NUTRITION ASSESSMENT REPORT

MIDDLE AND LOWER SHABELLE IDPs, AGROPASTORAL AND RIVERINE LIVELIHOOD SYSTEMS

SHABELLE VALLEY REGIONS, SOMALIA

Food Security Analysis Unit (FSAU/FAO)
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EXECUTIVE SUMMARY

Lower and Middle Shabelle regions are amongst the most highly populated regions in Southern Somalia, with over 1.2 million persons in twelve districts (UNDP 2005 population figures). Shabelle valley also bears the highest proportion (36%) of acute malnutrition caseloads in Somalia with about 75,740 children wasted (WHZ<-2 or oedema) based on the 2008 consolidated caseload estimation extrapolated from survey data. The regions support a total of seven livelihood zones namely Central Regions Agropastoral, Shabelle Riverine, Southern Agropastoral, Southern Inland Pastoral, Lower and Middle Shabelle Agropastoral Rainfed, Lower and Middle Shabelle Irrigated and South East Pastoral. The Riverine and Agro pastoral livelihood zones are dominant (*See Map 1*).

Shabelle has in the recent past (from February 2007) experienced multiple shocks and intense armed conflict with devastating effects including trade disruptions, massive displacement, four previous seasons of below normal cereal production, hyper inflation, reduced labor earnings and education. The nutrition situation has however improved in Shabelle regions in the last two seasons, the mitigating factors mainly being a favorable off-season crop harvest and substantial humanitarian response including food and cash transfer, increased access to safe water and sanitation facilities in the IDP settlements, which has facilitated control of acute watery diarrhea.

Between 1st and 11th November 2008, FSAU and partners[1] conducted three inter-agency nutrition assessments in IDPs[2], Agropastoral and Riverine Livelihood Zones in Middle and Lower Shabelle Regions in Southeast Somalia. This was in response to the need to monitor the levels of acute malnutrition for the different livelihoods and to inform on the intervention responses for the region following a series of shocks that led to *Serious* to *Critical* nutrition levels in earlier assessments conducted since May 2007 (Fig 2). The main objective of the survey was to determine the level of wasting among children aged 6-59 months and analyze the possible factors contributing to malnutrition, such as dietary diversity, morbidity, care practices and assess the mortality rates in the specific livelihood systems in the regions.

Using a two-stage PPS sampling methodology, 25, 26 and 25 clusters were selected for both nutrition and mortality assessments from the IDPs settlements, Agro pastoral and riverine livelihoods respectively. A total of 1986 children (667 from IDPs, 681 from agro pastoral and 638 from riverine livelihoods) aged 6-59 months were assessed from 373; 382 and 374 households, respectively.

Results indicate that the nutrition situation is *Serious* (GAM rate of 10-15%) in the three assessments showing a significant improvement among the agropastoral and IDP populations from the *Critical* levels recorded in the last assessment in May 2008, but no statistically significant change in the riverine population. The retrospective crude and U5 mortality rates (CMR and U5MR) were similar to the May '08 studies, indicating *acceptable* levels in two of the three assessments and *alert* in the other (Table 1.1).

Shabelle IDPs in Afgoye corridor and Merka reported a GAM rate (weight for height <-2 Z score or oedema) of **12.3%** (9.7-15.5) and SAM rate of **2.8%** (1.7-4.8%) with seven (1.0%) cases of oedema. This indicates a slight improvement from the previous GAM rate of 15.0% (11.5-18.4%), but a significant increase in the proportion of severely malnourished children from the 1.0% (0.2-1.8) including four (0.5%) oedema cases reported in the May 2008 assessment[3]. The deterioration in SAM rates is likely as a result of continuing influx of IDPs from Mogadishu. Although the GAM results appear lower than the rates reported among the IDP population assessed in May 2008, and indicates a general improvement from *critical* levels experienced over the previous one year to *serious* levels, the change is not statistically significant ($p>0.05$). In addition, 90-day retrospective mortality assessments reported respective Crude and Under Five year mortality rates of **0.70** (0.37-1.34) and **1.69** (0.90-3.17) among the IDPS which indicate below alert levels according to WHO classification and no change from CMR and U5MR of **0.96** (0.12-1.81) and **1.47** (0.96-1.99) respectively reported in the previous assessment.

[1] UNICEF, WFP, COSV, CARE, Mercy USA, INTERSOS, ZAMZAM, TRG, SACIID, SRCS, Muslim Aid, SHAWO and New Ways
[2] There were about 488,088 internally displaced persons in the Afgoye corridor and in Merka during the assessment (OCHA, Nov '08.
[3] FSAU Nutrition Update, June 2008.

Shabelle Agropastoral reported a **GAM** rate of **12.5%** (CI: 10.6-14.6) and a **SAM** rate of **2.2%** (1.3-3.6) including three (**0.4%)** oedema cases. These results indicate an improvement to a *serious* nutrition situation from the *Critical* level of acute malnutrition in the May 2008 assessment, where a GAM rate of **18.1%** (14.4-21.8) and a SAM rate of **3.5%** (1.7-5.3) including seven oedema cases (0.9%) were reported. The Crude and U5 Mortality rates of **0.91** (0.16-1.34) and **1.78** (1.05-2.98) respectively, among the agro pastoral population in Shabelle regions are *acceptable* according WHO standards.

Shabelle Riverine Assessment reported a **GAM** rate of **10.8%** (8.6-13.5) and a **SAM** rate of **2.5%** (1.4-4.4) that included seven (1.1%) oedema cases, indicating no significant change from the May 2008 assessment which reported a GAM rate of 13.7% (9.6-17.7) and SAM rate of 3.8% (1.8-5.9) including two (0.3%) oedema cases. The Crude and under five year mortality rates of **1.01** (0.66-1.55) and **2.15** (1.17-3.94) were reported respectively, both levels above the *alert* threshold of *1/10,000/day* and *2/10,000/day* (WHO standards) and illustrating an underlying acute crisis in these regions. Diarrheal diseases, birth complications and physical injuries were reported as the main causes of death.

The proportions of children who had suffered from one or more communicable childhood diseases during the two weeks prior to the assessment were 47.8%, 37.7% and 48.9% in the assessed IDPs, agropastoral and riverine populations respectively. As shown on Table 1, the incidence of reported diarrhoea in IDPs, Agropastoral and Riverine populations (21.0%; 13.7% and 15.5% respectively) in the two weeks prior to the assessment were high. High incidences of ARI (27.0%, 21.3% and 27.1% respectively) and febrile illnesses (22.9%, 16.3% and 18.0% in the IDPs, Agropastoral and Riverine populations respectively) were also reported in the three assessments. These levels were consistent with seasonal morbidity patterns recorded from the health facilities. Rapid Diagnostic Tests (RDT) conducted for malaria however reported very low (<1%) prevalence rates of 0.6% (N=1310), 0.1% (N=1612) and 0.8% (N=1257) positive for *Plasmodium falciparum* in the IDP, agropastoral and riverine population respectively. Analysis has shown strong association between acute malnutrition and morbidity rates. Children who were reported to have been ill within two weeks prior to the assessment were more likely to be acutely malnourished ($p<0.05$). For example, in the riverine livelihood, children who had reportedly fallen ill were nearly 3 times more likely to be acutely malnourished than those who were well (RR=2.84; CI: 1.54-5.26), and children who reportedly had diarrhoea were nearly 3.2 times more likely to be acutely malnourished than those who did not reportedly have diarrhoea (RR=3.2; CI: 1.72-6.10).

Past studies have shown that vitamin A greatly improves the immunity of individuals; hence reduce the disease burden of a population. However, as shown in table 3, Vitamin A supplementation as well as polio and measles immunization status, were far below the WHO recommended coverage of 95%.

While diseases continue to predispose children to malnutrition, concern remains on access to safe water, sanitation, access to health services and low coverage of health programmes and poor child care and feeding practices. With the exception of the IDPs, very low proportion of the households had access to safe drinking water (11.0% and 27.5%), sanitation facilities (28.8% and 48.1%) or health facilities (20.7% and 26.2%) in agropastoral and riverine respectively. Even though interventions targeting the IDP population have significantly improved access to safe drinking water (74.5%), improved sanitation facilities (89.0%) and health facilities (55.2%) sustained efforts are required to provide further improvements and to mitigate the risks to morbidity and malnutrition.

Although good *Deyr* '08/09 rains were reported in the Shabelle regions resulting into favourable food security indicators such as improved milk consumption, dietary diversity and increased agricultural produce (off-season yield) among the riverine and agropastoral populations, the prices for foods and other essential commodities, though declining are still high, limiting access by the poor households. Dietary diversity was reportedly high among all the three livelihood groups (96.0%, 92.4% and 97.6% in IDPs, agropastoral and riverine groups respectively).

Overall, the Shabelle IDPs, agropastoral and riverine populations have reported a sustained or improved nutrition situation. The improved dietary diversity across the three livelihood groups is undoubtedly a

contributing factor. Other influences include a controlled AWD outbreak and humanitarian support, such as cash-for-work and food assistance programmes. However, issues of child care and feeding practices continue to compromise the nutritional status of children, as is access to sanitation and safe water in the agropastoral and riverine populations. The IDP population, despite showing a slight improvement in the nutrition levels, still face a precarious situation. This demonstrates the need for continued support to the IDPs who recently fled the increased civil insecurity in Mogadishu and surrounding areas. Specific recommendations include:

Immediate Interventions

- Improving coverage for health programmes, especially for measles vaccination and vitamin A supplementation. Vigorous campaigns are required in the Shabelle regions especially among the agropastoral and riverine communities.
- Rehabilitation of acutely malnourished children through selective feeding programs and active case finding until household food security is restored and critical public health issues are addressed. All options to address this through effective and non-damaging measures need to be considered. Capacity building of the existing health facilities and the community to manage acutely malnourished children could be explored.
- There is need to focus on programmes that improve and sustain dietary diversity and consumption of micronutrient rich foods. Food distribution for pulses and micronutrient enriched oil could help improve dietary diversity especially among the IDPs.
- Intervention programmes on water, sanitation and hygiene practices including health education are essential.

Long term Interventions

- Rehabilitation/protection of water systems including the well and water catchments (such as capping of wells) in anticipation of seasonal flooding. The community should be trained on sanitation of the water systems
- There is need for establishment or strengthening of health facilities and satellite services especially in rural villages where there are no health facilities
- Intensifying health and nutrition education activities at the household level to address care concerns, targeting mothers, and other caregivers. The main areas of focus should include promoting exclusive breastfeeding, appropriate infant and young child feeding, dietary diversification, and improvements in household hygiene including health care practices.
- Peace building and conflict resolution remain the most crucial factors for the restoring and sustaining livelihoods in the Shabelle regions and Somalia as a whole, including returning of the displaced persons back to their homes. Efforts being made within and outside the Shabelle region to this effect are greatly encouraged.

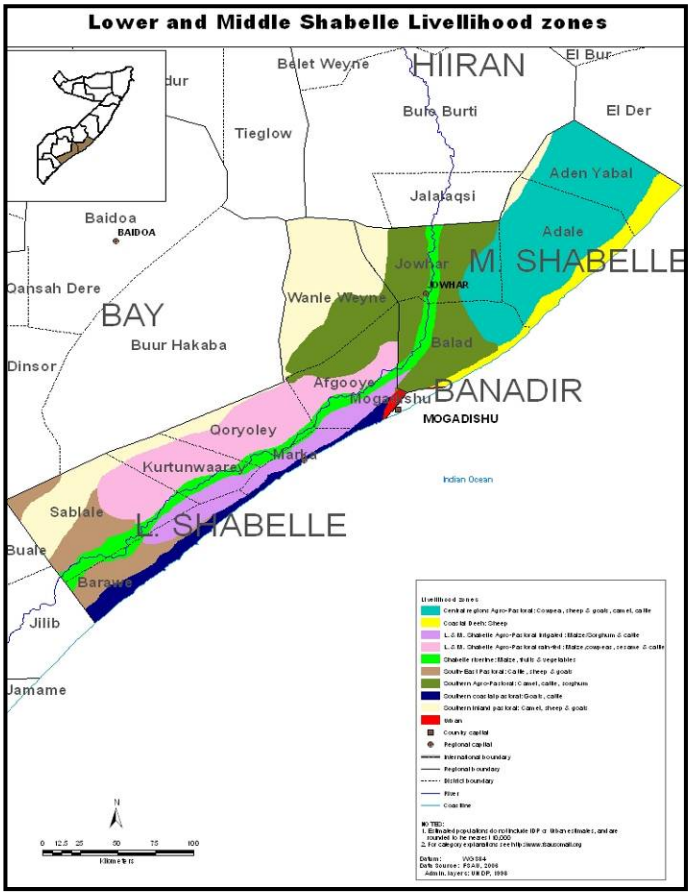
Table 1. Summary of Shabelle Region Assessment Findings (Nov 2008)

	IDPs (N=667)			Agro pastoral (N=681)			Riverine (N=638)		
Indicator	**n**	**%**	**95% CI**	**n**	**%**	**95% CI**	**n**	**%**	**95% CI**
Child Malnutrition									
Total number of households assessed for children	373	100		382	100		374	100	
Mean household size	6.5(SD=2.6)			6.3 (SD=2.4)			5.9 (SD=2.2)		
Total number of children assessed	667	100		681	100		638	100	
Child sex: Males (boys)	321	48.1	45.0-51.3	332	48.8	44.5-53.0	307	48.1	43.2-53.1
Females (girls)	346	51.9	48.7-55.0	349	51.2	47.0-55.5	331	51.9	46.9-56.8
Global Acute Malnutrition (WHZ<-2 or oedema)	82	**12.3**	9.7 – 15.5	85	**12.5**	10.6 – 14.6	69	**10.8**	8.6 – 13.5
Severe Acute Malnutrition (WHZ<-3 or oedema)	19	**2.8**	1.7 – 4.8	15	**2.2**	1.3 – 3.6	16	**2.5**	1.4 – 4.4
Oedema	7	**1.0**	0.2 – 1.9	3	**0.4**	0.0 – 1.0	7	**1.1**	0.0 – 2.3
Global Acute Malnutrition (WHO Anthro 2006)	83	**12.4**	9.4 – 16.3	89	**13.1**	10.7 – 15.8	68	**10.7**	8.4 – 13.4
Severe Acute Malnutrition (WHO Anthro 2006)	35	**5.2**	3.3 – 8.2	30	**4.4**	3.1 – 6.2	21	**3.3**	2.2 – 4.9
Global Acute Malnutrition (WHM<80% or oedema)	58	**8.7**	5.4 – 12.0	60	**8.8**	6.9 – 10.7	45	**7.1**	5.0 – 9.2
Severe Acute Malnutrition (WHM<70% or oedema)	10	**1.5**	0.3 – 2.7	6	**0.9**	0.2 – 1.5	9	**1.4**	0.2 – 2.6
Child Morbidity									
Children reported ill in 2 weeks prior to assessment	319	47.8	40.3 – 55.4	257	37.7	29.5 – 46.0	312	48.9	41.7 – 56.1
Children reported with diarrhoea in 2 weeks prior to assessment	140	21.0	16.5 – 25.5	93	13.7	8.7 – 18.6	99	15.5	11.5 – 19.5
Children reported with ARI within two weeks prior to assessment	180	27.0	20.6 – 33.4	145	21.3	15.5 – 27.1	173	27.1	19.3 – 35.0
Children reported with febrile illness in 2 weeks prior to assessment	153	22.9	13.9 – 32.0	111	16.3	11.1 – 25.1	115	18.0	12.6 – 23.4
Children reported with suspected measles within one month prior to assessment	119	17.8	8.4 – 27.3	61	9.0	2.9 – 15.1	70	11.0	4.9 – 17.0
Immunization Status									
Children immunised against measles	384	57.6	47.5 – 67.7	223	32.7	20.9 – 44.6	336	52.7	41.7 – 63.7
Children who have ever received polio vaccine	529	79.3	71.6 – 87.0	568	83.4	75.6 – 91.2	566	88.7	84.3 – 93.2
Children reported to have received vitamin A supplementation in last 6 months	374	56.1	46.2 – 65.9	389	57.1	44.9 – 69.3	326	51.1	37.6 – 64.6
Child Feeding & Household Dietary Diversity									
Children (6-24) months reported to be breastfeeding	104	46.8	40.0 – 56.3	148	64.1	54.7 – 73.5	134	53.6	45.1 – 62.1
Households who reported to have consumed ≤3 food groups	15	4.0	1.0 – 7.0	29	7.6	2.5 – 12.7	9	2.4	0.0 – 4.9
Households who reportedly consumed ≥4 food groups	358	96.0	93.0 – 99.0	353	92.4	87.3 – 97.5	365	97.6	95.1 - 100
Women Health & Nutrition									
Total women who are malnourished	16	4.2	2.0 – 6.5	11	2.8	0.6 – 5.1	18	4.8	2.0 – 7.7
Pregnant women who are malnourished (MUAC<23.0 cm)	15	16.7	(N=90)	10	13.2	(N=76)	13	17.6	(N=74)
Non pregnant women malnourished (MUAC≤18.5 cm)	1	0.3	0.0 – 1.1	1	0.3	0.0 – 1.0	5	1.7	0.2 – 3.1
Women who received tetanus immunization	255	67.5	58.5 – 76.4	145	37.4	25.3 – 49.5	256	68.3	59.6 – 76.9
Mortality									
0-5 Death Rate (U5MR) as deaths/10,000/ day	**1.69**		0.90 – 3.17	**1.78**		1.05 – 2.98	**2.15**		1.17 – 3.94
Crude Death Rate (CMR) as deaths/10,000/ day	**0.70**		0.37 – 1.34	**0.91**		0.16 – 1.34	**1.01**		0.66 – 1.55

1.0 INTRODUCTION

Historical Context

Lower and Middle Shabelle regions are amongst the most highly populated regions in Southern Somalia. Lower Shabelle hosts an estimated 815,158 persons in seven[4] districts and Middle Shabelle 539,637 persons in five[5] districts (UNDP 2005 population figures). Post-*Gu* nutrition analysis shows that Shabelle and Central regions constitute the largest (45%) of the total proportion of acutely malnourished children in Somalia. Shabelle alone bears 36% of acute malnutrition caseloads in Somalia) based on the 2008 consolidated caseload estimation extrapolated from survey data with about 75,740 children wasted (WHZ<-2 or oedema).



Shabelle has a total of seven livelihood zones namely Central Regions Agropastoral, Shabelle Riverine, Southern Agropastoral, Southern Inland Pastoral, Lower and Middle Shabelle Agropastoral Rainfed, Lower and Middle Shabelle Irrigated and South East Pastoral. The Riverine and Agro pastoral livelihood zones are the dominant livelihoods (*See Map 1*). The riverine zone is located within 10 km of the Shabelle River where maize, sesame and a variety of vegetables are cultivated in addition to fruit. Livestock keeping by the river is limited due to tsetse fly infestation.

The agropastoral zone extends within 20-40 km from the Shabelle River with maize, sorghum, cowpeas, sesame and fruits cultivated and livestock kept. The agricultural potential, the diverse casual labor and income opportunities from agricultural activities in the agropastoral livelihood zone make it an important host area for seasonal and vulnerable populations in normal and bad years. In both the riverine and agro pastoral livelihood zones, ownership of land is politically sensitive *(Ref: FSAU Food Economy Baseline Profile 2000)*.

Trends in Food Security Situation

The Shabelle regions have been considered the main grain basket for Southern Somalia with high cereals and fruits production from both rainfed and irrigated farming. For more than a decade and until the year 2006, the food security situation in the riverine and agro-pastoral livelihood zones has been classified in the **Borderline Food Insecure (BFI)** phase due to resilience to seasonal shocks and external pressures. This resilience is attributed to the extensive range of coping strategies including income source diversification options. *(Ref: FSAU Technical Series Report No. V.13 September 21, 2007*). Nevertheless, the FSAU Post *Deyr* '06/07 analysis, classified Shabelle Region as in an **Early Warning level of Watch** indicating deterioration to AFLC/HE due to decline in income from loss of crop and labor opportunities incurred during the *period,* severe flooding and the risk associated with off-season cereal harvest; a consequent potential increase in cereal prices and erosion of the population's resilience to shocks and seasonal pressures in addition to a potential deterioration in security.

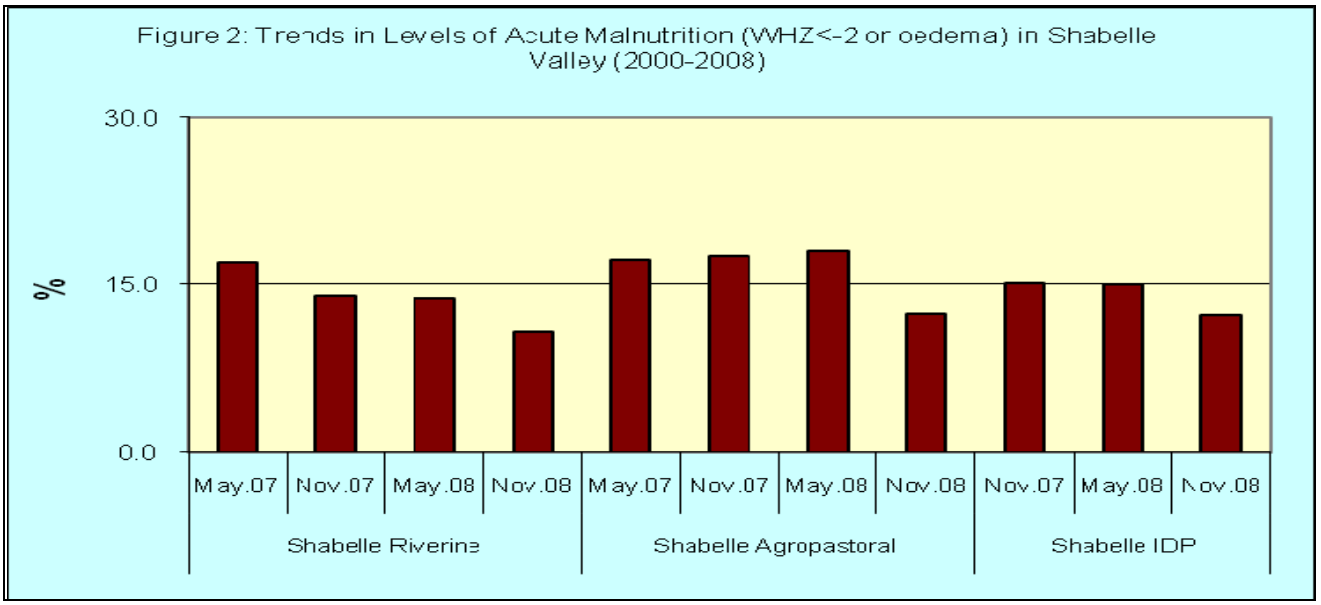
The FSAU Post *Gu* '08 Food security analysis indicated further deterioration since *Deyr* '07/08 in the food

[4] Kurtunwarey, Merka, Qoryoley, Afgooye, Brava, Sablale and Wanlaweyn
[5] Mahaday, Cadale, Jowhar, Balcad and Adenyabal

security and humanitarian situation in Shabelle regions. The number of people in HE and AFLC increased significantly with 48% of the affected in Middle Shabelle (indicating a doubling since *Deyr* '07/08) and 52% in L. Shabelle. This deterioration was the result of delayed and poor *Gu* '08 rains, previous below-average crop production in addition to displacement caused by continued civil insecurity.

Nutrition Situation Trends

Historically the nutrition situation in the rural livelihoods in the Shabelle regions was assumed not to be of much concern. Information was collected predominantly from health centres and nutrition sentinel sites and up to December 2006, levels of acutely malnourished children had remained stable and low (*See Figure 1)*. However the nutrition situation of the urban poor and protracted IDP population in the urban settings of Mogadishu was different. However, a series of nutrition surveys conducted from 2000 to 2005 highlighted the nutritional vulnerability of this group reporting levels from 13% to 16% GAM, in addition to high rates of severe acute malnutrition from 2% to 4%. Since 2007 when the first comprehensive assessment was conducted, the GAM rates have been above or slightly below 15% (*See Figure 2)*.



The integrated nutrition situation analysis conducted by FSAU and partners in the Post *Gu* '08 indicated Shabelle agro-pastoral and the IDPs in the Afgoye Corridor and Merka sustained a *Critical* nutrition situation due to deteriorating food security situation by that time and continued influx of IDPs. However in Shabelle riverine there had been some sustained improvement from the previous *Critical* in *Gu* '07 to *Serious* in Post *Deyr* '07/08 through Post *Gu* '08, possibly due increased humanitarian interventions, as well as increased access to fish, fruits and vegetables.

Three nutrition assessments conducted in May 2008 in the IDP, agro-pastoral/pastoral and riverine population groups in both Middle and Lower Shabelle Regions all reported a persistent *Critical* nutrition situation (*see Fig 3*) with similar GAM rates of 15.0% (11.5-18.4) from 15.2% (11.7 – 18.6) reported in November 2007 among the IDPs; 18.1% (14.4-21.8) in the agropastoral from a GAM rate of 17.6% (13.3 – 21.8) in Deyr '07/08 and 13.6% (9.2-18.0) among the Riverine from a GAM rate of 14.0% (11.2 – 16.7) reported in the November 2007 assessment.

2.0 ASSESSMENT OBJECTIVES

The overall objective of the three livelihood-based assessments was to establish the extent and severity of acute malnutrition, determine the causes of malnutrition and to monitor the trends of acute malnutrition in Middle and Lower Shabelle regions.

Specific Objectives were:

1. To estimate the level of acute malnutrition and nutritional oedema among children aged 6-59 months in the three livelihood groups of IDPs, Agropastoral and Riverine in Middle and Lower Shabelle regions.
2. To estimate the level of acute malnutrition among women aged 15-49 years in the three livelihood groups of IDPs, Agropastoral and Riverine in Shabelle valley.
3. To identify factors influencing nutrition status of the children in the three livelihood groups of IDPs, Agropastoral and Riverine in Middle and Lower Shabelle regions.
4. To estimate the prevalence of some common diseases (measles, diarrhoea, febrile illnesses, malaria and ARI) in the three livelihood groups of IDPs, Agropastoral and Riverine in Shabelle valley.
5. To estimate the measles and polio vaccination and Vitamin A supplementation coverage among children in the three livelihood groups of IDPs, Agropastoral and Riverine in the Shabelle regions.
6. To estimate the crude and under-five mortality rates in the three livelihood groups of IDPs, Agropastoral and Riverine in Middle and Lower Shabelle regions.

3.0 METHODOLOGY

Three cross-sectional assessments (using PPS) were conducted concurrently between 1st and 11th November 2008, among the Agropastoral, and Riverine populations of in Middle and Lower Shabelle Regions and among the IDPs in Merka and settlements along the Mogadishu - Afgoye road. A separate and fourth assessment was conducted at the same time among the riverine rural populations of Lower and Middle Shabelle using Lot Quality Assurance Sampling Methodology (reported separately).

Respective sample sizes (number of households and number of children) were calculated using the Epiinfo/Ena 2008 software after considering the population size, estimated prevalence and desired precision. A list of all villages within each of the assessed livelihoods in the regions with their respective populations[6] formed a sampling frame and was used to construct cumulative population figures for the assessment area from which 25-26 clusters were randomly drawn for each livelihood zone *(Appendix 4)*. Selection of respondents within the village was done randomly from a list of eligible names. Where these were not available, the number of households in the village was estimated from the population figures (the total population divided by the mean household size to get the interval, *n)*. Starting from a random household, every n*th* household was selected and all eligible children (aged 6-59 months) in that household measured. Retrospective mortality data was collected from all the households in each cluster from each livelihood including even those that did not have children aged 6-59 months.

Quantitative data was collected through a standard household questionnaire for nutrition assessments in Somalia (see appendix 2). Retrospective mortality data for 90 days prior to the assessments and Rapid Diagnostic Test for malaria was also collected among the study households using the standard questionnaires (see appendix 3 and 4 respectively). Qualitative data was collected through focus group discussions and key informant interviews to provide further understanding of possible factors influencing nutritional status.

A four-day training of enumerators and supervisors was conducted covering interview techniques, sampling procedure, inclusion and exclusion criteria, sources and reduction of errors, taking measurements (height, weight and MUAC), undertaking malaria RDTs, standardisation of questions in the questionnaire, levels of precision required in measurements, diagnosis of oedema and measles, verification of deaths within households, handling of equipment and the general courtesy during the assessment.

Standardisation of measurement and pre-testing of the questionnaires and equipment were carried out in a village in Merka town not selected as a cluster for the actual IDP assessment. Quality of data was also ensured through (i) monitoring of fieldwork by coordination team, (ii) crosschecking of filled questionnaires on daily basis, recording of observations; and confirmation of measles, severe malnutrition and death cases by supervisors. All households sampled were visited and recorded including empty ones (iii) daily review was undertaken with the teams to address any difficulties encountered, (iv) progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis, (v) continuous data cleaning and plausibility checks (vi) monitoring accuracy of equipment (weighing scales) by regularly measuring objects of known weights and (vii) continuous reinforcement of good practices. All measurements were loudly shouted by both the enumerators reading and recording them to reduce errors during recording.

Household and child data was entered, processed (including cleaning) and analysed using EPI6 software. Mortality data was entered and CMR and U5MR generated in ENA software.

[6] UNDP population estimates, 2005

4.0 ASSESSMENT RESULTS

4.1 Household Characteristics of Study Population

The three livelihood-based nutrition assessments covered a total of 1129 households (373 from IDPs; 382 from agropastoral and 374 from riverine livelihoods) with mean household sizes of 6.5±2.6; 6.3±2.4 and 5.9±2.2 persons respectively. A total of 1986 children (667 from IDPs, 681 from agropastoral and 638 from riverine livelihoods) aged 6-59 months were assessed with respective mean number of 1.9 ±0.8; 1.9 ±0.8 and 1.8 ±0.7 under fives per household. The household characteristics by livelihood are presented in Table 4.1 below.

Table 4.1: Household Characteristics

Characteristics	IDPs		Agropastoral		Riverine	
	N	%	N	%	N	%
Total Households	373	100	382	100	374	100
Household size (Mean):	6.5	SD=2.6	6.3	SD=2.4	5.9	2.2
Mean No of Underfives	1.9	SD=0.8	1.9	SD=0.8	1.8	SD=0.7
Sex of Household Head:						
Male	233	62.5	235	61.5	199	53.2
Female	140	37.5	147	38.5	175	46.8
Host IDPs?						
Yes	-	-	35	9.2	34	9.1
No	-	-	347	90.8	340	90.9
Current Food and Income Source						
Humanitarian support	309	82.8	-	-	-	-
Support from host population	3	0.8	-	-	-	-
Remittances from abroad	24	6.4	-	-	-	-
Remittances locally	1	0.3	-	-	-	-
Casual labour	9	2.4	-	-	-	-
Petty trade	4	1.1	-	-	-	-
Begging	0	0.0	-	-	-	-
Sale of assets	3	0.8	-	-	-	-
None – recent loss of LH	20	5.4	-	-	-	-
Main Source of Income:						
Animal and its products sales	1	0.3	132	34.6	21	5.6
Crop sales	4	1.1	150	39.3	237	63.4
Trade	35	9.4	20	5.2	12	3.2
Casual labour	216	57.9	66	17.3	90	24.1
Salaries/wages	8	2.1	0	0.0	4	1.1
Remittances	102	27.3	13	3.4	10	2.7
Others	7	1.9	1	0.3	0	0.0
Has Mosquito net:						
Yes	51	13.7	88	23.0	115	30.8
No	322	86.3	294	77.0	258	69.2
Type of Net:						
GFSOM	24	47.1	50	58.6	86	74.8
Other	23	45.1	36	40.9	22	19.1
Not seen	4	7.8	2	2.3	7	6.1

The results show that at least 53% of the assessed households were male-headed (Table 4.1).

In addition to the separate IDP populations assessed, 9.2% and 9.1% of the Agropastoral and riverine households hosted between 1 and 9 IDPs respectively, mainly fleeing from civil insecurity in Mogadishu.

Most IDPs lived an urban livelihood system (87.4%) before displacement, but are now dependent on humanitarian support (82.8%), remittances (6.4%) or support from the host community (0.8%) for their food and income. Some households (5.4%) reportedly lost their livelihoods and rely on remittances/gifts. Casual labour is the main source of income for 57.9% of the IDP households, 17.3% of the agropastoral and 24.1% of the riverine households.

Sale of crops was the main source of household income among the agropastoral (39.3%) and riverine (63.4%). Sale of livestock and livestock products also provided a significant source of income among the agropastoral group (34.6%). The households reported limited job opportunities with casual labour as the leading source of employment income and salaried or waged employment accounting for less than 3% of employment income.

Mosquito net ownership is very low in all the assessed households with only 13.7% in the IDPs, 23.0% in the agropastoral and 30.8% of the riverine household having access to bed nets, most (>47%) of which were supplied from the Somalia Global Fund for Malaria (GFSOM).

4.2 Households Access to Water, Sanitation and Health Facilities

Table 4.2. Households access to water, sanitation and health facilities

	IDPs		Agropastoral		Riverine	
	n	%	n	%	n	%
Main Source of drinking water						
Tap	132	35.4	41	10.7	30	8.0
Truck	180	48.3	3	0.8	0	0.0
Tube well	50	13.4	66	17.3	91	24.3
Surface sources	11	2.9	263	68.8	253	67.6
Have access to safe water						
Yes	278	74.5	42	11.0	103	27.5
No	95	25.5	340	89.0	271	72.5
Reason for water inaccessibility						
Not available	5	5.3	127	34.7	151	55.7
Distance too far	0	0.0	91	26.8	53	19.6
Can't afford	88	92.6	121	35.6	67	24.7
Security concerns	2	2.1	1	0.3	0	0.0
Have access to latrines						
Yes	332	89.0	110	28.8	180	48.1
No	41	11.0	272	71.2	194	51.9
Type of sanitation facility						
Bush	41	11.0	272	71.2	194	51.9
Traditional pit	202	54.2	106	27.7	176	47.1
VIP latrine	122	32.7	4	1.0	4	1.1
Flush	8	2.1	0	0.0	0	0.0
Reason for latrine inaccessibility						
Pastoral			21	7.7	2	1.0
Lack of resources			221	81.3	165	85.1
Doesn't see need			30	11.0	27	13.9
Access to Health Facility						
Yes	206	55.2	79	20.7	98	26.2
No	167	44.8	303	79.3	276	73.8
Reason for Inaccessibility to Health Facility						
Has little time to visit	1	0.5	5	1.6	40	14.3
Distance is far	123	63.1	232	71.4	197	70.4
Can't afford	71	36.4	86	26.5	42	15.0
Security Concerns	0	0.0	2	0.6	1	0.4

Access to safe water for drinking and for domestic use remains limited and is a key concern in the study area. About 73% of the assessed households in the agropastoral and 89% in the riverine livelihoods in addition to 25.5% of IDP households do not have access to safe water. However, well sinking and water trucking interventions have improved access to clean water (74.5%) in the IDP settlements.

Majority of the agropastoral (68.8%) and riverine (67.6%) population get water from unprotected surface sources like river, canals, shallow wells and water catchments, compared to only 2.1% of the IDP households (Table 4.2).

The cost of safe drinking water is the main reason reported among those who have no access, with 92.6%, 35.6% and 24.7% claiming they cannot afford the clean drinking water among the assessed IDPs, agropastoral and riverine households respectively.

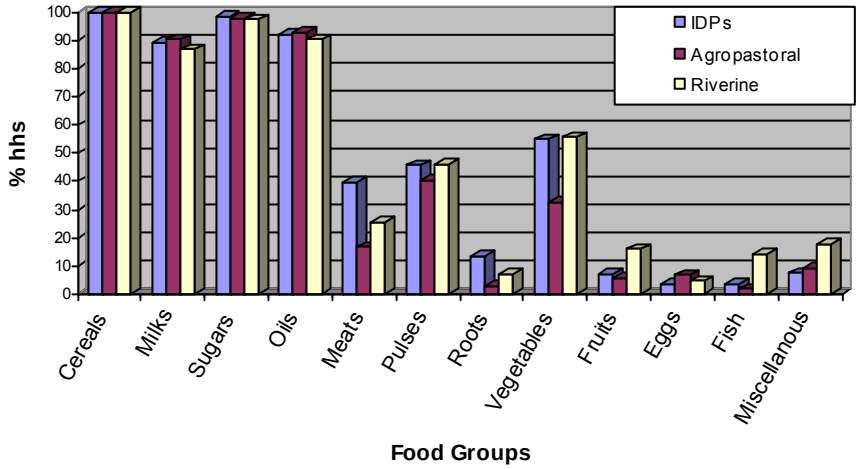
Poor sanitation is another key concern in Lower and Middle Shabelle. Access to sanitation facilities remains limited with 71.2% and 51.9% of agropastoral and riverine households respectively having no access to a sanitation facility which predisposes the population to diseases. Again, the IDPs reportedly had much better access to latrines (89.0%) compared to assessed agropastoral (28.8%) and riverine (48.1%) households. The main reason reported for inaccessibility is lack of resources (>70%) to construct the latrines (Table 4.2). The use of open bush/ground for faecal disposal coupled with consumption of water from open sources poses a risk of contamination of drinking water, a predisposing factor to diarrhoeal infections and acute malnutrition.

Overall, as shown in Table 4.2, there is a significant improvement in water access, quality and safety in the IDP settlements due to the ongoing humanitarian interventions.

4.3 Household Food Security

4.3.1 Food Consumption

Fig 4.3.1 Distribution of Food Groups Consumed by Households



Cereal-based diets are consumed by all the assessed households. Other food items frequently consumed were sugar, oil and milk. The consumptions of meat, pulses, roots, vegetables and fruits were significantly lower among the agropastoral households compared to IDP and riverine populations. Vegetable consumption was unsurprisingly significantly higher among the IDP (55.0%) and riverine (55.6%) households than in agropastoral (32.5%). The IDPs and the areas in Lower Shabelle benefited from the food assistance package of cereals, cooking oil and pulses and therefore most likely had increased consumption of these food groups. Consumption of roots/tubers, eggs and fish remained very low in all the assessments.

Most households in the assessed agropastoral (72.5%) and riverine (85.3%) livelihood mainly produce their own food (mainly cereals and milk). However, food aid is the main households' source of food for most (81.8%) households in the IDPs. Purchasing was another significant source of food to households in IDPs (14.5%), agropastoral (22.8%) and riverine (14.4%) populations (Table 4.3). This is an improvement from the previous assessment in May 2008 when purchasing was the main source of food for over 60% of the households in all the three assessments.

Table 4.3. Households main source of food

	IDPs		Agropastoral		Riverine	
	n	%	n	%	n	%
Main source of food						
Own production	12	3.2	277	72.5	319	85.3
Purchasing	54	14.5	87	22.8	54	14.4
Gifts	1	0.3	1	0.3	1	0.3
Food aid	305	81.8	17	4.5	0	0.0
Borrowing	1	0.3	0	0.0	0	0.0
Main source of cereals		N=373		N=382		N=374
Purchasing	5	1.3	251	65.7	251	67.1
Own production	43	11.5	106	27.7	116	31.0
Food aid	320	85.8	19	5.0	1	0.3
Gifts	4	1.1	4	1.0	4	1.1
Borrowing	1	0.3	2	0.5	0	0.0
Others (barter, gather, etc)	0	0.0	1	0.2	0	0.0
Main source of milk		N=333		N=345		N=325
Purchasing	312	93.7	190	55.1	280	86.2
Own production	2	0.6	153	44.3	42	12.9
Gifts	11	3.3	0	0.0	2	0.6
Bartering	4	1.2	1	0.3	0	0.0
Borrowing	4	1.2	1	0.3	1	0.3
Number of meals taken/day		N=373		N=382		N=374
One	31	8.3	11	2.9	2	0.5
Two	307	82.3	277	72.5	196	52.4
Three	35	9.4	94	24.6	176	47.1

Food distribution had been done in the IDPs settlements in Afgoye corridor and in lower Shabelle districts during the month of the assessment. Majority of the households (82.3%, 72.5% and 52.4% in IDPs, agropastoral and riverine households respectively) reportedly had two meals per day, with more than 50% skipping at least a meal the previous 24 hours.

4.3.2 Dietary Diversity

Table 4.4. Household Food Consumption and Dietary diversity

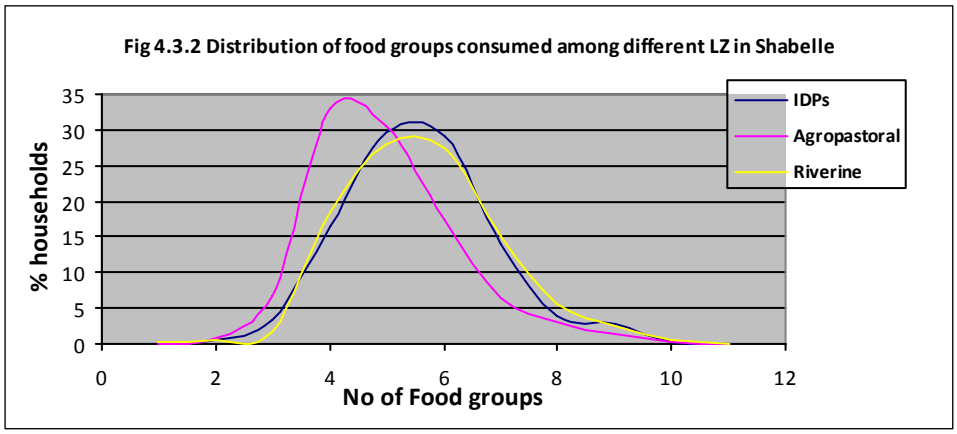
	Pastoral		Agropastoral		Riverine	
	n	%	n	%	n	%
No of food groups consumed						
1 food group	-	-	-	-	1	0.3
2 food groups	2	0.4	3	0.8	2	0.5
3 food groups	13	3.5	26	6.8	6	1.6
4 food groups	61	16.4	126	33.0	69	18.4
5 food groups	111	29.8	117	30.6	105	28.1
6 food groups	108	29.0	67	17.5	103	27.5
7 food groups	52	13.9	25	6.5	56	15.0
8 food groups	15	4.0	12	3.1	21	5.6
9 food groups	10	2.7	5	1.3	9	2.4
10 food groups	1	0.3	1	0.3	2	0.5
No. Having Diversified Diet						
1-3 food groups	15	4.0	29	7.6	9	2.4
≥ 4 food groups	358	96.0	353	92.4	365	97.6
Mean HDDS	5.6 (SD=1.3)		5.0 (SD=1.3)		5.6 (SD=1.4)	

As indicated in Table 4.4, some few households (≤1%) consume only one food group, usually cereal or two food groups. Among the IDPs, the most consumed number of foods was five (29.8%) followed by six (29.0%) with a range of one to ten food groups in 24 hours prior to the assessment.

Most households in the agropastoral livelihood consume four (33.0%) and five (30.6%) food groups with a range of one to ten and among the riverine group, one to ten food groups are reportedly consumed in the preceding 24 hours with five (28.1%) or six (27.5%) food groups, the most frequently

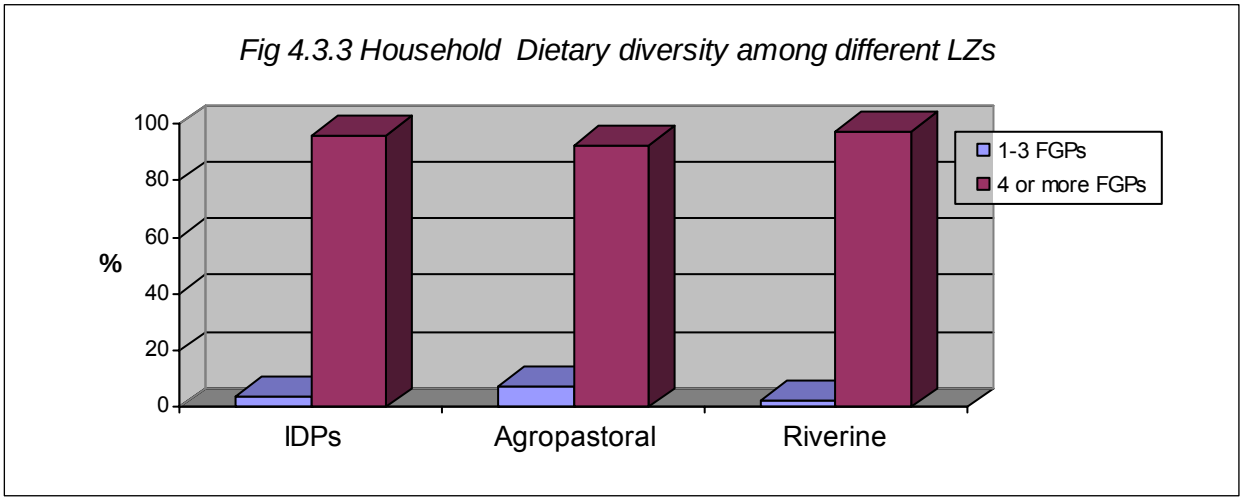
reported by households.

As reflected in the food consumption pattern (Fig 4.3.2), the riverine households consumed most diversified diet (97.6%) with a highest mean dietary diversity score of 5.6 ±1.4 within the previous 24 hours. The IDPs followed very closely as seen in the two overlapping graphs with a similar mean dietary diversity score of 5.0 ±1.3.



The agropastoral households had the most restricted diet (*see graph is farthest left*) consuming an average of 5.0 ±1.3 food groups in the preceding 24 hour period.

Fig 4.3.3 also shows the agropastoral group had the highest proportion (7.6%) of households consuming less diversified diet (3 or fewer food groups) indicating a critical situation[7] while riverine had the largest proportion (97.6%) of the households that consumed diversified diets[8] in the 24 hours prior to the assessment in all the three assessments.



[7] According to FSAU Nutrition Situation Categorization Table, 2007
[8] Composed of at least four food groups based on a total of 12 FAO food groups.

4.4 Morbidity, immunization and Health Seeking Behaviour

Morbidity rates were reportedly high in all the three livelihoods of IDPs (47.8%); agropastoral (37.7%) and riverine (48.9%) of the children assessed.

For the children reported to have fallen sick within two weeks prior to the assessment, majority (>65%) sought medical assistance, mostly from private pharmacies/clinics (>30%).

Table 4.5: Health seeking behaviour

	IDPs		Agropastoral		Riverine	
	N	%	N	%	N	%
Child fell sick						
Yes	319	47.8	257	37.7	312	48.9
No	348	52.2	424	62.3	326	51.1
Where health service sought						
Public health facilities	118	37.0	47	18.3	61	19.6
Private pharmacy/clinic	102	32.0	87	33.9	128	41.0
Traditional healers	17	5.3	39	15.2	34	10.9
Own medication	49	15.4	33	12.8	41	13.1
No assistance sought	33	10.3	51	19.8	48	15.4

A significant proportion consulted traditional healers (5.3 – 15.2%) or administered self medication (12.8 – 15.4%) at home. At least one in every ten children (10.3 – 19.8%) who fell sick did not get any assistance at all.

A higher proportion of ill children reportedly sought medical assistance from the public health facilities among the IDPs (37.0%), unlike in the agropastoral and riverine livelihoods where only 18.3% and 19.6% of the children respectively, who fell sick were taken to a public health facility (Table 4.5). This is an indication of improved access to health services in the IDP settlements as a result of interventions by humanitarian agencies.

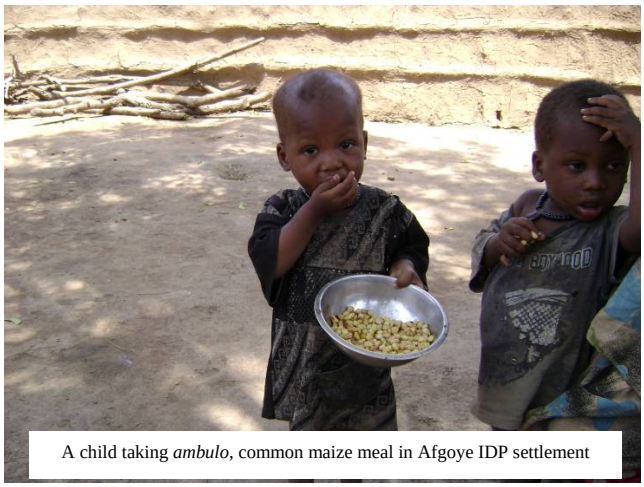
Table 4.6: Morbidity, measles immunisation, polio vaccination and vitamin A supplementation

	IDPs		Agropastoral		Riverine	
	n	%	n	%	n	%
Incidence of major child illnesses						
Proportion of children with diarrhoea in 2 weeks prior to assessment	93	13.7 (8.7 – 18.6)	99	15.5 (11.5 – 19.5)	140	21.0 (16.5 – 25.5)
Proportion of children with ARI within two weeks prior to assessment	145	21.3 (15.5 – 27.1)	173	27.1 (19.3 – 35.0)	180	27.0 (20.6 – 33.4)
Children with fever/ suspected malaria in 2 weeks prior to assessment	111	16.3 (11.1 – 21.5)	115	18.0 (12.7 – 23.4)	153	22.9 (13.9 – 32.0)
Children who slept under bed net	67	10.0 (4.4 – 15.6)	159	23.3 (10.6 – 36.1)	211	33.1 (19.4 – 46.8)
Proportion of persons confirmed Malaria (RDT) positive	10	0.8 (N=1257) (0.0 – 2.0)	8	0.6 (N=1310) (0.0 – 1.5)	1	0.1 (N=1249) (0.0 – 0.2
Suspected measles within one month prior to assessment	119	17.8 (8.4 – 27.3)	61	9.0 (2.9 - 15.1)	70	11.0 (4.9 - 17.0)
Immunization Coverage						
Children (9-59 months) immunised against measles	384	57.6 (47.5 – 67.7)	223	32.7 (20.9 – 44.6)	336	52.7 (41.7 – 63.7)
Children who have ever received polio vaccine	529	79.3 (71.6 – 87.0)	568	83.4 (75.6 – 91.2)	566	88.7 (84.3 – 93.2)
Children who received vitamin A supplementation in last 6 months	374	56.1 (46.2 – 65.9)	389	57.1 (44.9 – 69.3)	326	51.1 (37.6 – 64.6)

The prevalence of reported diarrhoea in IDPs, Agropastoral and Riverine populations (13.7%; 15.5% and 21.0% respectively) within two weeks prior to the assessment remained high but showed a significant improvement from the rates (23.5%; 33.4% and 25.5% respectively) reported during the May 2008 assessment. High incidences of ARI and febrile illnesses were also reported in the three livelihoods (Table 4.7). These levels are however, are consistent with seasonal morbidity patterns recorded from the MCHs. Rapid Diagnostic Tests (RDT) conducted for malaria reported a total prevalence of 0.8% (N=1257), 0.6%

(N=1310) and 0.1% (N=1249) positive for *Plasmodium falciparum*. These rates are similar to those reported in the *Gu* '08 (May 2008) assessment of 3.1% (N=1315), 0.6% (N=1505) and 2.1% (N=1411) in the IDPs, agropastoral and riverine respectively indicating low malaria transmission in all seasons in Shabelle. There was no reported disease outbreak in the assessment.

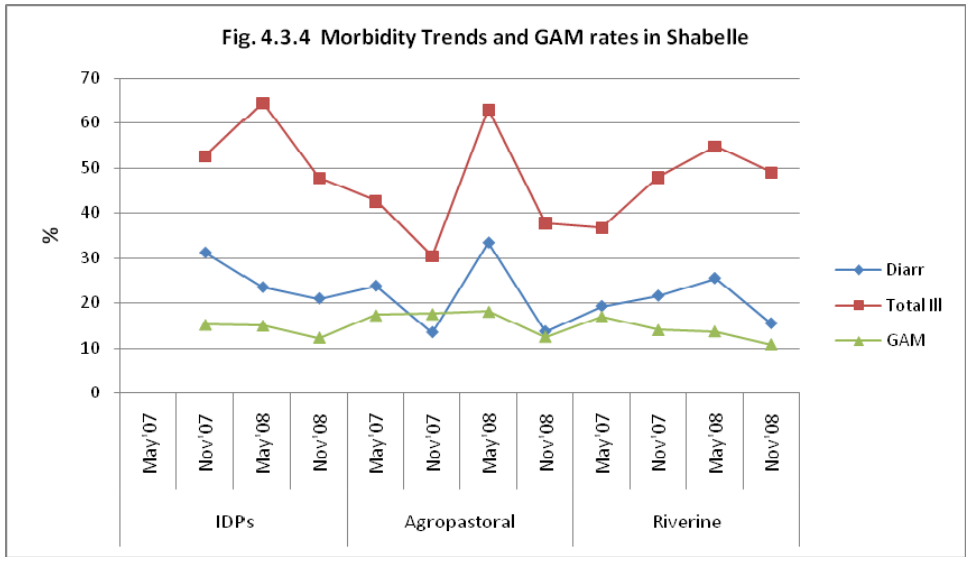
Children reported to have been ill within two weeks prior to the assessment were more likely to be acutely malnourished ($p<0.05$). For example, in the Agropastoral livelihood, children who had reportedly fallen ill were nearly 2.3 times more likely to be acutely malnourished than those who were well (RR=2.28; CI: 1.33-3.90) than their counterparts who did not fall ill; and in the riverine children who had reportedly fallen ill were 2.84 times more likely to be acutely malnourished than those who were well (RR=2.84; CI: 1.54-5.26) than their counterparts who did not fall ill.



A child taking *ambulo*, common maize meal in Afgoye IDP settlement

Diarrhoea is especially one of the contributory factors of malnutrition in Somalia. FSAU meta-analysis (2008) results have shown that diarrhoea accounts for 69% of GAM rates in Somalia. As noted in Fig 3.3.4, diarrhoea is not only a significant contributor in total morbidity but an increase in GAM rate is associated with increased diarrhoea incidences. Children who reportedly had diarrhoea 2.49 times (RR=2.49; CI: 1.31-4.75) and 3.2 times (RR=3.2; CI: 1.72-6.10) higher risk of acute malnutrition respectively in assessed agropastoral and riverine populations than their counterparts who did not have diarrhoea. Similarly, among the assessed IDPs, a higher proportion reported to have been ill or had diarrhoea were also acutely malnourished, but the association was not statistically significant ($P>0.05$).

Fig. 4.3.4 Morbidity Trends and GAM rates in Shabelle



Measles vaccination status (by recall) for eligible children (9-59 months old) was very low, reported in only 32.7% as was coverage for vitamin A supplementation (57.1%) in the assessed agropastoral population. Among the assessed IDP population, measles immunization and Vitamin A supplementation status were 57.6% and 56.1% respectively and at 57.2% and 51.1% respectively in the riverine population. Overall, immunization status for all the health programmes fell below the recommended 95% level (Sphere, 2004) in all the three livelihoods (Table 4.6).

4.5 Feeding practices

None of the assessed children were exclusively breastfed for the recommended first six months and more than 35% of the children aged 6-24 months had stopped breastfeeding at the time of the assessment. Only 46.8%, 64.1% and 53.6% of the assessed children in the breastfeeding age (6-24 months) were still breastfed as recommended (Sphere, 2004) in the IDPs, agropastoral and riverine livelihoods respectively. Analysis of distribution of acute malnutrition in the non breastfed group showed higher risks and levels of

association with acute malnutrition than those who were still breastfeeding, but this was not statistically significant in this assessment. Among the IDPs, 8.9% of the 6-24 months age group were acutely malnourished compared to 3.9% among those who had prematurely stopped breastfeeding. Among the Agro-pastoral population, 22.5% of those who had stopped breastfeeding were acutely malnourished compared to only 6.7% of those who were still breastfeeding and among the riverine 19.8% of the non-breast feeding were acutely malnourished compared to 11.9% of those who were breastfeeding. This highlights the importance of breastfeeding as a protective factor against malnutrition.

4.6 Nutrition Status

4.6.1 Acute Malnutrition by Livelihoods

A total of 1986 children aged 6-59 months were assessed from 1129 households for the three livelihoods (population groups). In the IDP assessment a total of 667 children, 48.1% boys and 51.9% girls (sex ratio = 0.93) aged 6-59 months were assessed from 373 households (mean household size = 6.5 ± 2.6). In the agropastoral livelihood, 681 children (48.8% boys and 51.2% girls; sex ratio 0.95) were assessed from 382 households (mean household size = 6.3 ± 2.4) while 638 children (48.1% of them boys and 51.9% girls; sex ratio 0.93) were assessed from 374 sampled households (mean household size = 5.9 ± 2.2).

The results indicate that the nutrition situation is *Serious* (GAM rate of 10-15%) according to WHO classification, in the three assessments showing a significant improvement among the agropastoral and IDP populations from the *Critical* levels recorded in the last assessment in May 2008, but no statistically significant change in the riverine population.

Shabelle IDPs in Afgoye corridor and Merka reported a GAM rate (weight for height <-2 Z score or oedema) of **12.3%** (9.7-15.5) and SAM rate of **2.8%** (1.7-4.8%) with seven (1.0%) cases of oedema. This indicates a slight improvement from the previous GAM rate of 15.0% (11.5-18.4%), but a significant increase in the proportion of severely malnourished children from the 1.0% (0.2-1.8) including four (0.5%) oedema cases reported in the May 2008 assessment[9]. The deterioration in SAM rates is likely as a result of continuing influx of IDPs from Mogadishu. Although the GAM results appear lower than the rates reported among the IDP population assessed in May 2008 and indicates a general improvement from *critical* levels experienced over the previous one year to *serious* levels, the change is not statistically significant (p>0.05).

Shabelle Agropastoral reported a **GAM** rate of **12.5%** (CI: 10.6-14.6) and a **SAM** rate of **2.2%** (1.3-3.6) including three (**0.4%)** oedema cases. These results indicate an improvement to *serious* nutrition situation from the *Critical* level of acute malnutrition in the May 2008 assessment, where a GAM rate of 18.1% (14.4-21.8) and a SAM rate of 3.5% (1.7-5.3) including seven oedema cases (0.9%) were reported.

Shabelle Riverine Assessment reported a **GAM** rate of **10.8%** (8.6-13.5) and a **SAM** rate of **2.5%** (1.4-4.4) that included seven (1.1%) oedema cases, indicating no significant change from the May 2008 assessment which reported a GAM rate of 13.7% (9.6-17.7) and SAM rate of 3.8% (1.8-5.9) including two (0.3%) oedema cases.

A summary of the findings for the acute malnutrition rates is given in Table 4.7.

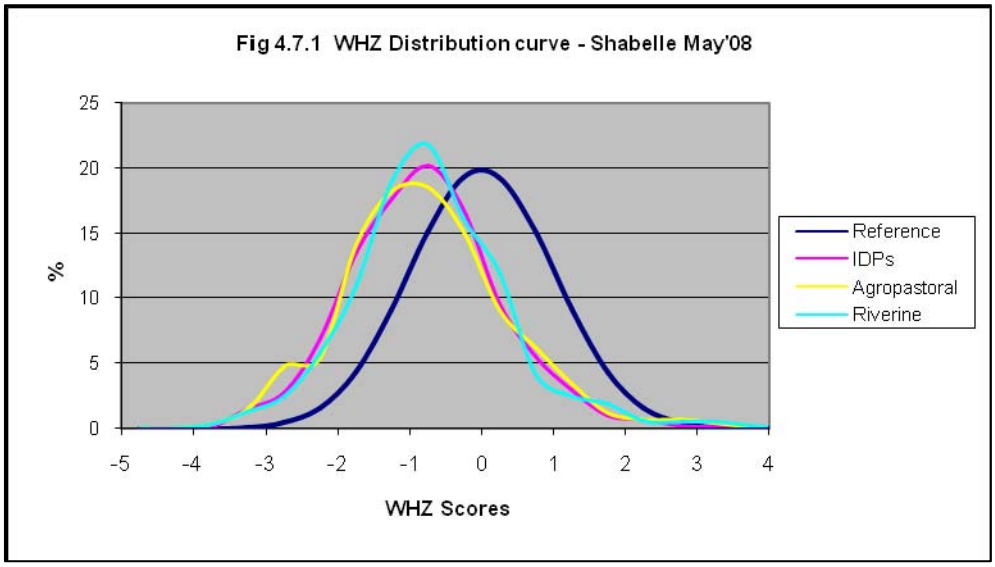
[9] FSAU Nutrition Update, June 2008.

Table 4.7: Summary of Malnutrition rates by Livelihood systems

Malnutrition rates	**IDPs (N=667)**			**Agro pastoral (N=681)**			**Riverine (N=638)**		
I	**n**	**%**	**95% CI**	**n**	**%**	**95% CI**	**n**	**%**	**95% CI**
Global Acute Malnutrition (WHZ<-2 or oedema)	82	**12.3**	9.7 – 15.5	85	**12.5**	10.6 – 14.6	69	**10.8**	8.6 – 13.5
Severe Acute Malnutrition (WHZ<-3 or oedema)	19	**2.8**	1.7 – 4.8	15	**2.2**	1.3 – 3.6	16	**2.5**	1.4 – 4.4
Oedema	7	**1.0**	0.2 – 1.9	3	**0.4**	0.0 – 1.0	7	**1.1**	0.0 – 2.3
Global Acute Malnutrition (WHO Anthro 2006)	83	**12.4**	9.4 – 16.3	89	**13.1**	10.7 – 15.8	68	**10.7**	8.4 – 13.4
Severe Acute Malnutrition (WHO Anthro 2006)	35	**5.2**	3.3 – 8.2	30	**4.4**	3.1 – 6.2	21	**3.3**	2.2 – 4.9
Global Acute Malnutrition (WHM<80% or oedema)	58	**8.7**	5.4 – 12.0	60	**8.8**	6.9 – 10.7	45	**7.1**	5.0 – 9.2
Severe Acute Malnutrition (WHM<70% or oedema)	10	**1.5**	0.3 – 2.7	6	**0.9**	0.2 – 1.5	9	**1.4**	0.2 – 2.6
Proportion of stunted children (HAZ<-2	216	**32.4**	27.2 – 37.6	208	**30.5**	23.7 – 37.3	213	**33.4**	25.2 – 41.3
Proportion of underweight children (WAZ<-2)	217	**32.5**	23.8 – 41.2	220	**32.3**	26.1 – 38.6	200	**31.3**	25.2 – 37.5

When estimated using WHO Anthro (2006) Reference standards, similar GAM rates and almost double SAM rates were reported. IDPs assessment reported GAM rate of **12.4%** (CI: 9.4 – 16.3) from 12.3% (CI: 9.7-15.5) and SAM rate of **5.2%** (CI: 3.3 – 8.2) from 2.8% (CI: 1.7 – 4.8). Agropastoral livelihood assessment reported GAM rate of **13.1%** (CI: 10.7 – 15.8) from 12.5% (CI: 10.6-14.6) and SAM rate of **4.4%** (CI: 3.1 – 6.2) from 2.2% (CI: 1.3 – 3.6). Among the riverine livelihood population the (WHO 2006) GAM rate was **10.7%** (8.4 – 13.4) from 10.8% (CI: 8.6 – 13.5) and an increased SAM rate of **3.3%** (CI: 2.2 – 4.9) from 2.5% (CI: 1.4 – 4.4) was reported.

The distributions of the weight-for-height scores in the three Shabelle regions assessments were shifted towards the left depicting a poorer nutrition situation according to international (WHO) standards (Fig 4.7.1).



The mean WHZ for IDPs, Agropastoral and Riverine livelihoods were -0.79 (SD=1.06); -0.77 (SD=1.18) and -0.70 (SD=1.10). A summary of the Nutrisurvey quality checks which assess the quality of the data for the assessments is given in appendix 7.

4.6.2 Acute Malnutrition by Sex in the three Livelihoods

Table 4.8 Distribution of children by nutritional status (WHZ-score or oedema) and gender

Nutrition status	IDPs				Agropastoral				Riverine			
	Males		Females		Males		Females		Males		Females	
	n	%	n	%	n	%	n	%	n	%	n	%
GAM (WHZ<-2 /oedema)	48	15.0	34	9.8	43	13.0	42	12.0	45	14.7	24	7.3
SAM (WHZ<-3 /oedema)	14	4.4	5	1.4	7	2.1	8	2.3	10	3.3	6	1.8
GAM (WHO Anthro)	48	15.0	35	10.1	44	13.3	45	12.9	42	13.7	26	7.9
SAM (WHO Anthro)	23	7.2	12	3.5	15	4.5	15	4.3	13	4.2	8	2.4
Stunting (HAZ<-2)	103	32.1	113	32.7	106	31.9	103	29.5	108	35.2	105	31.7
Underweight (WAZ<-2)	102	32.3	113	32.8	114	34.5	106	30.5	98	32.6	103	31.2

Results of acute malnutrition among the surveyed population in all the livelihoods using weight for height <-2 Z score or presence of oedema do not show any statistical difference between the two sexes (p>0.05) in IDP and agropastoral livelihoods. Among the assessed IDP children, a higher proportions of boys (15%) than girls (9.8%) were acutely malnourished while among the agropastoral a slightly higher proportion of boys (13%) compared girls (12%) were malnourished. In the assessed riverine children, boys were 1.93 times more likely to be acutely malnourished than girls (RR=1.93; CI: 1.12-3.32). However, meta-analysis of assessments conducted in Somalia in the period 2001-2008 indicates that girls and boys are equally likely to be acutely malnourished.

4.6.3 Acute Malnutrition by Age in the three Livelihoods

Table 4.9 Distribution of Acute Malnutrition (WHZ Scores) by Age

Age (months)	IDPs		Agropastoral		Riverine	
	SAM	GAM	SAM	GAM	SAM	GAM
6-17	4 (2.7%)	36 (24.0%)	3 (1.9%)	16 (10.3%)	2 (1.5%)	21 (15.3%)
18-29	5 (3.1%)	21 (13.2%)	3 (2.0%)	31 (20.8%)	7 (3.6%)	23 (11.7%)
30-41	4 (2.5%)	13 (8.1%)	4 (2.5%)	21 (13.2%)	5 (3.4%)	14 (9.7%)
42-53	5 (3.1%)	18 (11.3%)	4 (2.5%)	14 (8.8%)	1 (0.9%)	8 (6.8%)
54-59	1 (2.6%)	4 (10.5%)	1 (1.7%)	3 (5.1%)	1 (2.3%)	3 (7.0%)
Total	19 (2.8%)	82 (12.3%)	15 (2.2%)	85 (12.5%)	16 (2.5%)	69 (10.8%)

Analysis of distribution of acute malnutrition between the different age groups shows different risks and levels of association. Among the Riverine population, the breastfeeding age group 6-24 months were 2.19 times more likely to be acutely malnourished than the 25-59 months category (RR=2.19; CI: 1.41 – 3.41) and among the agropastoral group those in the 6-29 months age band were 1.53 times more likely to be acutely malnourished (RR=1.53; CI: 1.02 – 2.31) than those in the 30-59 months band. A higher proportion of the younger age groups were generally more malnourished than their older counterparts, even though this was not always statistically significant. Malnutrition among the younger age has been associated with poor infant and young child feeding practices in other studies, which are also illustrated in this report.

4.6.4 Acute Malnutrition Assessed by MUAC

Table 4.10 Child and Maternal Malnutrition by MUAC

Malnutrition rates	*IDPs*		*Agropastoral*		*Riverine*	
	No	*% (CI)*	*No*	*% (CI)*	*No*	*% (CI)*
Child MUAC	N= 667		N= 681		N=638	
GAM (MUAC< 12.5 cm or oedema)	65	**9.7** (6.7 – 12.8)	46	**6.8** (4.3 – 9.2)	60	**9.4** (5.9 – 12.9)
SAM (MUAC< 11.0 cm or oedema)	12	**1.8** (0.7 - 2.9)	10	**1.5** (0.6 - 2.7)	13	**2.0** (0.6 - 3.5)
Pregnant Women MUAC	N=90		N=76		N=74	
Total malnourished (MUAC< 23.0 cm)	15	**16.7**	10	**13.2**	13	**17.6**
Severely malnourished (MUAC≤ 20.7 cm)	4	**4.4**	1	**1.3**	3	**4.1**
Non pregnant women MUAC	N=288		N=312		N=301	
Total malnourished (MUAC≤ 18.5 cm)	1	**0.3** (0.0 – 1.1)	1	**0.3** (0.0 – 1.0)	5	**1.7** 0.2 – 3.1
Severely malnourished (MUAC< 16.0 cm)	0	**0.0**	0	**0.0**	0	**0.0**

Based on MUAC measurements, acute malnutrition rates (MUAC< 12.5 cm or oedema) of 9.7% (CI: 6.7 – 12.8); 6.8% (CI: 4.3 – 9.2) and 9.4% (CI: 5.9 – 12.9) were reported in the IDPs; Agropastoral and Riverine livelihoods respectively (Table 4.12) including 1.8% (CI: 0.7-2.9), 1.5% (CI: 0.6-2.7) and 2.0% (CI: 0.6 – 3.5) respectively at high risk of mortality (MUAC<11 or oedema). These rates fall within 5.0 -9.9% range indicating *critical*[10] nutrition situation in all the assessed three livelihoods. The MUAC results though lower were consistent with weight –for-height estimates of malnutrition that also placed the nutrition situation in the *Serious* range (GAM rates of 10.0 – 14.9%).

Among the assessed women; high malnutrition rates were recorded among the pregnant women (MUAC< 23.0 cm) ranging from 13.2% in Agropastoral to 17.6% in the riverine livelihood systems. A significant proportion of pregnant women were also severely (MUAC<20.7 cm) at risk of malnutrition as indicated in Table 4.10. Pregnancy raises physiological and nutritional demands of women making them vulnerable to malnutrition. Low acute malnutrition rates were recorded among the non pregnant women.

[10] According to the FSAU Nutrition Indicators and Categorization Table

4.7 Mortality

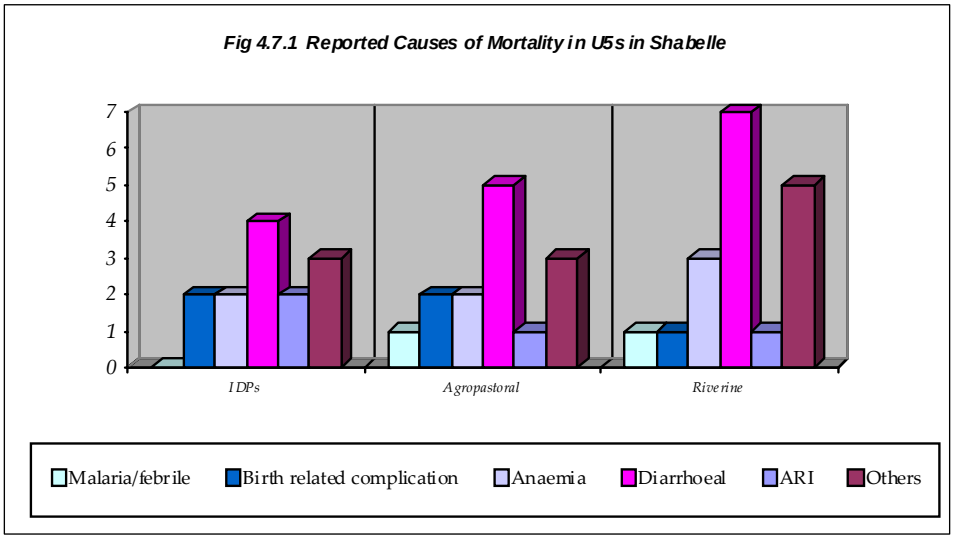
A total of 28 deaths, 34 deaths and 36 deaths were recorded respectively in IDPS, Agropastoral and Riverine assessments over a 90-day recall period. Table 4.11 summarises the results of the mortality assessment.

Table 4.11 Mortality among the IDPs, Agropastoral and riverine LZs in Shabelle

	IDPs		Agropastoral		Riverine	
	U5	Total	U5	Total	U5	Total
Total HHs surveyed		789		757		705
Total Population assessed in HHs	937	4433	1016	4158	944	3923
Number who joined the HHs	10	96	4	69	5	44
Number who left the HHs	4	138	6	100	3	102
Number of births		45		49		45
Number of deaths	14	28	16	34	18	36
Mortality rate	**1.69** (0.90-3.17)	**0.70** (0.37 - 1.34)	**1.78** (1.05 - 2.98)	**0.91** (0.16 - 1.34)	**2.15** (1.17 - 3.94)	**1.01** (0.66 - 1.55)

The retrospective Crude and U5 Mortality Rates were 0.70 (0.37-1.34) and 1.69 (0.90-3.17) respectively among the IDPs. CMR and U5MR rates of 0.91 (0.16 - 1.34) and 1.78 (1.05 -2.98) respectively were reported in the agropastoral livelihood. Among the riverine CMR of 1.01 (0.66 - 1.55) and U5MR 2.15 (1.17-3.94) were reported (Table 4.11).

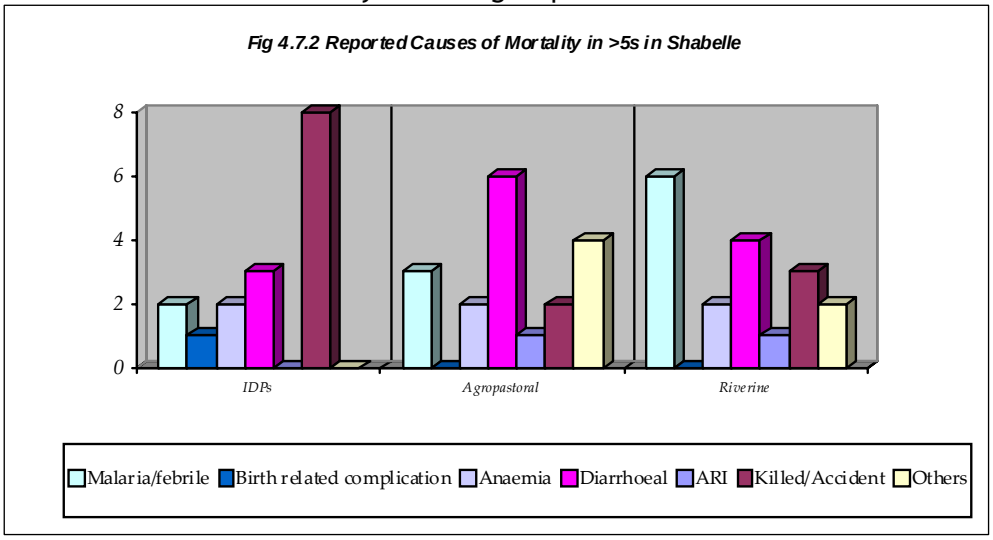
Fig 4.7.1 Reported Causes of Mortality in U5s in Shabelle



Except for riverine, which is above the *alert thresholds*, both CMR and U5MR are below the alert thresholds in both IDPs and agropastoral livelihoods indicating *acceptable* situation according WHO standards.

As shown on figure 4.7.1, diarrhoeal diseases, birth related complications (poor birth outcome), febrile illnesses and ARI were the main reported factors associated with under-five mortality according respondents' recall.

Fig 4.7.2 Reported Causes of Mortality in >5s in Shabelle



Among adults and children aged 5 years, most deaths were reportedly caused by physical injuries/violent deaths especially among the IDPs (Fig 4.7.2). Diarrhoea; anaemia, malaria and birth related complications were also reported as the main causes of death. It should be noted that the mortality recall period of 90 days coincided with the sporadic armed conflict in Mogadishu and most areas of southern Somalia in which several people have lost their lives, explaining the high conflict-related

deaths. Other suspected common causes of mortality in children and in adults include measles, TB and chronic illnesses.

4.8 Qualitative Information

Additional Information on food security, water & sanitation and childcare practices was collected through qualitative approaches. Semi-structured interviews with key informants and community focus groups were used for collecting the information. Proportional piling was used to identify livestock mortality, calving and kidding rate. The team also stopped randomly at settlements along the road for brief assessments, and ensured that rural communities and IDPs living outside the main villages were identified during the assessment.

Shabelle regions received below normal *Deyr* '08 rains, with localized distribution and poor intensity estimated at 0-40% of normal in Middle Shabelle and 20-60% of normal with pockets of 80-120% in Lower Shabelle using satellite imagery. The rains started on time in Lower Shabelle but late in most areas of Middle Shabelle. The riverine areas planted late – offseason crops and were expecting significant harvest of maize in Lower Shabelle. At the time of the assessment there was no water stress yet in the region, as most of the sources still contained water. Most of the areas in the Shabelle regions accessed water mainly from rain water catchments, open wells and river. There are some villages with protected water wells like Wanlawein, Janale and Bulo-Marer towns, but this is not affordable to all. Overall, pasture condition was getting poorer in Middle Shabelle but average in Lower Shabelle areas and the livestock body condition among the agropastoralists was normal for most species but deteriorating for cattle. There was notable livestock migration from Middle Shabelle, Bay, Bakool and Hiran regions towards pockets of Lower Shabelle, which received good rains. Conception, kidding and calving was reportedly good for all the animal species apart from cattle in Middle Shabelle. Milk production was normal for goats and camel but low for cattle in the agropastoral villages. Cereal availability was normal and was expected to improve in the market because of supplies from *Deyr*' 08 production, off-season harvest and food aid distribution during the period. The prices of foods and other essential commodities were declining but remained higher than 2007 prices for a similar period. A kilo of rice for instance cost up to SSH 42,000 in August 2008 while in November 2008; the price had declined to SSH 35,000. In the same month of August, cooking oil, wheat flour and sugar cost SSH 44,000 per litre, SSH 32,000 per kilo and SSH 18400 per kilo respectively while in November their prices had reduced to SSH 38,000; 24,000 and 18,000 respectively.

The food security was apparently worse in M. Shabelle than in L. Shabelle, even though the nutrition situation is not significantly different. Most villages in Lower Shabelle had normal milk production, more favourable TOT, good sorghum crop establishment, good pasture and animal body conditions. Low river bank water levels in M. Shabelle had affected irrigation upstream and with high cost of farm inputs, crop cultivation was severely affected. An area of notable concern was Walanweyne district, which faced crop failure having received very low rains, declining livestock and milk production as well as restricted access to humanitarian interventions. The main source of household food is purchases and food aid. Income for food purchases is mainly derived from casual farm labour; charcoal burning; petty trade for instance sale of fruits. Most households take only two meals a day. Some households engage in harvesting, consumption and sale of bush products, firewood and fodder and to some extent sale of relief food share in exchange of other essential items.

Common diseases like diarrhoea, ARI, malaria and whooping cough are prevalent. InterSOS distributed several insecticide treated nets in the past one year but not all who have the nets use them. Some of the nets have since been torn and cannot protect against mosquito bites. Health facilities are generally insufficient and water quality and sanitation is precariously poor in both Middle and Lower Shabelle, but improvements have been noted after humanitarian intervention in the IDP concentration settlements.

Child feeding and child care practices remain largely suboptimal. Breastfeeding duration for children is usually 12 -18 months from birth. Water is often given to the newborn at birth. A sugary solution is given to the baby within the first week of birth while most children are given complementary food (animal milk – mostly goat milk) before they are one month old. For most children, semi solid foods are introduced as

early as 3-4 months of age and solid foods like rice or canjera are introduced at the age of 8-12 months. Main foods given to infants (1 – 12 years) are goat milk 3 to 4 times a day in most cases and sometimes *canjero* or rice mixed with sugar and oil/butter and porridge (flour + sugar + oil). Food insecurity/hunger, close pregnancy intervals and sometimes ill health are the major constraints to breastfeeding of young children below two years. However cultural beliefs sometimes also negatively affect breastfeeding as highlighted in the FSAU KAP study. Lack of safe water, cooking & storage facilities and too much domestic work for women were mentioned as the main hindrances to food preparation and storage. Women have to travel long distances at times (during dry spells) or spend a lot of time away from home and do not have enough time to prepare food.

5.0 Discussion

Results from the three nutrition assessments (IDPS, Agropastoral and Riverine Livelihoods) conducted in the Shabelle regions between 1st and 11th November 2008, by FSAU and partners, indicate that the nutrition situation is *Serious* (GAM rate of 10-15%) in the three population groups showing a significant improvement among the agropastoral and IDP populations from the *Critical* levels recorded in the last assessment in May 2008, but no statistically significant change in the riverine population. The retrospective crude and U5 mortality rates (CMR and U5MR) were similar to the May '08 studies, indicating *acceptable* levels in two of the three assessments. The improvement in nutrition situation is the result of the humanitarian efforts in food aid, food-for-work, cash-for-work, healthcare and water & sanitation interventions together with some improved food security indicators.

Shabelle IDPs in Afgoye corridor and Merka reported a GAM rate (weight for height <-2 Z score or oedema) of **12.3%** (9.7-15.5) and a SAM rate of **2.8%** (1.7-4.8%) with seven (1.0%) cases of oedema. This indicates a slight improvement from the previous GAM rate of **15.0%** (11.5-18.4%), but a significant increase in the proportion of severely malnourished children from the **1.0%** (0.2-1.8) including four (0.5%) oedema cases reported in the May 2008 assessment[11]. The deterioration in SAM rates is likely as a result of continuing influx of IDPs from Mogadishu. Although the GAM results appear lower than the rates reported among the IDP population assessed in May 2008 and indicates a general improvement from *critical* levels experienced over the previous one year to *serious* levels, the change is however not statistically significant ($p>0.05$). In addition, the respective Crude and under five year mortality rates of **0.70** (0.37-1.34) and **1.69** (0.90-3.17) among the IDPS indicated below alert levels, according to WHO classification and no change from CMR and U5MR of **0.96** (0.12-1.81) and **1.47** (0.96-1.99) respectively reported in the previous assessment.

Shabelle Agropastoral reported a **GAM** rate of **12.5%** (CI: 10.6-14.6) and a **SAM** rate of **2.2%** (1.3-3.6) including three (**0.4%)** oedema cases. These results indicate an improvement to *Serious* nutrition situation from the *Critical* level of acute malnutrition in the May 2008 assessment, where a GAM rate of **18.1%** (14.4-21.8) and a SAM rate of **3.5%** (1.7-5.3) including seven oedema cases (0.9%) were reported. The Crude and U5 Mortality rates of **0.91** (0.16-1.34) and **1.78** (1.05-2.98) respectively, among the agro pastoral population in Shabelle regions were *acceptable* according WHO standards.

Shabelle Riverine Assessment reported a **GAM** rate of **10.8%** (8.6-13.5) and a **SAM** rate of **2.5%** (1.4-4.4) that included seven (1.1%) oedema cases, indicating no significant change from the May 2008 assessment which reported a GAM rate of 13.7% (9.6-17.7) and a SAM rate of 3.8% (1.8-5.9) including two (0.3%) oedema cases. The Crude and under five year mortality rates of **1.01** (0.66-1.55) and **2.15** (1.17-3.94) were reported respectively, both levels above the alert threshold levels of *1/10,000/day* and *2/10,000/day* and indicating an *alert* situation (WHO standards) and illustrating an underlying acute crisis in these regions.

The proportions of children reported to have suffered from one or more communicable childhood diseases during the two weeks prior to the assessment were 47.8%, 37.7% and 48.9 in the assessed IDPs, agropastoral and riverine populations respectively. As shown on Table 1, the incidence of reported diarrhoea in IDPs, Agropastoral and Riverine populations (21.0%; 13.7% and 15.5% respectively) in the two weeks prior to the assessment were high. High incidences of ARI (27.0%, 21.3% and 27.1% respectively) and febrile illnesses (22.9%, 16.3% and 18.0% in the IDPs, Agropastoral and Riverine populations respectively) were also reported in the three livelihoods. These levels were consistent with seasonal morbidity patterns recorded from the health facilities. Rapid Diagnostic Tests (RDT) conducted for malaria however reported very low (<1%) prevalence rates of 0.6% (N=1310), 0.1% (N=1612) and 0.8% (N=1257) positive for *Plasmodium falciparum* respectively. Analysis has shown significant association between acute malnutrition and morbidity rates. Children who were reported to have been ill within two weeks prior to the assessment were more likely to be acutely malnourished ($p<0.05$). For example, in the riverine livelihood, children who had reportedly fallen ill were nearly 3 times more likely to be acutely

[11] FSAU Nutrition Update, June 2008.

malnourished than those who were well (RR=2.84; CI: 1.54-5.26), and children who reportedly had diarrhoea were nearly 3.2 times more likely to be acutely malnourished than those who did not reportedly have diarrhoea (RR=3.2; CI: 1.72-6.10).

Past studies have shown that vitamin A greatly improves the immunity of individuals; hence reduce the disease burden of a population. However, as shown in table 3, Vitamin A supplementation as well as polio and measles immunization status, were far below the WHO recommended coverage of 95%.

While diseases continue to predispose children to malnutrition, concern remains on access to safe water, sanitation, access to health services and low coverage of health programmes and poor child care and feeding practices. With the exception of the IDPs, very low proportion of the households had access to safe drinking water (11.0% and 27.5%), sanitation facilities (28.8% and 48.1%) and health facilities (20.7% and 26.2%) in agropastoral and riverine respectively. Even though interventions targeting the IDP population have significantly improved access to safe drinking water (74.5%), latrines (89.0%) and health facilities, (55.2%) sustained efforts are required to provide further improvements and to mitigate the risks to morbidity and malnutrition.

Although good *deyr* '08/09 rains were reported in the Shabelle regions resulting into favourable food security indicators such as improved milk consumption, dietary diversity and increased agricultural produce (off-season yield) among the riverine and agropastoral populations, the prices for foods and other essential commodities, though declining are still high, limiting access by the poor households. Dietary diversity was reportedly high among all the three livelihood groups (96.0%, 92.4% and 97.6% in IDPs, agropastoral and riverine groups respectively). The food security was apparently worse in M. Shabelle than in L. Shabelle, even though the nutrition situation is not significantly different. Most villages in Lower Shabelle had normal milk production, more favourable TOT, good sorghum crop establishment, good pasture and animal body conditions. Low river bank water levels in M. Shabelle had affected irrigation upstream and with high cost of farm inputs, crop cultivation was severely affected. An area of notable concern was Walanweyne district, which besides reporting high numbers of malnourished children was faced with crop failure having received very low rains, declining livestock and milk production as well as restricted access to humanitarian interventions. The main source of household food is purchases and food aid. Income for food purchases is mainly derived from casual farm labour; charcoal burning; petty trade for instance sale of fruits. Most households take only two meals a day. Some households engage in harvesting, consumption and sale of bush products, firewood and fodder and to some extent sale of relief food share in exchange of other essential items.

In conclusion, the Shabelle IDPs, agropastoral and riverine populations have reported a sustained or improved nutrition situation. The improved dietary diversity across the three livelihood groups is undoubtedly a contributing factor. Other influences include a controlled AWD outbreak and humanitarian support, such as cash-for-work and food assistance programmes. However, issues of child care and feeding practices continue to compromise the nutritional status of children, as is access to sanitation and safe water in the agropastoral and riverine populations. Insecurity, unemployment, stressed livelihoods, poor child feeding, poor access to water and sanitation and poor access to health services remain the main underlying causes of malnutrition in the Shabelle regions. The IDP population, despite showing a slight improvement in the nutrition levels, still face a precarious situation. This demonstrates the need for continued support to the IDPs who recently fled the increased civil insecurity in Mogadishu and surrounding areas.

6. 0 Recommendations

The serious nutrition, health and food security situation in Shabelle calls for intervention efforts to address both immediate life saving needs in addition to developing longer term strategies to enhance the provision of basic services, sustainable strategies for livelihood support and social protection mechanisms. Specific recommendations include:

Immediate Interventions

- Improving coverage for health programmes, especially for measles vaccination and vitamin A supplementation. Vigorous campaigns are required in the Shabelle regions especially among the agropastoral and riverine communities.
- Rehabilitation of acutely malnourished children through selective feeding programs and active case finding until household food security is restored and critical public health issues are addressed. All options to address this through effective and non-damaging measures need to be considered. Capacity building of the existing health facilities and the community to manage acutely malnourished children could be explored.
- There is need to focus on programmes that improve and sustain dietary diversity and consumption of micronutrient rich foods. Food distribution for pulses and micronutrient enriched oil could help improve dietary diversity especially among the IDPs.
- Intervention programmes on water, sanitation and hygiene practices including health education are essential.

Long term Interventions

- Rehabilitation/protection of water systems including the well and water catchments (such as capping of wells) in anticipation of seasonal flooding. The community should be trained on sanitation of the water systems
- There is need for establishment or strengthening of health facilities and satellite services especially in rural villages where there are no health facilities
- Intensifying health and nutrition education activities at the household level to address care concerns, targeting mothers, and other caregivers. The main areas of focus should include promoting exclusive breastfeeding, appropriate infant and young child feeding, dietary diversification, and improvements in household hygiene including health care practices.
- Peace building and conflict resolution remain the most crucial factors for the restoring and sustaining livelihoods in the Shabelle regions and Somalia as a whole, including returning of the displaced persons back to their homes. Efforts being made within and outside the Shabelle region to this effect are greatly encouraged.

Appendix 1. Shabelle Nutrition Assessment Household Questionnaire, November 2008

Household Number _____ Date_____ Team Number _____ Cluster Number _____ Cluster Name _____ District: _____

Q1-6 Characteristics of Household

Q1. Household size[12] ?_____

Q2. Number of children less than 5 years (0-59 months)? _____

Q3. Sex of household head[13]? 1=Male 2=Female

Q4a Are you hosting any recently (in the last 6 months) internally displaced persons? 1= Yes 2= No **Q4b** If yes, Number of persons _____

Q5a Does household have mosquito net? _____ 1= Yes 2= No **Q5b.** If yes, ask to see the net: _____ 1= GFSOM label 2=Other type 3=Not seen

Q6. What is the household's main source of income? 1= Animal & animal product sales 2= Crop sales/Farming 3= Trade 4= Casual labour
5= Salaried/wage employment 6= Remittances/gifts/zakat 7= Others, specify _____

Q7-14 Feeding and immunization status of children aged 6 – 59 months (or 65 – 109.9 cm) in the household.

First Name	Q7 Age (months)	Q8 (If 6-24 months) Are you breastfeeding[14] the child? *1=Yes* *2= No*	Q9 (6-59 months) How many times did you feed the child in the last 24 hours *(besides breast milk)*? *1= 1 time* *2=2 times* *3=-3 times* *4= 4 times* *5= 5 times or more*	Q10 Has child been provided with Vitamin A in the last 6 months? *(show sample)* *1=Yes* *2= No*	Q11 Has child ever been vaccinated against measles? *1=Yes* *2= No.*	Q12 Has the child ever been given polio vaccine orally? *1=Yes* *2= No*	Q 13 Has the child benefited from any feeding program in the last 3 months? *1= SFP* *2= TFC* *3= OTP/CTC* *4= None*	Q14 Did child sleep under a mosquito net last night? *1=Yes* *2= No*
1								
2								
3								
4								

[12] *Number of persons who live together and eat from the same pot at the time of assessment*
[13] *One who controls and makes key decisions on household resources (livestock, assets, income, and food), health and social matters for and on behalf of the household members.*
[14] *Child having received breast milk either directly from the mothers or wet nurse breast within the last 12 hours*

Q15-24 Anthropometry and morbidity for children aged 6 – 59 months or (65 – 109.9cm) in the household

First Name *Follow same order as per table on page 1*	**Age (months)**	**Q15** **Sex** *1=Male* *2=Female*	**Q16** **Oedema** *1=yes* *2= No*	**Q17** **Height (cm)** ***To the nearest one tenth)***	**Q18** **Weight (kg)** ***To the nearest one tenth)***	**Q19** **MUAC (cm)** ***To the nearest one tenth)***	**Q20** Diarrhoea[15] in last two weeks *1= Yes* *2= No*	**Q21** Serious ARI[16] (*Oof Wareen/ Wareento)* in the last two weeks *1=Yes* *2= No*	**Q22** Febrile illness/ suspected Malaria[17] in the last two weeks *1=Yes* *2= No*	**Q23** Suspected Measles[18] in last one month *1=Yes* *2= No*	**Q24** Where did you seek healthcare assistance when child was sick? **(**If yes in ***Q20 – 23)*** *1=No assistance sought* *2=Own medication* *3=Traditional healer* *4=Private clinic/ Pharmacy* *5= Public health facility*
1											
2											
3											
4											

25: Anthropometry (MUAC) for adult women of childbearing age (15-49 years) present at the household

Sno	**Name**	**Age** (years)	**Received Tetanus vaccine?** *1= Yes* *2= No*	**MUAC** (cm)	**Physiological status** *1= Pregnant* *2= Non pregnant*	**Illness in last 14 days?** If yes, what illness?
1	*Mother:*					
2						
3						

Codes** for adult **illnesses	
0= None	1= ARI
2=Diarrhoreal	3=Malaria/febrile
4=Joint	5=Urinal
6=Organ	7=Anaemia
8= Reproductive	9=Other, specify

[15] Diarrhoea is defined for a child having three or more loose or watery stools per day
[16] *ARI asked as oof wareen or wareento. The three signs asked for are cough, rapid breathing and fever*
[17] *Suspected malaria/acute febrile* illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma
[18] *Measles (Jadeeco): a child with more than three of these signs– fever and, skin rash, runny nose or red eyes, and/or mouth infection, or chest infection*

Q26 Food Consumption & Dietary Diversity

Twenty four-hour recall for food consumption in the households: The interviewers should establish whether the previous day and night was usual or normal for the households. If unusual- feasts, funerals or most members absent, then another day should be selected.

Food group consumed: What foods groups did members of the household consume in the past 24 hours (from this time yesterday to now)? Include any snacks consumed.	Did a member of your household consume food from any these food groups in the last 24 hours**?** *1=Yes* *2= No*	**Codes:* 1= Own production 6=Borrowed 2=Purchases 7=Gathering/wild 3=Gifts from friends/ relatives 8=Others, specify___ 4=Food aid 9=N/A 5=Bartered
Type of food		**What is the main source of the dominant food item consumed? *(Use codes above)?***
1. Cereals and cereal products *(e.g. maize, spaghetti, rice, caanjera, bread*)?		
2. Milk and milk products *(e.g. goat/camel/ fermented milk, milk powder)?*		
3. Sugar and honey?		
4. Oils/fats *(e.g. cooking fat or oil, butter, ghee, margarine)?*		
5. Meat, poultry, offal *(e.g. goat/camel meat, beef; chicken or their products)?*		
6. Pulses/legumes, nuts *(e.g. beans, lentils, green grams, cowpeas; peanut)*?		
7. Roots and tubers *(e.g. potatoes, arrowroot)?*		
8. Vegetables *(e.g. green or leafy vegetables, tomatoes, carrots, onions)?*		
9. Fruits *(e.g. water melons, mangoes, grapes, bananas, lemon)*?		
10. Eggs?		
11. Fish and sea foods *(e.g. fried/boiled/roasted fish, lobsters)?*		
12. Miscellaneous *(e.g. spices, chocolates, sweets, beverages, etc)?*		

Q27 In general what is the <u>main</u> source of staple food in the household? *(*Use codes in 26 above)* _____

Q28 Total number of food groups consumed in the household: _____

Q29 How many meals[19] has the household had in the last 24 hours (from this time yesterday to now)? 1= One 2=Two 3= Three

[19] *A meal refers to food served and eaten at one time (excluding snacks) and includes one of the three commonly known: - breakfast, lunch and supper/dinner*

Q30-32 Access to water (quality and quantity) and Sanitation

Q30 What is the household's main source of drinking water? 1 = Tap/ piped water 2= Tanker truck 3= Tube well/ borehole 4= Spring 5= Bottled water 6= rooftop rainwater 7= Surface water (river, stream, dam, pond, open well; water catchments; berkad, etc)

Q31a Is drinking water drawn from a protected/safe source? 1= Yes 2= No

Q31b If household has no access to safe protected water what is the main reason? 1= Not Available 2= Distance too far 3= Security Concerns 4= Cannot afford

Q32a Is water treated at the:

a) Source? 1= Yes 2= No

b) Storage level? 1= Yes 2= No

Q32c If treated, what is the method of treatment? 1= Boiling 2= Chlorination 3= straining/filtering 4= Decanting/ letting it stand and settle 5= Other, specify

Q33-34 Access to Sanitation and Health Facility

Q33a Does household have access to usable sanitation facility? 1= Yes 2= No

33b Type of toilet/ sanitation facility used by most members of the household 1= Bush/open ground 2= Traditional pit latrine/ Open pit 3= VIP latrine 4= Flush toilets

Q33c If household has no access to sanitation facility, what is the main reason? 1= Pastoral/ frequent movements 2= Lack resources to construct 3= Doesn't see the need

Q34a Does the household have access to a health facility? 1= Yes 2= No

Q34b If yes, do you use the facility? 1= Yes 2= No

Q34c If No, what is the reason, circle the appropriate answer: 1= Not enough time 2= Distance too far 3= Security Concerns 4= Can't afford 5= Other Specify _____

Checked by supervisor *(signed)*: _____

Appendix 2: Shabelle Valley Mortality Questionnaire, Nov 2008

Household No: _____ Date: _____ Team No: ____ Cluster No: ____ Enumerator's Name: _____

No.	**1**: First Name	**2**: Sex *(1=M; 2=F)*	**3**: Age (yrs)	**4**: Born since __ **/ 8/ 2008**	**5**: Arrived since __ **/ 8/ 2008**	**6**: Reason for leaving	**7**: Cause of death
a) How many members are present in this household now? List them.							
b) How many members have left this household (out migrants) since **August __, 2008**? List them							
c) Do you have any member of the household who has died since **August __, 2008**? List them							

Codes

Reason for migration

1= Civil Insecurity
2= Food Insecurity
3= Employment
4=Divorce/ Married away
5=Visiting
6= Hospitalised
7= In boarding school
8= Grazing/herding
9= Other, specify

Cause of death

1= Diarrhoeal diseases
2= ARI
3= Measles
4= Malaria
5= STD/ HIV/AIDS
6= Anaemia
7= Birth complications
8= Accident/ killed/ physical injuries
9= Hunger/starvation
10= Other, specify

Summary*

	Total	**U5**
Current HH Members		
Arrivals during the Recall period		
Number who have left during Recall period		
Births during recall		
Deaths during recall period		

** For Supervisor Only*

APPENDIX 3: Traditional Calendar of Events in Shabelle- November 2008

Month	Events	2003	2004	2005	2006	2007	2008
Jan.	Beginning of Jiilal		58 Arafo/Dul-Xaj	46 Arafo/Dul-Xaj	34 Arafo/ Gubashadii Maandher	22 Arafo/Dul-Xaj	10 Arafo/Dul-Xaj
Feb	Mid of Jiilaal		57 Sako	45 Sako	33 Sako	21 Sako	9 Sako
Mar.	End of Jiilaal		56 Safar	44 Safar TFG-Jowhar	32 Safar	20 Safar	8 Safar
Apr.	Beginning of Gu'		55 Mawliid SH.Oyaaye	43 Mawliid SH.Oyaaye	31 Mawliid SH.Oyaaye	19 Mawliid SH.Oyaaye	7 Mawliid SH.Oyaaye
May	Mid of Gu'		54 Malmadoone	42 Malmadoon	30 Malmadoon	18 Malmadoo	6 Malmadoo
Jun.	End of Gu'		53 Jamadul-Awal	41 Jamadul-Awal	29 Jamadul-Awal	17 Jamadul-Awal	5 Jamadul-Awal
Jul.	Beginning of Xagaa		52 Jamadul-Akhir Istunka	40 Jamadul-Akhir Istunka	28 Jamadul-Akhir Istunka	16 Jamadul-Akhir Istunka	4 Jamadul-Akhir Istunka
Aug.	Mid of Xagaa		51 Rajab Ow-osmaan	39 Rajab Ow-osmaan	27 Rajab Ow-osmaan	15 Rajab Ow-osmaan	3 Rajab Ow-osmaan
Sep.	End of Xagaa		50 Shacbaan	38 Shacbaan	26 Shacbaan	14 Shacbaan Fatahaadii	2 Ramadaan
Oct.	Beginning of Deyr		49 Ramadaan	37 Ramadaan	25 Ramadaan	13 Ramadaan	1 Soonfur
Nov.	Mid of Deyr		48 Soonfur	36 Soonfur	24 Soonfur	12 Soonfur	
Dec.	End of Deyr	59 Siditaal	47 Siditaal	35 Siditaal	23 Siditaal	11 Siditaal Burburkii Maxkamada	

Jiilaal
GU'
Xagaa
Deyr

Appendix 4: Clusters Sampling for Shabelle, November 2008 assessment

District / Area	Settlement	Livelihood	Pop Size	Cluster No.	Hhs To skip
Afgoi New	Kurshale	IDPs	600	1	3
Faculty Agri	Dooha Two	IDPs	2100	2; RC	6
Faculty Agri	Ruweyda	IDPs	900	3	5
Faculty Agri	Malab-Shilinni	IDPs	600	4	3
Lafoole	Galbeedka Jamacada	IDPs	3900	5	23
Lafoole	Daryeel II	IDPs	2400	6	14
Lafoole	Horyaal	IDPs	804	7	4
Elasha A	Al-Towba	IDPs	1500	8	8
Elasha A	Bashaash Two	IDPs	1800	RC	10
Elasha A	Stadio Mug.Two	IDPs	2100	9	12
Elasha A	Furqan	IDPs	1800	RC	10
Elasha A	Al-Toqwa	IDPs	1800	10	10
Elasha A	Raas-Caseyr	IDPs	1800	11	10
Elasha A	Carmooley	IDPs	1500	12	8
Elasha B	Jabad-geelle	IDPs	2700	13	16
Elasha B	Shareco	IDPs	5100	14	30
Elasha B	Hagi Gate	IDPs	2400	15	14
Elasha B	Dige Camp	IDPs	2400	16	14
Elasha B	Salama Camp	IDPs	3600	17	21
Elasha B	Biyo-Biyo	IDPs	600	18	3
Elasha B	Cali-Kamiin	IDPs	1500	19	8
Hawa Abdi	Hawa Abdi Center	IDPs	26700	20	Segment
Hawa Abdi	Al-Addala	IDPs	3000	21	17
Hawa Abdi	Hiddo	IDPs	1800	22	10
Marka	Bulo-Jan	IDPs	4068	23	24
Marka	Golweyn	IDPs	665	24	4
Marka	Shalambot	IDPs	1140	25	6
Adan Yabal	Ceel-Dhere Malin	Agropastoral	3056	26	19
Afgoi	Xaawo-cabdi	Agropastoral	5550	27	35
Afgoi	Raaxoole No. Km 50	Agropastoral	4650	28	29
Afgoi	Warmooley	Agropastoral	450	29	3
Afgoi	Cadeyley	Agropastoral	720	30	4
Balcad	Gololey	Agropastoral	3840	31	24
Balcad	Ali Gabow	Agropastoral	480	32	3
Balcad	Aqableey	Agropastoral	2470	33	15
Cadale	Ado Ul	Agropastoral	1620	34	10
Jowhar	Khalafow	Agropastoral	1950	35	12
Jowhar	Harisholey	Agropastoral	588	36	4
Kurtunwarey	Buulo mareer	Agropastoral	15600	37	Segment
Kurtunwarey	Sujilow/Tawakal	Agropastoral	596	38	3
Mahaday	Docoley	Agropastoral	904	39	5
Mahaday	Calaag/ Ceel fiyoor	Agropastoral	512	40	3

Marka	Garas-hufey	Agropastoral	2160	41	13
Marka	Muraale	Agropastoral	1920	42	12
Marka	Shalaambood	Agropastoral	21360	RC	Segment
Marka	Mayey	Agropastoral	600	43	3
Qoryoley	Buulo Jadiid	Agropastoral	958	44	6
Sablaale	Garas babow	Agropastoral	600	45	3
Walanwein	Abgaalow/Kabhanley	Agropastoral	578	46	3
Walanwein	Gareeri/Garas Uley	Agropastoral	525	RC	3
Walanwein	Raama Sharif/Kaxarow	Agropastoral	740	47	4
Walanwein	Goobaanle.	Agropastoral	3700	48	23
Walanwein	Wadajir/Galoolle	Agropastoral	585	RC	3
Walanwein	Dawanle.	Agropastoral	1600	49	10
Warsheikh	Gurmarow	Agropastoral	2520	50	16
Warsheikh	Ceelow	Agropastoral	2436	51	15

Balcad	Shanlow	Riverine	2270	52	15
Jowhar	Baalguri / Gacan Libaax	Riverine	28200	53	Segment
Jowhar	Tugarey	Riverine	1386	RC	9
Jowhar	Bananey	Riverine	1180	54	7
Jowhar	Buulo Makiino	Riverine	27780	55; 56	Segment
Kurtunwarey	Aflow	Riverine	1312	57	8
Mahaday	Duduble	Riverine	1396	58	9
Marka	Mushaani	Riverine	8100	59	Segment
Marka	Doonka-daafeedow	Riverine	956	60	6
Marka	Janaale	Riverine	22516	61; 62	Segment
Marka	Kaaytoy	Riverine	966	63	6
Marka	Ugunji	Riverine	3570	RC; 64	23
Marka	Baldooska	Riverine	4212	65	28
Marka	Cumar-beere	Riverine	4050	66	27
Marka	Sabiid	Riverine	2512	67	16
Marka	Ris	Riverine	2189	68	14
Marka	Maguurto	Riverine	1986	69	13
Qoryoley	Doon buraale	Riverine	3480	RC;70	23
Qoryoley	Jeerow	Riverine	4600	71	30
Qoryoley	Maanyo murug	Riverine	2142	72	14
Qoryoley	Far keerow	Riverine	600	73	4
Qoryoley	Haduuman	Riverine	4260	74	28
Qoryoley	Camp 1	Riverine	1590	75	10
Sablaale	Biya maalow	Riverine	1568	76	10

Balcad	Marerey	LQAS	1928	77	Segment
Balcad	Hawadley	LQAS	5068	78	Segment
Balcad	Baqdaad	LQAS	998	79	Segment
Jowhar	Primo Zendo	LQAS	684	RC	Segment
Jowhar	Baalguri / Gacan Libaax	LQAS	28200	80; 81; 82	Segment

Jowhar	Sabun	LQAS	2050	83	Segment
Jowhar	Rakayle	LQAS	2194	84	Segment
Jowhar	Buulo Makiino	LQAS	27780	85;86;87	Segment
Jowhar	Boodaale	LQAS	1212	88	Segment
Kurtunwarey	Boley	LQAS	366	RC	Segment
Kurtunwarey	Sheekh banaaney	LQAS	1202	89; 90	Segment
Kurtunwarey	Uraanurow	LQAS	1176	91	Segment
Mahaday	Kulmis Weyne	LQAS	2606	92; 93	Segment
Mahaday	Shidle Bari	LQAS	1536	94	Segment
Marka	Gol-weyn	LQAS	4620	95	Segment
Marka	Janaale	LQAS	22516	96;97	Segment
Marka	Buulo-cabdalla	LQAS	956	98	Segment
Marka	Jaran	LQAS	652	99	Segment
Marka	Cumar-beere	LQAS	4050	100	Segment
Marka	Sabiid	LQAS	2512	101	Segment
Marka	Balbaley	LQAS	1162	102	Segment
Marka	Ris	LQAS	2189	103	Segment
Marka	Mareerey	LQAS	9045	104	Segment
Marka	Baalgure	LQAS	5652	105	Segment
Qoryoley	Doon buraale	LQAS	3480	106	Segment
Qoryoley	Dharenley	LQAS	2180	107	Segment
Qoryoley	Gur gaal	LQAS	2568	RC	Segment
Qoryoley	Buulo sheekh	LQAS	4200	RC	Segment
Qoryoley	Gorgaal	LQAS	1650	108	Segment
Sablaale	Biya maalow	LQAS	1568	109	Segment

Sampling parameters

		IDPs	Agropastoral	Riverine	LQAS
	Village population	488,088	733,921	378,969	
	Estimated GAM	15	18	14	
Anthropometry	Desired Precision	3.5	3.5	3.5	
	Design Effect	1.5	1.5	1.5	
	No of children	600	694	566	
	Mean HH size	6	6	6	
	% U5s	20	20	20	
	% HH non response	3	3	3	
	No of HHs to assess	573	663	541	
	Population Size	488,088	733,921	378,969	
	Estimated CMR	1	1	1.42	
Mortality	Desired Precision	0.4	0.4	0.5	
	Design Effect	1.5	1.5	1.5	
	Recall Period (days)	90	90	90	
	Population to survey	4002	4002	3637	
	Households to survey	688	688	625	
Overall	No of clusters	25	26	25	33
	Total No of HHs	688	688	625	
	No of HHs per cluster	28	26	25	
	No of children/Cluster	24	27	23	6

Appendix 4b. Shabelle November 2008 Assessment Team

Team		Names	Agency	Responsibility	Area Surveyed	Cluster No.
1	1	Mohamed Ahmed Ibrahim	Ex. UNICEF Nut	Supervisor	Merka, Afgoi,	61.62,66,
	2	Ismail Salaad Dhoore	SACOD, Merka	Team Leader	Merka, Janaale	25,23,42,41
	3	Fardowsa Farah Ahmed	Marka Hospital	RDT Nurse	Merka Janele	96,97,100
	4	Aden Mohamed ali	Community Marka	Enumerator	Merka, Afgoi	65
	5	Sahro Omar Ali	COSV; Merka	Enumerator	Merka	
	6	Abdullahi Abdi	Community Marka	Enumerator	Marka	
2	1	Yusuf Mohamed Haji	Community Marka	Supervisor	Marka, Afgoi	95.10124..98.
	2	Farxiya Abdirihin	Green hope Mogadishu	Team leder	Marka ,Afgoi	37.38.89.
	3	Kinsi farah Mohamed	COSV; Merka	RDT Nurse	Marka, Afgoi	90.59.71.72
	4	Dahabo Hilowle Aden	Marka Hospital	Enumerator	Marka , Afgoi	67. 99
	5	Abdiqadir nur Sheikh	Community Afgoi	Enumerator	Marka, Afgoi	
3	1	Ali Hasan Diriye	New Ways, Merka	Supervisor	Afgoye	44. 73. 91
	2	Yusuf hassan Dooyow	TRG Jowhar	Team leder	Qoryoley	43. 74. 75.
	3	Maryan Dahie Xalane	COSV, Merka	RDT Nurse	Afgoye; Qoryoley	107. 102. 68
	4	Sagal Mohamed Omar	Community, Afgoi	Enumerator	Afgoye; Qoryoley	103. 106
	5	Abdikamil Abdulahi Mohamed	Community Marka	Enumerator	Qoryoley; Afgoye	60.
4	1	Salaad Aweys Mohamed	SACOD, Merka	Supervisor	Brava;	64. 63. 76
	2	Xaawo Aden mailn	COSV, Shalambod	Team leder	Kurtunwarey	104. 105. 45
	3	Maryan Ahmed Mohamed	COSV, Brava	RDT Nurse	Qoryoley; Sablale;	57. 108. 69
	4	Mahad Mohamed Ali	Community Marka	Enumerator	Kurtunwarey;	109. 70.
	5	Nimcom Abdulahi Yasin	Community Marka	Enumerator	Sablale	
5	1	Mohamed mohamud Mohamed	COSV; Merka	Supervisor	Walawein; Afgoye IDPs	46. 47. 48.
	2	Sicid Ismacil Yusuf	CCP Marka	Team leder	Walawein; Afgoye IDPs	49. 22. 21
	3	Faduma Ali Dini	COSV, Shalambod	RDT Nurse	Walawein; Afgoye IDPs	20. 19. 29
	4	Abukar Omar malin	Zam Zam; Mogadishu	Enumerator	Walawein; Afgoye IDPs	28
	5	Faisa Mohamud Jimcale	Muslim aid wanlewyn	Enumerator	Walawein; Afgoye IDPs	
6	1	Caasho Hussen Moalim	Zam Zam; Mogadishu	Supervisor	Afgoye	2. 3. .
	2	Mohamed Nur Cilmi	Green hope	Team leder	Afgoye	4. 5.
	3	Kaltuuma Sheikh osman	Marka Hospital	RDT Nurse	Afgoye	6. 7. 8.
	4	Iqra Hussein Mohamed	Marka Midwife Ass,	Enumerator	Afgoye	9.. 30
	5	Abdi Mohamed Ahmed	Hawo abdi Hospital	Enumerator	Afgoye	

7	1	Sahro Moahemd Omar	TRG; Jowhar	Supervisor	Afgoye	10. 11. 12.
	2	Amino Ahmed Sidow	New ways marka	Team Leader	Afgoye	13. 14. 15
	3	Mulki Nur Warsame	Marka hospital	RDT Nurse	Afgoye	16. 17. 18
	4	Caaqil Cumar Hassan	Green hope	Enumerator	Afgoye	271
	5	Abdirahman haji Aliyow	*SRCS; Merka*	Enumerator	Afgoye	
8	1	Saciid Xagaa Afrax	TRG Jowhar	Supervisor	Jowhar, Warshekh balad	50. 51. 52
	2	Farah Osman raage	COSV; Merka	Team leder	Jowhar Warshekh balad	
	3	Abdishakir Sheikh Hassan	New way; Merka	RDT Nurse	Jowhar Warshekh balad	77. 78. 79
	4	Abdirahman Shiekh Ahmed	Community; Mogdishu	Enumerator	Jowhar Warshekh balad	31.32.33
	5	Cise Husen Abdi	SACOD Marka	Enumerator	Jowhar Warshekh balad	88.
9	1	Salah Hussein Hurshe	TRG, Jowhar	Supervisor	Jowhar; Mahaday	85. 86. 87
	2	Yasin Abdulaahi Yasin	Community marka	Team leder	Jowhar; Mahaday	55. 56.53
	3	Liban Sheikh Siaad	Marka Hospital	RDT Nurse	Mahaday; Jowhar	80. 81. 82
	4	Xaawo MohamedMohamud	SRCS; Jowhar	Enumerator	Mahaday; Jowhar	83. 84.35
	5	Shamso xaaji Mohamed	MERCY Jowhar	Enumerator	Mahaday; Jowhar	36
10	1	Hussein Mohamed Abdulle	SRCS; Jowhar	Supervisor	Jowhar; Mahaday, Adale	34. 26. 40
	2	Hanad Faqrudin Madar	TRG Jowhar	Team Leader	Jowhar; Mahaday,Adale	39. 58. 94
	3	Shuti Muxidiin Mohamud	COSV; Shalmbod	RDT Nurse	Mahaday; Jowhar Adale	92. 93. 54
	4	Ister Ali Afrah	TRG Jowhar	Enumerator	Mahaday; JowharAdale	
	5	Abdiqadir mustaf Takow	SRCS; Merka	Enumerator	Mahaday; Jowhar. Adale	
		Tom J Oguta	FSAU Nbi	Coordination	All	
		Mohamed Moalim Hussien	FSAU Mogdishu	Field Coordination	Afgio, Wanle Jowhar	
		Ibrahim Mohamud Mohamed	FSAU Kismayu	Field Coordination	Markam Qoryole, Sablale	

APPENDIX 5: REFERRAL FORM FOR MALNOURISHED CHILDREN

Name of the village: _____ Date:_____

Name of the child:_____ Sex of child: _____

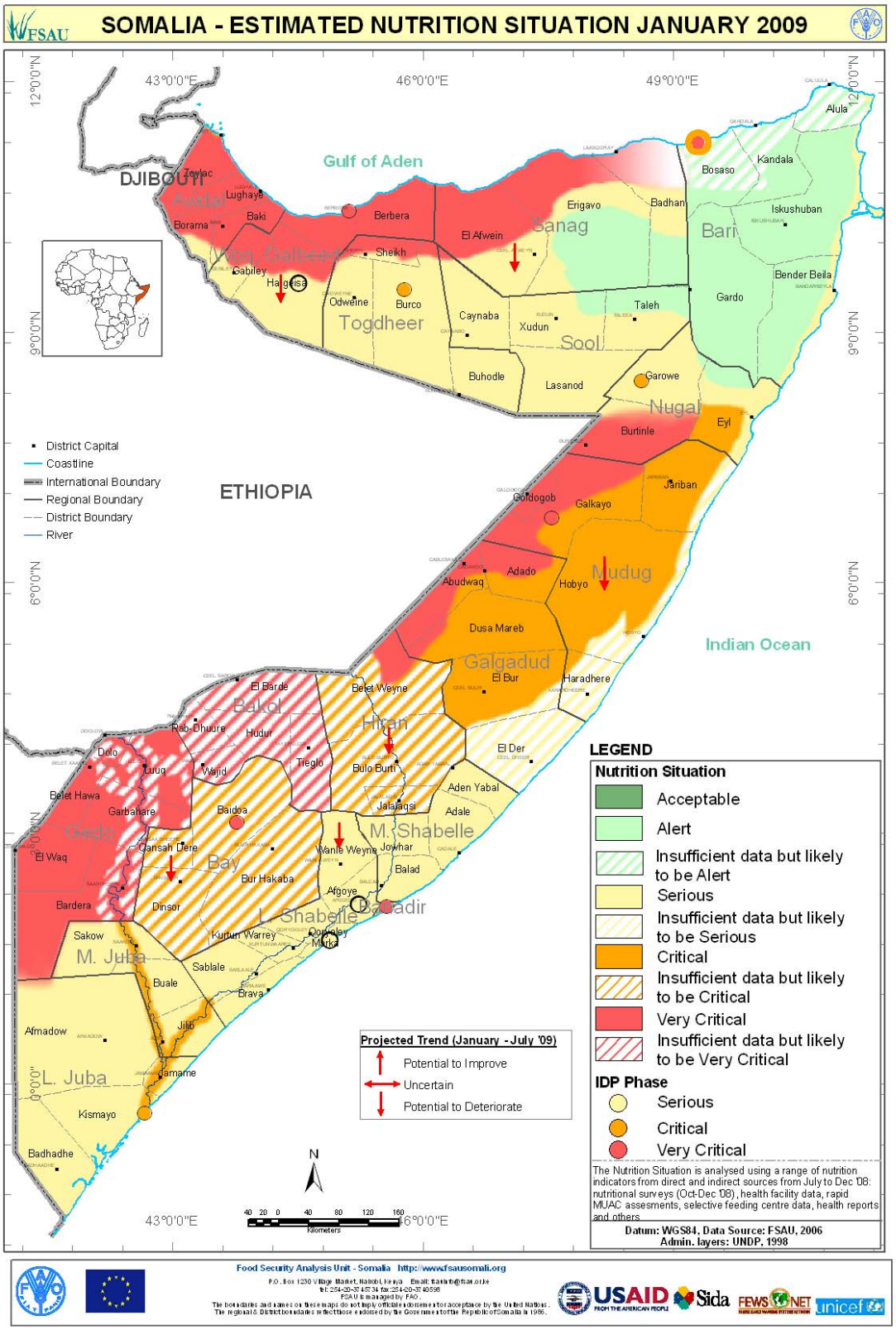
Age of child: _____ Name of caretaker: _____

Child diagnosed (suspected) with (state the condition): _____

Child referred to: _____

Child referred by: _____

Appendix 6.


SOMALIA - ESTIMATED NUTRITION SITUATION JANUARY 2009
FSAU
43°0'0"E
46°0'0"E
49°0'0"E
12°0'0"N
9°0'0"N
6°0'0"N
Gulf of Aden
Indian Ocean
DJIBOUTI
ETHIOPIA
Zeylac
Lughaye
Baki
Borama
Berbera
Erigavo
Badhan
Alula
Kandala
Bosaso
Iskushuban
Bender Beila
Gardo
Taleh
Sheikh
Gabiley
Hargeisa
Odweine
Burco
Caynaba
Xudun
Buhodle
Lasanod
Garowe
Burtinle
Eyl
El Afwein
Goldogob
Galkayo
Jariban
Abudwaq
Adado
Hobyo
Dusa Mareb
El Bur
Haradhere
El Barde
Belet Weyne
Rab-Dhuure
Hudur
Dolo
Luuq
Wajid
Tieglo
Bulo Burti
El Der
Belet Hawa
Garbahare
Baidoa
Aden Yabal
Jalalaqsi
Adale
El Waq
Gansah Dere
Wanle Weyne
Jowhar
Balad
Bur Hakaba
Afgoye
Bardera
Dinsor
Kurtun Warrey
Qoryoley
Merka
Sakow
Sablale
Buale
Brava
Jilib
Afmadow
Jamame
Kismayo
Badhadhe
Ayadar
W. Galbeed
Togdheer
Sool
Sanag
Bari
Nugal
Mudug
Galgadud
Hiran
Bakol
Gedo
Bay
M. Juba
L. Juba
M. Shabelle
L. Shabelle
Benadir
District Capital
Coastline
International Boundary
Regional Boundary
District Boundary
River
LEGEND
Nutrition Situation
Acceptable
Alert
Insufficient data but likely to be Alert
Serious
Insufficient data but likely to be Serious
Critical
Insufficient data but likely to be Critical
Very Critical
Insufficient data but likely to be Very Critical
IDP Phase
Serious
Critical
Very Critical
Projected Trend (January - July '09)
Potential to Improve
Uncertain
Potential to Deteriorate
The Nutrition Situation is analysed using a range of nutrition indicators from direct and indirect sources from July to Dec '08: nutritional surveys (Oct-Dec '08), health facility data, rapid MUAC assesments, selective feeding centre data, health reports and others
Datum: WGS84, Data Source: FSAU, 2006
Admin. layers: UNDP, 1998
N
40 20 0 40 80 120 160
Kilometers
Food Security Analysis Unit - Somalia http://www.fsausomali.org
USAID
Sida
FEWS NET
unicef

Appendix 7. Assessments Quality checks

Asssess-ment	Overall	Missing/ Flagged data Incl %	(% of in-range subjects)	Overall Sex ratio Incl P	(Signifi-cant chi square)	Overall Age distrib Incl p	(Significant chi square)	Dig pref score - weight Incl #		Dig pref score - height Incl #		SD WHZ Excl SD		Skewness WHZ Excl #		Kurtosis WHZ Excl #		Poisson dist WHZ-2 Excl p	
Agro-pastoral	Good	Good	1.60%	Good	p=0.515	Good	p=0.353	Good	5	Accept	9	Good	1	Good	0.2	Good	-0.2	Good	p<0.05
	2%					0		0		2		0		0		0		0	
Riverine	Poor	Good	1.70%	Good	p=0.342	Unaccept-able	p=0.000	Poor	6	Poor	7	Good	1	Good	0	Good	0.13	Good	p<0.05
	14%					10		2		2		0		0		0		0	
IDPs	Accept-able	Good	0.90%	Good	p=0.333	Poor	p=0.001	Good	2	Accept	8	Good	1	Good	0.1	Good	0.06	Good	p<0.05
	6%					4		0		2		0		0		0		0	

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