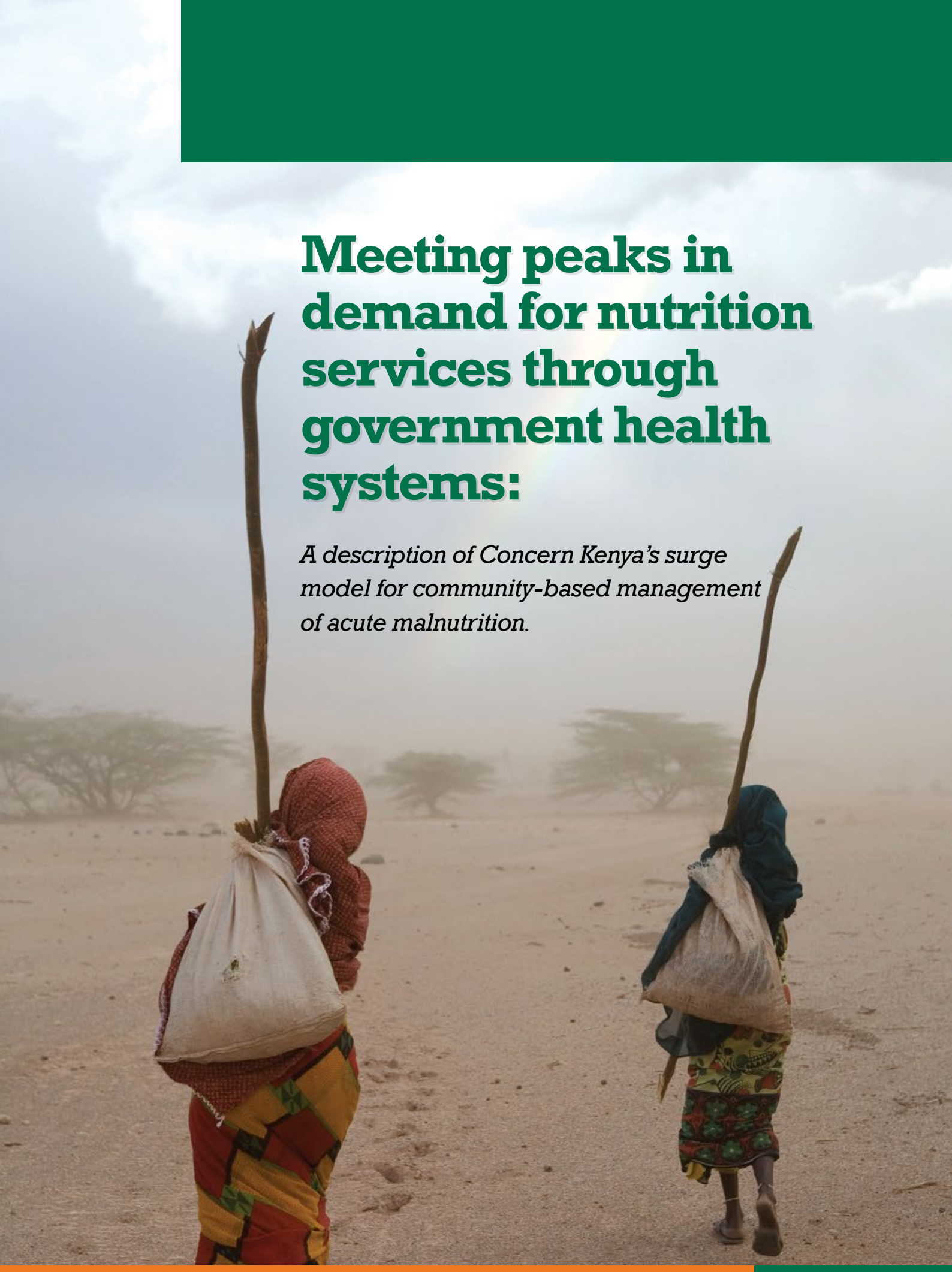
Meeting peaks in demand for nutrition services through government health systems:

A description of Concern Kenya's surge model for community-based management of acute malnutrition.



CONCERN worldwide

Introduction

The humanitarian community and national governments increasingly recognize that early warning and response are more effective and less costly than late response. While this recognition exists, the relationship between warning and response remains spurious. Early warning in the 2010/2011 food crisis in the Horn of Africa did not lead to early action and resulted in loss of livelihoods and lives[1]. Concern Worldwide (Concern), part of the humanitarian response in the arid and semi-arid lands (ASALs) of northern Kenya, used learning from the response to develop a model of early action for community-based management of acute malnutrition (CMAM). This brief describes the CMAM 'surge model' and its application in Marsabit County by Concern and the Government of Kenya (GoK)[2]. The model builds upon Concern's experience implementing CMAM[3] in emergency and development contexts more broadly and is informed by the organisation's experience in health system strengthening through its child survival interventions[4].

Background on CMAM

There has been wide scale adoption of out-patient treatment for malnutrition over the last decade and a half. These protocols and treatment strategies, known as CMAM[5] have increasingly been incorporated into routine health systems. The approach has particularly revolutionised the treatment of severe acute malnutrition (SAM), through the introduction of decentralised outpatient treatment for uncomplicated cases and inpatient stabilization for more complicated ones. CMAM was adopted as international best practice by the United Nations in 2007 and is being implemented in 60 countries worldwide including Kenya[6]. Although spikes in acute malnutrition are often precipitated by humanitarian emergencies, there is growing recognition that a considerable portion of the global acute malnutrition (GAM) burden exists outside the spotlight of declared emergencies. There is, therefore, a clear need to provide services for acute malnutrition within government-run health systems and to effectively respond to seasonal as well as emergency-related increases in malnutrition as they arise.

While services for acute malnutrition, particularly SAM, have been integrated to some degree into government health services, emergency nutrition responses often run parallel to health systems. They use 'start-stop' modes of engagement, triggered by fixed prevalence thresholds for SAM or GAM[7]. Interaction is often perfunctory, enlisting government health facilities and health workers in externally driven and defined humanitarian responses. Rarely is *existing* health system capacity acknowledged or built through these interactions[8]. Within this mode of engagement, health systems strengthening (HSS) may be viewed as a 'luxury', suitable only for periods of non-emergency when there is less stress on health services, and using development funding or government resources.

Contextualising the CMAM Surge Model

In 2010 and 2011, the Horn of Africa had two consecutive seasons with below-average rainfall, resulting in one of the worst droughts in 60 years. In Kenya, this mainly affected the ASALs. In the ASALs, the effects of drought related food insecurity are manifested in high maternal and child malnutrition. Underlying factors which contribute to high levels of malnutrition in these areas include pre-existing chronic and acute food insecurity; poor dietary diversity; poor child care and feeding practices; poor hygiene and sanitation; limited infrastructure, poor health service delivery and market integration; as well as sporadic conflict.

Concern was part of the humanitarian response in Marsabit County and was the lead non-governmental partner for nutrition in Moyale, Chalbi and Sololo districts[9]. In most of the affected districts of Marsabit County, the emergency response was initiated after the GAM rates were above 20%[10]. Despite this, the response was successful in addressing malnutrition through static and outreach provision of health and nutrition services. Post analysis of the response by Concern and District Health Management Teams (DHMTs) revealed that there was a lack of pre-emergency planning (despite slow onset of the emergency and early warning); limited use of available data and contextual analysis; and, limited understanding of how and when to scale up interventions. Conclusions drawn at the time indicated the need to establish:

- Emergency thresholds as part of disaster risk reduction (DRR) to enable the DHMTs to initiate early response to predictable emergencies;
- Community-based surveillance for early detection of malnutrition (number of cases and trends);
- Indicators and thresholds to facilitate planning and prompt scaling up and down of service provision.

In response to lessons and the rallying call for a new design framework for CMAM programming[11], Concern and the DHMTs developed the 'CMAM surge model.'

The CMAM Surge Model

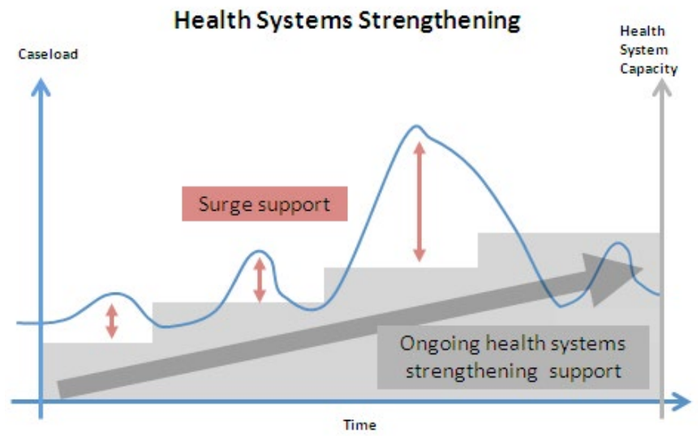
Model principles

The CMAM surge model is premised on one of the fundamental principles of CMAM, that early detection of malnutrition leads to improved treatment outcomes and fewer cases of SAM, as children are treated before their malnutrition becomes severe. The model affirms that strengthening the capacity of the health system to better manage spikes in demand for services is essential to ensuring quality health services and health systems in the longer term. The model aims to:

Strengthen the capacity of government health systems to effectively manage increased caseloads of malnutrition during predictable emergencies without undermining the health system, the provision of other services and on-going systems strengthening efforts.

The CMAM surge model prepares the health system to plan for, detect and respond efficiently to spikes in MAM and SAM prevalence and caseload; while it does not prevent malnutrition it does trigger early action and community mobilisation. It responds to the call for a new design framework for CMAM programming, one that employs capacity-based response thresholds that trigger support based on existing health system capacity; this is reflected in Figure 1[12]. Overtime, through such an approach, it can be expected that health system capacity to manage spikes in cases of acute malnutrition would improve; this would be reflected in revised upwards capacity thresholds and allow for increased attention to other aspects of service delivery, coverage and quality. The model presupposes therefore that there is some existing health system capacity and local commitment (of managers and health workers) to HSS. Without base capacity and commitment, the health system could potentially be in permanent 'surge' mode, leading to direct service provision by an external agency with no exit strategy in place. Box 1 reinforces the underlying requirements of the model.

Fig 1



Box 1: Surge model underlying requirements

The CMAM surge model is appropriate for contexts where:

- There are recurring, seasonal spikes in the prevalence of acute malnutrition, with risk of significant morbidity and mortality;
- "Management of SAM (and moderate acute malnutrition, if appropriate" with "management of acute malnutrition"
- Government health systems function to a moderate standard during non-emergency times and appropriate health system strengthening efforts are in place (where indicated).

Surge components

The surge model contains a series of components, which align with and reinforce the WHO's health system building blocks[13]. These are outlined in Table 1. The capacity of a health system to cope with increased needs for curative care for any disease or condition is a key aspect of HSS. It is also a means of promoting preparedness under a broader DRR framework, especially in areas where populations live in a chronic state of food and nutrition insecurity.

Table 1 Health system building blocks and surge components

Building Block	Surge components
Service delivery	Pre-defined and agreed surge package and delivery modality
Health Workforce	Capacity building of health workers and managers on CMAM and the surge model; pre-defined and agreed 'drawn down' plan for additional human resources for health
Information	Threshold setting, monitoring, timely communication and triggering (data analysis for triggering response)
Medical products and technologies	Pre-positioning of therapeutic foods, essential medicines and equipment
Financing	Costed surge plan, funding modalities identified and in place prior to an emergency
Leadership and governance	Reinforce mandated 'systems' and supportive roles (DHMTs, health workers, NGOs, communities, etc.) Government health managers and health workers in the 'driving seat'

Surge components

Fig 2

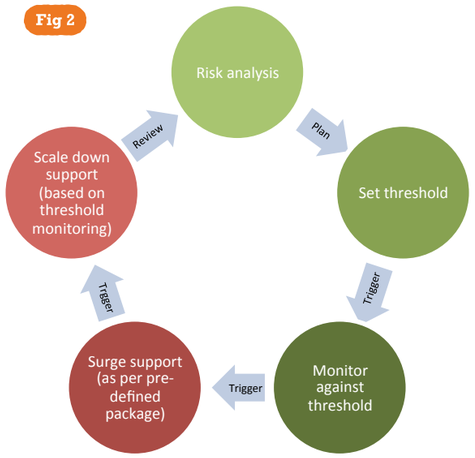


Figure 2 provides a visual representation of the components of the surge model. The figure has been presented as a cycle given the chronic nature of food and nutrition insecurity in the ASALs, due to both seasonal peaks and drought-related 'nutrition' emergencies. Steps in the cycle are as follows:

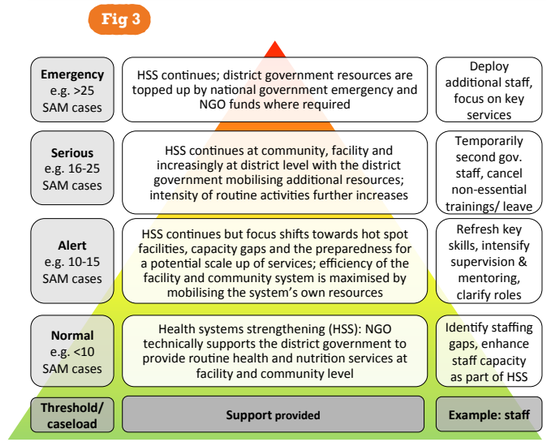
1. Risk analysis: Facilities implementing the surge model analyse the drivers of increased caseloads of acute malnutrition in their contexts. The intention is to facilitate an understanding of what is considered 'normal' caseload and why, when and to what degree spikes occur. Both supply and demand side factors are considered as part of this. These include seasonal impediments to health seeking behaviour, such as women's workloads, to health 'systems' issues such as absent health workers or a lack of commodities. All factors are triangulated to estimate the expected caseload over the year under different conditions and should be reflected in the caseload seen at the facility. Trends may be quite localised therefore analysis should be done with the staff and community informants at each facility.

2. Threshold setting: Thresholds are developed to indicate a critical number of monthly cases at a health facility, above which the type and scale of support changes. These thresholds are defined by the staff at each health facility and should be based on *their* capacity to respond to increasing health and nutrition needs. Caseload records (SAM, MAM, malaria, pneumonia, diarrhea, etc.) of the previous months can help in defining realistic thresholds as well as drawing from staff experiences during times when service needs exceeded available resources or capacity.

3. Monitor against thresholds: Caseloads are monitored and compared against thresholds on a monthly basis. This is done using hand drawn wall charts. Once a threshold is exceeded the health facility informs the DHMT, mobilizes its own resources, and, if needed, requests additional support, based on a pre-defined and jointly agreed package. This support should enable the facility to cope with an increasing number of patients without compromising the quality of health services.

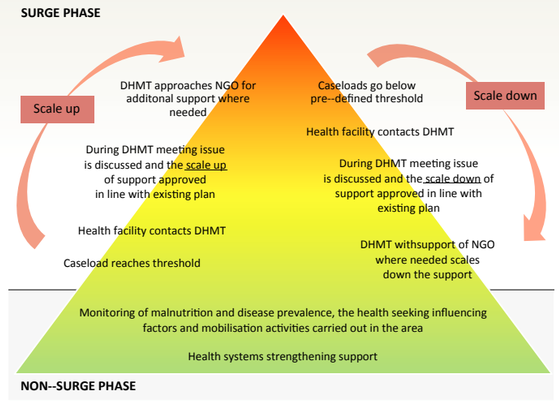
4. Provision of surge support: The type and level of surge support and how and when it is scaled up and down is formally agreed at district level prior to implementation of the model. Surge support is activated to fill in capacity gaps at different threshold levels in order to allow routine health services to continue without compromising the quality or type of services. Figure 3 outlines the flow of support within the model.

Fig 3



5. Scaling-down surge support: Once the caseloads are reducing, support is gradually scaled down until it reaches the pre-surge level. Figure 4 provides a visual representation of the scaling up and down mechanism.

Fig 4



Application of the CMAM Surge Model

The CMAM surge model is being piloted with DHMTs and health workers in three districts of Marsabit County - Moyale, Chalbi and Sololo. Activities commenced in May 2012 and continue to date, and are being implemented in 14 health facilities across the three districts. Implementation of the model is part of a larger ECHO funded project. Initiation of the model involved pre-defining and costing the surge support package and agreeing on roles and responsibilities, through formal agreement, between Concern and the respective DHMTs. While these aspects of the model are not featured in Figure 2, the parameters of external support[14] need to be set at the initial stage of implementation and require only periodic review.

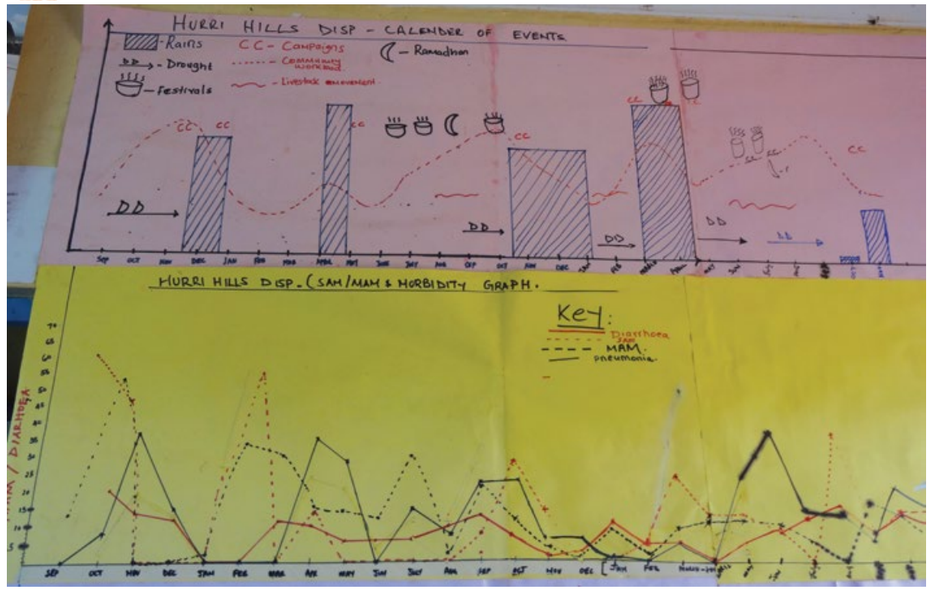
Risk analysis: Health facility personnel and DHMT members were supported to identify factors contributing to caseloads of malnutrition seen in the 14 facilities (note, this does not necessarily correlate with caseload in the community). In the context of Marsabit, the following factors were identified: rainfall, conflict, population movement, workload of households and festivals. Stakeholders then developed graphs of recorded caseloads for children with diarrhoea, pneumonia and severe and moderate acute malnutrition[15], and were trained to interpret contextual factors and relate these to observed number of cases. Through this process, health workers could better understand which factors increase prevalence of acute malnutrition and

which deter health seeking behaviour; from this understanding, spikes in caseload could be predicted.

Health workers also developed an appreciation of the importance of coverage of services and the need to investigate deviations in anticipated caseload. For example, seasonal peaks are expected in July at the onset of the rains when several factors overlap: 1) the number of diarrhoea cases increases, 2) the workload particularly for women increases due to agricultural activities, and 3) most households run out of food stocks. Health workers appreciated the need to investigate with the community reasons for any deviations from anticipated caseload during this period.

For Marsabit stakeholders, the risk analysis was considered a real 'eye opener'. It gave them better predictive skills over future events and an understanding of causal factors. The process was so enlightening that the DHMT in Sololo conducted a similar exercise for all health facilities in the district. Figure 5 presents a replication of one facility's risk analysis.

Fig 5



Threshold setting: Health personnel were then supported to define capacity thresholds based on analysis of their *own* ability to respond to an increase in health and nutrition needs. Caseload records for MAM, SAM, diarrhoea and pneumonia from the previous months assisted in defining realistic thresholds as well as drawing from past experience. Capacity has multiple factors – the total number of human resources for health, individual qualifications as well as motivations, equipment, supplies, community support, etc. As a result, threshold levels need to be defined by facility. These were then mapped against four phases - normal, alert, serious and emergency. In the case of Marsabit, thresholds were set for both MAM and SAM.

Monitor against the threshold: Monitoring is done on a monthly basis using prepared wall charts to plot caseloads for diarrhoea, pneumonia, MAM and SAM. Data is extrapolated from facility reports, the "source" documents for the Health Management Information System. This exercise does not take long given that the data is already compiled. The thresholds are placed beside the graph and immediately used to compare the recorded cases. In the case of Marsabit, the health facility staff has found the monitoring of caseloads against the thresholds to be an easy task, one which does not take much time but generates crucial insight. The health staff appreciate that they are in the 'driving seat' and that they decide when to request for additional support. While the response trigger is SAM and MAM in Marsabit, any disease or condition could be used.

The process of regular plotting of admission data against the threshold enables health workers to track even slight changes in their context over time. It allows for gradual intensification of support as and when this is required based on a pre-agreed package. The model therefore promotes data for decision making at facility level and system efficiencies as external resources serve gap filling requirements for discrete periods of time only. An additional component of the model, one that does not take place at facility level, is community engagement. How effective this component is has significant implications for facility-based thresholds, the accuracy of trend analyses and supply- and demand-side factors related to service utilisation[16]. Concern is currently testing a community-based surveillance system in order to ensure that trends at health facility level are reflective of the situation in the community. The surveillance system operates through Ministry of Health defined community units – Community Health Committees, Community Health Extension Workers (CHEWs) and Community Health Workers (CHWs).

Proof of concept: Conditions in Marsabit County have recovered since the 2011 drought mitigating the need for 'emergency' surge support at scale. However, the model has been 'triggered' 11 times by health workers at pilot health facilities between January and September 2013; in one instance, this reached the emergency threshold level. Box 2 provides details on this event.

Box 2: Exceeding the emergency threshold in Debel health centre

Debel health centre is situated in Moyale district and serves a population of approximately 7,500 including 1,400 under five children and 1,800 women of reproductive age. The facility is staffed by one nurse supported by two CHWs. In May 2013, MAM cases exceeded the emergency threshold set at 30 new admissions (actual cases = 35). This triggered surge support from the DHMT and Concern. Support included the secondment of a CHEW and an additional CHW to support the nurse; the provision of weekly on-the-job training and supportive supervision by the DHMT and Concern; the reallocation of supplies and equipment from another health facility and community mobilisation and outreach clinics to the more distant communities. Analysis of the factors contributing to the increased caseload included the following:

- Mass screening and referral by CHWs during community based surveillance data collection
- Increased diarrhoea in May 2013
- No general food distribution since March 2013. In addition, the last distribution included maize not rice. Maize is often sold for other commodities as the community prefers rice.
- Outbreak of camel disease leading to out migration of the camels to a neighbouring district leaving the area with inadequate milk which comprises a big part of the children's diet in the area.
- The nurse was on leave in April 2013 so few admissions were done for that month.

Surge support was gradually reduced and ceased altogether once the caseload returned to normal. The response had the additional benefit of securing a CHEW for the facility on a permanent basis and the repair of the broken equipment (a mother and child scale).

The model will be evaluated in 2014 as part of its 'proof of concept' so that it may be scaled up or replicated in other ASAL counties. Lessons learned to date include the following:

- Acceptance of the model is closely related to its simplicity
- Incorporating community systems into the model is important and an area for further development
- Periodic review of the threshold is required given changes in local context (e.g. facility capacity, health need and health seeking behaviour)
- Decentralised governance allows for flexible and localised decision making, an opportunity for the surge model

Lessons learned to date and those emerging from formal evaluation will be taken into account in the model's evolution. Watch this space!

Conclusion

Health systems are intended to be flexible systems, able to expand and contract as need requires. Making health systems 'disaster proof' should be an aim of all HSS initiatives and is a true reflection of an able system. Given the predictable nature of humanitarian 'nutrition' emergencies and seasonal spikes in malnutrition in the Kenyan ASALs, localised capacity is essential. This will require external agencies, such as Concern, to work differently. Government health managers, for their part, will also need to work differently; their pro-active and effective leadership remains crucial both during and after emergencies (Box 3). The CMAM surge model serves as an effective approach for realigning government and non-governmental roles, those of external agencies and health system' stewards and operators, for more effective and cost effective provision of CMAM, allowing services to reach more people, at the right time and in the right quantity.

Box 3: Effective systems require effective leaders

An estimated 25 million people are displaced today as a result of conflict, natural or manmade disasters. In such situations, local health systems become rapidly overwhelmed and multiple agencies often move in to assist. This leads to the paradoxical situation in which leadership is weaker than usual because it has been disrupted or divided, but the need for leadership is even greater.

World Health Organisation (2007) *Everybody's Business: strengthening health systems to improve health outcomes* (WHO's Framework for Action), WHO, Geneva.

Endnotes

1 Disasters Evaluation Committee, January 2012. DEC Real Time Evaluation - East Africa Crisis Appeal, Synthesis Report.
2 The Ministry of Health domesticated the CMAM approach for Kenya. This is referred to as the Integrated Management of Acute Malnutrition or IMAM.
3 Concern currently supports CMAM programmes in Chad, Ethiopia, Haiti, Kenya, Malawi, Niger, Rwanda, Sudan, South Sudan and Uganda.
4 Concern has successfully implemented Child Survival programmes in six countries to date: Bangladesh, Rwanda, Burundi, Haiti, Niger and Sierra Leone. In 2012, Concern initiated a Child Survival Programme in Kenya.
5 The strategy was initially referred to as Community Therapeutic Care by Valid International and Concern Worldwide in 2002.
6 UNICEF, 2013. Global SAM Management Update, Summary of Findings, Nutrition Section, Programme Division, UNICEF New York.
7 P. Hailey and D. Tewoldeberha, Suggested New Design Framework for CMAM Programming, Emergency Nutrition Network, 2010, issue 39.
8 Ibid.
9 Marsabit County came into existence in 2013 as part of devolution under Kenya's new Constitution; this also saw the dissolution of districts. The county is presently divided into four constituencies, Moyale, North Horr, Saku and Laisamis. For the purposes of this brief, the term district is retained given that it references the model's application under district administrative boundaries and teams.
10 Save the Children and Oxfam, 2012, A Dangerous Delay: the cost of late response to early warnings in the 2011 drought in the Horn of Africa.
11 P. Hailey and D. Tewoldeberha, Suggested New Design Framework for CMAM Programming, Emergency Nutrition Network, 2010, issue 39.
12 Adapted from P. Hailey and D. Tewoldeberha, Suggested New Design Framework for CMAM Programming, Emergency Nutrition Network, 2010, issue 39.
13 World Health Organisation (2007) *Everybody's Business: strengthening health systems to improve health outcomes* (WHO's Framework for Action), WHO, Geneva.
14 The model does not presuppose that external non-governmental support is required hence its absence in the model.
15 Malaria was not selected as it is not endemic in the area.
16 Community engagement can also influence supply-side factors of health care provision such as staff attitudes, their availability, etc.

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