WHO Somalia P.O. Box: 63565 - Nairobi, Kenya - wroffice@nbo.emro.who.int - T: +254 20 7623197/8/9 and +254 20 7622840
For Technical Information; Dr. Hammam El Sakka, elsakkah@nbo.emro.who.int Mobile: +254 73 666 1111

Unprotected water well, Merka town, Lower Shabelle region. Photo: WHO Merka

Laboratory Confirmed Cholera Outbreak, Merka town, Lower Shabelle Region, Somalia.

25 September 2008

Introduction

In May 2008, WHO Somalia implemented Disease Early Warning and Response System (EWARS). Reporting sources include hospitals, MCHs Health Posts as well as functional MOH facilities. Overall, there are 32 reporting sites representing the 8 districts in Lower Shabelle Region. The total population under surveillance in Lower Shabelle region is estimated at 845,651.

The MOH and WHO have established a priority list of 22 diseases and have identified and trained reporting health facilities throughout the region. MOH and WHO staff are collecting surveillance data using standardized EWARS forms on weekly basis.

The overall objectives of the EWARS system are: to ensure timely detection response and control of outbreaks; to monitor the trend of communicable diseases in order to take appropriate public health actions and; to estimate the workload of different health units involved in the system to rationalise resource allocation.

Since the start of the EWARS in the epidemiological week 21 (May 2008), a total of **5,725** diarrheal diseases cases with **25** related deaths (**CFR 0.44%**) were reported from Lower Shabelle region[1]. Overall, Merka district reported **54%** (3089/5725) of the total diarrheal cases and 68% (17/25) of the related-deaths.

Lower Shabelle is an administrative region in southern Somalia, the capital is Merka. Its bordered by the Somali regions of Banaadir, Middle Shabelle, Hiiraan, Bay and Middle Juba, and the Indian Ocean.

The Region consists of 8 districts, namely Afgooi, Barawe, Janale Kurtunwarey, Merka, Qoriyoley, Sablale, and Walaweyn.

After Mogadishu, this is the most populated region in Somalia.

On 13th August 2008, the EWARS detected an increase of acute watery diarrhea (AWD) cases in Merka district. The AWD cases were reported from Merka General Hospital and New Way MCH in Merka town. An outbreak investigation team was sent to Lower Shabelle region with the following objectives: to verify existing information of an ongoing AWD outbreak; to evaluate the AWD situation on the ground and

[1] Between 1st January and 30 June **2007**, a total of 6,211 AWD cases including 252 related-deaths (**CFR: 4.06**) were reported form Lower Shabelle Region with overall attack rate of **0.89** per 100 person.

identify crucial intervention needs; and to provide technical and material support for *COSV* and *New Way* already managing the AWD situation.

Results and Analysis

Between 13 August and 24 September 2008, a total of 329 cases of acute watery diarrhoea including 4 related-deaths (CFR: **1.22%**) were reported from Merka hospital. Sixty-three percent (63%) was less than 5 years old (207/329). Fifty-one percent (51%) (167) were males.

Reviewing the hospital records revealed that 51% (166/329) were from Holwadaag village, 25% (83) from Horseed Village, and 20% (66) from Wadajir Village. The remaining 4% of the cases were from other villages around Merka town. All the affected villages are situated less than 5 kilometres from Merka town.

The daily distribution of acute watery diarrhea cases and related-deaths reported from Merka hospital is shown in figure 1.

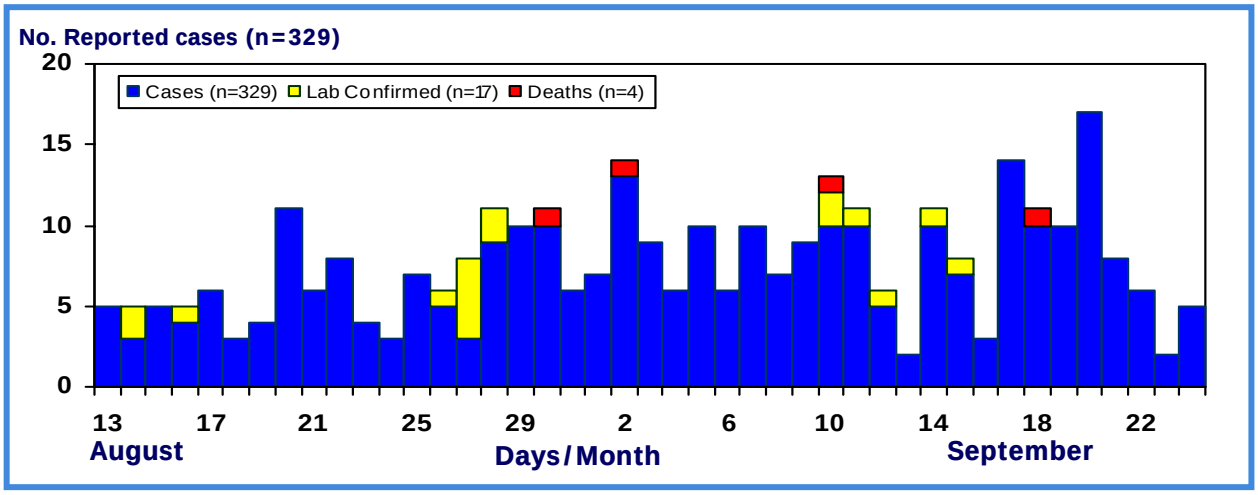

Figure 1. Daily distribution of reported clinically diagnosed, Laboratory confirmed Cholera cases and related-deaths , Merka Hospital, Lower Shabelle Region, Somalia, 13 August-24 September 2008.

Laboratory Confirmation

Between 18 August and 19 September 2008, a total of 22 stool samples were tested by AMREF laboratory in Nairobi, Kenya. Of these, 77% (17/22) were positive for ***V. cholerae*** serogroup O1, serotype ***Inaba***. All the samples were collected from the Cholera Treatment Centre in Merka Hospital[2] in Lower Shabelle region. Overall, the mean age of positive samples was 19.5 years, ranging from 1.5-70 years. Fifty-three percents (9/17) were females. The antibiotics sensitivity test showed 100% of the isolated ***V. cholera*** was resistant to Nalidixic Acid and Cotrimoxazole while sensitive to Tetracycline. The laboratory and the drug resistance results of the isolated ***V. Cholera*** is shown in table 1.

[2] Three out of 10 stool samples collected from **Merka Hospital**, 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*[2]*.* 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.

Table 1. Laboratory Confirmed results and Drug resistance, Merka Town, Lower Shabelle region, Somalia 18 August-19 September 2008.

Date	No. tested	Confirmed	Results	Antibiotic Sensitivity Test		
			Organism/ Serotype	Cotrimoxazole	Nalidixic	Tetracycline
18/08/200	4	3	*V. cholera Inaba*	Resistant	Sensitive	Sensitive
29/08/200	8	8	*V. cholera Inaba*	Resistant	Sensitive	Sensitive
19/09/200	10	6	*V. cholera Inaba*	Resistant	Sensitive	Sensitive
TOTAL	22	17	*V. cholera Inaba*			

Outbreak Response Activities

1. Establishment of Cholera Task Force:

A Cholera task Force was established in Lower Shabelle with the main objectives to coordinate the efforts to reduce the impact of the outbreak; reduce the case fatality rate; and to prevent the outbreak of spreading outside Merka Town. Task force meetings are held on a weekly basis.


Task Force meeting, 14 September 2008

To achieve the above objectives the task force focuses on: (1) case management; (2) chlorination of water sources; and (3) community based social mobilization. Task force leads were chosen for different tasks: *WHO*, *COSV* and *MDM* for case management; *UNICEF* and *COSV* for water chlorination; and *UNICEF*, *COSV*, *New Way*, *IIDA* and *Ayuub* for community based social mobilization.

2. Meeting with the Regional authority:

On 14th September, WHO met with the regional governing authorities, represented by the Regional Coordinator for Relief and Humanitarian Affairs. WHO requested for the collaboration of the local authorities in concurrent all water source chlorination and facilitating the implementation of community-based diarrhoea preventive activities. These activities mainly include social mobilization and health promotion, using all possible means such as local broadcast media and religious centers. The relief coordinator asserted his full agreement with the suggested interventions and granted his full support.

3. Case Management:

The AWD trend showed an increase since the start of the outbreak on 13th of August 2008. As of 24th September 2008, 329 cases have been admitted with moderate to severe dehydration, 4 related-deaths of patients less than 5 years of age. One of the patients died upon arrival to hospital, due to delayed referral.

From 19th to 24th of September, an average of 12 patients is admitted every day. Merka is divided into three main areas: Howlwadag, Horseed; and Wadajir. These areas account for 51%, 25% and 20% of CTC admissions respectively.

COSV and *MoH* CTC staff has demonstrated high competence and managed to keep the case fatality rate within 1 per 100 cases. Assessments of AWD case management principles and practice sessions were conducted by *WHO* for Merka Hospital CTC and New Way MCH staff. Based on recommendations from the assessment, trainings in cholera case management were initiated using WHO guidelines and treatment protocols. One doctor, six nurses, one midwife, one lab technician and four auxiliary staff attended the two sessions.

WHO provided supplementary case management supplies to New Way MCH, including intravenous fluids and oral antibiotics. Almost 40% of all AWD cases reported had been referred from New Way MCH. Additional supplies and drugs were given to the CTC (see table 2).

Table 2: SUPPLIES provided to MERKA HOSPITAL

Item	Quantity
Aquatabs, 8,5 mg 1 liter tablets	5000
IV Ringer Lactate 1 liter, 10/ box + Infusion sets	5
Doxycycline 100 mg, capsules	1000
Erythromycine 125 mg/ ml Syrup	600
IV Canula G16	5
IV Canula G18	5
IV Canula G22	5
IV Canula G24	5
IV Scalp Vein Needles G21	10
IV Scalp Vein Needles G25	5
Non-sterile Gloves 100 pcs/ box	2
Zinc Oxide tapes 5m	5
Foldable 20 it containers with Tap	2
Plastic Buckets, 10 liter	2

WHO and *MDM* continue daily monitoring of the evolution of case management activities at the CTC. *MDM* pre-positioned 2 additional cholera kits to be used if necessary.

4. Water sources and Chlorination:

There are more than 100 private wells in Merka Town, most of which are unprotected (see picture). Due to the fact that the inhabitants are requested to pay 500 Somali Shillings per jerry can to get water from the private wells, part of the population is using different shallow unsafe water collecting points. Residents reported that neither water sources were ever chlorinated. However, the majority of the inhabitants still use the water for domestic use, as well as for their animals.


Unprotected water collecting point, Merka

Although the number of diarrhoea cases is alarming, with a high risk of the outbreak spreading outside Merka town, preventive measures have not been fully implemented. Of 54 major water sources surveyed *WHO* in the past 8 days, only 10 had residual chlorine traces (all <0.1 mg/ liter), even though *UNICEF* had widely supplied HTH chlorine powder.

Chlorine tests were performed using Visocolor®ECO Chlor2 (Macherey-Nagel Gmbh & Co. KG, Germany) which measures both total and residual chlorine. In the given wells, even total chlorine levels were too low, suggesting inappropriate chlorine dosing to the wells[3].

Visocolor®ECO Chlor2

Over 95% of the wells that have been chlorinated were never cleaned before the initial chlorination. The permanent water troughs used by the community to collect water, are polluted with algae and floating macro particles which are also likely to reduce the quality of chlorination attained during dosing sessions. Discussions with some well owners

[3] a listing of randomly surveyed wells in Merka Town is attached as Annex1

on chlorination procedures also indicated drastic dosage miscalculations due to the fact that the overall water yield was never measured to provide a near correct estimate.

5. Household drinking water Chlorination:

WHO is providing Aquatabs for 14 days (280 tablets/ patient for 20 liters drinking water per person per day) to be distributed to all patients discharged from the CTC. Another 540,000 have been provided to *COSV*, *IIDA*, *Ayuub* and *New Way* for distribution to the community alongside social mobilization.

These activities started in the week of September 16, in response to the lack of community based household drinking water chlorination activities, with exception of the CTC. *WHO* will be able to provide up to 2.7 million litres in the next week.


Water distribution point, Merka Town

6. Social Mobilization:

Ayuub, *IIDA*, *COSV* and *New Way* trained 3000 women (25% of all households in Merka) on AWD, and provided nine core messages in Somali. The messages were developed together with/ sponsored by *UNICEF* and are covering three categories: (1) personal hygiene; (2) environmental hygiene; and (3) food hygiene. Leaflets used during the training were also distributed (all translated to Somali). However, the training participants were never informed to actively share the health messages. As a result, there has been no active inter-community social mobilization except for those households.

Annex 1 showed that no community mobilization has been done so far. WHO suggested that social mobilization should be coupled with the distribution of Aquatabs.

Urgent Action Recommendations

- To provide medical supplies to the Merka Hospital CTC and New Way MCH (**done**).
- To enhance the active case finding to detect any suspected cases outside Merka town (**ongoing**).
- Distribute HH chlorination in Merka Town (**ongoing**).
- Conduct refresher course on AWD case management including WHO recommended case definition, data registration and reporting tools to decrease the case fatality (**done**).
- To Train staff and community and mobilize them to detect and report/refer cases of AWD fitting the case definition as early as possible (**ongoing**).
- To chlorinate the main water sources in Merka and be sure that standardized residual chlorine level.
- Intensify health/hygiene promotion activities to improve population awareness and practice in relation to AWD e.g. hand washing, proper disposal of human excreta and use of clean and safe drinking water.

Annex1: Random assessment outcomes to determine chlorination of wells in correlation with social mobilization activities:

14.09	Well Name	Chlorine today	Residual chlorine	Social mobilization
1.	Horseed – El Farey	No		No
2.	Horseed – Mad Jura	No		No
3.	Horseed – Magaro	No		No
4.	Horseed – Hargaant	No		No
5.	Howlwadag – El Shidane	Yes		No
6.	Howlwadag – El Adoomoow	Yes		No
7.	Howlwadag – Cabdigaad	Yes		No
8.	Howlwadag – El Fayislaaw	Yes		No
15.09				
1	Howlwadag – El Shidane	Yes	< 0.1 mg/ liter	No
2	Howlwadag – El Adoomoow	No		No
3	Howlwadag – Cabdigaad	No		No
4	Howlwadag – El Fayislaaw	Yes	<0.1 mg/ liter	No
5	Howlwadag – Osman Shariff	No		No
6	Howlwadag – El Cumarey	No		No
16.09				
1	Horseed – El Magaro	No		No
2	Horseed – Xuseen Osman	No		No
3	Horseed – Cabdille A	No		No
4	Horseed – Adeerow	No		No
5	Horseed – Sh. Xasan Jiis	No		No
6	Howlwadag – Cabdule B	No		No
7	Howlwadag – Cabdigaab	No		No
8	Howlwadag – El Fayislaaw	Yes	<0.1 mg/ liter	No
19.09				
1	Horseed – Cabdille A	No		No
2	Horseed – El Jeele	Yes	<0.1 mg/ liter	No
3	Horseed – Sheikh Xasan	No		No
4	Horseed – Macali Maxamed	No		No
5	Horseed – Cabdille B	No		No
6	Horseed – Cabdille C	No		No
7	Horseed – El Magaro	No		No
8	Horseed – School Beder	No		No
9	Horseed – School Idirus	No		No
10	Horseed – Adeerow	No		No
20.09				
1	Howlwadag – Osman Shariff	Yes	<0.1 mg/ liter	No
2	Howlwadag – El Fayislaaw	Yes	<0.1 mg/ liter	No
3	Howlwadag – Adoomoow	Yes	<0.1 mg/ liter	No
4	Howlwadag – El Shidane	Yes	<0.1 mg/ liter	No
5	Howlwadag – El Cumarey	Yes	No trace	No
6	Wadajir – Shariif Bayti	No		No
7	Wadajir – Fariidey	No		No
8	Wadajir – Ceel Hindi	Yes	<0.1 mg/ liter	No
9	Wadajir – Masjid Awnuurow	No		No
10	Wadajir – Masjid Huddaano	No		No
11	Wadajir – Foolwayn	No		No
21.09				
1	Howlwadag – Osman Shariff	No		No
2	Howlwadag – El fayoslaaw	Yes	<0.1 mg/ liter	No
3	Howlwadag – El Cabdigaab	No		No
4	Howlwadag – El Adoomoow	Yes	<0.1 mg/ liter	No
5	Howlwadag – El Cumarey	No		No
6	Horseed – El Cabdille*	No		No
7	Horseed – Sheikh Maxamed	No		No
8	Horseed – El Magaro	No		No
9	Horseed – Ceelfarey	No		No
10	Horseed – Sheikh Xusseen	No		No