

Update on Gulu meningitis Outbreak

1. Introduction

Gulu, one of the five conflict affected districts of northern Uganda which lies in the “African meningitis belt” started reporting suspected cases of meningitis from mid January 2006. Over 90% of Gulu population live in internally displaced peoples (IDP) camps where overcrowding, poor hygiene and lack of access to good healthcare services predisposes to outbreaks of epidemic diseases. Hot and dusty dry seasons and high rates of acute respiratory infections also amplify the risk of epidemic meningococcal disease outbreaks whilst population movements (travel, migration and displacements) facilitate fast spread of the disease between areas. As at 6th March, a total of 30 suspected (14 confirmed) cases and 6 deaths have been reported in the district. The rising number of suspected cases of meningitis in Gulu district which comes against the backdrop of the recent meningitis outbreak in Nakapiripit District that started in December 2005 and intensified in early January 2006 heightened the suspicion of a possible big outbreak in the district. Nonetheless, no epidemiological linkage has been established between the cases in Gulu and those in Nakapiripit.

In response to the increasing number of suspected cases of meningitis, WHO in collaboration with other partners supported the DHT to institute appropriate control measures. This short update describes the evolution of the outbreak and the steps taken to control it so far.

2. Response to the increasing number of meningitis cases

Given that the cases were initially sporadic, the following preparedness and response activities were put in place to monitor the progression of the disease, ensure prompt detection and appropriate treatment of cases and educate the public about the disease.

2.1 Improved Co-ordination

A Meningitis Technical Working Group comprising of health personnel from all the government departments and agencies sitting in the Health and Nutrition Coordination Committee was formed. The working group which is co-chaired by the Gulu DDHS and WHO meets daily and is responsible for the overall technical management of the epidemic.

2.2 Strengthening of the Disease Surveillance System

- i. Daily active case searches and review of data in the major hospitals and health facilities and community follow-up of cases by the WHO NPOs and district surveillance focal person (DSFP) and a daily surveillance report (with line list) is written and disseminated to all partners by the WHO Gulu sub-office on a daily basis.
- ii. Provision of airtime to the DSFP to facilitate timely and daily collection of data from the health facilities that are far from the municipality

2.3 Case Management

- i. Two hundred doses of oily chloramphenicol were procured by WHO and rapidly pre-positioned at the WHO Gulu sub office. Some of these were distributed to Lacor and Gulu referral hospitals in Gulu town.
- ii. WHO facilitated the training of 48 health workers drawn from 40 peripheral health units and 18 health workers from Gulu Regional Hospital on meningitis case detection and management.
- iii. Lacor Hospital was facilitated to carry out a continuing medical education (CME) exercise on meningitis, involving about 60 clinical and nursing staff.

- iv. Provision of fuel to facilities to facilitate referral of patients from the peripheral health facilities in the rural areas to the referral centres in the municipality
- v. Production and distribution of the national guidelines on epidemic response to meningococcal meningitis outbreak to all health facilities.

2.4 Laboratory Diagnosis

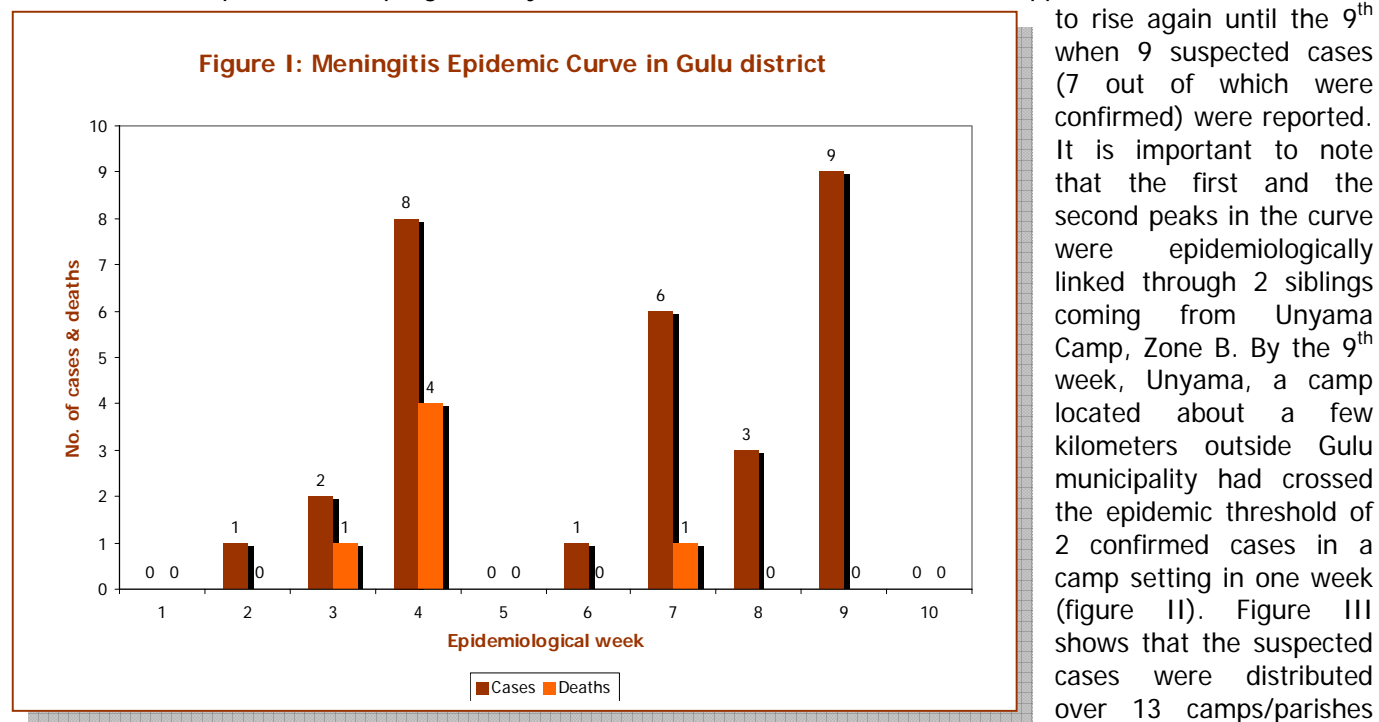
- i. WHO purchased and delivered one electric microscope and assorted laboratory supplies to Gulu Hospital.
- ii. Laboratory personnel from Gulu Regional and Lacor Hospitals were trained on performing Latex test by the laboratory technologist from CPHL, Kampala.
- iii. WHO provided one kit each of Latex Agglutination Test to Gulu Regional and Kitgum hospitals.
- iv. WHO is covering the costs of culture and sensitivity test of specimens at Lacor Hospital and transportation of specimen from Gulu to Kampala for further testing serotyping

2.5 Social Mobilization

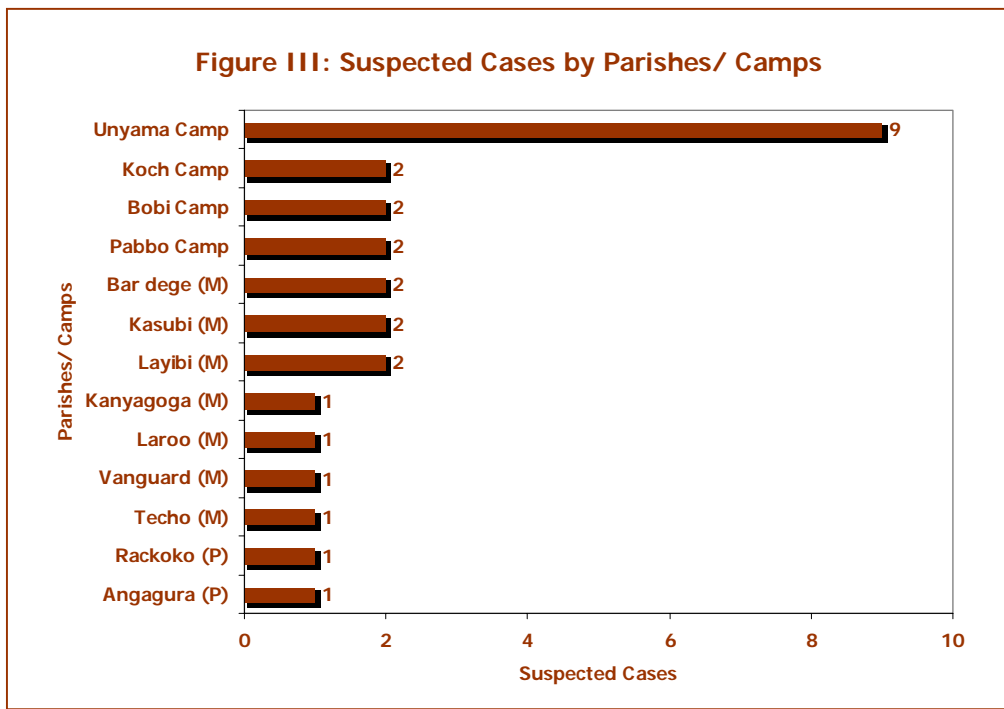
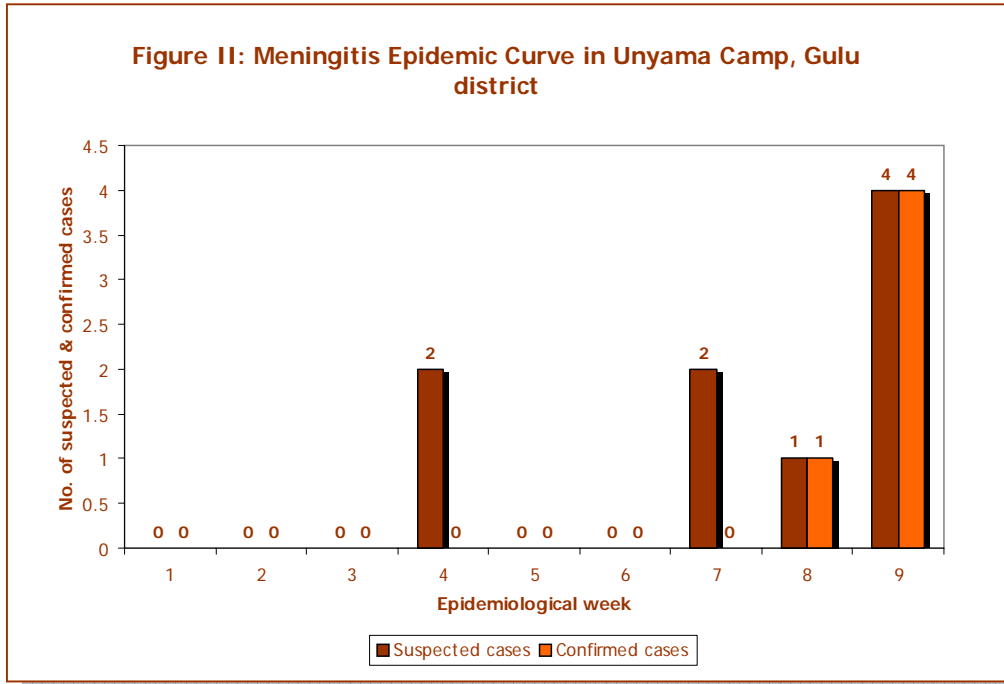
- i. UNICEF is supporting the production and airing of radio messages on meningitis through various local FM radios
- ii. UNICEF supported the district to put a school health programme in place have been put in place
- iii. Plans are underway to train community resource persons (CORPs) in order to institute community surveillance.

3. Progression of Suspected Cases of Meningitis in Gulu District

On going active surveillance data showed that Gulu District started reporting suspected cases of meningitis in the 2nd week of January 2006. The first suspected case was registered on the 13th January 2006, admitted in Gulu Regional Hospital. By the end of February, a total of 30 cases presenting with features of suspected meningitis had been reported. The epidemiologic curve showing progression of suspected cases is shown in Figure 1 below. The number of reported cases progressively increased until the 5th week when it dropped to zero. It then started



with most of the cases (30%) coming from Unyama camp. It is important to note that 5 of the 6 suspected cases reported in the last 3 epidemiological weeks emanated from Zone B of Unyama Camp. Community follow-up also established epidemiological link between one of the confirmed case from the municipality to Unyama Camp, Zone B.



Up to the end of the 9th week, a total of 14 cases of meningococcal meningitis had been laboratory confirmed. The distribution of the confirmed cases by the epidemiologic weeks is shown in figure IV below. The first confirmed case was reported in the third week. No confirmed cases were reported in the 5th and 6th weeks whilst the confirmed cases rose from 2 in the 7th week to 7 in the 9th week. Of the 7 confirmed cases in the 9th week, 4 were from Unyama camp. Figure V shows the age distribution of suspected cases indicating that that a sizeable percentage of the cases (about 37%) are outside the usual age group affected by meningitis during epidemic conditions.

Figure IV: Laboratory Confirmed Cases of Meningitis in Gulu District

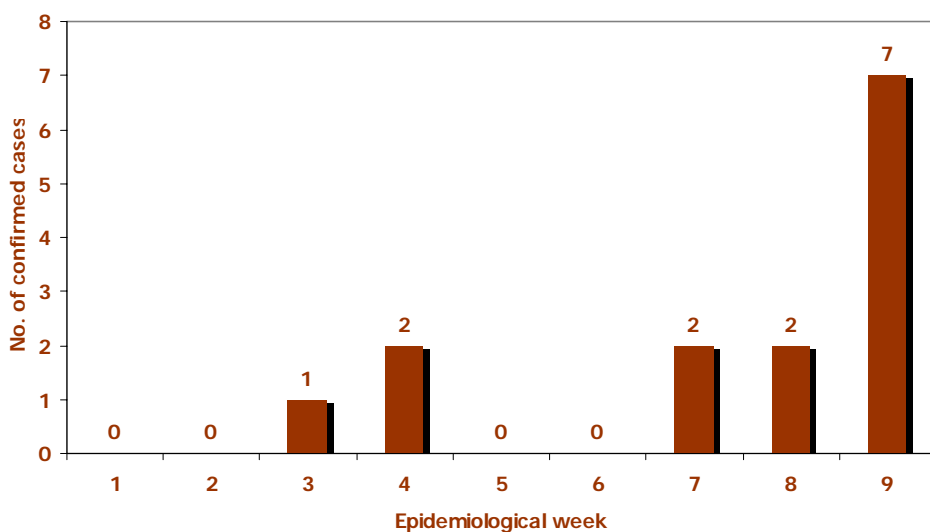
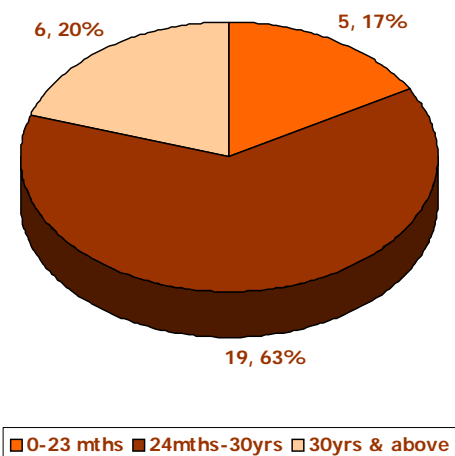
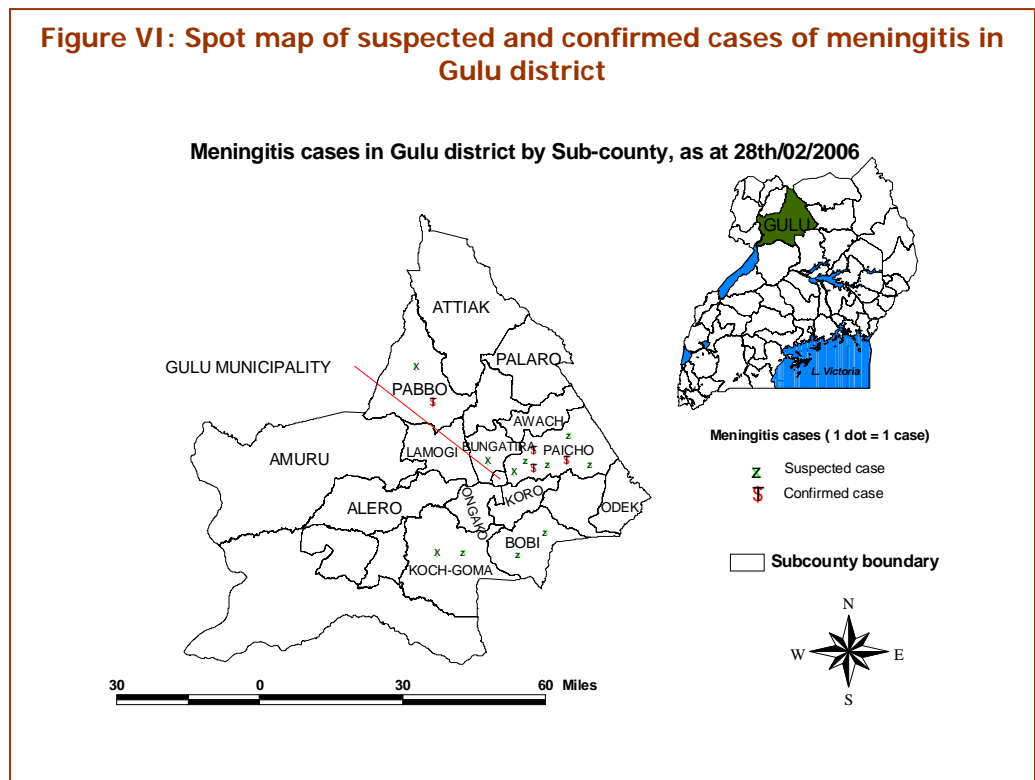


Figure V: Age Distribution of Suspected Meningitis Cases in Gulu district



Most of the suspected cases had their CSF taken and had gram stain, latex agglutination test and culture done on them. Serotyping of the cases showed that a mixed epidemic of type A and W135. The culture result of some of the cases performed at Lacor Hospital showed *Neisseria meningitidis* serogroup W135. However, analysis conducted at the central public health laboratory (CPHL) in Kampala indicated *Neisseria meningitidis* Type A. Another inconsistent result was that of a patient where gram staining showed *gram negative diplococci* while the latex test indicated *Strep. Pneumoniae*.

Figure VI: Spot map of suspected and confirmed cases of meningitis in Gulu district



4. Conclusions and Lessons Learned

- i. Unyama camp, which is located on the outskirts of Gulu municipality crossed the epidemic threshold in the 9th week and a decision has been taken to start mass vaccination campaign in this camp. Gulu municipality and the other camps who have reported cases during this outbreak have also been targeted for mass vaccination in order to raise the herd immunity bringing the total target population to about 310,000. The target age group for the mass vaccination campaign was expanded to 2-45 years of age because the epidemiological data (figure V) above indicates that a sizeable percentage of the cases are outside the traditional age group usually targeted for vaccination (2-30 years) and given the fact that the case fatality rate (CFR) was higher in the above 30 age group. Since this outbreak is a mixture of A and W135 serotype of the *Neisseria Meningitidis*, the trivalent ACW (much more expensive than the AC vaccine) vaccine is going to be used for the mass vaccination which has increased the cost of the mass campaign considerably.
- ii. Although the CFR was high at the onset of the outbreak, this reduced to almost zero with the provision of oily chloramphenicol and training of clinicians on early case detection and appropriate management indicating that the case management strategy has been successful. The CFR was very high in the above 30 age group due to reasons which are still being investigated

- iii. Lacor hospital laboratory plays a critical role in the diagnosis of cases and confirmation of the epidemic although there were few differences between results obtained in Lacor and the central public health laboratory (CPHL) in Kampala. Gulu referral hospital which is affiliated to the Gulu University lacks capacity to effectively perform microbiological investigation of CSF samples.
- iv. The community surveillance system in Gulu district is rudimentary and not working well which was a major challenge for instituting community based surveillance for the meningitis outbreak
- v. Effective co-ordination and technical support from the MOH, WHO, UNICEF and other partners catalyzed a timely and coherent response to the outbreak and facilitated good collaboration among stakeholders

5. Recommendations

5.1 General

Continue the current activities such as active surveillance, appropriate case management, community mobilization and education and possibly expand these to include cholera which is a perennial problem in Gulu and given the fact that the cholera season is fast approaching

5.2 Surveillance

- i. Re-establishment of community surveillance activities where these are not currently in place and strengthen it where it exists through training and mobilization of CORPS and other community-based networks (there is plan for this under the DFID project)
- ii. Encourage the hospitals and health facilities to timely report all suspected cases of meningitis to the district

5.3 Mass Vaccination

Mass vaccination campaign in all parishes and camps of Gulu district where cases have been reported since the beginning of the outbreak.

5.4 Laboratory

- i. Provision of technical support to Gulu referral hospital to initiate and maintain microbiology testing of samples
- ii. Provision of on-the-job training on CSF sample processing for the laboratory technologists in Lacor and Gulu hospitals
- iii. Establishment of a quality control system for CSF sample processing in the laboratories of both hospitals
- iv. In view of the changing picture of the serotype, CSF samples should be taken from all suspected cases of meningitis and samples confirmed in Gulu should be double checked in Kampala and other reference laboratories.