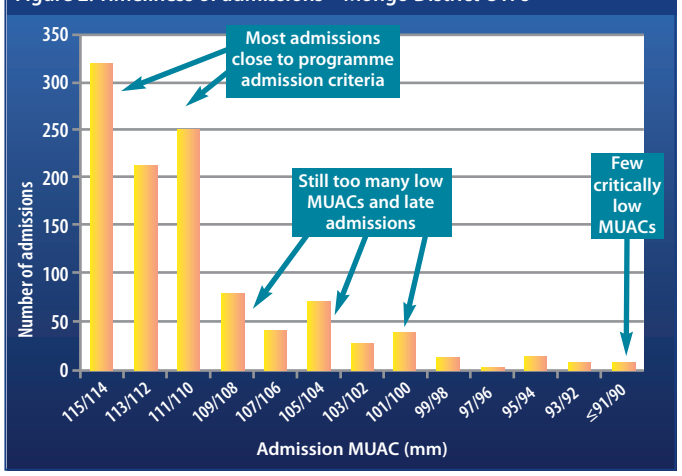


Figure 3: OTP performance indicators – Mongo District

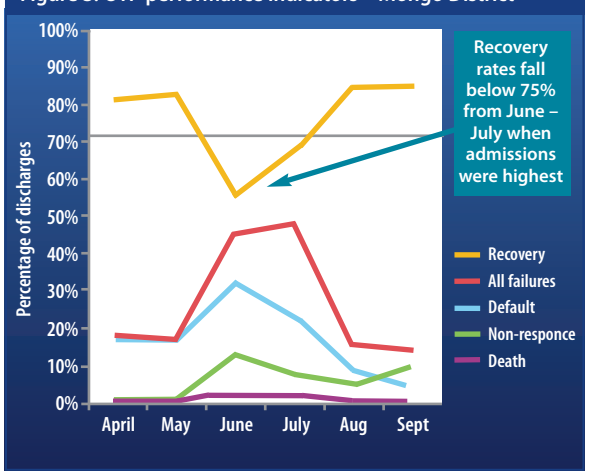
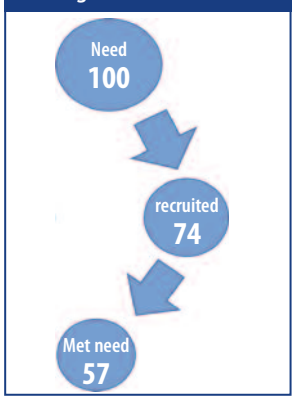


Figure 4: Overall OTP performance: the 'met need' of 100 SAM cases in Mongo District



7 Deconinck, H et al. (FANTA). Review of Community-based Acute Malnutrition (CMAM) in the post-emergency context: synthesis of lessons on integration of CMAM into National Health Systems: Ethiopia, Malawi and Niger (2008).

8 ENN. Government experiences of scale-up of Community-based Management of Acute Malnutrition (CMAM). A synthesis of lessons. January 2012.

9 Treatment of 2 million cases out of a 20 million SAM caseload. Global caseload estimate based on weight for height z score.

10 ECHO and OFDA

11 Period coverage includes new SAM cases and recovering cases in the OTP

12 Total cured divided by total discharged (not including transfers) since the start of the programme

13 Total SAM cases (110) + recovering cases (53) = 163

14 70 SAM cases in OTP + 53 recovering cases in OTP = 123

15 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, vol. 27, no. 3 (supplement), 2006

16 Myatt M et al. 2012. Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)/ Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) Technical Reference. FHI 360/FANTA

Table 2: Priority issues to address to improve coverage	
Recommendations	
Organisation	Reduce waiting time for beneficiaries
	Improve follow-up and referral between the OTP and SFP
Quality of programme	Ensure OTP staff are following the national treatment protocol
	Ensure admission criteria are adhered to so that no SAM patient is refused admission
	Implement a tally sheet for tracking community referrals and 'real cases' that meet the admission criteria
	Follow-up all early defaulters to ensure timely re-admission
Communication	Improve the communication between health personnel and beneficiaries
	Ensure flexibility of OTP staff to meet needs of beneficiaries
Access	Develop a strategy to prevent defaulters due to lack of access during the rainy season
Coverage	Improve coverage of northern and southern OTP catchment areas
	Enhancing identification of SAM cases through active and adaptive case finding including local terminology and assistance from key informants

OTP barriers

It is important to note that often OTP staff perceived different reasons for OTP barriers (such as distance or poor treatment seeking behaviour) than those cited by the community or caretakers, which shows the importance of triangulation throughout the SQUEAC assessment. For example, distance was not found to be positively associated with defaulting as shown in Table 1.

The SQUEAC also allowed the community to provide thorough feedback on OTP programme performance and the barriers they face which is a valuable result of the assessment.

The reasons that were cited from caretakers who had a SAM child who was not currently in the OTP included the following: previous rejection; discharged as cured recently (so a relapse or an error); no time due to workload or social engagements; the child was found to be enrolled in the wrong programme (SFP) or the child had been previously discharged as a non-respondent.

The reasons for defaulting cited by caretakers included the following: no time due to workload or social engagements and lack of flexibility of the OTP to accommodate their absence; illness of caretakers; distance including nomadic movements and lack of access during the rainy season.

Conclusion

It was overwhelmingly observed that the community is well aware and in favour of the OTP services in Mongo District. Many caretakers reported that their children recover very quickly and gain weight when taking RUTF. This very good treatment seeking behaviour is evident in the fact that distance did not increase defaulting. Clearly caretakers are motivated and come from even very long distances.

The support to a network of 200 CBVs in Mongo District has clearly resulted in not only a motivated and active routine network of screening, but a network that has achieved mostly a very high level of coverage even in distant areas. This thorough case-finding and early treatment seeking results in mostly uncomplicated cases that can be cured quickly and cheaply.

The active participation and CMAM leadership of the MoH in Mongo District and Guéra Region has also created an enabling environment to achieve positive programme results, as well as support from partners to ensure a continuous pipeline of RUTF and supplies. The support and supervision to the OTP staff and to the CBVs has also helped achieve a high level of quality care and routine case finding and referral. As the MoH continues to increase their capacity and experience in CMAM, it will be interesting to explore more ways to increase the sustainability of what works.

Figure 4 shows the overall performance of the OTP programmes in Mongo District combining the effect of both coverage and effectiveness. This is the 'met need' of 100 SAM children given the current OTP coverage and recovery rates. The OTPs in Mongo District with a coverage rate of 74% and an average recovery rate of 77%, has a met need of 57 out of 100 SAM children.

Recommendations

To sustain and improve the current level of coverage, there are a few priority issues to be addressed, i.e. barriers for SAM cases not currently in the OTP (see Table 2). Early defaulters should also be prioritised and followed-up immediately to ensure a timely recovery. Many discharged caretakers refused to be followed-up in the supplementary feeding programme and a strategy should be developed to ensure adequate follow-up of SAM cases to avoid relapses.

The results of the SQUEAC assessment were presented to the MoH and partners in Mongo District who recommended that partners and donors in Chad invest in more coverage assessments. Furthermore, there is a need to develop a technical consortium to share experiences of what works in the country context so that this can be replicated with a view to scale-up and achieve good coverage in other parts of Chad.

For more information, contact: Casie Tesfai, email: Casie.Tesfai@rescue.org

People in aid

Mark Myatt, Kenya 2012

The Coverage Monitoring Network (CMN) team who participated in training on the SQUEAC coverage assessment methodology in Kenya in October and November 2012 (see field article).

Invite to submit material to Field Exchange

Many people underestimate the value of their individual field experiences and how sharing them can benefit others working in the field. At ENN, we are keen to broaden the scope of individuals and agencies that contribute material for publication and to continue to reflect current field activities and experiences in emergency nutrition.

Many of the articles you see in Field Exchange begin as a few lines in an email or an idea shared with us. Sometimes they exist as an internal report that hasn't been shared outside an agency. The editorial team at Field Exchange can support you in write-up and help shape your article for publication.

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Thanks for the pictures to:

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Cover
Mogadishu DRC Somalia, Alexandra Strand Holm 2012

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Field Exchange supported by:

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 network aims to improve emergency food and nutrition programme effectiveness by:

- providing a forum for the exchange of field level experiences
- strengthening humanitarian agency institutional memory
- keeping field staff up to date with current research and evaluation findings
- helping to identify subjects in the emergency food and nutrition sector which need more research.

The main output of the ENN is a tri-annual publication, Field Exchange, which 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. ENNs five year strategy (2010-2015) is available at **www.ennonline.net**

The Team



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