Understanding nutrition data and the causes of malnutrition in Kenya

A special report by the Famine Early Warning Systems Network (FEWS NET)

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BACKGROUND

The Greater Horn of Africa (GHA) has once again been hit by drought. The United Nations (UN) estimates that at least 11 million people across the region in Djibouti, Eritrea, Ethiopia, Somalia and Kenya are affected[1]. In Kenya, 3.5 million people are estimated to be in need of immediate humanitarian assistance making this the region's worst drought in a decade[2]. The impact has been particularly severe in pastoral regions of northeast Kenya (Ethiopia-Kenya-Somalia border) resulting in an unprecedented loss of livestock, and migration in search of employment and relief aid. Malnutrition rates have been reported at very high levels in many of the districts in the northeast and in the Turkana region of northwestern Kenya. While there is no doubt as to the severity of the current drought, there is considerable debate regarding the lack of timely action, particularly in terms of protection of pastoralist livelihoods, to reduce the need for a massive and costly emergency response. As well, the high levels of acute malnutrition found in these areas have once again provoked a debate regarding what is "normal" among pastoralist populations, and what should be considered an acute or chronic situation.

FEWS NET is interested in deepening its understanding of the nutrition situation in northern Kenya to improve the interpretation of the high malnutrition prevalence rates reported in 2006. To do so, it is undertaking this assessment and Special Report to:

- Assist food security and early warning analysts to better understand the nutritional aspects of the 2005/06 drought in Kenya, including the possible contributory causes to persistently high rates of malnutrition;

- Highlight the issues and gaps in being able to analyze and interpret nutritional data in the Kenya context, based on the 2006 experience; and

- Outline broad recommendations regarding what types of nutrition-related information should be collected and analyzed, and how the situation should be monitored.

This report is based on information collected during a brief visit to North Eastern Province (Mandera District) and Rift Valley Province (Turkana District) in June 2006. Both areas have been badly affected by drought and have cross-border issues that impact food security. Mandera has a predominantly pastoral livelihood base. Turkana has a mixed livelihood base, but pastoralism is the predominant livelihood. The two districts were chosen in order to determine if there is a possible variation in the causal analysis of the malnutrition rates, according to livelihood characteristics. While this paper is informed by the current experience in Mandera and Turkana Districts, previous similar work of the same nature carried out in Niger shows that many of the issues raised are pertinent to other marginal livelihoods, and to nutrition information, interpretation and emergency response generally.

Discussions were held at national and district levels with the Office of the President's Arid Lands Resource Management Project (ALRMP), Ministry of Health (MoH), the United Nations Childrens Fund (UNICEF), the United Nations World Food Programme (WFP), the United Nations Food and Agriculture Organisation (FAO), and non-governmental organizations (NGOs) implementing health and nutrition surveys, and nutrition programs (OXFAM, Islamic Relief, Medecins sans Froniteres (MSF) - Belgium, Action against Hunger, World Vision, Christian Children's Fund, and Merlin). Discussions were held with communities, and with mothers/caregivers participating in nutrition programs. Site visits were made to Supplementary Feeding Programs (SFP), Outpatient Therapeutic Programs (OTP), Community Therapeutic Care (CTC) programs and to hospital-based stabilization centers (SC) serving severely malnourished children with complications. It proved difficult to access high quality, reliable information regarding nutrition trends and program outcomes. In part this is due to problems of coordination and compilation of nutrition data, and in part it is due to the relatively short time period during which many nutrition programs have been fully operational (around 3 months).

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[1] United Nations Consolidated Appeal for the Horn of Africa, April 7, 2006
[2] USAID. Horn of Africa Complex Emergency. Situation Report 15, May 19, 2006

FOOD SECURITY AND NUTRITION SITUATION IN NORTHERN KENYA

Unlike other crises, including the 2005 drought in Niger, the quality and credibility of early warning systems in Kenya is not in question[3]. The progressive deterioration of pastoral livelihoods in the region was well documented both by the Kenya Early Warning System (EWS), Arid Lands Resource Management Project (ALRMP), as well as the international systems (FEWS NET). By November 2005, there were clear warnings of "pervasive pre-famine conditions with the potential for widespread famine in pastoral areas". Since then, considerable attention has focused on the lack of an appropriate response. This is particularly true regarding a lack of timely action to protect pastoralist livelihoods, and thereby to reduce the need for a massive and costly emergency response. Livelihoods interventions have been rare, and the response has focused overwhelmingly on food aid. .
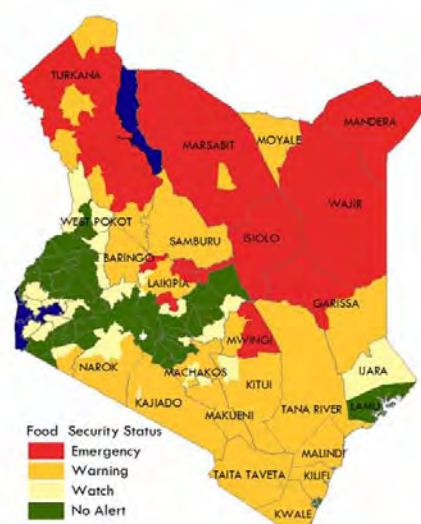
FOOD SECURITY SITUATION

Successive seasons of failed rains have contributed to the current situation in northern Kenya. A Government of Kenya (GoK) drought emergency program began in pastoral districts in October 2003[4]. In September 2004 a WFP Emergency Operation (EMOP) began to provide food assistance to 2.3 million people affected by drought[5]. It was anticipated that this relief operation would draw to a close following the short rains in 2005. However the October to December 2005 short rains failed in all of the pastoral districts. The season was described as a "complete failure"[6]. Pastoral livelihoods became severely threatened, as the basis of their food security - animals - began to die in unprecedented numbers due to the lack of pasture and water. Mobile pastoralist communities found it increasingly difficult to find water and pasture in the region - including across international borders. In northeast Kenya (Ethiopia-Kenya-Somalia border) livestock losses estimated at 30-40 percent (up to 70 percent in some communities) were reported, and

Figure 1: Food security status: March 2006

Source: KFFSG/ALRMP

contributed to a mass migration of pastoralists in search of water, employment and emergency relief aid[7]. About 3.5 million people were estimated to be in need of food aid between March 2006 and February 2007. This estimate was based on both the failure of the short rains and climate forecasts indicating a higher likelihood that the long rains (March to June) would be below normal[8]. Indeed the performance of the long rains was mixed in the drought affected areas, with good rainfall interspersed with areas of below average rainfall, and uneven temporal distribution of the rains.

In pastoral areas, water, pasture and browse improved in an overall sense. However, in areas most affected by the drought (Mandera, Wajir, Turkana and part of Garissa districts) pasture is scarce, and browsing animals that eat shrubs and twigs, such as goats and camels, are increasingly becoming the most important livestock, as pastoral cattle holdings have been decimated. The condition of surviving livestock is improving in most districts, and mortality has declined, partly due to availability of browse and pasture, and partly due to

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[3] Grobler-Tanner. FEWS NET Special Report. Understanding nutrition data and causes of malnutrition in Niger. June 2006.
[4] The GoK program is not given much attention in the chronology of the Kenyan drought because of the absence of targeting resulting in marginal impact.
[5] An estimated 1.2 persons were targeted in the EMOP from September 2005-February 2006. The number declined from 2.3 million in September 2004 to 1.2 million in September 2005. Most of these were pastoral households.
[6] Kenya Food Security Steering Group (KFSSG). Consolidated inter-agency report. Short rains assessment report. February 2006.
[7] OXFAM, UK Press Release. Update on the East Africa Food Crises. May 9, 2006
[8] KFSSG short rains assessment. Op Cit. February 2006.

vaccination campaigns. Cattle and sheep are still noticeably thin, and are taking much longer to rebound than camels and goats.   Despite these improvements, food security remains precarious[9].

NUTRITION SITUATION

Consistently high levels of acute malnutrition have provoked a debate regarding what is "normal" among pastoralist populations in Kenya, and what should be considered an abnormal acute or chronic situation.

Comprehensive nutrition assessments coordinated by the Ministry of Health (MoH), UNICEF, Action Against Hunger and MSF/Belgium in March 2006 suggest an alarming nutrition situation, with Global Acute Malnutrition (GAM) rates between 17 and 30 percent in Mandera, Marsabit, Moyale and Samburu Districts. This is significantly higher than WHO's emergency threshold of 15 percent. Severe Acute Malnutrition (SAM) rates are between 2.1 and 3.5 percent (see Figure 2)[10]. A recent multi-agency survey in Turkana District revealed a GAM rate of 24.6 percent, with a very high SAM rate of 4 percent[11].

Figure 2: Rates of Child Malnutrition in Pastoral Districts
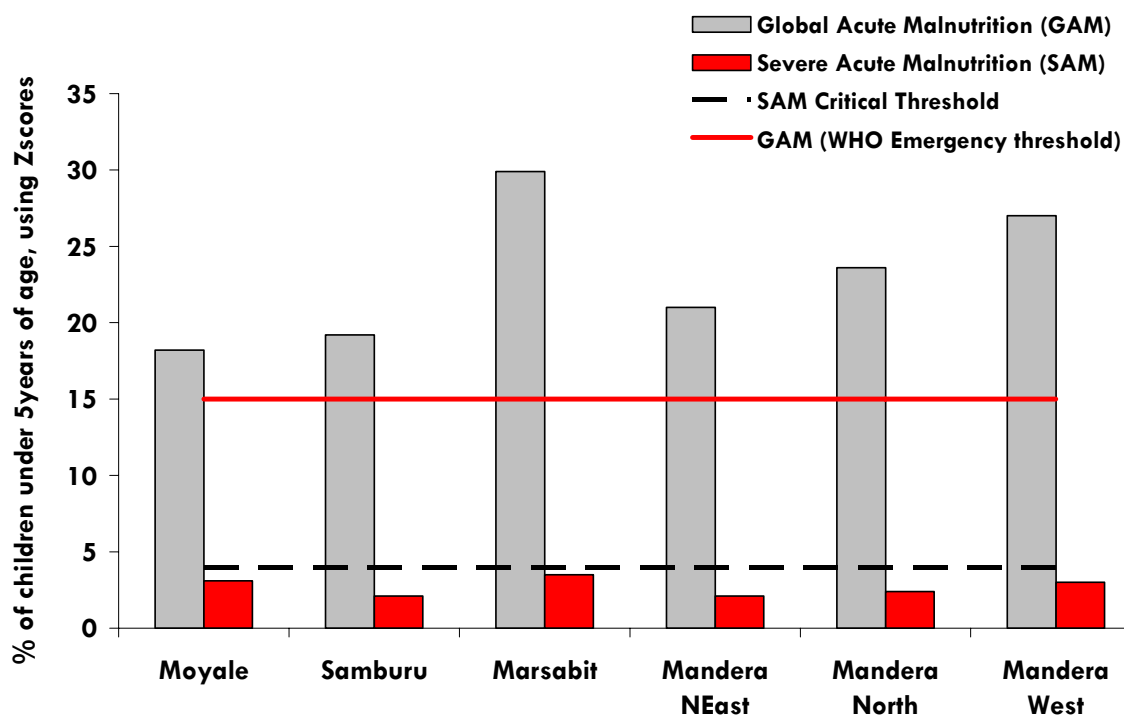
Sources: UNICEF, AAH, MSF/Belgium and MoH

Northern Kenya has been seriously affected by drought over the last seven years, with severe droughts in 1999, 2000, 2004 and 2005/6[12]. Drought used to occur every three years on average but has now become so recurrent it is perceived to be almost normative in northern Kenya. Predictable rainy and dry seasons can no longer be counted upon to provide adequate dry season grazing and water for pastoral populations, whose resilience is increasingly eroded by broader economic factors in the region. Food aid deliveries have been substantial over this period, especially after droughts in 2000 and in 2004 in Kenya[13]. Therefore, any attempt at analyzing trends in nutritional status, and at determining a "norm" or baseline of GAM and SAM rates,

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[9] FEWS NET. Food Security update, June 12, 2006
[10] UNICEF/GoK integrated health and nutrition survey in Moyale , Samburu and Marsabit, Mandera. March 2006.
[11] OXFAM, World Vision and Christian Children's Fund. Health and Nutrition Survey, Turkana district, May 2006
[12] FAO Global Information and Early Warning System www.fao.org/giews
[13] WFP Kenya food distribution plans 2000, 2001 and 2004.

must take account of the context of recent recurrent drought, and the erosion of coping strategies in populations that have historically been extremely resilient.

An analysis of trends for northern Kenya has proven difficult since survey methodologies are not comparable and often do not cover the same locations, thus making comparisons difficult. Presentation of data, disaggregation of data, and analysis are also very poor in many previous years' survey reports.

The prevalence of edematous malnutrition is often not reported at all, or not reported separately, making interpretation of the GAM difficult. What is available from nutrition surveys and therapeutic feeding program data indicate that the rates of edema are very low in North Eastern Province. Most of the GAM has therefore been attributed to wasting (WFH <-2 Z). In Turkana, the rates of edema are much higher and edematous malnutrition is a significant proportion of the overall high SAM prevalence (25 to 50 percent)[14].

Data from the Kenya Demographic and Health Survey 2003 (KDHS) for North Eastern Province indicate that wasting rates have remained at elevated levels for some time (GAM 26.5 percent and SAM 10.9 percent 2002/03 data), certainly due in part to repeated droughts[16]. This corresponds to other available data which show a variation in GAM between 14 and 22 percent between 2000 and 2005 in the northeast[17]. District and sub-district surveys show much higher levels, partly because district and sub-district surveys often focus on the worst affected areas. Pooled analysis

Figure 3: GAM percent East and Northeast Kenya 2000-05 [15]
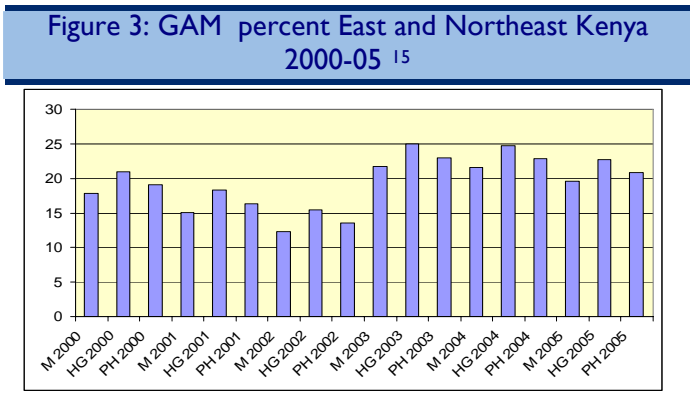
(accounting for season and other variables) of small-scale survey data for 2000 to 2005, conducted at the same time of year in Marsabit, Isiolo, Kitui and Moyale Districts in Eastern Province; Wajir in North Eastern Province; and Turkana, West Pokot, Lakipia and Kajiado Districts in Rift Valley Province, reveal a GAM mean of 19.3 percent in 2000 (drought), 13.7 percent in 2002 (no drought), and above 20 percent in 2004 and 2005 (drought). Rates increased to a mean of 24 percent in 2006 (severe drought; See Figure 3).

Trend analysis for Turkana is possible because annual surveys have been conducted since 2002, using the same methodology, and conducted at the same time of year (See Figure 4). These trends indicate that within districts there are substantial differences in rates. But Turkana's central regions and Kerio have remained persistently high. It is important to note in these cases that despite food distributions beginning in 2004, GAM rates have not declined. Indeed SAM rates in Turkana in 2006 have reached 5.2 percent in some areas. Thus it is clear, first, that high GAM rates in northern Kenya are a persistent phenomenon, and what might have been considered a temporary acute crisis has now become a chronic crisis. Secondly, it is clear that food is not the only answer to persistent high rates of malnutrition.

Data on admissions to supplementary and therapeutic feeding programs and hospital nutrition units are scarce prior to 2006. However Merlin data on admissions to inpatient and outpatient therapeutic feeding programs in Turkana (2004 to 2006), show increases in admissions in 2006, with a dramatic hike in admissions in May, mostly due to the expansion of services. UNICEF estimates 73,000 children and 7,200 pregnant and lactating women are in need of supplementary and therapeutic feeding, with an estimated 50,000 children not being reached[18]. However accurate these figures may or may not be, consolidated program data, including admissions and outcome data (numbers recovered, mortality, default) are not

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[14] OXFAM, Op cit May 2006. Prevalence of SAM 3.1-5.2. Prevalence of edema (0.4-1.6 percent).
[15] Mason, J et al. Assessment of child nutrition in the greater horn of Africa. Report for UNICEF Eastern and Southern Africa Office, Draft, February 2006
[16] Kenya Demographic and Health Survey, 2003 (data collected in 2002).
[17] UNICEF Kenya, summary table on nutrition surveys (2000-2004). October 2004.
[18] UNICEF, Horn of Africa donor update. May 11, 2006.

available. Therefore it has not been possible to compare current program outcomes to international standards, or to determine impact. In both Mandera and Turkana, community-based therapeutic programs are targeting children with severe acute malnutrition. They offer particular advantages over facility based programming, especially given the mobility of pastoralist populations. Despite community based programming, drop-out (default) rates have been high (>15 percent), exceeding SPHERE standards[19]. This is certainly in part due to distance, migration, and sometimes to a lack of understanding of program purposes on the part of the community. Readmissions have also been relatively high, primarily because of a lack of supplementary feeding, inadequate general rations, ration sharing, and very frequent infections directly linked to poor hygiene. A large proportion of children in inpatient care have chronic conditions such as TB and/or HIV/AIDS, and in the case of Turkana, they result in long periods of stay before discharge and/or readmission, and high mortality rates.

Program coverage has not been well reported, partly because many programs have only recently expanded. Reported coverage rates for community based therapeutic programs using reliable methods are low (30 percent), far below the SPHERE recommendation of 50 percent. Barriers to program access and uptake, including use of weight-for-height, have been cited as the primary reasons for poor coverage[20]. There are still many areas with no program coverage at all, particularly in Isiolo, Garissa and Samburu[21]. Thus, large numbers of moderately and severely malnourished children are not receiving treatment. In Mandera and Turkana, for example, there is a significant gap in addressing the needs of moderately malnourished children and malnourished pregnant and lactating women. In many cases targeted supplementary feeding

Figure 4: Malnutrition Trends in Turkana District by Cluster Divisions (2002 to 2006)

programs do not exist at all. This should be better coordinated by the Kenya Food Security Steering Group (KFSSG) and the District Steering Groups (DSG) to ensure fewer significant gaps in programming coverage..
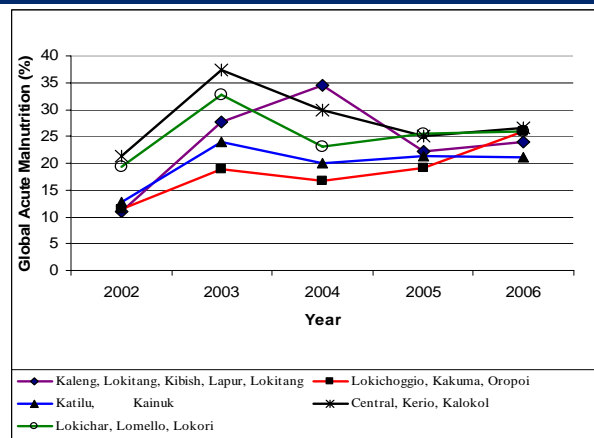
From January to April 2006, a fortified blended food (Corn Soy Blend, or CSB) was added to the general food aid ration for households with children under five, and pregnant and lactating women. Since May 2006, CSB has been included in the general ration for all targeted households. In June the amount of CSB will be doubled from 1.2kg to 2.4kg/person/month to address ration quality issues and to attempt to prevent micronutrient deficiencies[22].

Given the very large numbers of moderately malnourished children, poor household food security, and high rates of morbidity, it is not surprising that many children become severely malnourished because of the lack of a safety net. But even where a supplemental feeding program does exist, large numbers of children are non-recovered (i.e., did not reach discharge criteria of >85 percent weight-for-height). This is in part due to an inadequate general food aid ration and ration sharing. The possibility also exists, however, that many children in these areas may reach their "normal" weight-for-height at around 82 percent of the international standards. This is noted below in issues in interpretation of data.

Security issues and periodic inter-clan and cross-border fighting present problems of safety and access in some areas in the northeast and Turkana, and affect food security. However, security issues are not considered a significant obstacle to the implementation of nutrition programs. Despite the perception that children from Somalia form the bulk of the malnourished children in supplementary and therapeutic feeding

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[19] Program outcome data from Merlin Turkana and AAH Mandera, May 2006
[20] Valid International. Coverage survey of Merlin OTP in Wajir, March 2006.
[21] Nutrition programs in nine drought affected districts, KFSM sub-committee for health and nutrition, May 15, 2006.
[22] WFP/UNHCR. Joint assessment guidelines. WFP Office of Emergency Needs, 2004

programs in border areas of the northeast, and that this is contributing to the high levels of acute malnutrition, this is not the case[23].

NUTRITION SURVEILLANCE AND MONITORING

There are two types of nutrition information routinely collected in Kenya: Middle Upper Arm Circumference (MUAC) data gathered by ALRMP monitors on a monthly basis at selected "sampling" sites in a given district, and routine growth monitoring of children under five, collected by the Child Health and Nutrition Information System (CHANIS). The CHANIS dataset is extremely limited as a monitoring tool. It is based on Growth Monitoring (GM) and collected only from health clinics (facility-based). Thus, coverage is extremely poor, particularly in the northeast. After the child is one year of age, visits become even more infrequent. In the northeast, GM is extremely erratic, rendering it redundant as a tool for determining trends. GM uses weight-for-age, and is intended as a monitoring tool for individual children to detect growth failure. It is not useful for gauging population level trends. MUAC <110 mm should be used in addition to routine GM to detect children at high mortality risk, and those who should be referred for therapeutic feeding.

MUAC data are collected by the ALRMP on a monthly basis from sampling sites in 22 districts (increasing to 28) at district level. This is reported in the monthly ALRMP bulletins. Until recently the MUAC data collected and presented in the ALRMP monthly bulletins has been very difficult to interpret because it has not been presented against a district average, or compared to an historical trend (mean data over the last 5 to 6 years). This situation is exacerbated by the fact that the MUAC data are not, for the most part, triangulated with other relevant information. As such, the information has not proven particularly useful in terms of gauging the severity of a situation or triggering a response.

There are also issues in using MUAC and appropriate cut off points. Currently a MUAC of 135 mm is used as a cut-off to determine children at risk. The proportion of children below this level would normally go up and down according to the public health and nutrition situation, and the information can then be used for decision making, if there is an accumulation of data over time, sufficient to determine trends (five years). This historical data exists in many districts, and would considerably improve the surveillance system by reporting current data against trends, and identifying significant changes from normal condition.

However the problem is not only with the limited ability to analyse the data. The institutions, and their personnel using this data do not understand or make effective use of it. OXFAM has provided some useful training and analytical tools for collecting and analyzing MUAC data in the EWS/surveillance system for use by ALRMP[24]. This has made some difference, but has not yet trickled down to the district level where the understanding of basic nutrition concepts and indicators is minimal. Similarly while nutrition partners at the district level were very familiar with the ALRMP, they were often unaware that nutritional data was being collected by ALRMP, suggesting the need for better coordination and collaboration with technical experts at district level in the interpretation and analysis of the data collected.

Quantitative data and information (food security, malnutrition prevalence rates, surveillance and admissions to therapeutic feeding programs) are not alone sufficient to determine the severity of a crisis, or to design a response. An understanding and analysis of the causes of malnutrition, and an interpretation of the data in context are required. For the most part, analysis of high GAM rates in Kenya has tended to over-emphasize the absence of food, and thus the response tends to be overwhelmingly food-related. This is exacerbated by donor "preferences" for food, versus non-food responses. The over-emphasis on food obscures the contribution of other causal factors, such as poor hygiene, morbidity and care practices, to malnutrition. Data and information on the causes of malnutrition in northern Kenya are discussed below.

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[23] MSF-B El Wak and AAH Mandera. Personal communication, June 2006.
[24] OXFAM. Malnutrition and nutrition status in the EWS. Guidelines and tools for ALRMP, 2006.

CAUSES OF MALNUTRITION IN NORTHERN KENYA

There is a direct connection between areas of high food insecurity and high rates of malnutrition in the areas studied in Kenya . However the available evidence and data on trends suggest that provision of food (or food as the predominant response) has not solved the problem, and will not solve it alone. To date, the United States Government (USG) has provided 69,500 MT of Title II food aid, valued at $49.8 million, to WFP's drought relief programs. In May 2006, only 17 percent of the UN Consolidated Appeal non-food request for Kenya had been funded[25]. And as we have already seen in previous years, the provision of food aid has failed to bring malnutrition rates below emergency levels. Emergency food aid interventions have been on-going since 2004 in up to 25 drought-affected districts, including the four districts where some of the highest current GAM rates are found.

The reasons for persistently high rates of malnutrition are always multi-faceted and multi-causal. The standard reference tool for understanding and analyzing the causes (direct, indirect and underlying) is the causal framework (See Annex 1). This framework has generally been adopted by international agencies and should form the basis for nutritional assessments in emergencies[26]. The framework cites food intake and disease as the immediate causes of malnutrition, with three underlying and overlapping causes:

> i)   inadequate household food security;
> ii)   inadequate care and feeding practices; and
> iii)   poor public health access and environment.

The third tier of causes includes socio-political and economic causes. The causal framework should guide investigation of the relative importance of the different causes of malnutrition and mortality, thereby clarifying a relative prioritization of interventions among different potential sectoral responses.

The three underlying causes are explored within the context of northern Kenya below.

INADEQUATE HOUSEHOLD FOOD SECURITY

Very high livestock mortality rates were found between November 2005 and March 2006, especially among cattle and sheep, such that livestock holdings for a significant number of pastoralists were insufficient to support household food security in both the immediate and long-term. Many pastoralists reported losing their entire livestock holdings and were no longer able to sustain themselves based upon a pastoral livelihood. They have been forced to live with relatives in town, take up petty-cash employment, and begging ("pastoralist drop-outs"). Pure pastoralists (those depending solely on their animals) who still have reproductive animals appear to be much better off than these drop-outs who are settling in towns and along roadsides. In many cases among these destitute pastoralists, a part of the family, usually women and children, waits by the road or around towns for food relief and water, resulting in a proliferation of unplanned settlements without basic amenities.

Food security for much of the population in the northeast and northwest is highly precarious for the following reasons:

● **Recurrent and lengthy droughts**

Frequent droughts have reduced dry season grazing options. Once the rains end, choices for where to migrate for more favorable grazing and water availability are very limited, making it difficult for pastoralists to endure until the next rains.

● **A rapidly degrading environment**

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[25] Approximate figures available from OCHA Regional Support Office, Central and Eastern Africa, May 2006.
[26] WHO, 2000, Sphere Project 2004, WFP 2000

Environmental degradation engenders more degradation. Even if rains were normal, bare soils have little ability to absorb and retain the moisture in the soil because of the high run-off rates.   High run-off rates continue to generate more eroded top-soils, which will impede the generation of pastures.   Even food aid may have an unintended negative impact in this sense. The provision of maize as the principle food aid commodity in the relief food basket has a detrimental impact on the environment because of its relatively long cooking time, which requires significant supplies of wood fuel.

- **Terms of trade/purchasing power**

Livestock prices have now increased in most pastoral markets, while maize prices have declined by about 10 percent, tilting the terms of trade slightly in favor of pastoralists. However the current terms of trade are well below the five year average. And without animals to sell, many of the most destitute are not now able to take advantage of this trend as they have substantially reduced purchasing power[27].

- **Milk availability**

Milk availability (a key dietary staple) has only increased slightly because few animals are lactating, following the harsh dry season. Milk consumption among children has only increased slightly. In Turkana many divisions report that no one is drinking milk[28].

- **General ration issues**

A large proportion of the population in affected areas is dependent on the general ration for household food security at this time. However, the ration is a partial ration (75 percent or 1,575kcal/person/day) aimed at covering 80 percent of the population in pastoral districts and 60 percent in Turkana[29]. Cereals have been in sufficient supply, but both pulses and oil are in short supply, and in many cases, households have not received any oil[30]. This has resulted in significant problems regarding both the quantity and the quality of the general ration. This is compounded by issues related to targeting at the community level (who gets what and how much), resulting in uneven, and in some cases, inequitable distribution. Despite recent agreement in the KFSSG that households of children admitted to therapeutic feeding programs should be linked to the general ration distribution, this is not always the case in practice. In many cases there is sharing of the ration and it lasts up to two weeks of the month. While end-use monitoring is tight, selling, trading and use of relief food (maize) for making alcohol (Boraa) is quite common. A switch from whole maize to bulgar wheat and sorghum is exacerbating general ration quality issues in the northeast, since many people do not like these commodities and prefer to trade or sell them.   The pipeline is expected to be more stable from June and thus the food basket should be more complete. As noted above CSB (2.4kg) was to be added to the ration from June. This should help to address ration quality issues.

- **Security and conflict issues**

Conflict in Turkana with tribes from neighboring countries for control of resources for their livestock (water and pasture), has led to the migration of Turkana out of the normal dry season grazing areas. This adds to the food insecurity faced by many more pastoralists. Major causes of conflict include competition for scarce resources, inadequate policing and state security, erosion of traditional governance systems, land issues and increasing poverty. Firearms add lethal force to the situation.

Livelihoods play a significant role in food security and malnutrition rates. Pure pastoralists with animals are better off than those who have settled and who are often dependent on food aid, trade and begging for food

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[27] ALRMP data (Samburu and Mandera districts)
[28] Arid Lands Turkana, personal communication
[29] World Food Program. Kenya EMOP 10374.0. June 2006 distribution plan.
[30] Considerable variation in GR was found in Turkana ranging from 30-90 percent receiving some food aid. In central division only 20 percent reported receiving food aid. Those reporting receiving oil was very low overall and ranged from none (Lomelo, Kibish and Lapur) to 40 percent.

in urban and peri-urban areas. In Turkana, the highest GAM and SAM rates were found among those who were 'casually employed' (petty traders, unemployed), or who relied on hunting and gathering, selling charcoal and begging. Fishing communities face a much-reduced catch due to receding waters of Lake Tana and migration of the fish. SAM rates have increased among these lake-shore communities.

A look at food consumption profiles in Turkana found that diets are extremely monotonous. Certain wild foods (palm fruits and tubers) make up part of the diet, but this is difficult to quantify. The blended food (Corn Soy Blend) in the general ration contributes significantly to overall dietary quality. Without the beans, oil and CSB provided in food aid rations in the overall diet profile, dietary diversity and quality is extremely poor. Blood was not included in the profiles, but it is likely that blood (mixed with milk) contributes significantly to dietary quality in Turkana. In the northeast, consumption of blood is not as significant given Islamic prohibitions against consuming animal blood. A considerable proportion of children under five are not consuming food of sufficient quality. However, high rates of GAM were not found to be directly affected by the general ration or consumption patterns in Turkana. In some sub-districts such as Lomelo, which received a higher proportion of the general ration compared to other areas, high rates of GAM persist.

Little attention has been given to possible widespread micronutrient deficiencies. The inclusion of CSB in the food aid ration is aimed to prevent outbreaks of micronutrient deficiencies. However since large numbers of the population have been living on maize and tea, it is a distinct possibility that sub-clinical micronutrient deficiency is quite common. This may be contributing to relatively high levels of edema in Turkana since edema is often associated with a micronutrient poor diet. Prevalence of iron deficiency anemia among pregnant women is extremely high in the northeast, with very few taking any treatment in the form of iron tablets (<18 percent)[31]. Vitamin C is also likely to be deficient given the high prevalence of anemia (vitamin C is needed for iron absorption) and very low consumption of fruit and vegetables.

CHILD CARE AND FEEDING PRACTICES

The impact of socio-cultural factors, particularly care and feeding practices, on malnutrition levels in northern Kenya should not be underestimated. Available data suggest that breastfeeding for up to twenty months is common, but that exclusive breastfeeding (for children <6 months of age) is extremely rare (0.4 percent) in North Eastern and Rift Valley Provinces[32]. Infants are often fed water, tea and cow or goat milk within a few days of birth, and by 3 months most infants are given other foods. The effects of early mixed feeding have been well documented and include greater risk of infection, particularly diarrhoeal disease and acute respiratory infections (ARI)[33]. Inadequate introduction of complementary foods (too early, too late, insufficient quantity and quality) affects over 80 percent of infants in Turkana. Infant feeding practices (particularly the lack of exclusive breastfeeding) was found to be strongly associated with acute malnutrition in children in Turkana[34]. An increased practice of exclusive breastfeeding could immediately reduce infant deaths by 20 percent[35].

Prevalence of acute malnutrition among infants under 6 months appears to be high in the northeast and in Turkana, although precise data could not be found. Infants under 6 months are not included in nutrition surveys[36]. It is likely that low birth weight (LBW), and small for gestational age, are common and appear as a frequent issue at therapeutic feeding programs[37]. Mortality rates are probably considerably under-reported in this group. It is extremely likely that the underlying causes (nutrient deficiencies) leading to stunting and wasting begin shortly after birth. In some areas, high levels of malnutrition have been reported among pregnant women (62.9 percent of pregnant women were reported to have a MUAC <210 in Samburu[38]). This is attributed in part to restricting food consumption in favor of the children and also because pregnant

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[31] Kenya Demographic Health Survey (DHS) 2003.

[32] ibid

[33] Emergency Nutrition Network, Infant feeding in emergencies, module 1. 2001.

[34] OXFAM, World Vision and Christian Children's Fund. Health and Nutrition Survey, Turkana district, May 2006

[35] Kenya Demographic and Health Survey (DHS), 2003

[36] Golden, M. Including infants in nutrition surveys: examples from ACF experience in Kabul. Field Exchange. 2000 (9).

[37] Admission data from MSF-B El Wak and Merlin Turkana, May 2006.

[38] UNICEF/GoK integrated health and nutrition survey in Moyale , Samburu and Marsabit, March 2006.

women believe that eating too much will result in a large baby and make delivery complicated. They are frequently advised by women in their communities to reduce food intake, resulting in low birth weight[39]. Thus a programmatic focus on increasing the skills and knowledge of the women who act as primary care givers (pre-natal care, including nutrition, prevention of low birth weight, protection and promotion of breastfeeding/complementary feeding), is critical if malnutrition rates are to be reduced. In Turkana, moderate acute malnutrition in young children is reportedly correlated with poor nutritional status of their care giver, although this is somewhat difficult to corroborate.

The lack of empowerment of women, and a patriarchal culture, further complicate the issue of caring practices. Most women have a very heavy work burden and engage in pastoral care of animals, acquiring food (including relief food), collecting water and firewood, as well as activities that may generate some income, as well as child care, but they have little access to family income. Early marriage and early first delivery are common. Young women may be one of several wives and may have particularly heavy workloads. Polygamy and early age at marriage contribute to a high fertility rate and as well as to the associated problems of high maternal and child mortality and poor infant and young child feeding.

Furthermore educational status and literacy rates are particularly low among women in the northeast. Completion of primary school is estimated at 8 percent for females, and adult literacy for women is less than 6 percent[40]. The correlation between low education and social status of women, and the health and nutritional status of children has been well documented[41]. Older women (grandmothers) are often primary care givers of children in part due to a high maternal mortality rate, and in part due to the work and duties of younger women in the household.

Recent increased male migration has led to an increase in women-headed families with poor access to markets, low cash reserves, and a heavy domestic workload, resulting in less time for child care. A significant proportion of children admitted to stabilization centers (i.e. the worst cases of severe acute malnutrition) in Turkana were cared for by someone other than the mother, and/or there was a history of neglect due to the heavy burden on women to find food and income[42]. This suggests the importance of good community outreach, and that coverage of community based programs is essential in order to find and treat children on a timely basis in their homes.

PUBLIC HEALTH AND ENVIRONMENT

Infant mortality is estimated at 91/1,000 live births in North Eastern Province and 61/1000 live births in Rift Valley Province. It is likely, given transient and highly mobile pastoralist populations, that this is under-reported. The majority of births and deaths are not officially recorded. Neo-natal mortality (probability of dying in first month) in North Eastern Province is the highest of all of the provinces (50/1000 live births). Infant and young child mortality rates are increasing in Kenya as a whole. The under five mortality rate (probability of dying between birth and 5 years/1,000 live births) is 163/1,000 live births in North Eastern Province and 77/1,000 in Rift Valley Province. Antenatal care coverage is low (41 percent) and the majority of women (68 percent) in North Eastern Province give birth at home without a trained attendant[43].

Frequent illness (diarrhea and acute respiratory infections) among children under five is common. In the northeast, incidence of diarrheal disease usually increases following the onset of the long rains. In April of this year, heavy rains caused animal carcasses to be washed into water pans, leading to contaminated water sources. This resulted in an outbreak of Shigella (a bacteria that causes diarrhea in animal and humans). Mortality rates in therapeutic feeding centers in Mandera and El Wak increased exponentially. Action Against Hunger set up a large number of rehydration points and was able to control the outbreak. Measles outbreaks have also occurred in the southern parts of Mandera district, as well as well as in some urban areas of

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[39] Community based discussions with mothers/caregivers participating in community based therapeutic feeding program in Mandera and El Wak.June 2006
[40] Kenya Demographic and Health Survey (DHS), 2003.
[41] SCN. 5th World report on the world nutrition situation, March 2004
[42] Stabilization Center, Lodwar district hospital, Merlin staff and caregivers personal communication, June 2006.
[43] Kenya Demographic and Health Survey (DHS) 2003

Nairobi. The situation was contained by a measles vaccination campaign in affected areas. Measles cases were reported among adults. Measles cases have also been reported in Turkana, suggesting the need for continued campaigns in areas of poor coverage. The impact of measles on rates of malnutrition does not yet appear to be significant[44]. In surveys conducted in Turkana, 65 percent of children under five were reported to have been sick in the previous two weeks. Fever and diarrhea were most frequently reported. Statistical analysis revealed significant correlation ($p<0.01$) between malaria and diarrhea and acute malnutrition. This relationship is not necessarily causal but indicates that high rates of illness and acute malnutrition are associated. This is particularly the case when it comes to high rates of severe malnutrition[45].

Lack of access to clean potable water and poor sanitation are also major public health problems in the northeast and Turkana. In Mandera, a large portion of the population is currently obtaining water from unsafe sources (unprotected pans, contaminated rivers, lake). Treatment of water by boiling or purification is not common. Water is in short supply and in many areas has had to be trucked in.

Poor hygiene is not surprisingly a significant issue. The great majority of the population does not have access to adequate sanitation. In Turkana, between 10 and 55 percent of households surveyed disposed of a child's feces in an unhygienic manner. In North Eastern Province, 70 percent of children's waste was disposed of inappropriately (thrown outside)[46]. It is thus not surprising that infectious excreta-related diseases are common. In Turkana severe acute malnutrition is strongly associated with crowded settled areas (e.g. the central division where rates are extremely high) and poor hygiene and sanitation ($P<0.05$)[47]. Improvements in safe water supply, and in particular hygiene (including use of soap for hand washing), and effective use of oral rehydration solution (ORS) would likely substantially reduce the incidence of diarrhea and the number of deaths due to diarrhea.

Of note is the very low access to formal health treatment and the low number seeking treatment even where there is access. Treatment is free for children under five. While dispensaries may be stocked with basic drugs, there is often no qualified heath staff and the system is generally under-resourced. Community health workers are often not paid. Recruiting government health workers to stay in the northeast is problematic. Interviews with mothers of children in community-based therapeutic feeding programs in Mandera revealed that very few took their children to a health centers. Mobile health clinics have helped somewhat to address the needs of mobile populations, although those reporting consulting mobile clinics is low (20 to 30 percent). In Turkana, the first line consultation for illness and malnutrition is the Traditional Healer. Often the practices disseminated through the healer are harmful in the "treatment" of malnutrition. For example a common practice is to "drain" edema through cutting. Traditional Healers are rarely included in health and nutrition programs and this should be addressed.

The impact of HIV/AIDS on the prevalence of SAM is not mentioned in any report, including the recent joint agency survey in Turkana. However there is little doubt that HIV/AIDS is a significant causal factor in the high rates of severe malnutrition in children in urban areas of Turkana (around Lodwar). While overall prevalence in Rift Valley Province is estimated at 5.3 percent[48], the prevalence among severely malnourished children is much higher. Severely malnourished patients with complications who were admitted to the stabilization center at Lodwar District Hospital were recently given the option of voluntary counseling and testing (VCT)[49]. HIV/AIDS prevalence is estimated at between 30 and 60 percent among severely malnourished children. This is in line with findings from other countries[50]. Mortality rates among HIV positive (HIV+) severely malnourished children are much higher than HIV negative (HIV-) severely

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[44] MSF Belgium, El Wak, Personal communication June 2006.
[45] OXFAM, World Vision and Christian Children's Fund. Health and Nutrition Survey, Turkana district, May 2006
[46] Kenya Demogrpahic and Health Survey (DHS) 2003
[47] OXFAM Op cit. May 2006.
[48] Kenya Demographic and Health Survey (DHS), 2003
[49] VCT was offered to severely malnourished children in Lodwar district hospital. Of 10 children tested, 7 were found to be HIV positive. Merlin/MOH Turkana, June 2006.
[50] Kessler. L. et al. The impact of human immunodeficiency virus type 1 on the management of severe malnutrition in Malawi. Annals of tropical pediatrics 2001; 20(1): 50-56

malnourished children, and time to recovery is much longer[51]. This needs to be considered when looking at program outcomes. This is in contrast to the northeast where HIV/AIDS prevalence is very low and is thus not a factor in treatment. Infants and young children whose mothers have died of HIV/AIDS are much more prone to becoming malnourished irrespective of their HIV status[52]. Treatment options (pediatric HAART) appear to be minimal at this time for HIV+ severely malnourished children in Turkana and this will need to be further explored.

The combination of few qualified health personnel, poor access, inadequate distribution systems, and very poor health surveillance, primarily due to lack of trained staff, cars, and computers, has resulted in a mismanaged health system. Localized outbreaks of measles and diarrheal disease and a re-emergence of polio cases have been reported, but there were no large scale epidemics during 2005/06. The contribution of poor public health on the high rates of malnutrition is clear. Without sufficient investment and capacity, longer term efforts to integrate the treatment of acute malnutrition into the existing primary health care system will be challenging.

CONCLUSIONS ON CAUSES OF MALNUTRITION

In summary, it is clear that frequent illness (high morbidity), poor hygiene, a lack of clean potable water supply, and care practices, particularly infant feeding practices, are significant contributors, with poor food consumption, to acute malnutrition in northern Kenya. Severe acute malnutrition is linked to more densely populated areas in these regions, and is more common among those who are on the margins (pastoralist drop-outs, female or grandmother-headed households, the destitute, and those dependent on petty trade).

A better appreciation of the underlying causal factors of malnutrition in northern Kenya, as in all places, is essential for planning appropriate interventions. When it comes to interpreting both the nutrition data and the possible causal factors, there are several interpretation issue that must be considered. These include seasonal factors, mortality and issues regarding indicators and reference baseline. This can be complex particularly since there is a lack of agreement and thus no standardization or clear guidance on some of these issues. For example there is little guidance on how to analyze malnutrition and mortality together. These issues are further discussed below.

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[51] Bahwere, P, Sadler K, Grobler-Tanner C. Integrating HIV services into a CTC program in Malawi. An operational research study. Academy for Educational Development and Valid International, December 2005.

[52] [52] Nakiyingi, J. et al. Child Survival in relation to mother's HIV infection and survival: evidence from a Ugandan cohort study. AIDS 2003, Vol 17. No 12.

ISSUES IN INTERPRETATION OF KENYAN NUTRITIONAL DATA
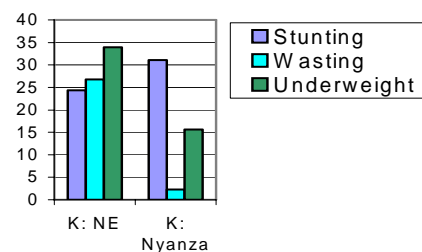
SEASONAL FLUCTUATIONS

Seasonal fluctuations may have some role in generating peaks of wasting prevalence in northern Kenya, although there is little surveillance data to substantiate it. The wet season (long rains from March to June) results in increased diarrheal disease after rains peak in April. It is not clear whether this has a significant impact on the prevalence of malnutrition or admittance to therapeutic feeding programs in "normal years." This year the incidence of diarrhoeal disease was both high and severe, primarily due to contaminated water sources, resulting in elevated mortality rates in therapeutic feeding centers. The dry season (July to September) results in less milk availability and reportedly higher rates of wasting among children. However the fluctuations in malnutrition prevalence in northern Kenya are not significant compared to other countries, such as in southern Africa for example, where clear seasonal peaks are observed. The GAM prevalence here is more variable between years than between seasons.

WASTING, STUNTING AND INTERPRETATION OF INDICATORS

Of particular note is the disparity between wasting and stunting rates in northeast Kenya in comparison to the rest of Kenya. Rates of stunting in North Eastern Province are noticeably low and have remained low over time (average 24.3 percent). In Turkana the pattern is similar among pastoralists with an average 20 percent stunting and 23 percent wasting. In other parts of Kenya rates of stunting are well over 30 percent with wasting rates around 5 percent[53]. This high wasting/low stunting pattern among pastoralists in Kenya is similar to other pastoralist populations in Ethiopia and Somalia.

This pattern raises some interesting and pertinent questions regarding pastoralist populations that have been raised many times before. Conventional wisdom dictates that young children of all population groups have similar genetic potential or growth and thus international reference standards are relevant and appropriate. It

has been argued that the determinants for growth start with genetic potential and growth in-utero which depends in part on the mother's previous growth and current nutritional status. Birth weight is an important determinant of subsequent growth. While low birth weight is relatively uncommon in Kenya as a whole, low birth weight is common in North Eastern Province and is similar to Somalia in this respect, unsurprisingly since the majority of the population is ethnically Somali. Low birth weight may in part be due to thinness rather than shortness (linear growth). This corresponds to a very high prevalence of "thinness" among women. The prevalence of moderate thinness (BMI <18.5) in the northern areas is 27.5 percent compared to national

Figure 5: Stunting and wasting in North Eastern Province and Nyanza

Source: DHS 2003

mean of 10 percent. Of these, 7.3 percent are severely thin compared to a mean of 1.2 percent. The average Kenyan child is not thin at all at 6- to 12 months, and is building up muscle and fat. But s/he falls behind the reference standards for linear growth by 12 to 24 months, leading to stunting rates of more than 30 percent (DHS 2003). By contrast the average Somali child is thinner and taller by 12 to 24 months (wasting prevalence) with much lower stunting rates, at around 15 percent[54].

The low stunting rate seems to suggest that chronic deprivation is not a critical issue (as yet) in pastoralist populations. These patterns suggest that pastoralists may have different growth patterns than international norms assume, and that wasting and stunting here have different causes, and may be due to diet and child care practices. The pastoralist lifestyle involves a high intake of animal products (protein), particularly milk and meat, and sometimes blood, all of which may favor linear growth (height), influenced by maternal factors and genetic potential. Many children among pastoralist populations are tall and thin. It is likely therefore

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[53] Kenya Demographic and Health Survey (DHS), 2003
[54] Somalia Demographic and Health Survey (DHS), 2001

that systematic bias in nutritional assessment is introduced by the poor fit between the current reference standards (NCHS growth curves) and long-limbed populations, resulting in many "false positives" when using weight-for-height.

A difficult issue arises, then, of what should be an appropriate baseline for wasting prevalence among pastoralist populations. Based on available data and meta analysis of historical data over the last five or six years, it has been suggested that a prevalence rate of 15 percent (WFH-2 z) would be appropriate as a norm. An increase in rates of wasting above this baseline could then be used to determine the severity of the situation. This might be compared to using 5 percent as a baseline in non-pastoralist populations to identify comparable nutritional problems[55]. This argument for a relative baseline between populations has implications for resource allocation and programming and should be the subject of further analysis and research.

MUAC has been recommended for referral and admitting children to community based therapeutic feeding programs. This is based on substantive research which has demonstrated that MUAC is strongly associated with mortality, much more so than WFH[56]. There has been some discrepancy regarding use of WFH and MUAC. In pastoralist populations, GAM prevalence is high using WFH, and low using MUAC, whereas in other populations, WFH and MUAC prevalence is similar or MUAC is higher. This has caused some confusion regarding use of only MUAC for admission to CTC. Nevertheless, it is highly preferable to use MUAC only for referral and admission to CTC because of the association with mortality and morbidity and because it considerably simplifies the process and results in much better coverage than using WFH alone.

MORTALITY

Under-five mortality rates (U5MR) reported in small scale surveys in Mandera and Marsabit districts using 3 month recall methods were reported to be between 0.22 and 0.65/10,000/day. Mortality levels appear to be elevated in Moyale (1.04/1000) and Samburu (1.5/10,000). In Turkana the recent joint agency survey investigated U5MR using 3 month recall and found a U5MR of <1/10,000/day, suggesting there have been relatively few deaths. However it is speculated that that given the causal factors, particularly the very high rates of morbidity, and based on figures from 2005 (2.8/10,000/day), that this is an under-estimate of child mortality partly attributed to the manner in which data was collected. Mortality data from the stabilization center at Turkana district hospital referral hospital shows a high mortality rate of 13 percent (exceeding SPHERE <10 percent). This high mortality rate is likely associated with the high prevalence of HIV/AIDS among the children admitted with complications. The emergency threshold for U5MR is 2 deaths per 10,000 people per day, and thus the current U5MR do not exceed emergency thresholds.

It appears that despite high levels of GAM and frequent illness, mortality rates are not highly elevated. It is also possible that mortality among infants less than 6 months is high, and that these deaths are not picked up in survey mortality reporting. There is no doubt that high levels of acute malnutrition are linked to increased morbidity and mortality; however, interpreting these numbers is somewhat complicated. The prevailing belief is that high mortality can mask deteriorating nutritional status (high number of child deaths results in lower levels of acute malnutrition). However in an emergency context, infant and young child deaths are not limited to the severely or moderately malnourished. It is therefore likely that even where rates are very high, for example higher than 10/10,000/day, that there would be a significant effect on the prevalence of acute malnutrition[57].

It is interesting to look at prevalence of severe malnutrition by MUAC (<110). MUAC is a very good predictor of mortality in young children, better than weight for height.   In surveys that collected both WFH and MUAC data, prevalence of severe malnutrition is lower using MUAC. In Turkana for example 1.5

[55] Mason, J et al. Assessment of child nutrition in the greater horn of Africa. Report for UNICEF Eastern and Southern Africa Office, Draft, February 2006
[56] Myatt, M et al.   A review of methods to detect cases of severe malnourished children in the community for admission to CTC. WHO Consultation on community-based management of severe malnutrition, November 2005
[57] Save the Children U.K. Emergency nutrition assessment. Guidelines for field workers. SC-UK has developed a model showing different possible combinations of malnutrition and mortality and likely causes.

percent of children 12 to 59 months had a MUAC <110.   Prevalence of severe malnutrition using WFH Z<3 was on average 3 percent, with edematous malnutrition accounting for on average 1 percent. In the northeast, prevalence of SAM by MUAC <110 is even lower. This suggests that that the mortality risk associated with acute malnutrition is not highly elevated. However MUAC should be recorded for children from 6 months, not 12 months, and this would result in higher numbers. The 1.5 percent MUAC <110 in Turkana 2006 was reported as double that of 2005, suggesting that young child morbidity is manifesting itself in low MUAC.

The crude mortality rate (CMR) was reported as less than 1/10,000/day (the emergency threshold) in Mandera and Turkana[58]. There are indications of excess mortality but not exceeding serious crisis levels. It is somewhat surprising that given the high GAM levels, CMR is not higher. Either current surveys are underestimating CMR or mortality rates are actually relatively low compared to GAM as noted above. This has occurred in other situations. High GAM (>10 percent) and low mortality (<1/10,000/day) is typically referred to (perhaps wrongly) as a food crisis[59]. Some evidence suggests that areas of high HIV/AIDS prevalence in Turkana (central areas) have higher CMR than other areas, suggesting excess mortality among adults 15 to 45 may in part be attributed to HIV/AIDS.

Malnutrition and mortality are influenced by a range of conditions including recurrent drought and the underlying causal factors (food, care and health and in the case of Turkana HIV/AIDS).   It is also likely that a failure in all groups of causal factors (as in Kenya) is far greater than the sum of the individual effects which could account for the high malnutrition prevalence rates in northern Kenya[60].

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[58] WFP summary of nutrition and mortality survey results, May 2006.
[59] ENCU/WFP VAM. Prevalence of acute malnutrition and mortality rates in 15 surveys in Ethiopia August –December 2002
[60] Young, H. Nutritional assessment in emergencies: progress and remaining challenges. Unpublished Paper, 2003.

CONCLUSIONS AND RECOMMENDATIONS FOR KENYA

Warnings about the severity of the current drought were timely. However, it was not until the situation was extremely acute (i.e. in terms of high malnutrition rates and mass loss of livestock) that there was noticeable response. The official Kenyan Government declaration that the drought was a national disaster occurred only at the end of December 2005[61]. By then it is estimated that in some pastoral areas 40 percent of livestock had already died[62]. Multi-agency assessments took place at the beginning of 2006 and funding appeals were launched between February and April 2006. While there was a small presence on the ground, most emergency programs did not really begin until March/April 2006[63]. The delayed response highlights the limitations of early warning and the absence of direct links to plans that set out rapid and appropriate response options. Despite lessons from previous severe droughts in Kenya[64] and a vast literature on pastoralist livelihoods, opportunities were not taken to build on existing programs' work and knowledge by heavily frontloading the emergency response with livelihood interventions. This is possibly because non food interventions are not well articulated or understood[65]. While it is beyond the scope of this paper to analyze what could or should have been done in terms of preserving livelihoods, suffice to say that the most significant way of preventing high malnutrition rates both in the short and long term would be to focus on water and sanitation, livelihood interventions and cash for work.

It is generally recognized by humanitarian organizations in Kenya that food aid alone will not significantly improve rates of malnutrition in the pastoral districts, and that an integrated approach is required. It is widely recognized that pastoral groups suffer from political and economic marginalization, and increased vulnerability is a direct consequence of adverse national policies which have restricted access and investment in basic services such as health education and water. It has been suggested that government and international agencies implement policies and interventions to strengthen pastoral livelihood systems and that this drought and lack of effective response should not be used as an excuse for attempts to increase the sedentarization of pastoral communities — which is a very real and likely consequence of the recent crisis. For these plans to be put into action there must be investment in national capacity to implement such programs on a large scale and in a timely fashion, and adequate contingency funds must be available[66].

All of these underlying factors directly or indirectly impact on the persistent high rates of acute malnutrition in northern Kenya. However, it is clear that high morbidity, poor hygiene, lack of a clean portable water supply, and care practices, particularly infant feeding practices, are significant contributors to acute malnutrition. Nutrition has not been given the prominence that it deserves in national policy or planning and as a result, is under-recognized and under resourced.

Several broad based recommendations are noted below. These have been fully discussed with key stakeholders in Kenya and aim to be practical and feasible to implement immediately. In some thematic areas there is no consensus on what to do, and/or it is agreed that further dialogue is needed. These areas are loosely categorized into three areas: a) nutrition coordination, information and capacity; b) surveillance and monitoring; and c) programming.

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[61] EMOP (September 2004-February 2006. An estimated 1.2 persons were targeted in the EMOP From September 2005 through February 2006. (The number had declined from 2.3 million in September 2004 to 1.2 million in September 2005 through Feb. 2006). Most of these were pastoral households

[62] Mass deaths of livestock in Mandera and Marsabit districts with mortality rates of up to 40 percent were reported for sheep and cattle and 10-15 percent for camels and goats. International Federation of the Red Cross Press Release. December 23, 2005.

[63] Interviews with international and local NGOs, Mandera and Wajir districts. Prior to February 2006, there were very few international NGOs in Madera district

[64] Aklilu, Y and Wekesa, M. Livestock and livelihoods in emergencies: Lessons learned from the 1999-2000 emergency response in the pastoral sector in Kenya, Feinstein international Famine Center, Tufts University, 2001.

[65] Humanitarian Policy Group. Briefing Note. Saving lives through livelihoods: Critical response to the drought in the Greater Horn of Africa. Overseas Development Institute, May 2006

[66] OXFAM UK. Making the case: A national drought contingency fund for Kenya. Policy Paper, May 2006.

NUTRITION COORDINATION, INFORMATION AND CAPACITY

Nutrition programming is coordinated under the KFSSG, with funding channeled through the Office of the President's ALRMP. Since January 2006 line ministries, and in the case of nutrition, the Ministry of Health (MOH), have taken the responsibility. The MOH, while well intentioned, is under-resourced and lacks capacity. At national and district levels, coordination is generally very good since the systems in Kenya are clear and well established. Health and nutrition technical groups exist at both national and district levels. However there are several key gaps that need to be addressed:

- **Increase the capacity of the ALRMP in nutrition**

In order to strengthen understanding of the importance of nutrition and to enhance links between Arid Lands and the MOH and nutrition implementing partners, it is recommended that a nutritionist should be employed or seconded to ALRMP.

- **Adopt an agreed upon survey methodology**

Nutrition survey methodology has been agreed upon (e.g., SMART). Thus there is broad agreement regarding the process of gathering and analyzing anthropometric data for estimating prevalence of acute malnutrition. The UNICEF causal framework model has been widely adopted as the basic conceptual framework for nutrition assessments.

- **Conduct bi-annual nutrition surveys**

In the past, nutrition surveys have been conducted on an ad hoc basis by individual NGOs often with varying methodologies and objectives making comparisons difficult. There has been an effort to consolidate surveys and to conduct joint agency assessments and surveys coordinated by the District Steering Groups (DSG). There is a general consensus that it would be preferable for nutrition surveys to be conducted twice a year. KFSSG and MOH should take a key role in conducting and coordinating the surveys with technical input from UNICEF and NGOs with technical capacity in nutrition. The timing needs to be agreed upon. The preferred timing is March/April and September/October. The nutrition surveys need not be conducted at the same times as the KFSSG short and long rains assessments, but the analysis must take into account the food security assessments. Nutrition survey data analysis should be conducted quickly to avoid time delays in relating the findings to the food security assessments. There is no need to conduct further nutrition surveys during the current long rains assessment since there have been a plethora of surveys and the data is sufficient. Despite the cost of conducting large scale bi-annual nutrition surveys this is likely to reduce duplication in the longer term by providing better and reliable data on a frequent basis.

- **Strengthen nutrition reporting in the short and long rains assessments**

Nutrition reporting and analysis in the short and long rains assessments is weak. It is therefore suggested that at the time of the assessments, a meeting should be held, coordinated by the KFSSG, with nutrition partners to collate and report on current data and provide a thorough analysis. This should be included as an annex to the assessment report and should also be reported on the ALRMP/FAO website.

- **Guidelines for selective feeding programs**

There are currently no standardized national guidelines for supplementary and therapeutic nutrition programs in Kenya. This is particularly problematic for nutrition program implementation and collection and compilation of outcome data. Currently it is not possible to determine the overall impact and performance of nutrition programs. Current guidelines recommend the use of WHO 1999 protocols. This is very out of date and does not encompass community based therapeutic feeding, which is now widely accepted and practiced. The lack of guidelines and standardized reporting must be addressed immediately. This should considerably improve the overall management of emergency nutrition interventions. MOH and UNICEF should take the lead on the development of guidelines through a collaborative process.

- **Conduct a workshop to address nutrition analysis and data interpretation issues**

UNICEF (Eastern and Southern Africa Office) is currently undertaking a nutritional information project for Greater Horn of Africa (NIPHORN). It is recommended that as part of this process a workshop should be

held for government (national and district), UN agencies and NGO partners to: i) build capacity in nutrition and ii) seek consensus and to provide clarity and standardization on issues for which there is currently no consensus and often outright disagreement resulting in tremendous confusion. Background papers on these issues should be prepared prior to the meeting. The workshop should be highly practical and relevant and result in clear consensus. Major issues to be addressed include:

- Indicators (MUAC and Weight for height) and cut offs
- Use of MUAC only for referral and admission to supplementary and therapeutic feeding programs
- Interpretation of mortality and GAM
- Surveillance and appropriate indicators
- Data analysis and interpretation
- Monitoring and surveillance

- **Strengthen the EWS/Surveillance system**
Strengthening the well-established EWS/Surveillance system should be a primary focus which would negate the need for so many ad-hoc nutrition surveys. Surveys would then be conducted when the situation is worrisome and a survey is warranted. Nutrition data collected by ALRMP on a monthly basis should be revised and improved. Currently the information is not presented well, is not well analyzed in context, and as such is not used. The augmentation of the ALRMP nutrition capacity would greatly help in this regard.

- **Train and provide technical assistance for ALRMP field monitors**
ALRMP staff at district level often lack basic knowledge in terms of nutrition indicators and nutrition programming. A simple three-day orientation for field monitors would be useful. Guidelines and tools have been developed by OXFAM for field staff but these are not been used. The orientation should include how to report against historical trend data and the importance of triangulation of data and analysis. District MoH nutritionists and UNICEF nutritionists seconded at district level should be contacted through the DSG to assist with nutrition analysis in the ALRMP monthly reporting.

- **Improve EWS/nutrition surveillance to make it more useful and relevant**
The basic collection of anthropometric data at sampling sites should include the following:

1. The proportion of children 6 to 59 months at risk of becoming malnourished, or already malnourished, in each site, based on MUAC <135mm. This should be reported as the percentage of children that fall below the cut-off.
2. This should be augmented by reporting case finding thresholds using MUAC<110 for severely malnourished children.
3. Children should be checked for bilateral pitting edema. The proportion of children with edema should be reported separately.

Data should be analyzed based on high or increased trends (compared to historical data) to indicate a worrying situation. Data should not be reported as GAM only. Severely malnourished children identified during data collection should be referred to a community health worker of directly to programs treating severely malnourished children.

- **Determine use of appropriate nutrition indicators in surveillance system**
There needs to be agreement regarding a simple and effective set of indicators for use in the surveillance system. Triangulation of available data and information is critical. This includes food security, mortality and morbidity data, nutrition surveys, information on seasonal prevalence rates and admissions to hospital and clinic nutrition rehabilitation units and feeding centers. The integrated food security and humanitarian phase

classification (IPC) developed by FSAU is an example of a reference tool for gauging the severity of a crisis, although such a tool should be used with some caution given to using cut offs within a given context[67].

SURVEILLANCE AND MONITORING

In addition to the nutrition indicators noted above, the surveillance system should also collect or ensure that other responsible agencies (MOH, WFP and UNICEF) collect information and report on the following:

- **Improve general food aid ration coverage and quality during food crises**

Available data and information suggest that coverage of general food aid distribution programs has been low and quality of the ration varies. This is likely to improve considerably from June as the food basket is better. Nevertheless, monitoring of the quantity and quality of general ration is essential. Given the high prevalence of malnutrition in pastoral areas of northern Kenya, providing a general food aid ration complete with pulses, oil, and CSB should be a priority.

- **Program coverage and quality**

There are currently significant gaps in program coverage. This should be reported. Currently program admission and outcome indicators have not been compiled. It is therefore not possible to determine program impact to date.   Program outcome indictors should be compared to SPHERE standards. This should include coverage since this is an important indicator of program access and therefore impact. Coverage is also a good proxy indicator of community involvement in a program.

- **Household food consumption patterns**

Household food consumption patterns - including food use, dietary diversity, intra-household food allocation and cultural taboos - should be monitored and documented. Dietary diversity might be defined as a number of unique foods (selected foods) consumed by the household (or individual) in a specific period of time[68]. Poor dietary diversity (consumption of <3 food groups) has been found to be associated with acute malnutrition. Weekly consumption frequency for the selected foods and two main sources (access strategies) used by the household to acquire the selected foods can be monitored. This can be compared with a reference food consumption indicator to estimate food gaps as a benchmark for household food insecurity. Selected foods should include those suitable for children as well as foods eaten by mothers (particularly breastfeeding mothers). The situation should be flagged for further investigation when a large proportion of the interviewed households have very poor dietary diversity.

- **Disease surveillance**

Given the strong association between high GAM and morbidity, it is essential to strengthen health surveillance. In some areas support to the MOH (logistical and technical) is considerably improving the ability to provide effective surveillance and to initiate appropriate response including measles vaccination campaigns in areas with low vaccination coverage. Surveillance should include tracking of diseases which will include close collaboration with the MOH at district. Outbreaks of disease or high incidence of diseases above expected seasonal peaks should be presented as a deteriorating health situation.

PROGRAMMING

It is beyond the scope of this brief to discuss programming in detail. Suffice to say that in light of the causal factors of malnutrition there are several key programming areas that should be emphasized. Adapting programs to nomadic lifestyles rather than compelling them to adopt sedentary habits is preferable. Other key programming traits should include:

- Improved quality of the general ration, both in terms of the amount of food reaching the targeted population, and ensuring those in need are targeted.

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[67] Food Security Analysis Unit-Somalia. Integrated food security and humanitarian phase classification: Technical Manual version 1. Report No. IV. II, May 11, 2006.
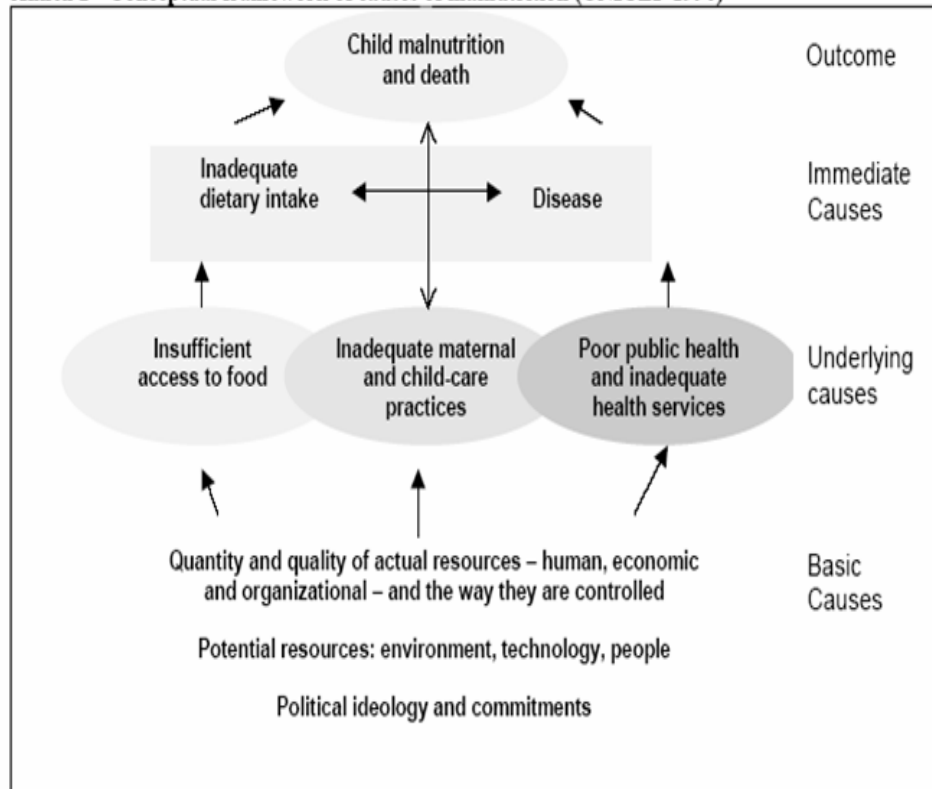[68] WFP. Emergency food security handbook, June 2005.

- Effective community based nutrition programming for moderate and severe malnutrition, such as Community Therapeutic Care (CTC) that emphasizes community involvement and good coverage. In some locations CTC may operate every two weeks instead of every week due to distance. Health education should be provided at every opportunity. It must include simple practical and feasible messages related to health and hygiene with a focus on prevention and treatment of diarrhea (including the distribution of soap) and promotion of exclusive breastfeeding for six months and appropriate use of available local foods for children. Mothers in CTC programs should be engaged to the maximum to act as agents for behavior change and in active case finding of malnourished children in their communities. Men should also be included. Attention must be given to the need of children with severe malnutrition with complications including TB and HIV/AIDS.

  CTC protocols use routine basic medical treatment for all severely malnourished children admitted. Given the high morbidity, this must include effective anti-microbials and anti-helminthics. These treatments should be available in SFP.

- CTC should be linked to both static and mobile clinics as a means of ensuring sustainability and linking emergency programming with longer-term health and nutrition interventions. Linkages can be established between CTC and seemingly divergent programs and services such as livelihood interventions primary education, child care interventions and Growth Monitoring and Promotion (GMP).

- MUAC only (without weight-for-height) should be used for referral and admission to CTC programs using accepted cut offs (<125 for supplementary feeding, and <110 and/or edema with appetite, for outpatient treatment using Plumpynut, or MUAC <110 with no appetite and/or complications, for inpatient stabilization treatment. Use of MUAC will capture younger acutely malnourished children at high mortality risk and those who are affected by frequent illness. Importantly it will enable much better coverage because it is easy to use and removes barriers to access which are currently a significant obstacle to program uptake.

- Increased targeted SFP for moderately malnourished children and malnourished pregnant and lactating women. This is currently a program gap.

- Support for local production of ready to use therapeutic food (Plumpynut) with a focus on sustainable distribution mechanisms. UNICEF should ensure an adequate and sustainable supply of Plumpynut and F100/75.

- Sustained advocacy for, and investments in, the primary health care sector, including adequate measles vaccination coverage and improved health surveillance and response. Investments should be made in mobile outreach services tied to nutrition programming. Traditional Healers and TBAs and kiosk owners who are often first line of consultation must be involved in health and nutrition programs. Incentives should be provided for MOH doctors, nurses and nutritionists to work in remote areas such as the northeast.

- Increased access to clean portable water including use of simple and effective water purification techniques (filters and chemicals).

- Improved household food security through livelihood initiatives such as cash for work as well as initiatives aimed at women including: providing goats; provision of seeds, tools and irrigation to support home gardens; and micro-income generating initiatives (and/or direct cash transfers) to enable small enterprise such as basket weaving.

ANNEX 1: CONCEPTUAL FRAMEWORK FOR THE CAUSES OF MALNUTRITION

Annex 2 - Conceptual framework of causes of malnutrition (UNICEF 1990)

Child malnutrition and death — Outcome

Inadequate dietary intake ↔ Disease — Immediate Causes

Insufficient access to food | Inadequate maternal and child-care practices | Poor public health and inadequate health services — Underlying causes

Quantity and quality of actual resources – human, economic and organizational – and the way they are controlled

Potential resources: environment, technology, people

Political ideology and commitments — Basic Causes

ANNEX 2: DEFINITION OF KEY NUTRITION TERMS AND INDICATORS

Key Definitions	
Global Acute Malnutrition (GAM)	Weight for Height < -2 Z and/or edema
Moderate Acute Malnutrition (MAM)	Weight for Height < -2 Z, MUAC <125
Severe Acute Malnutrition (SAM)	Weight for Height < -3 Z, MUAC < 110 and/or edema
Supplementary Feeding Program (SFP)	Treatment for MAM
Community Therapeutic Care (CTC)	Home based treatment for SAM without complications. Includes outreach and community participation
Outpatient Therapeutic Program (OTP)	Home based treatment for SAM without complications. Little focus on community aspects
Stabilization Center (SC)	Inpatient treatment for SAM with complications at hospital or clinic