SUMMARY OF KEY FINDINGS

- All three sentinel sites in Greater Mandera District were above 20% GAM in March, according to both the LQAS decision rule and the calculated point estimates, showing a very critical nutritional status.

- In Garissa, the Riverine sentinel site deteriorated to more than 20% GAM, while both Urban and Pastoral improved slightly but remained at more than 15% GAM.

- In terms of child morbidity, there was an increase in fever with cough or difficult breathing and fever with chills like malaria in all Mandera and Garissa sentinel sites.

- In Mandera a considerable proportion of households, ranging from 65-100% in Pastoral and Riverine sentinel sites accessed water from unsafe sources.

- In Garissa the Riverine communities accessed water from unsafe sources (62%), followed by Pastoral (40%).

- Access to food was mainly dependent on markets in Garissa and Mandera Urban, whereas important sources of food in Mandera Pastoral and Riverine sites are food aid and own production.

- Main coping strategies in all sites of Mandera were skipping meals and reducing meal size, while in Garissa Pastoral and Riverine, purchase of food on credit and sale of livestock were the most frequently reported coping strategies.

1. INTRODUCTION

This report presents the results of the second round of the integrated sentinel site surveillance system implemented by ACF in December 2008, to monitor the nutritional and food security situation in the districts of Mandera and Garissa, North Eastern Province. The districts are located within the Arid and Semi-Arid (ASAL) region and demonstrate recurrent droughts and high rates of acute malnutrition necessitating close monitoring of key variables for early and timely response. The quarterly surveillance, conducted in close collaboration with the Ministry of Health and Arid Land Resources Management Project (ALRMP) at the district level, uses the Lot Quality Assurance Sampling (LQAS) methodology. The system uses an integrated approach focusing on nutrition, water/sanitation and food security/livelihoods. The sentinel sites were selected, in accordance with the MoH/ALRMP and represent the different livelihood zones and most vulnerable areas of the two districts. Three sites were selected in each district representing the three broad livelihood zones (Pastoral, Riverine, and Urban/Peri-Urban). Through quarterly data collection, the system aims at serving early warning purposes while providing trends that will allow better global and seasonal understanding of the underlying causes of malnutrition in the targeted areas.

<table>
<thead>
<tr>
<th>District</th>
<th>Pastoral</th>
<th>Riverine</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandera</td>
<td>Dandu, Takaba</td>
<td>Malkamari, Rhamu Dimtu</td>
<td>Mandera Town</td>
</tr>
<tr>
<td>Garissa</td>
<td>Danyere, Modogashe, Shanta Abak</td>
<td>Sankuri, Balambala, Garissa Central</td>
<td>Garissa Town</td>
</tr>
</tbody>
</table>

It is important to note the actual location of the sentinel site within the Mandera Riverine Livelihood zone. The site is located in Malkamari and Rhamu Dimtu Divisions (Mandera West and Central Districts), far from a sizeable market and where access to the river is sometimes difficult due to the terrain.
The second round of data collection was conducted in March 2009 before the start of the long rainy season.

2. METHODOLOGY

Lot Quality Assurance Sampling (LQAS) is a rapid and cost-effective alternative for the assessment of the prevalence of acute malnutrition. The main consideration is the reduction of clusters (from 30x30 standard survey) while maintaining statistical representation. A 33x6 two-stage cluster sampling was selected for Mandera and Garissa. The Probability Proportional to Population Size (PPS) design was applied for the cluster sampling, and the EPI method was used for household selection. In each Sentinel Site a total of 198 children and 198 households were sampled and analyzed.

In addition to the anthropometric measures of the children, a qualitative questionnaire was used for all households including health, water & sanitation & hygiene and food security & livelihood information. The results from the first round of the Surveillance Sentinel Sites are presented in the following sections.

3. CHILD NUTRITIONAL STATUS

Mandera

Analysis of the March 2009 anthropometric data based on NCHS reference and comparison with the December 2008 results indicate a worsening nutritional status of children across the three sentinel sites. The Global Acute Malnutrition (GAM) rates are above the 20% WHO emergency threshold. These alarming results were confirmed by the LQAS decision rule as all sites showed more than 33 children with a Z-score <-2, indicating a 90% probability for the GAM rates being above 20%.

Table 2: Malnutrition Rates for Mandera Sentinel Sites (Z-Score using NCHS reference)

<table>
<thead>
<tr>
<th></th>
<th>Pastoral Dec-08</th>
<th>Pastoral Mar-09</th>
<th>Riverine Dec-08</th>
<th>Riverine Mar-09</th>
<th>Urban Dec-08</th>
<th>Urban Mar-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAM</td>
<td>23.2 % [17.4-29.1]</td>
<td>27.8 % [21.0-34.5]</td>
<td>36.0 % [28.5-43.6]</td>
<td>40.9 % [34.3-47.5]</td>
<td>24.2 % [18.0-30.5]</td>
<td>25.3 % [17.5-33.1]</td>
</tr>
<tr>
<td># of Children &lt;2 Z-Score</td>
<td>46</td>
<td>55</td>
<td>71</td>
<td>81</td>
<td>48</td>
<td>50</td>
</tr>
<tr>
<td>Decision Rule</td>
<td>≥20%</td>
<td>≥20%</td>
<td>≥20%</td>
<td>≥20%</td>
<td>≥20%</td>
<td>≥20%</td>
</tr>
</tbody>
</table>

Several factors may be contributing to the increase in the acute malnutrition rates in Mandera. March corresponds to the dry and hunger season when availability and access to food in general and milk for children in particular is at its lowest. Livestock have moved to the dry season grazing areas, away from families and children, in search of pasture and water, which contributes to reduced availability of food/milk at the household level. Factors related to unsafe water, poor child feeding, weaning practices, poor personal and environmental hygiene practices, potentially contribute to the deteriorating nutritional status of children.
Garissa

In Garissa, Global Acute Malnutrition (GAM) has only increased in the Riverine site, with rates more than 20%. A reduction was measured in the Pastoral and Urban sites, nevertheless the results are higher than the 15% WHO emergency threshold. The point estimates for the Urban and Pastoral sites can only show that the GAM rates are around 15%, where the LQAS decision rule indicates with 90% confidence that both sites face GAM rates higher than 15%. Similarly, the Riverine zone shows with a 90% confidence GAM rates above 20%.¹

Table 3: Malnutrition Rates for Garissa sentinel sites² (Z-Score using NCHS reference)

<table>
<thead>
<tr>
<th></th>
<th>Pastoral</th>
<th>Riverine</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dec-08</td>
<td>Mar-09</td>
<td>Dec-08</td>
</tr>
<tr>
<td>GAM</td>
<td>17.7%</td>
<td>13.6%</td>
<td>12.1%</td>
</tr>
<tr>
<td></td>
<td>[11.4-24.0]</td>
<td>[7.9-19.4]</td>
<td>[7.1-17.1]</td>
</tr>
<tr>
<td># of Children</td>
<td>35</td>
<td>27</td>
<td>24</td>
</tr>
<tr>
<td>&lt;-2 Z-Score³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision Rule</td>
<td>≥20%</td>
<td>≥15%</td>
<td>≥15%</td>
</tr>
</tbody>
</table>

4. CHILD MORBIDITY

¹ With more than 23 children measured with a Z-score <-2.
² Results in brackets are point estimates at 95% confidence level
³ Extra data were deleted randomly for each sentinel site in order to ensure a final sample of 33x6 for the calculation of the results to compare with the decision rules.
Mandera

Data collected on morbidity during the March round shows that as in December 2008, the pastoral site has the highest morbidity, followed by the Riverine and the urban. The poor access to health care noticed in all areas except the urban zone may partially explain this situation. The number of accessible and functional health facilities is the lowest in the pastoral zone.

The three main diseases, represented in the following graphs, seem to be at an equal level in each site, except an increase for cough related diseases in the urban area. The high density of population in urban settings is usually facilitating the spread of respiratory diseases more than in any other setting.

Garissa

In Garissa, there was a significant increase in reports of child morbidity in terms of fever with cough and fever with chills like malaria, compared to December 2008. Similarly, the high rates of morbidity in Garissa could be linked with access to health services, child care practices, access to quality water or poor personal and environmental hygiene.
5. Water, Sanitation and Hygiene Practices

5.1. Water Sources and Use

Mandera

The data on sources of drinking water in March indicate that a considerable proportion of families in the Pastoral and Riverine sites accessed from unsafe sources - about 64% of the households in the pastoral from earth pan alone. Those who accessed from safe sources (pump, tap, and underground tank) and water trucking accounted to about 29% in pastoral and 34% in Riverine. On the other hand, urban sites accessed predominantly from donkey cart seller which alone accounted for 56% of sources followed by safe source (tap/pump).

In terms of water treatment about 43% and 27% of households in the Pastoral indicated using some kind of treatment practice for December and March, respectively that included boiling, sitting to settle and passing through cloth. On the other hand, in the Riverine site about 96% and 92% in December and March, respectively, did nothing to the water before drinking.

Per capita water use for domestic use (drinking, cooking and washing) was generally lowest in the Pastoral site and highest in urban. The Riverine site showed a clear decrease in water use during the dry season, most likely due to lack of water in nearby rivers (longer distance, harder to fetch when digging in the dry river bed). Communities except in Urban showed water consumption below the minimum Sphere standard of 15 liters/person/day. Water rationing is common in Mandera during the dry season.

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4 Water, sanitation and hygiene indicators are monitored as a component of the overall surveillance system. In this report only the water sources and use are presented as the interpretation of trends in the other WASH indicators is beyond the scope of the data at this time.

5 Data on water sources are grouped into safe (pump, tap, closed well, underground tank) and unsafe (shallow well, earth pan/dam, river/dry river bed) sources, and services (water trucking, donkey cart)
Garissa

The predominant sources of water in Garissa Pastoral and Riverine sentinel sites were unsafe sources while in the Urban site nearly all households accessed from safe sources. It could be argued that this could contribute to the low diarrhea prevalence in urban areas. In the Riverine and Pastoral sites, given the fact that a considerable proportion of households accessed from unsafe sources and over 98% of households reporting no use of water treatment, unsafe water is considered as a great concern and risk factor to water borne diseases.

The average daily water consumption in liters per person/day for drinking, cooking and washing in March for Garissa sentinel sites was relatively adequate meeting the minimum SPHERE standard of 15 liters/person/day requirement. In general households’ water use seems to increase in the dry season, but not significantly.
6. Food Security & Livelihoods

6.1. Livestock ownership

Mandera
The proportion of households owning livestock during December was 99%, 74% and 29% in Pastoral, Riverine and Urban sites, respectively. The March result was 93%, 84% and 25% in that order. The herd composition primarily consisted of goats, cattle, camels and sheep. The average livestock ownership per household is indicated in the following Table.

Table 3: Average Livestock Ownership (Mandera)

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Pastoral (N=198)</th>
<th>Riverine (N=198)</th>
<th>Urban (N=198)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dec 08</td>
<td>March 09</td>
<td>Dec 08</td>
</tr>
<tr>
<td>Cattle</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>5.3</td>
<td>5.5</td>
</tr>
<tr>
<td>Camel</td>
<td>6.7</td>
<td>7.3</td>
<td>8.7</td>
</tr>
<tr>
<td>Goat</td>
<td>6.7</td>
<td>7.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Sheep</td>
<td>2.3</td>
<td>5.0</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Table 3 indicates that the households interviewed in Pastoral and Riverine sites in March 2009 owned more livestock than the households interviewed in December 2008. Reason for the increase could be that households and their livestock were moving from Pastoral to Riverine sites, because the status of the pasture and browse was better in the area. Moreover, camel and shotts are calving in February and beginning of March. However, in the Urban area of Mandera the number of livestock has decreased. Reasons could be linked to the dry season and increasing food prices since December and households had to sell the animals to buy food and other condiments.

Garissa
In March 88%, 86% and 12% of households in Pastoral, Riverine and Urban sentinel sites, respectively, reported owning livestock (goats, cattle, camels and sheep). The corresponding result in December round of surveillance was 93%, 84% and 13%. The average livestock ownership is indicated in Table 4.

Table 4: Livestock Ownership (Garissa)

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Pastoral (N=198)</th>
<th>Riverine (N=198)</th>
<th>Urban (N=198)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dec 08</td>
<td>March 09</td>
<td>Dec 08</td>
</tr>
<tr>
<td>Cattle</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>7.0</td>
<td>13.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Camel</td>
<td>2.7</td>
<td>6.3</td>
<td>3.8</td>
</tr>
<tr>
<td>Goat</td>
<td>38.0</td>
<td>40.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Sheep</td>
<td>21.2</td>
<td>26.0</td>
<td>13.6</td>
</tr>
</tbody>
</table>

Generally, the households interviewed in March had a decrease number of livestock as compared

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6 In the December round of surveillance the Pastoral site included Dandu division only while in March the Takaba and Dandu divisions were included as part of the Pastoral sentinel site and this could affect the results particularly for food security, making comparison between December and March difficult.
to December 2008. This could be due to either increased mortality of livestock or distress sale in response to the prolonged dry season. The number of camels has not changed significantly, whereas the number of cattle, goats and sheep has decreased. This may be due to: 1) Camels being life saving assets resisting harsh climatic conditions and providing milk throughout the year, 2) Households preferring to sell cattle, goats and sheep first, if in distress or in need of monetary liquidity as they represent a small portion to be exchanged (a camel is equaling several similar portions, but cannot be split into smaller units) and 3) small ruminants reproducing much faster cycle than big ruminants, and hence re-creation of the herd after depletion is faster.

### 6.2. Sources of Food

#### Mandera

Sample households ranked the four common sources of food (purchase, own production, food aid and gift). Purchase was the first important source for the majority of households in the urban site in March and in December, while food aid was in the Riverine. In Mandera Pastoral a relatively higher proportion of households reported own production as the first important source. Overall, there was no significant change in terms of ranking of the first important source of food between December and March. There were a high percentage of households receiving food aid in the Riverine and to a lesser extent in the Pastoral sites. The same sites have recorded the highest malnutrition rates (GAM).

![Figure 9: First Important Source of Food for Households for the 30 days before the survey (Mandera)](image)

#### Garissa

In Garissa across all sentinel sites the first important source of food for the majority of the households was purchase. Food items were mainly spaghetti, maize, sugar and oil. The second important source of food for the Riverine site was own production although it is insignificant amount compared to the purchase of food. The result shows the extent of households’ reliance on markets to access food.
6.3. Income and Expenditure

Mandera

Income sources and expenditure data were collected for the 30 days preceding the survey. There was no significant difference in terms of sources of income between the December and March results.

The main source of income in Pastoral and Riverine sites is livestock and casual labor, whereas Urban sites were largely based on own business and employment sources. The following graph indicates the main source of income in the Pastoral, Riverine and Urban Sites.

Figure 11 with a breakdown of expenditure between food (food, debt repayment and water) and non-food items or all other expenditures reveals that a significant part of the limited income was spent on food, 65%, 71% and 74% in Pastoral, Riverine and Urban, respectively. This was high considering that most households receive food aid and rely on own production in the Riverine and Pastoral sites. Like in December, average daily income exceeded expenditure in all sites. Nevertheless, malnutrition rates are increasing, and hence the assumption that only income and increased income would positively affect malnutrition rates, are not fully applicable. However,
the malnutrition status of the population remains considerably high and this suggests that malnutrition is considerably linked to non-food related underlying causes, e.g. hygiene, health and care practices.

Garissa

Urban sites in Garissa have the strongest employment based income sources, whereas Pastoral and Riverine sites rely more on their livestock as their key income source. Own business is the source of income existing across all the sites. For the Riverine site, in addition to livestock and small businesses, agricultural products, mainly fruits and vegetables, are a source of income for 15% of households in December and to 33% in March. There was no significant change in terms of income sources, except for agricultural products in the Riverine, which suggests that households’ income sources are less variable between seasons.

A further look at the data (in Figure 14) on expenditure between food and non food indicates that a significant proportion of income was spent on food which accounted for 67%, 58% and 55% during March in Pastoral, Riverine and Urban, respectively. Nevertheless less than in Mandera, which might be due to local production or lower prices of food on the markets linked to distances and transport.
6.4. Coping Strategies

**Mandera**

The employment of household coping strategies is similar in December and March, and skipping meals and reducing the size of meals remained the top strategies across all sentinel sites. Purchase of food on credit has gone up both in the Pastoral and Riverine sites indicating the vulnerability of these sites at the peak of the dry season in March.

It is important to note that access to credit to purchase food is not a sign of being less vulnerable. Credit will often be extended for food. However, credit is rarely extended without collateral assets. Purchase of food on credit is “normal” and seasonal for poor households; it becomes a problem if the assets are unstable or weak and hence the redeeming of the credit becomes uncertain. In the current situation, collateral assets like animals and future harvests, are weak and unreliable, hence households have been reducing their overall access to credit (see Figure 11). Sale of productive assets as a coping strategy was higher in Pastoral and Riverine sites, probably due to increased distress sale of livestock as a result of prolonged dry season.

**Garissa**

The three prominent coping strategies used in Garissa Pastoral and Riverine sites include purchase of food on credit, sale of productive asset (mainly livestock) and reducing size of meals. In Urban sites, purchase of food on credit was the most common coping strategy during the 30 days before the data collection. There was no sudden increase or use of unusual coping strategies in the December to March period.
7. CONCLUSION AND RECOMMENDATIONS

The second round of sentinel surveillance data analysis based on both LQAS decision rule and point estimates revealed that four out of six sentinel sites were above the 20% GAM threshold and very critical, two of the sites were above the 15% GAM emergency threshold and in critical stage.

Cough with difficult breathing and fever with chills like malaria were contributing factors to the high child morbidity rates compounding the malnutrition problem further. The use of coping strategies, especially the purchase of food on credit and sale of productive assets have increased in March in the Pastoral and Riverine sites indicating increased vulnerability of households at the peak of the dry season.

The situation seems particularly worrying in Mandera Riverine with the highest malnutrition rates, the lowest recorded income and high distribution of food aid. Such trends require concerted efforts through short- to medium-term complementary interventions, with the following recommendations:

- Scale up of outpatient therapeutic feeding program with proper screening (passive and active) together with relevant partners and communities.
- Refocus and/or expand activities for nutrition and food security to beneficiaries living in Pastoral and Riverine sites (beyond the Urban sites)
- Improving access to safe water in the Pastoral and Riverine sites
- Scale up and reinforce the training of communities about child care and feeding practices for under five year olds.
- Advocate immediately at national level to increase the quantity of distributed food, as the GFD is not adequate to cover the nutritional needs of the targeted community.
- Support income-generating activities as a way to diversify the pastoralist livelihoods income and food sources and hence improve their nutritional status.
- Enable pastoralists to become more strategic and market-oriented to create and receive the full value of their animals and animal products throughout the different seasons.
- Promote mid and long term alternatives to overcome dependency on food aid, with focus on innovative and appropriate social safety net programmes, supporting the most vulnerable to exit the cycle of seasonal hunger and malnutrition.