



*This update describes the development, status, and response activities implemented by the humanitarian community of the Acute Watery Diarrhoea outbreak in Somalia. The update follows the structure as proposed in the WHO guidelines for cholera outbreak response. The update is built on surveillance data that health service providers and NGOs transmit on a weekly basis from health facilities and hospitals in South and central Somalia.*

03 May 2007

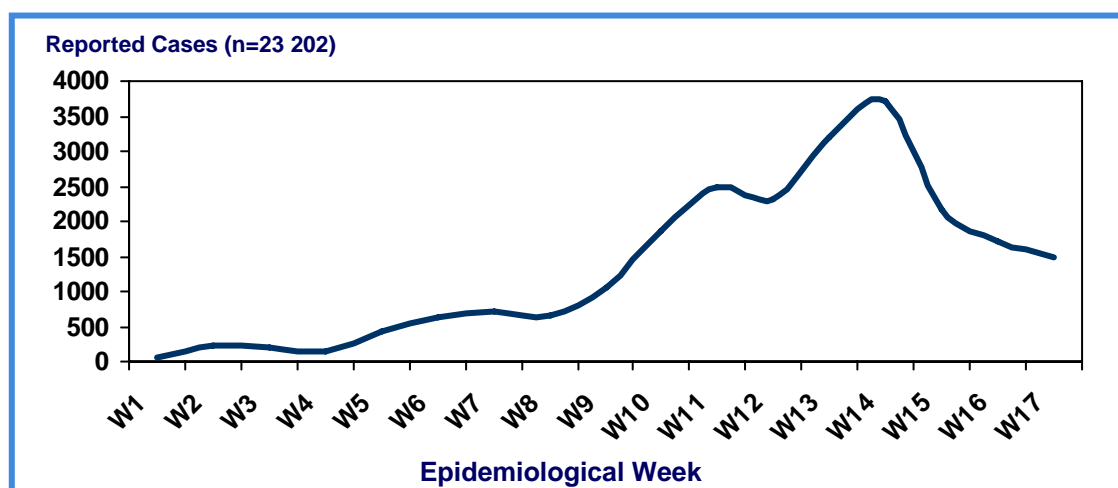
**Table of contents**

1	Epidemiological week 17 results and outcome .....	1
2	Distribution of cases by region .....	3
	Table 1: Number of AWD cases, deaths and CFR .....	5
	Table 2: Distribution AWD cases and deaths by district...	7
3	Laboratory confirmation / drug resistance .....	8
4	Outbreak control task force .....	8



**1 Epidemiological week No 17: Overall results and outcome**

Between 1 January and 27 April 2007, a total of **23 202** cases of clinically diagnosed **Acute Watery Diarrhoea (AWD)** including 743 related deaths (**CFR<sup>1</sup> 3.20**) were reported from Central and South Somalia. Cases were reported from 10 regions (Hiiraan, Banadir, Lower and Middle Shabelle, Bay, Gedo, Bakool, Galgudud and Lower Juba and Middle Juba) with an estimated population of **4,089,847**; the overall attack rate<sup>2</sup> (**AR**) is **0.57%**.



*Note: the sharp decrease of the number of cases since the epidemiological week 15 is mainly related to lack of data from Babadir Region (Mogadishu) due to security reasons.*

Figure 1: Distribution of AWD cases, Central and South Somalia, 01 January -27 April 2007

<sup>1</sup> The case fatality rate (CFR) refers to the number of deaths per 100 cases

<sup>2</sup> WHO/EMC/ DIS/97.11”Attack rate of 0.5% would be used for urban areas, 0.2% for rural areas and 1-2% for refugee/displaced populations as a worst case scenario”

In the last three epidemiological weeks (15 to 17), the trend shows a decrease in the number of reported cases mainly related to a decreased **number of reporting units in Mogadishu due to security reasons**. In the current week (epidemiological week 17), the reported cases decreased by 14%, in comparison with the previous week (1488 and 1702 respectively). The distribution of AWD cases is shown in figure 1.

The first report of an increase in AWD cases was received from **Hiiraan region** (not included in the graph) in the first epidemiological week of 2007. After reaching the peak in week 7, cases started to decrease to date (no cases were reported since epidemiological week 12).

In epidemiological week 5, **Middle Shabelle** region (not included in the graph) reported a similar increase in AWD cases. The number of cases reached the peak in epidemiological weeks 6 and 7 and decreased in the last few weeks.

In the beginning of epidemiological week 6, an increase of AWD cases was reported from **Lower Shabelle** region. The peak was reached in epidemiological week 10, but a slight decrease was observed in the epidemiological weeks 11 and 12 with another increase in the epidemiological week 13, followed by a steady decrease in the previous 4 weeks (epidemiological weeks 14-17).

**Banadir** region started reporting cases from week 8. The trend is showing a continuous increase up to week 14. In the previous 2 epidemiological weeks (16 and 17), a sharp decrease was observed mainly related to a decrease in the number of reporting facilities due to security reasons (only one Cholera Treatment Centre reported in the previous 2 weeks).

**Bay** region started to report cases in epidemiological week 9. In the current week, the reporting cases showed a marked decrease in the trend. In comparison with the previous week, a 34% decrease was observed in the number of reported cases (496 and 773 respectively).

**Gedo** region (not included in the graph) started to report cases in epidemiological week 10 followed by a marked decrease to date.

**Bakool** region (not included in the graph) started to report cases in epidemiological week 12 with an increase in the number of reported cases up to the current week (no data were available from epidemiological weeks 15 and 16).

**Galgadud** region reported AWD cases in epidemiological week 10. The peak was observed in epidemiological week 13 and showing a slight decrease in the number of reported cases until epidemiological week 16, but a sharp increase was observed in the current week (245 and 23 respectively).

In epidemiological week 14, **Middle Juba** region reported 927 cases including 59 related deaths (CFR 6.36%). No more reports were received in the last three epidemiological weeks (15-17).

The distribution of AWD cases by region is shown in figure 2.

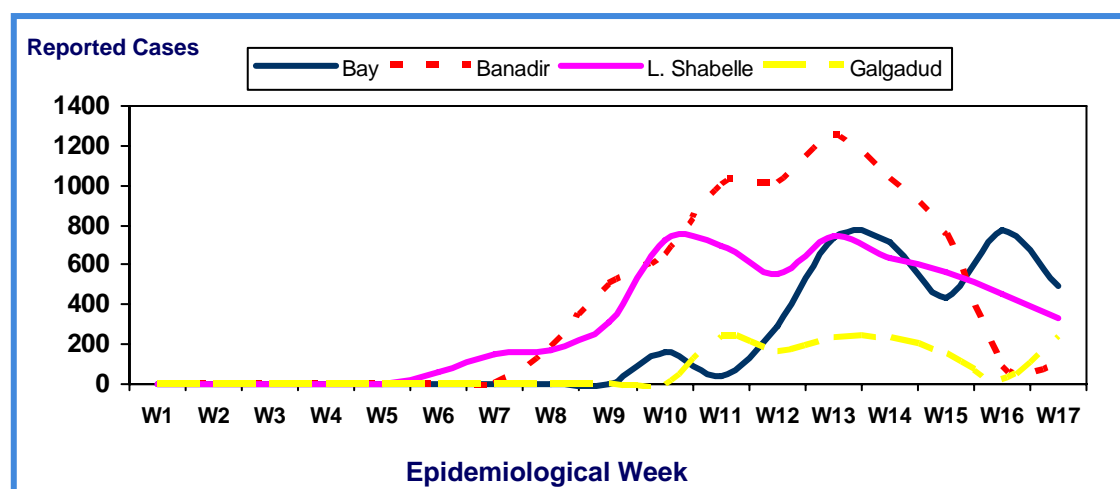
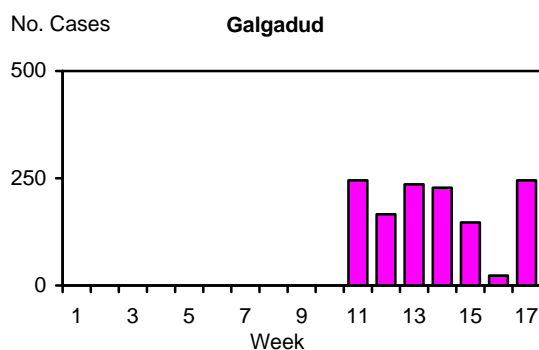
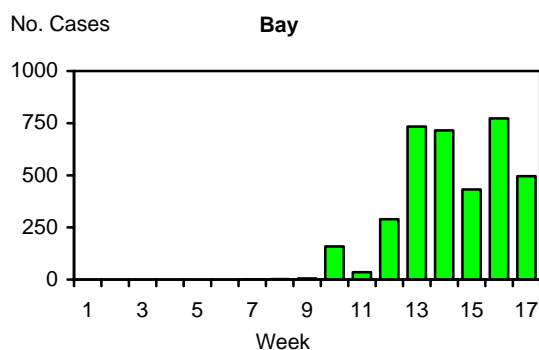
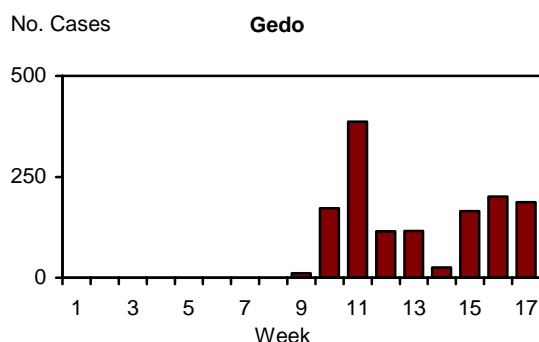
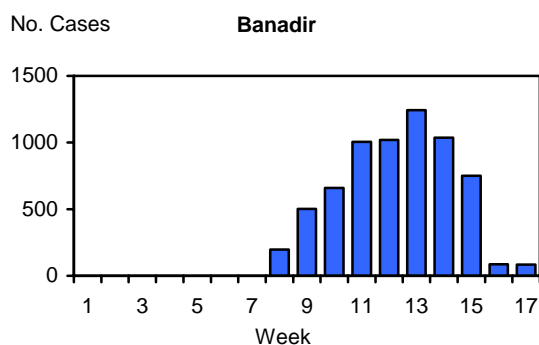
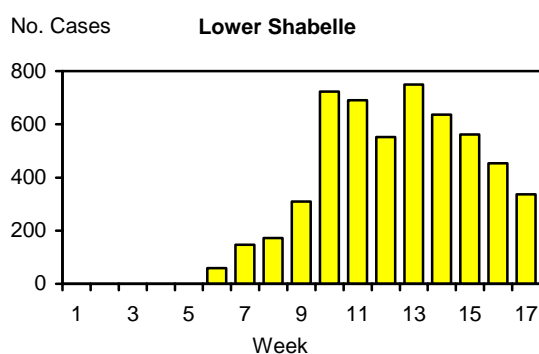
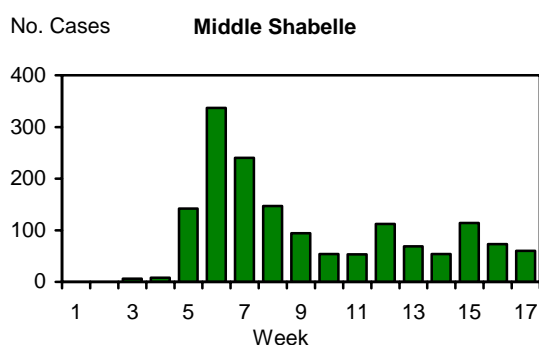
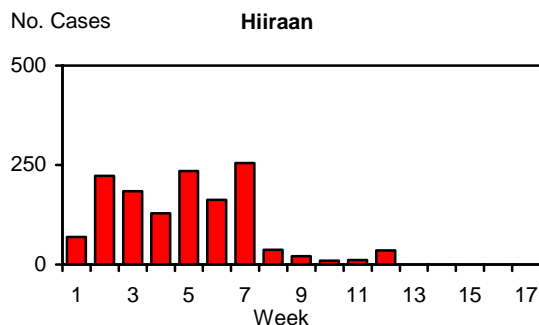
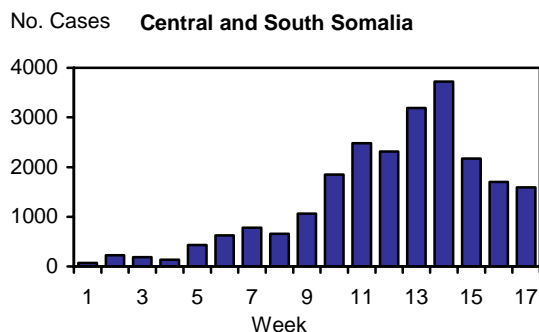


Figure 2: Distribution of AWD cases by region, Central and South Somalia, 1 January -27 April 2007

## 2 Distribution of Acute Watery Diarrhoea cases by region South and Central Somalia



The charts showed that the outbreak started in Hiiraan region early in January 2007, and then spread to Middle Shabelle in late January. Lower Shabelle region reported cases in February, while Banadir, Gedo and Bay regions cases were reported in early March, followed by Galgadud region.

Overall, the highest attack rate (AR) was observed in **Gedo** region with **1.35%** followed by **Lower Shabelle** with **0.78%**, and Banadir and Middle Shabelle with **0.73%** and **0.72%** respectively. The lower attack rate was observed in **Bakool** (0.07%) and **Lower Juba** (0.24). The attack rate per 100 population is shown in figure 3.

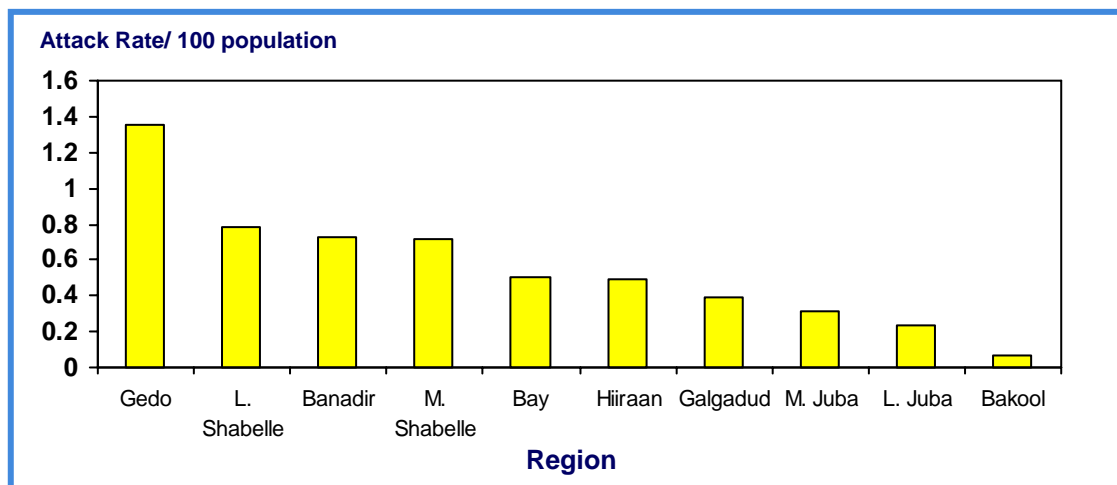


Figure 3: Distribution of AWD cases, deaths and CFR by region, Central and South Somalia, 1 January - 27 April 2007

During the same reporting period, **28%** (6586/23 202) of AWD cases were reported from **Banadir** region including 13% (100/743) of the total related-deaths (CFR<sup>3</sup> 1.62%). Twenty-three percent (5391) were reported from **Lower Shabelle** including 34% (249/743) of the total related-deaths (CFR 4.62%). Sixteen percent (3641) were reported from **Bay** including 16% (100/743) of the total related-deaths (CFR 3.19%). **Middle Shabelle** region reported 7% (1563) including 16% (116/743) of the total related-deaths (CFR 3.19%). Although Lower Juba and Bakool regions reported only 4% (818) and 1% (178) of the total reported cases, they reported the highest CFR 6.18% and 5.75% respectively. The distribution of AWD cases, deaths, and CFR by region is shown in figure 4.

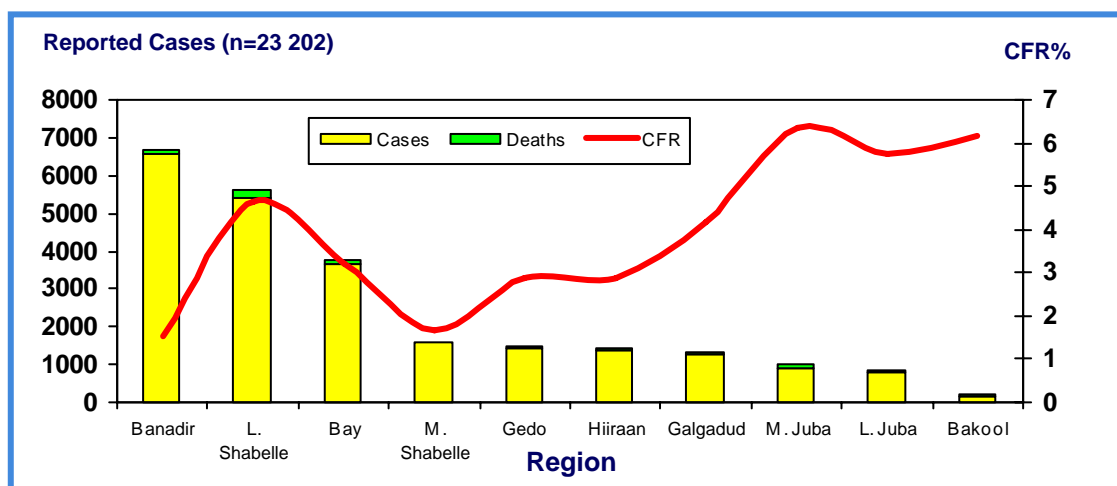


Figure 4: Distribution of AWD cases, deaths and CFR by region, Central and South Somalia, 1 January - 27 April 2007

<sup>3</sup> <http://www.who.int/topics/cholera/control/en/index.html> "Prompt and appropriate medical management of cases can significantly decrease mortality (Case Fatality Rate); when applied properly; case-fatality rate should be below 1%. In untreated cases the fatality rate may reach 30-50%. These levels are often observed in crisis situations with overcrowding, limited access to health care and precarious environmental management"

Table 1: Number of reported Acute Watery Diarrhoea cases, deaths and Case Fatality Rate per region, Central and South Somalia

Central and South Region, 1 January – 27 April 2007, Somalia															
Week	Hiiraan			Banadir*			Lower Shabelle			Middle Shabelle			Bay		
	C	D	CFR%	C	D	CFR%	C	D	CFR%	C	D	CFR%	C	D	CFR%
1	69	6	8.70	0	0	0	0	0	0	0	0	0.00	0	0	0.00
2	223	7	3.14	0	0	0	0	0	0	0	0	0/00	0	0	0.00
3	184	6	3.26	0	0	0	0	0	0	6	0	0.00	0	0	0.00
4	129	8	6.20	0	0	0	0	0	0	8	1	12.50	0	0	0.00
5	235	6	2.55	0	0	0	0	0	0	142	4	2.82	0	0	0.00
6	162	4	2.47	0	0	0	59	5	8.47	337	4	1.19	0	0	0.00
7	255	3	1.18	0	0	0	147	18	12.24	240	3	1.25	1	0	0.00
8	37	0	0.00	196	2	1.02	172	15	8.72	147	5	3.40	2	0	0.00
9	21	0	0.00	502	10	1.99	309	18	5.83	94	1	1.06	5	2	40.00
10	10	0	0.00	659	12	1.82	723	69	9.54	54	0	0.00	159	14	8.81
11	11	0	0.00	1006	16	1.59	691	33	4.78	53	2	3.77	35	3	8.57
12	35	0	0.00	1021	14	1.37	552	13	2.36	112	0	0.00	289	3	1.04
13	0	0	0	1244	17	1.37	750	22	2.93	69	1	1.45	734	26	3.54
14	0	0	0	1036	21	2.03	636	15	2.36	54	0	0.00	715	23	3.22
15	0	0	0	751	8	1.07	562	21	3.74	114	2	1.75	432	15	3.47
16	0	0	0	86	0	0	453	12	2.65	73	1	1.37	773	20	2.59
17	0	0	0	85	0	0	337	8	2.37	60	2	3.33	496	10	2.02
TOT	1371	40	2.92	6586	100	1.52	5391	249	4.62	1563	26	1.66	3641	116	3.19

\* Banadir Region; epidemiological weeks 16 and 17 data was collected only from South CTC al Hijra by Action Contre Faim, Somalia

Central and South Region, 1 January – 27 April 2007, Somalia																		
Week	Bakool			Gedo			Galgadud			Middle Juba			Lower Juba			GRAND TOTAL		
	C	D	CFR	C	D	CFR	C	D	CFR	C	D	CFR	C	D	CFR	C	D	CFR
1	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	69	6	8.70
2	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	223	7	3.14
3	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	190	6	3.16
4	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0	137	9	6.57
5	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	57	15	26.32	434	25	5.76
6	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	70	5	7.14	628	18	2.87
7	0	0	0.00	55	0	0.00	0	0	0.00	0	0	0.00	82	5	6.1	780	29	3.72
8	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	102	5	4.9	656	27	4.12
9	0	0	0.00	11	0	0.00	0	0	0.00	0	0	0.00	124	8	6.45	1066	39	3.66
10	0	0	0.00	172	13	7.56	3	0	0.00	0	0	0.00	71	1	1.41	1851	109	5.89
11	0	0	0.00	387	14	3.62	245	10	4.08	0	0	0.00	55	2	3.64	2483	80	3.22
12	22	0	0.00	115	4	3.48	166	0	0.00	0	0	0.00	NA	NA	NA	2312	34	1.47
13	38	3	5.00	116	2	1.72	236	8	3.39	0	0	0.00	NA	NA	NA	3187	79	2.48
14	42	4	9.52	25	3	12.00	228	10	4.39	927	59	6.36	62	0	0	3725	135	3.62
15	NA	NA	NA	165	1	0.61	147	12	8.16	NA	NA	NA	NA	NA	NA	2171	59	2.72
16	NA	NA	NA	201	4	1.99	23	4	17.39	NA	NA	NA	93	5	5.38	1702	46	2.70
17	76	4	5.26	187	0	0.00	245	10	4.08	NA	NA	NA	102	1	0.98	1588	35	2.20
TOT	178	11	6.18	1434	41	2.86	1293	54	4.18	927	59	6.36	818	47	5.75	23202	743	3.20

Table 2: Distribution of reported Acute Watery Diarrhoea cases and deaths by district

Region	District	Estimated Population	Cases	AR per 100	Deaths	CFR%	Comments
Hiiraan	Bulo Burte	89,120	355	0.40	26	7.32	Data up to 31 March, 2007 No data form Bulo Burte and Jalaalqsi
	Jalaalqsi	46,724	795	1.70	6	0.75	
	Beletweyne	144,345	221	1.15	8	3.62	
<b>TOTAL</b>		<b>280,189</b>	<b>1371</b>	<b>0.49</b>	<b>40</b>	<b>2.92</b>	
Lower Shabelle	Merka	192,939	2421	1.25	83	3.43	
	Afgoye	135,012	892	0.66	47	5.27	
	Qoryoley	134,205	544	0.41	52	9.56	
	K/Warey	55,445	747	1.35	29	3.88	
	Sablale	43,055	107	0.25	8	7.48	
	Brave	57,652	499	0.87	13	2.61	
	Awdegle	76,700	181	0.24	17	9.39	
<b>TOTAL</b>		<b>695,008</b>	<b>5391</b>	<b>0.78</b>	<b>249</b>	<b>4.62</b>	
Lower Juba	Kismayo	166,667	737	0.44	34	4.61	Lab. confirmation (10) <i>V. Cholera</i> Ogawa
	Afmadow	51,334	30	0.06	0	0.00	
	Jamame	129,149	51	0.04	13	25.49	
<b>TOTAL</b>		<b>347,150</b>	<b>818</b>	<b>0.24</b>	<b>47</b>	<b>5.75</b>	
Middle Juba		238,877	927	0.31	59	6.36	
<b>TOTAL</b>		<b>238,877</b>	<b>927</b>	<b>0.31</b>	<b>59</b>	<b>6.36</b>	
Banadir	Mogadishu	901,183	6586	0.73	100	1.52	Lab. confirmation (24) <i>V. Cholera</i> Inaba
<b>TOTAL</b>		<b>901,183</b>	<b>6586</b>	<b>0.73</b>	<b>100</b>	<b>1.52</b>	
Middle Shabelle	Jowhar	218,027	1563	0.72	26	1.66	All samples negative for <i>V. Cholera</i> .
<b>TOTAL</b>		<b>218,027</b>	<b>1563</b>	<b>0.72</b>	<b>26</b>	<b>1.66</b>	
Gedo	Bardera	106,172	1434	1.35	41	2.86	Lab. confirmation (3) <i>V. Cholera</i> Inaba
<b>TOTAL</b>		<b>106,172</b>	<b>1434</b>	<b>1.35</b>	<b>41</b>	<b>2.86</b>	
Bay	Baidoa	726,849	3641	0.50	116	3.19	
<b>TOTAL</b>		<b>726,849</b>	<b>3641</b>	<b>0.50</b>	<b>116</b>	<b>3.19</b>	
Galgudud	Galaheri	330,057	1293	0.39	54	4.18	
<b>TOTAL</b>		<b>330,057</b>	<b>1293</b>	<b>0.39</b>	<b>54</b>	<b>4.18</b>	
Bakool	Wajid	246,335	178	0.07	11	6.18	
<b>TOTAL</b>		<b>246,335</b>	<b>178</b>	<b>0.07</b>	<b>11</b>	<b>6.18</b>	
<b>GRAND TOTAL</b>		<b>4,089,847</b>	<b>23,202</b>	<b>0.57</b>	<b>743</b>	<b>3.20</b>	

### 3 Laboratory confirmation / drug resistance

Three out of 10 stool samples collected from **Merka district**, Lower Shabelle on 10 March 2007, were confirmed with *V. cholerae*, serogroup O1, serotype *Inaba*, and two samples with *V. cholerae*, serogroup O1, serotype *Hikojima*<sup>4</sup>. WHO requested the African Medical and Research Foundation (AMREF) laboratory in Nairobi to confirm the results. The mean age of confirmed cases was 5.0 years, ranging from 2-20 years. 60% (3/5) were males. The *Vibrio* was resistant to Chloramphenicol, and Cotrimoxazole, while sensitive to Erythromycin and Tetracycline.

On 13 March 2007, 10 stool samples were collected by MSF-Spain from **Banadir hospital**. All 10 samples were confirmed with *V. cholerae*, serogroup O1, serotype *Inaba*. The mean age of confirmed cases was 11.02 years ranging from 10 months-35 years. 70% (7/10) were male.

On 14 March 2007, 12 stool samples were collected by MSF-Spain from **Hayat hospital**. Five samples were confirmed with *V. cholerae*, serogroup O1, serotype *Inaba*. The mean age of confirmed cases was 8.70 years ranging from 2-40 years. Sixty percent (3/5) were male.

In both cases, the *Vibrio* was resistant to Chloramphenicol, and Cotrimoxazole, while sensitive to Tetracycline.

On 05 April 2007, 4 stool samples were collected from **Gedo Region**. Three (**3**) samples were confirmed with *V. cholerae*, serogroup O1, serotype *Inaba* in AMREF Laboratory in Nairobi. The mean age of confirmed cases was 4.70 years ranging from 18 months-16 years.

### 4 Outbreak control task force

UNHCR estimates that up to 300 000 people have fled Mogadishu since 1 February 2007. In spite of the deteriorating security situation in Somalia and the already poor accessibility to the affected areas, humanitarian efforts continue in the response to the ongoing outbreak of Acute Watery Diarrhoea.

Coordination meetings between the health partners from the Cholera Outbreak Taskforce as well as the Water and Sanitary Hygiene (WASH) cluster are being held on a regular basis in Nairobi and Somalia.

An environmental health assessment mission to Baidoa and Wajid, conducted in April 2007, concludes that extensive training of local health staff and the provision of basic equipment for water treatment and water quality testing is urgently needed.

WHO is planning to procure 2000 rapid test for *choliform* detection and 100 pool testers, as well as one microbiological water testing kit for each WHO field office. WHO recommends that all water treatment stations in Baidoa should be provided with pool testers and multi-tube tests. WHO aims to maintain sufficient stocks of chlorine (HTH or Chlorine tablets) to ensure possible gaps in UNICEF supplies are always filled.



WHO has enhanced environmental health monitoring of the Cholera Treatment Centre (CTC) in Baidoa to ensure all necessary facilities such as hand pumps for disinfectants, waste boxes for sharp objects, latrines, and garbage bins are properly used and maintained. Further training for the CTC staff on purification of drinking water, sanitation and hygiene issues is being planned.

<sup>4</sup> The organism responsible for causing cholera is *Vibrio cholerae* serogroup O1 of which there are 2 biotypes, Classical and El Tor. The biotypes are further split into serotypes *Inaba*, *Ogawa* and (rarely) *Hikojima*. If *Hikojima* serotype is confirmed, all 3 serotypes of *Vibrio cholerae* are present during the ongoing outbreak.

WHO is considering promoting the implementation of a large scale household water treatment programme in Baidoa.

A practical workshop on drinking water in response to the AWD outbreak was conducted in Baidoa in April 2007. Twenty members of the Water Management Committee (WMC), community chlorinators, as well as health staff from NGOs involved in chlorination activities were taught practical methods on how to control the spread of the disease by optimizing the use of chlorination and sanitary inspection.



The workshop was an introduction to a series of workshops organized by UNICEF and WHO to train all concerned partners and volunteering youth on drinking water issues in response to the AWD outbreak.

WHO furthermore translated and disseminated flyers with messages on safe drinking water, food safety, and sanitation and hygiene promotion for cholera prevention in Somali language in Wajid and Baidoa. The same messages are spread to the larger public by WARSAN radio.

WHO continues to monitor chlorination activities in Wajid. From 22 March to 18 April 2007, 616 open dug wells were chlorinated in Wajid: 443 communal wells twice a week, and 173 personal wells on a daily basis.

The NGO **MDM** supplied Ringer Lactate to the NGO **COSV** in Lower Shabelle.

The CTC run by **MSF Spain** is operating in Bay Region. MSF is providing Oral Rehydration Salts (ORS) and is carrying out chlorinating in collaboration with the NGO **ACF**. MSF Spain is also supplying ORS and Ringer Lactate to the NGO Intersos in Jowhar.



**MSF Switzerland** runs a hospital in Dinsor and set up an isolation ward for AWD patients. Four out of six samples sent to the AMREF public health laboratory in Nairobi, Kenya were tested positive for cholera.

The NGO **World Vision** is ensuring drinking water chlorination in Wajid.

**WHO** is offering support to NGOs in the transportation of supplies from Wajid to Lower Juba.

**UNICEF** has distributed 10 cholera kits to Kismayo. Five additional kits are planned to be distributed to NGO partners in Mogadishu. UNICEF is also planning to distribute 2 million sachets of ORS. UNICEF plans to preposition 2 cholera kits in Jowhar.

On the 23 April 2007, WHO Somalia representative, **Dr Fouad Mojallid** was on a mission to Baidoa visiting health facilities including Cholera Treatment Centres (CTC). Rehabilitation work has been initiated in Baidoa Hospital on the Out Patient Department (OPD) and the water and sanitation system. Plans are underway to develop Emergency Obstetric care (EmOC) in four key hospitals in South Central zone, including Baidoa, Kismayo, Beletweyne and Mogadishu.