This week’s first WHO update of disease outbreak control provides the latest information on major diseases in the Greater Darfur.

The major health concern these past weeks has been the upsurge of Hepatitis E Virus affecting over a thousand people and killing 27 throughout Darfur.

Meanwhile ARI continue to remain the predominant cause of morbidity among <5 year children. Rumors of an outbreak of suspected malaria cases were reported throughout this past week due to an increase in the number of cases.

A significant step was made this week with the agreement made between UN Special Representative and rebels to allow vaccination against polio and measles in rebel controlled areas.

As a result of WHO’s support to the establishment of an efficient EWARN catchments of the surveillance system has improved from 28% to 34% of the camps known to exist and from 52% to 68% of the IDP population. WHO is currently working with the Federal and State MoH Ministry of health to improve on data flow and analysis of samples from the field to the National Laboratory in Khartoum for outbreak verification. A sensitisation meeting between WHO FmoH and Kassi Express and NGOs took place in Genina. Other meetings on the same issue are planned to take place in Khartoum, Nyala and El Fashir.

More refresher courses on surveillance throughout Darfur are being conducted with the support of WHO and the collaboration of FMoH and SMoH for medical doctors, medical assistants, community health workers, health inspectors, statisticians and epidemiologist.

Population under surveillance are all internally displaced population living at present in different conditions as established camps, informal camps and displaced people hosted by resident populations. Data is aggregated at administrative unit level. To calculate incidences, the denominator used is based on OCHA estimated population data. When data is not available for specific displaced population aggregation, ad hoc surveys are carried out to estimate denominators.

The EWARN system is still in its implementation phase, in the overall Greater Darfur region only 38 camps are at present reporting, and not all of them every week.

Inside this Issue

<table>
<thead>
<tr>
<th>Acute Jaundice Syndrome outbreak</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspected Malaria outbreak</td>
<td>4</td>
</tr>
<tr>
<td>Cholera vaccination campaign in Kalma camp</td>
<td>5</td>
</tr>
<tr>
<td>Measles cases on the decrease as a result of campaigns</td>
<td>7</td>
</tr>
<tr>
<td>More wild poliovirus cases found in Darfur</td>
<td>8</td>
</tr>
</tbody>
</table>

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Reducing Suffering & Saving Lives
Epidemiological situation

<table>
<thead>
<tr>
<th>Total number of deaths</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cases to date</td>
<td>1006</td>
</tr>
<tr>
<td>Total cases laboratory confirmed</td>
<td>23</td>
</tr>
</tbody>
</table>

Affected camps

**West**
- Al Geneina, Galado,
- Habillah, Mornei,
- Mukjar, Sirba, Zallingi

**South**
- Bilel, Kass Nyala,
- Nyala North, Shataya,
- Un Labasa

**North**
- Al Fasher, Al Fasher Rural, Fata Borno, Kabkabiya, Kutum, Tawila.

Current status

WHO and partners are scaling up efforts to reduce incidence of Hepatitis E virus in the Greater. Mass chlorination and aggressive hygiene promotion action, construction of latrines, provision of safe drinking water especially for pregnant women are being accelerated. UNICEF and WHO launched a health and hygiene education campaign from 28/07 to 31 August throughout Darfur focusing on children and women. WHO will continue to support the MOH for spraying of latrines in camps with locally bought insecticides.

Since the beginning of the outbreak in May 22 a total number of 1006 suspected cases and 27 deaths from acute jaundice syndrome were reported from health clinics and IDP camps in the Greater Darfur region in Sudan.

70% of the cases are female and the mean age is 24 years. Of the 8 deaths reported, 6 of them (75%) have occurred in pregnant women. The most commonly reported symptoms were jaundice, fever, abdominal pain, vomiting and coma without any hemorrhagic manifestation.

Hepatitis E virus (HEV) was confirmed by ELISA in 23 samples tested at the NAMRU3 laboratory in Cairo, Egypt. Suspected hepatitis cases have been reported from East, North and West Darfur but the highest incidence to date has been recorded in Morni IDP camp, West Darfur.

WHO was first alerted on increased cases on 24th of July by an Italian INGO (COOPI). The NGO reported 20 cases suspected to be Yellow Fever from 2 refugee camps Goz Amer and Djabal in Goz Beida district of Chad. 4 deaths were reported. 7 blood samples were taken for laboratory confirmation to CDC Atlanta, GA.

WHO conducted a field visit to Morni IDP camp, El Geneina locality to investigate/confirm the suspected acute jaundice syndrome cases in Morni and surrounding areas. Morni IDP camp, is about 75 Km (Approx 2.5 hours driving) from El Geneina (Capital city for West Darfur).

Morni camp is the biggest IDP camp in West Darfur State, the IDP was estimated to be around 71,000 (Source: HAC). The camp was served by 6 health clinics (3 clinics operated by Save the Children/US, 1 health Clinic by the Islamic African Relief Agency, 1 run by the State Ministry of Health and 1 by MSF-France).

MSF-F established with FMoH a field hospital to admit severe clinical cases. To date there’s still no laboratory in the hospital or any other clinics.

Actions Taken

Strengthening surveillance activities through active case finding in Morni camp and other IDP camps, daily reporting of Acute Jaundice Syndrome cases and deaths to SMoH and WHO. Establishment of a task force set up at WHO and chaired by SmoH participated by FmoH, SmoH, WHO, WES and NGOs involving in healthand water and sanitation sector). An Emergency coordination meeting with health partners and WES held daily at WHO office.

Improvement of Environmental Health Sanitation with the organization of a clean-up campaign, now on-going in every camp. Insecticide spraying of households for vector control. A rodent control campaign is being planned.

Health and hygiene education is been strengthened with the training and activation of 70 health and hygiene promoters for home visiting to spread health messages. Provision of 73 000 bars of soap in Morni camp with the support of UNJLC.

To ensure safe water supply, 200,000 tablets of chlorine were provided for the chlorination of water taps and were distributed at household level. Provision of two water bladders in Mornicamp, of 1,5 L water container for each household and ensure water chlorination of water tanks.

Ensure the availability of supplies for case management of Hepatitis E by making available intravenous fluids in all reporting sites camps and health facilities.
Drinking water source: contaminated wells in Darfur (Mornei camp) WHO 2004

The Hepatitis E Virus Syndrome outbreak is a consequence of the inadequate and unsafe water supply and poor sanitary conditions the Darfur population has experienced during this crisis. Despite important efforts by international organizations, existing resources are insufficient to cover the basic needs of the IDPs. Without an immediate improvement in access to safe, clean water and better sanitation in these camps, the disease could spread rapidly and lead to increased mortality.

HEV is a waterborne disease usually transmitted by faecally contaminated water that can provoke major outbreaks in settings with poor sanitation. Refugees and IDPs residing in overcrowded camps are at highest risk of disease. Case fatality rates can vary from 1 to 4%, but may be as high as 20% in pregnant women who are more susceptible to severe forms of the disease.

WHO is conducting additional field investigations to focus current outbreak control measures, to better understand the epidemiology of HEV transmission in IDP and refugee camps and to elaborate specific recommendations for prevention and control of future HEV epidemics in such settings.

Coverage by WHO of wells in camps to prevent further water contamination in Darfur camps.

Geographical Distribution of Hepatitis E Cases
Greater Darfur, Sudan, 2004

Children playing with contaminated water
Malaria

The number of malaria cases is on the increase according to statistics provided by WHO through the Early Warning System it helped establish in Sudan. Between 3 July to 6 August 2004, a total of 104859 cases were reported through the Ewarn System of which 18% were clinically diagnosed malaria cases.

The World Health Organization, sister agencies, FMoH and NGOs are collaborating in a vector control campaign to curb the transmission of malaria in IDP camps throughout Darfur.

Plans are to spray in Tawilla and Zamzam. However this strategy is impossible to be practices in areas where plastic sheeting is widely used asin Abu Shoak.

The campaign spearheaded by the Federal Ministry of Health was implemented in camps as local epidemics with high mortality may occur among vulnerable displaced populations due to overcrowding, the lack of adequate housing and preventive measures resulting in increased exposure to mosquito bites, and reduced access to effective treatment.

In case of epidemics WHO implements appropriate and timely planned, targeted and cost effective vector control that will contribute to reducing the risk of infection and save lives including prompt and effective diagnosis and treatment with artimisinin-based combination therapy (ACT) to contain the spread of the disease.

WHO recommended Malaria treatment guidelines and the new national drug policy were recently reviewed and discussed with the participation of NGOs. The treatment guidelines are now available and posted in all health centers.

Epidemiological situation from 2 July to August 15, 2004

<table>
<thead>
<tr>
<th>Total number of deaths</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cases to date</td>
<td>6993</td>
</tr>
<tr>
<td>Number of malaria cases in 2001</td>
<td>Reported: 4,250,000 (only 371,633 laboratory confirmed) Estimated: 7,500,000</td>
</tr>
<tr>
<td>N. of estimated deaths per year</td>
<td>35,000</td>
</tr>
</tbody>
</table>

80% of the Sudanese population lives in malaria endemic prone areas. In the Sudan the risk of malaria - predominately due to Plasmodium falciparum (95% of malaria cases) - exists all year round in the entire country. However, the magnitude of the problem varies in different areas. The risk is low and seasonal in north, higher in the central and southern part of the country. It is very limited on the Red Sea coast.

In Greater Darfur the risk is low as malaria is mainly seasonal but the endemicity varies and may increase as you go down southwards where it becomes meso to holo endemic. People with little immunity to the disease like IDPs and who live near permanent water bodies face death all year-round and at all ages, with children, pregnant women, malnourished people and patients with concurrent infections most at risk.

Flooded areas in Kalma camp place millions at risk of contracting malaria
WHO and implementing partners SMOH, UNICEF, MDM-F, Care, IRC and NCA have just concluded the second round of a vaccination campaign against cholera in Kalma camp.

This second round against cholera started on 6th August. On day one 13 400 people received the vaccine. 38% of them were children under 6 years age group. Residual doses should be used to cover a small camp (Mussei).

The first round of the Oral Cholera Vaccination (OCV) campaign was completed on 25 July in Kalma camp with 42,000 people vaccinated. MDM assisted in the campaign, covering the area/sector where their clinic is located.

In camp situations, diarrhoeal diseases can account for between 25% and 40% of deaths in the acute phase of an emergency. Over 80% of deaths usually occur among children under 2 years old.
Security tensions within Kalma camp and heavy rains were the two major constraints of the second round of the cholera campaign in South Darfur.

Because of tensions brewing in the camp organizers were compelled to delay the campaign by one day.

Rains flooding the camp forced internally displaced populations living in makeshift shelters to relocate themselves and occupy dryer areas. Also the rains compelled many to remain in their shelters.

This situation drove campaign managers to rethink their outreach strategies and redistributed the vaccination teams. Increasing mobile teams to reach those IDPs who stayed home and those displaced within the camp.

WHO provided 103,800 doses of Cholera Vaccine sufficient for two doses for 50,000 people.

Cholera kits were distributed in South Darfur according to expected case load to Kass, Dagadussa, Um Kaddada, Kubum, Edel Fursan and Kalma. All supervised by WHO-Nyala.

The cholera campaign was organized by WHO as preventive measure as Sudan is prone to cholera outbreaks with higher incidence during colder months such as from December through April.

Implementing an immunization campaign against cholera in an emergency situation as the one faced today by Darfur is more than challenging logistically.

Volumes of vaccines and water requirements for the vaccination are enormous and heavy on transportation from warehouse to the camp.

WHO provided 103,800 doses of Cholera Vaccine sufficient for two rounds targeting 50,000 people in Kalma camp.

Social mobilizers just about to start sensitization in Kalma camp.

Rains are now pouring on a daily basis in Darfur and hampered vaccination.
Measles

There are still reported cases of measles in Darfur despite the organization of several campaigns in the region. Difficulties in accessing areas controlled by rebels is one consequence as children are missed during campaigns.

The latest agreement between the UN Special Representative for Sudan, WHO and UNICEF with two rebel movements this month will contribute considerably to the reduction of the continued prevalence of the disease in Darfur.

The EPI program in collaboration with partners including WHO and UNICEF implemented vaccination campaigns in 5 states in the first half of 2004 following reports of ongoing measles virus transmission in the region.

To achieve a substantial reduction of morbidity and mortality due to measles in the Darfur Region the programme targeted 2,170,985 million children 9 months to 15 years old. 2,008,202 children were vaccinated against measles giving a total coverage rate of 93%.

Due to the widespread malnutrition and low polio vaccine coverage, it was decided to supplement the children under 5 years old with vitamin A and polio vaccine in risky areas.

Training courses for the personnel that participated in the campaign were organized and focused on: Injection safety and proper disposal of injection materials, vaccine and cold chain management, monitoring and management of adverse events following immunization (AEFIs), social and resource mobilization, Strengthening routine immunization for the target age group, measles case based surveillance, OPV and vitamin A supplementation.

The campaign manpower required was 6259 vaccinators, 522 team leaders and 711 supervisors distributed in the three Darfur states. The vaccination sites included 500 fixed centres, 1,088 temporary posts and 189 mobile teams.

Epidemiological situation as of August 15 2004

<table>
<thead>
<tr>
<th>Total number of deaths</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cases to date</td>
<td>89</td>
</tr>
<tr>
<td>Next round of measles</td>
<td>Around August 28 2004</td>
</tr>
</tbody>
</table>

Measles is the third cause of infant mortality in Sudan and the first cause of mortality among the vaccine preventable diseases. Measles vaccine was introduced into the expanded program on immunization in 1985. Since the introduction of measles vaccine, coverage rate has increased from < 20% in 1986 to an average of 70% in 2003. Prior to the introduction of vaccine, the country experienced large nationwide outbreaks on a regular basis with 50 to 75,000 cases and 15,000-30,000 deaths annually.

EPI vaccination services have been negatively impacted by the conflict in Darfur. In 2003, vaccination coverage for measles was 46%, 77%, and 57% respectively in North, South, and West Darfur respectively.

The recent ceasefire agreement has improved access for MOH staff and the campaign for measles provided a venue to increase access to the displaced populations including some populations living in the rebels-controlled areas.
Poliomyelitis

Epidemiological situation as of August 15 2004

<table>
<thead>
<tr>
<th>Total Wild polio cases confirmed by laboratory (National Lab in Khartoum, Cairo and CDC/Atlanta) (From these 5 only 3 have been completely sequenced)</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>West Darfur</strong></td>
<td>1 confirmed imported wild polio</td>
</tr>
<tr>
<td><strong>South Darfur (Kass location)</strong></td>
<td>1 confirmed wild polio-Origin of the viruses: Nigeria</td>
</tr>
<tr>
<td>2 wild poliovirus are still under investigation at CDC Atlanta</td>
<td>1 confirmed wild polio virus case. Origin of the virus: Sudan</td>
</tr>
<tr>
<td><strong>West Kordofan</strong></td>
<td></td>
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</table>

Representatives of two rebel movements in Darfur, the Sudan Liberation Army (SLA) and the Justice and Equality Movement (JEM) have agreed to allow the vaccination of children against polio and measles following a meeting with UN in the Eritrean capital of Asmara on Friday 6 August 2004.

Around half a million children living in rebel controlled areas are missed out during vaccination campaigns. WHO and UNICEF under the umbrella of the UN are now planning to vaccinate the remaining children against measles and polio, and administer vitamin A drops around August 28.

Security is still a major constraint in the vaccination of children. Despite the agreement, Secretary General Kofi Annan Special Representative for Sudan "expressed concern about the lack of progress registered so far on the ground and at the fact that the Janjaweed militia was still active around the IDP camps and continued to be a threat."

A mop-up campaign in response to earlier detected polio cases was conducted on July 27th, covering more than a million children under 5 years of age.

The next rounds of NIDs 2004 will be conducted in. Meanwhile Sudan will participate in Synchronized NIDS with 22 african countries to take place in October and November 2004.