



Photo: Dr Hammam El Sakka, WHO Somalia

WHO is funding a massive clean up campaign of all districts of Somaliland. The campaign aims to prevent fecal-oral transmitted and vector borne diseases. The picture shows the main garbage dump near Hargeisa town, and is located next to the river which is the source of drinking water in different areas.

## Highlights

- Between 1 January and 16 June, 2007, **2060** of Acute Watery Diarrhoea (AWD) cases were reported from Somaliland including 30 related deaths.
- In the current week (epidemiological week 24), the reported cases decreased by **8%**, in comparison to the previous week (457 and 539 respectively).
- In comparison with previous epidemiological weeks, the overall Case Fatality Rate (CFR) continues to decrease from **5.26%** in epidemiological week 20, to **1.09%** in the current week.
- Overall, **Toghheer** region reported **51% (1046)** cases, including **30% (15)** of the total related deaths. The trend shows a slight increase in the reported cases compared to the last epidemiological week.
- Although Adwal region reported only **11% (223)** of the total reported cases, it reported the highest CFR **2.69%**.
- ***V. cholerae* serogroup O1, serotype *Inaba* was confirmed in 26 out of 62 samples collected from Hargeisa and Burao.**

**The AWD trend shows that the number of reported AWD cases is increasing in Somaliland.**

## 16 June 2007

*This update describes the development, status, and activities implemented by the humanitarian community in response to the Acute Watery Diarrhoea outbreak in Somaliland. The update follows the structure as proposed in the WHO guidelines for cholera outbreak response.*

*The report is built on surveillance data that health service providers and NGOs transmit on a weekly basis from health facilities and hospitals in Somaliland.*

## In this issue

- ✓ Detailed epidemiological description of the current (10-16 June 2007) AWD outbreak in Somaliland;
- ✓ AWD data including age distribution;
- ✓ Easy-to-grasp figures showing the trends in the affected regions;
- ✓ Interventions from all health partners in response to the ongoing AWD outbreak

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## 1 Epidemiological week No 24: Overall results

Between 22 March and 16 June 2007, a total of **2060** cases of clinically diagnosed **Acute Watery Diarrhoea (AWD)** including **30** related deaths (**CFR<sup>1</sup> 1.47%**) were reported from Somaliland. Cases were reported from 3 regions (Toghheer, Awdal and Wogooyi Galbeed) with an estimated population of **1,063,855**; the overall attack rate<sup>2</sup> (**AR**) is **0.19%**.

In the last **four** epidemiological weeks (21 to 24), the trend shows an increase in the number of reported cases in all the 3 regions. In the current week (epidemiological week 24), the reported cases decreased by **8%**, in comparison with the previous week (457 and 539 cases respectively). The overall CFR continues to decrease from **5.26%** in epidemiological week 20 to **1.09%** in week 24. The weekly distribution of AWD cases and CFR is shown in figure 1.

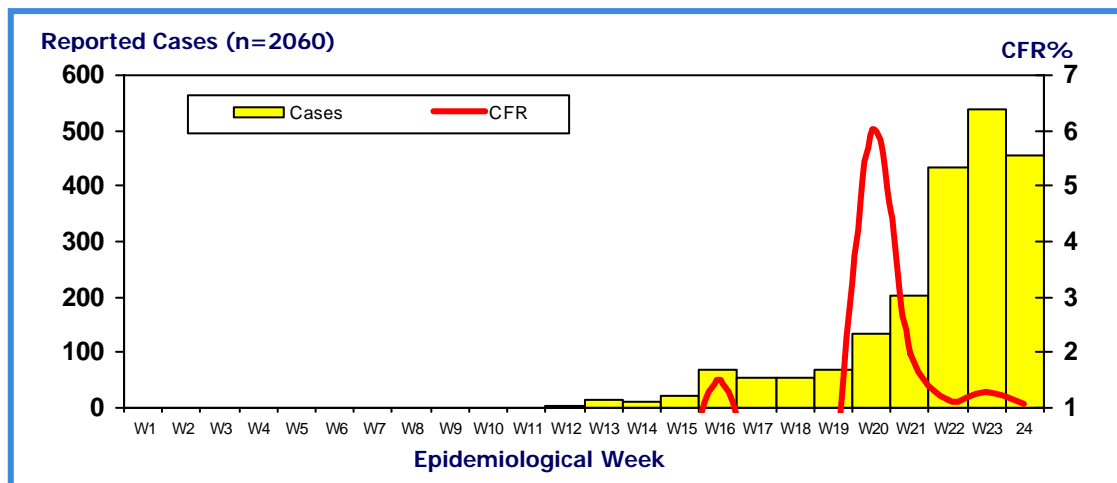


Figure 1: Distribution of AWD cases, Somaliland, 01 January -16 June 2007

Overall, 63% (1289/2060) of the AWD cases occurred in equal to or above 5 years old age group including 53% (16/30) of all reported deaths. Although the less than 5 years old age group reported 47% (771/2060), the Case Fatality Rate (CFR) was higher compared to the more than 5 years old age group (1.82% and 1.24% respectively). The weekly distribution of AWD cases by age groups is shown in figure 2.

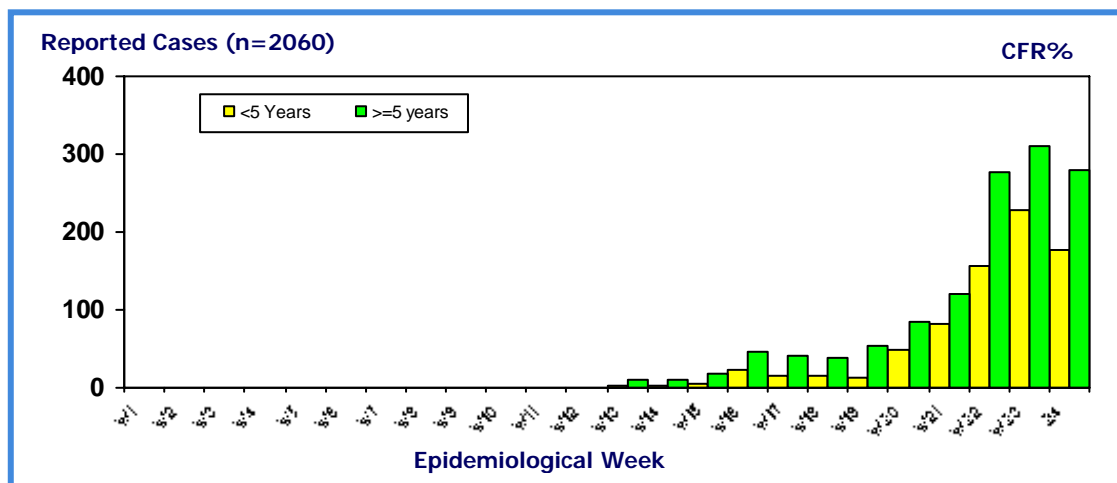


Figure 2: Distribution of AWD cases by age groups, Somaliland, 01 January -16 June 2007

<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"

The **first** report of an increase in AWD cases was received from **Burao** district in **Toghheer region** in the epidemiological **week 12**. After reaching the peak in week 16, cases started to decrease up to the epidemiological week 19. On the 27 of May (epidemiological week 22), the number of reported cases showed a sudden increase which continues to date. In the current week, Burao district reported 259 cases including 3 deaths (CFR **1.16%**), in comparison to the previous week, an increase of 4% was observed (259 and 249 respectively).

In epidemiological **week 14**, the first cases of AWD were reported from **Hargeisa, Wogooyi Galbeed** region. Hargeisa town reported 3 cases of AWD and the number of reported cases continued to increase reaching the peak in epidemiological week 23. However, a slight decrease was observed in the current epidemiologic week (215 and 160 respectively).

Starting from the epidemiological **week 16**, **Borma district**, Awdal region reported AWD cases with a high Case Fatality Rate (CFR **4.35%**). The peak was reached in epidemiological week 23, but a sharp decrease was observed in the current epidemiologic week (75 and 38 respectively).

The distribution of AWD cases by region is shown in figure 3.

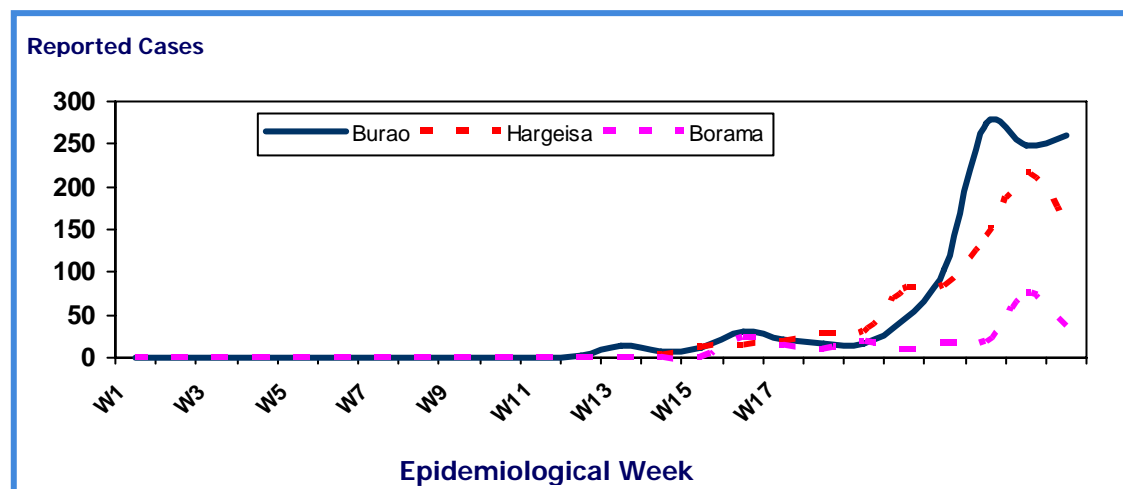


Figure 3: Distribution of AWD cases by region, Somaliland, 1 January -16 June 2007

During the same reporting period, **51%** (1048/2060) of AWD cases were reported from **Toghheer** region (Burao) including **50%** (15/30) of the total related deaths (CFR<sup>3</sup> **1.43%**). **Thirty-eight percent** (789) were reported from Wogooyi Galbeed region (Hargeisa) including **30%** (9) of the total related deaths (CFR **4.06%**). Although **Awdal** region (Borama) reported only **11%** (223) of the total related deaths, it reported the highest CFR at **2.69%**.

The age distribution in both Burao and Hargeisa is almost identical; the less than 5 years old represented 33% and 34% respectively, but in Borama, the less than 5 years old represented only 29%. The age distribution of reported AWD in the 3 regions is shown in figure 4 and table 1.

<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"

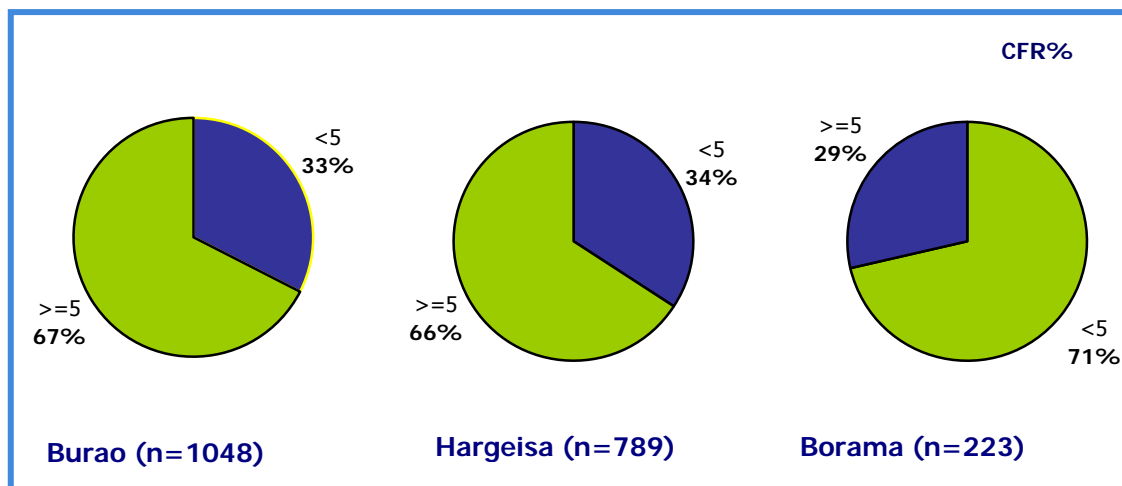


Figure 4: Distribution of AWD cases by age groups, Somaliland, 1 January -16 June 2007

The charts below (Figure 5-1 to 5-3) show the weekly distribution of AWD and the logarithmic trend line (in black). The charts demonstrate that the outbreak started in Burao district in March 2007, and then spread to Hargeisa in early April followed by Borama in the middle of April 2007. The overall trend line (Figure 5-4) shows that the number of reported cases is increasing in Somaliland.

## 2 Distribution of Acute Watery Diarrhoea cases by region, Somaliland, 1 January-7 June 2007 (Figure 5)

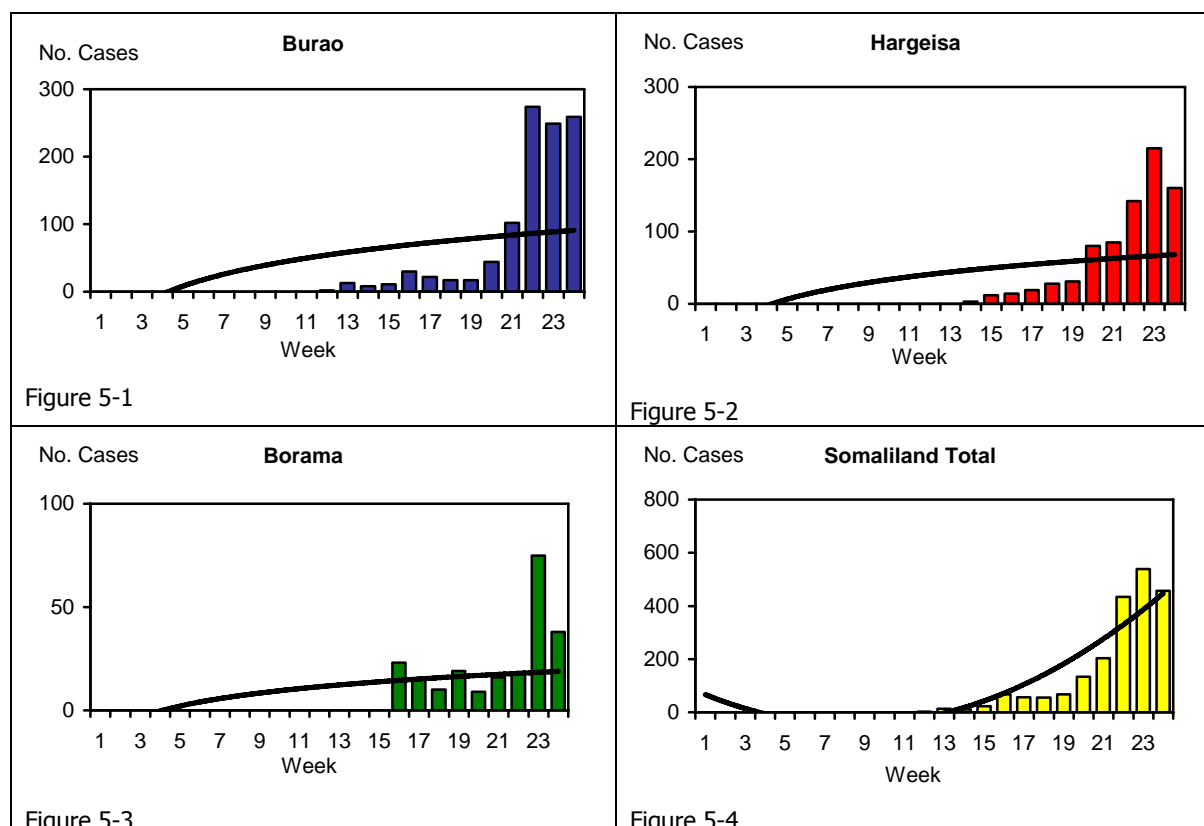


Table 1: Distribution of reported Acute Watery Diarrhoea cases and deaths by Region in Somaliland

| Week | Buraq (Toghheer) |     |        |    |      | Hargeisa (Awdal) |     |        |    |      | Borama (Wogooyi Galbeed) |     |        |    |       | Total |      |        |    |      |
|------|------------------|-----|--------|----|------|------------------|-----|--------|----|------|--------------------------|-----|--------|----|-------|-------|------|--------|----|------|
|      | Cases            |     | Deaths |    | CFR  | Cases            |     | Deaths |    | CFR  | Cases                    |     | Deaths |    | CFR   | Cases |      | Deaths |    | CFR  |
|      | <5               | >=5 | >5     | <5 |      | <5               | >=5 | >5     | <5 |      | <5                       | >=5 | >5     | <5 |       | <5    | >=5  | >5     | <5 |      |
| 1    | 0                | 0   | 0      | 0  | 0    | 0                | 0   | 0      | 0  | 0    | 0                        | 0   | 0      | 0  | 0     | 0     | 0    | 0      | 0  | 0    |
| 2    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 3    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 4    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 5    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 6    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 7    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 8    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 9    | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 10   | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 11   | 0                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 0     | 0    | 0      | 0  | 0.00 |
| 12   | 1                | 0   | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 1     | 1    | 0      | 0  | 0.00 |
| 13   | 2                | 11  | 0      | 0  | 0.00 | 0                | 0   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 2     | 11   | 0      | 0  | 0.00 |
| 14   | 2                | 6   | 0      | 0  | 0.00 | 0                | 3   | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 2     | 9    | 0      | 0  | 0.00 |
| 15   | 3                | 8   | 0      | 0  | 0.00 | 1                | 11  | 0      | 0  | 0.00 | 0                        | 0   | 0      | 0  | 0.00  | 4     | 19   | 0      | 0  | 0.00 |
| 16   | 6                | 24  | 0      | 0  | 0.00 | 1                | 13  | 0      | 0  | 0.00 | 15                       | 8   | 0      | 1  | 4.35  | 22    | 45   | 0      | 1  | 1.49 |
| 17   | 6                | 16  | 0      | 0  | 0.00 | 2                | 17  | 0      | 0  | 0.00 | 8                        | 7   | 0      | 0  | 0.00  | 16    | 40   | 0      | 0  | 0.00 |
| 18   | 7                | 10  | 0      | 0  | 0.00 | 4                | 24  | 0      | 0  | 0.00 | 5                        | 5   | 0      | 0  | 0.00  | 16    | 39   | 0      | 0  | 0.00 |
| 19   | 4                | 13  | 0      | 0  | 0.00 | 4                | 27  | 0      | 1  | 3.23 | 6                        | 13  | 0      | 0  | 0.00  | 14    | 53   | 0      | 1  | 1.49 |
| 20   | 16               | 28  | 0      | 3  | 6.82 | 25               | 55  | 0      | 1  | 1.25 | 8                        | 1   | 3      | 0  | 33.33 | 49    | 84   | 3      | 4  | 5.26 |
| 21   | 36               | 66  | 0      | 0  | 0.00 | 30               | 55  | 0      | 2  | 2.35 | 16                       | 0   | 1      | 0  | 6.25  | 82    | 121  | 1      | 2  | 1.49 |
| 22   | 96               | 178 | 3      | 0  | 1.09 | 47               | 95  | 0      | 2  | 1.41 | 13                       | 5   | 0      | 0  | 0.00  | 156   | 278  | 3      | 2  | 1.15 |
| 23   | 80               | 169 | 3      | 3  | 2.41 | 90               | 125 | 1      | 0  | 0.47 | 59                       | 16  | 1      | 0  | 1.33  | 229   | 310  | 5      | 3  | 1.48 |
| 24   | 83               | 176 | 1      | 2  | 1.16 | 66               | 94  | 1      | 1  | 1.25 | 29                       | 9   | 0      | 0  | 0.00  | 178   | 279  | 2      | 3  | 1.09 |
| TOT  | 342              | 705 | 7      | 8  | 1.43 | 270              | 519 | 2      | 7  | 1.14 | 159                      | 64  | 5      | 1  | 2.69  | 771   | 1289 | 14     | 16 | 1.46 |

\*\*\* D; Deaths, CFR%; Case Fatality Rate per 100 cases

### 3 Laboratory confirmation / drug resistance

| Date         | District | No. tested | Confirmed | Results  |              | Antibiotic Sensitivity Test |              |              |
|--------------|----------|------------|-----------|--|--------------|-----------------------------|--------------|--------------|
|              |          |            |           | Organism   | Serotype     | Chloramphenicol             | Tetracycline | Erythromycin |
| 23 March 07  | Burao    | 3          | 3         | <i>V. cholerae</i>   | <i>Inaba</i> | Sensitive                   | Sensitive    | Sensitive    |
| 31 March 07  | Hargeisa | 3          | 3         | <i>V. cholerae</i>   | <i>Inaba</i> | Resistant <sup>4</sup>      | Sensitive    | Sensitive    |
| 04 April 07  | Burao    | 8          | 1         | <i>V. cholerae</i>   | <i>Inaba</i> | Resistant                   | Sensitive    | Sensitive    |
| 04 April 07  | Hargeisa | 5          | 2         | <i>V. cholerae</i>   | <i>Inaba</i> | Sensitive                   | Sensitive    | Sensitive    |
| 07 April 07  | Hargeisa | 3          | 2         | <i>V. cholerae</i>   | <i>Inaba</i> | 1XR, 1XS                    | Sensitive    | Sensitive    |
| 11 April 07  | Hargeisa | 4          | 3         | <i>V. cholerae</i>   | <i>Inaba</i> | Resistant                   | Sensitive    | Sensitive    |
| 13 April 07  | Hargeisa | 11         | 8         | <i>V. cholerae</i>   | <i>Inaba</i> | 3XR, 5XS                    | Sensitive    | Sensitive    |
| 16 April 07  | Hargeisa | 1          | 0         | <i>V. cholerae</i>   | <i>Inaba</i> | NA                          | NA           | NA           |
| 17 April 07  | Hargeisa | 5          | 0         | <i>V. cholerae</i>   | <i>Inaba</i> | NA                          | NA           | NA           |
| 18 April 07  | Hargeisa | 1          | 0         | <i>V. cholerae</i>   | <i>Inaba</i> | NA                          | NA           | NA           |
| 19 April 07  | Hargeisa | 3          | 2         | <i>V. cholerae</i>   | <i>Inaba</i> | Sensitive                   | Sensitive    | Sensitive    |
| 21 April 07  | Hargeisa | 4          | 0         | <i>V. cholerae</i>   | <i>Inaba</i> | NA                          | NA           | NA           |
| 23 April 07  | Hargeisa | 4          | 1         | <i>V. cholerae</i>   | <i>Inaba</i> | Sensitive                   | Sensitive    | Sensitive    |
| 24 April 07  | Hargeisa | 7          | 1         | <i>V. cholerae</i>   | <i>Inaba</i> | Sensitive                   | Sensitive    | Sensitive    |
| <b>TOTAL</b> |          | <b>62</b>  | <b>26</b> | <b><i>V. cholerae</i> serogroup O1, serotype <i>Inaba</i>.</b> |              |                             |              |              |

Between 23 March and 24 April 2007, a total of 62 stool samples were tested in Hargeisa general hospital laboratory; of these 42% (26/62) were positive for *V. cholerae* serogroup O1, serotype *Inaba*. Eighty-five percent (51/62) of the samples were from Hargeisa and the remaining 15% were from Burao. Overall, the mean age of positive samples was 28.03 years, ranging from 6-70 years. Fifty-three percents (14/26) were females. The antibiotics sensitivity test showed 42% (11/26) of the isolated *V. cholerae* was resistant to chloramphenicol.

From the 51 samples collected from Hargeisa 43% (22/51) were positive, and, the mean age of positive samples was 28.82 years, ranging from 6-70 years. Fifty percent (14/22) were females.

From the samples collected from Burao 36% (4/11) were positive, and the mean age of positive samples was 34.00 years, ranging from 7-70 years. Seventy-five percent (14/26) were females.

<sup>4</sup> All *V. cholerae* serogroup O1 serotype *Inaba* positive samples collected in South and Central zones of Somalia were sensitive to Chloramphenicol.

## 4 Response to the outbreak

On 28 May 2007, upon the request of the Ministry of Health and Labour (MOH&L) in Somaliland, the WHO Somalia senior medical Epidemiologist conducted a field visit to Hargeisa in response to the ongoing AWD outbreak. During the mission different activities were conducted and the following is a summary and outcomes of these activities:

### 4.1 Hargeisa General Hospital

On the 29 May, WHO team visited Hargeisa General hospital. The AWD patients were treated in 2 separated wards, one for adults and one for children. At the time of the visit, there was no available information about the number of admitted patients in the hospital since the start of the outbreak. The team had to review all the registration records in both wards to be able to calculate and confirm the number of admitted cases. There was no standardized format for collecting the data, nor was there any regular reporting to the Ministry of Health surveillance officer.



Treatment of patients was not according to protocol. Patients were given unnecessary intravenous (IV) fluids, putting them at risk of ineffective IV therapy or the possibility of over hydration (pulmonary oedema).

Although UNICEF provided the hospital with 2 complete cholera kits, the hospital management complained of severe shortage of IV fluids (the calculated mean of litres required per patient is estimated at 10 L). The hospital staff mentioned that all the cases admitted to the hospital were severe cases and this might be an indicator about the weakness of the surveillance system and the under reporting of the cases as no more cases were reported from the different health facilities in Hargeisa.

There was little evidence of the use of Oral Rehydration Salts (ORS). Those patients that were provided with ORS therapy were not supervised by the health staff. No specific ORS corner was set up in the wards, nor a referral corner for triage of AWD patients. ORS and intravenous patients were all mixed up in the wards. These problems were addressed and corrected on spot during the visit to the hospital. The use of antibiotics was acceptable, however some shortage of antibiotics was observed.

There are 9 staff members working in the hospital laboratory, all of them are well trained and data of the laboratory results is computerized and most of the equipments are functional. However, shortage of reagents and supplies were reported by the staff. WHO has provided adequate reagents and supplies to fill the gap.

### 4.2 Hargeisa main water supply treatment centre

The main water supply treatment centre in Hargeisa is approximately 40 kilometres from the town. Due to the distance, a booster station is located in the middle, approximately 20 km from Hargeisa. WHO team paid a visit to the booster station.

During the visit water testing showed that the storage tanks of the water supply treatment centre were slightly chlorinated. However, there was no evidence of chlorine in the tap water.

No regular monitoring visits are paid to the booster station to follow up on the chlorine status. Although UNICEF provided the booster station with sufficient amounts of chlorine, there was no evidence of frequent chlorination.

The main two tanks were not protected and not clean. The yard of the booster station was filled with animal excreta and cows were drinking from the water points.

**The team conducted on the spot training on proper chlorination methods and techniques and by the end of the visit, both tanks were chlorinated.**

Regular visits will be scheduled by the WHO environmental health officer from now on.



### 4.3 Hargeisa main garbage dump

The main garbage dump area is located 11 kilometres from Hargeisa town, a wide area which is filled with garbage of all kinds. The garbage location is nearby the river, which is the source of drinking water of different parts in Hargeisa town. The risk of water contamination after the rainy season is very high. There is no specified area to dump the garbage and the odour of the entire area is very bad. The garbage attracts different type of animals and birds posing major threats to the public health in Somaliland.



**A meeting was held with the Municipality of Hargeisa, and a proposal for garbage collection was developed to conduct a clean up campaign in all Wogooyi Galbeed districts (I/Koodbuur, G/Libaah, A/Dhagah and M/haibe). The proposal includes door-to-door garbage collection, road side collection and transfer point collection of the garbage. The campaign is scheduled for late June. WHO and UNICEF will financially support the campaign together with the municipality in Hargeisa.**

### 4.4 Enhance surveillance system in Somaliland

In a meeting with the Director General of Health in Somaliland, the current surveillance system was discussed together with the outbreak response. It was clear that there were serious delays in reporting, as according to the available data, the outbreak started in Burao late March 2007, however the system was unable to identify the outbreak. Also, there was no information available on the number of cases in Burao and Borama.



Although the first laboratory confirmation of the cholera was in March 2007, response to the outbreak was delayed. The surveillance officer did not visit the affected area to confirm the diagnosis.

In order to enhance the MOH&L capacity for surveillance and outbreak response, a proposal was developed to establish, deploy and expand the current sentinel surveillance system to cover all functioning health facilities in the 3 regions of Somaliland. The proposal includes developing and revising forms and guidelines for communicable diseases under surveillance; the standardizing case management protocols and thresholds for epidemic response; the conducting initial and refresher training for MOH&L and NGOs staff on data collection and registration, case definitions, filling forms and reporting for the surveillance system; printing, translating and distributing guidelines, data collection forms and surveillance standards; the recruitment of essential staff; as well as monitoring and evaluation. WHO will be funding the project. Currently, the WHO/CSR medical officer is in Hargeisa to follow up on the implementation of the proposal.

#### 4.5 Buffer stock and supplies

Save the Children is working closely with the Ministry of Health and other agencies on many fronts, including provision of supplies and training of health workers. The agency supported primary health care centers throughout the district with fluids and ORS and set up additional rehydration centers in key affected areas. One key isolation center was set up for the management of severe cases. Trainings were also conducted for doctors and nurses on monitoring and treatment of cholera cases. In addition, chlorine was provided to clean water sources, including shallow wells. Chlorine was also provided at the household level, and awareness raising campaigns were held within communities on the importance of sanitation measures, such as hand washing, boiling drinking water, and basic food hygiene.

In the response to the outbreak, UNICEF provided 4 complete Cholera kits to Somaliland, 1 kit to Borama on 01 February, 2 kits to Hargeisa on 5 April and 17 May, and 1 kit to Burao on 23 May. UNICEF is supporting the water chlorination activities and 9 drums of chlorine have been distributed to the affected areas between 28 March and 5 June 2007.

WHO provided the 3 affected regions with drugs and supplies including antibiotics (erythromycin syrup and 3000 tablets and 19 000 Doxycyline 100 mg). WHO donated 3465 litres ringer lactate as well as 3800 Oral Rehydration Salts (ORS) sachets.

WHO also provided the health facilities and hospitals in the 3 regions with disinfectants, chlorine, cotton, gloves, cups and containers for ORS, feeding tubes, nasogastric tubes, hand soap, IV, cannula of different sizes, scalp of different sizes, and 6 spray pumps.