

## Round 1: Alert Management I

### Location: Basindi District

#### Background information:

1. Located in Western Uganda bordering a country with a history of infectious disease outbreaks
2. District with an estimated 2013 population 580,000.
3. Agriculture is the main economic activity and small-scale livestock, including goats and cattle. Other economic activities include hunting, logging, gold mining of small alluvial deposits, and oil exploration.
4. In the past five years, the district has confirmed human cases of Ebola and Marburg virus infection, and several cases of yellow fever virus infection. Other diseases reported regularly in the district include malaria, typhoid fever, and viral and bacterial causes of both meningitis and diarrhea (including cholera).
5. The district has also experienced animal cases of rabies, foot and mouth, Rift Valley Fever, brucellosis and other diseases.
6. Immunization coverage in children under 5 years of age is approximately 85%; however this level varies by village.
7. The district has a hospital and there is a regional referral hospital located in the neighboring district.

**From:** Basindi District Health Officer  
**To:** Epidemiological Surveillance Division  
**Cc:** Dr. Issa Makumbi, Dr. Joseph Wamala  
**Subject:** Alert

23 August 2013 9:00 am

Dear Dr. Makumbi and Colleagues,

I am writing to inform you of a developing situation for which we may need your assistance.

The Misori Village Health Team (VHT) reported that 20 children from different families had become ill in the last two weeks. All the ill children were between 1 and 5 years of age. The parents reported that all (100%) had experienced vomiting, 13 (62%) had abdominal pain and poor appetite, 10 (50%) had fever in previous 2-3 weeks, 10 (50%) children also had drowsiness, and five (25%) were difficult to wake up, even for meals. A single child had loose, watery stools without blood.

In the past 24-48 hours, five children (25%) with symptoms were observed to have jerking of the arms and legs (one reportedly had fever) lasting several minutes, and this had occurred multiple times in nearly all these children. Parents took the children to a Level IV health centre, where the local clinician diagnosed possible meningitis. Two of the children were unconscious, but the facility did not have equipment to perform an investigation for meningitis. Each was given intravenous fluids, was treated with antibiotics as per the clinical protocol for suspected bacterial meningitis and was transferred to the district hospital. One of the children died in transit and the other died within several hours of arriving at the district hospital.

At this point, rumors are spreading that the new "strange disease" is due to "spirits" or "the evil eye." There have also been rumors of some wildlife and livestock deaths.

I have mobilized our District RRT and will promptly inform you with more up-to-date information.

Sincerely,

Dr. David Lukwiya

DHO, Basindi District

Round 1. Ask yourself:

1) What would you do?

2) Who should be involved?

3) What communication and to whom is appropriate at this time?

4) Other?

And then proceed into action as you normally would under these circumstances.

## Message 1: Communication from WHO

**From:** WHO AFRO **23 August 2013 11:00 am**  
**To:** DPC WHO Uganda  
**Cc:** Dr. Wondimagegnehu Alemu; Dr. Charles Okot  
**Subject:** Article for verification

Dear DPC WHO Uganda,

The attached article appeared in the Red Pepper today about a strange disease in Misori Village. Please verify.

Regards,

WHO AFRO

AUG 23, 2013

STRANGE DISEASE KILLING CHILDREN IN MISORI VILLAGE

*Isaac Ojala reporting for Red Pepper*

A strange disease which is said to cause a loss of appetite, vomiting, fever, coma and eventual death has struck the border village of Misori. Dr. Asuman Ibanda at Misori Health Centre confirmed that the strange illness is already claiming the lives of children. It began several weeks ago and has raised fears of another Ebola outbreak among the locals

The community of Misori has been thrown into panic after the Village Health Team acknowledged that the children were not responding to common treatments. An insider in the hospital who preferred to remain anonymous told our reporter that three medical staff refused to report to work yesterday, in fear of contracting the deadly Ebola-like disease, Red Pepper can authoritatively report.

The deadly contagion is believed to be spreading rapidly. The Ministry of Health has not yet done anything and appears to be ignoring the situation. Red Pepper was unable to reach anyone from The Ministry of Health for comment. The district has been living in fear following the outbreaks of Ebola and Marburg Fever last year.

When asked how safe the District is, a polite head nurse at the District Hospital exclusively told Red Pepper that she wouldn't want to arouse fears because the District has not recovered from the 'Ebola tragedy', but that staff were worried about the community and their families.

One village elder in Misori believes evil spirits have caused the strange disease and the deaths. For now, at least, no one seems to be offering any other explanation.

## Round 2: Alert Management II

### MEMO:

**To:** Dr. Jane Ruth Aceng, Director General  
**From:** Dr. David Lukwiya, Basindi District Health Officer  
**Re:** Recent alert

24 August 2013 2:00 pm

Dear esteemed Director General,

A situation is developing for which we request your support. Upon first information of a potential outbreak in Misori village area, the District Rapid Response Team was deployed. Below is an extract from their report. We request a team be sent from the central level as soon as possible to support us in further investigation and response. The press is requesting an interview tomorrow morning.

Highest regards,

Dr. David Lukwiya

**Cc:** ESD  
Dr. Issa Makumbi  
Dr. Joseph Wamala

Extract of: **Report of Field Investigation, Basindi District RRT, 24 August 2013**

Findings:

- 1) At the level IV health centre, 27 additional children had symptoms consistent with the “strange disease”, of whom two died. On the advice of the RRT, eight were referred to the district hospital. Three of the children also had bleeding from the nose and one had a rash. The health centre reported that three adult men and two pregnant women reported being ill recently, with symptoms including fever, vomiting, abdominal pain and weakness and/or confusion.
- 2) Children who had become ill lived in both Misori and at least two other villages. Most of the children were members of households in different areas and several actually lived in small neighboring villages located several kilometers distant from Misori village. Some of the families with ill children attended the same church and may have attended a funeral one week earlier, for which a cow was slaughtered.
- 3) Interviews with parents of the children at the health centre showed:
  - a) The majority of children were under 5 years of age.
  - b) Parents reported other unexplained deaths in the community with similar symptoms..
  - c) The main source of food for families was reportedly vegetables grown locally on small agricultural plots tended by families. Other protein sources included milk, chickens and occasionally beef from livestock owned by local farmers; sometimes bush meat from wildlife killed in surrounding forests by local hunters was available.
  - d) Although the VHT had determined that many families with ill children had visited a local traditional healer within several days of symptoms onset, interviews with parents showed only one of the five children initially hospitalized had taken any treatment recommended by the traditional healer.
- 4) Several cows have been found dead in the villages where children have been affected and farmers reported cows having spontaneous abortions, or poor feeding in the previous two weeks. Dead birds have also been found.
- 5) Information from Health Centre:
  - a) Immunization records for sick children under 5 were reviewed and more than 90% had been immunized as per the officially recommended MoH vaccination schedule, and their clinic charts suggested nearly all had been previously healthy. None of the ill children had been immunized in the month prior to the “strange” illness appearing; several had been treated properly in the previous month for suspected malaria.
  - b) Tests performed at the level IV health centre were limited to blood smear or rapid test for malaria, and basic urinalysis. Laboratory results on the initial five children showed only a single malaria rapid test was positive. The urinalyses showed some evidence of dehydration in several children referred to hospital, but were otherwise normal. One blood culture was sent to the regional referral laboratory; included with the sample was the name, address and age of the patient.
  - c) Despite the seizure-like activity and coma in several children initially hospitalized, clinicians at the health centre could not perform a spinal tap due to lack of proper, sterile equipment and lack of experience or staff training for this procedure, so no cerebrospinal fluid specimen was collected, examined or cultured at the health centre.
- 6) Information from Hospital: At the district hospital, results of the clinical exams and laboratory tests on the children initially hospitalized showed:

- a) The clinicians' initial diagnosis was suspected bacterial meningitis, with secondary coma and/ convulsions.
  - b) Clinicians obtained blood cultures, repeated the malaria smear and rapid test, and drew a sample of blood in a red-top glass tube of blood for serum chemistry and subsequent serological testing.
  - c) A lumbar puncture was performed and cerebrospinal fluid sent to the regional referral hospital for culture and analysis.
  - d) A Gram Stain was performed and showed no signs of bacterial meningitis; cultures will be available in 1-2 days).
  - e) A sample of urine was also collected
  - f) Hospitalized children received intravenous antibiotics at the proper doses recommended in the MoH protocol for treatment of bacterial meningitis. Children in coma are receiving anti-malarial medications as well.
- 7) The DHO, clinicians and local health officials agreed upon an initial "case definition" to identify any possible child (individual) in Misori and adjacent villages who might be ill with the "strange" disease:

**Case definition:**

- Any unexplained death in child under 5 years of age in the past month in Misori village, or neighboring villages, or
- One or more of the following symptoms in a child up to 18 years of age in the last 2 weeks:
  - a) Fever
  - b) Vomiting
  - c) Abdominal pain
  - d) Weakness
  - e) Mental status change (drowsiness, confusion, or loss of appetite)
  - f) Seizure or seizure-like activity
  - g) Coma or lack of responsiveness

- 8) Nearly all families in Misori live in basic dwellings (e.g., with earthen floors) and the poor socioeconomic status of families with ill children was similar to the vast majority of other families in Misori.
- 9) Visits to the homesteads will commence tomorrow.

Round 2. Ask yourself:

1. What would you do?
2. Who should be involved?
3. What communication and to whom is appropriate at this time?
4. Other?

And then proceed into action as you normally would under these circumstances.

## Message 2: Reporter Calls

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### Message 1:

From: Amanda Pitt, BBC  
To: Rukia Nakamatte  
Date: 23 Aug 2013, 12:47pm  
Re: Outbreak in Misori Village  
Urgently return call!

### Message 2:

From: Shifa Mwesigye, New Vision  
To: Rukia Nakamatte  
Date: 23 August, 1:08pm  
Re: Deaths in Basindi District  
Please call back today, as soon as possible.

### Message 3:

From: Doreen Komuhangi, NTV Television  
To: Rukia Nakamatte  
Date: 23 August, 2:22pm  
Re: Misori Outbreak  
Awaiting your call. Preparing for story for tonight.

## Round 3: Field Investigation I

Location: Kampala

25 AUGUST 2013, 1400 hrs

Round 3. Ask yourself:

1. What would you do?
2. Who should be involved?
3. What communication and to whom is appropriate at this time?
4. Other?

And then proceed into action as you normally would under these circumstances.

## Round 4: Field Investigation II

Extract from *National RRT Report of Investigations in Basindi District, 30 August 2013, 0900h*

1. All existing 164 homesteads (a total of 1,830 residents) in Misori village and two small neighboring villages were visited during the survey led by RRT members, with DHO and local staff.

Findings and Observations:

- a) Dwellings are mostly of mud brick construction, with earthen floors.
  - b) Drinking water sources include communal wells, or either a small slow-moving river (near Misori) or stream (near the two smaller villages).
  - c) Based on the case definition, between 3- 6 children died each month in the past 12 months. These 43 additional deaths were three times higher than the average district mortality for children under five.
  - d) Field workers identified a total of 19 children under 5 years whose parents reported a convulsion or seizure-like activity in previous two weeks; none had been taken to the health centre. Only two of these seizures were reported to occur following fever.
  - e) Many families have a small number of livestock linked to homesteads; these include goats, pigs and cattle. Interviews with heads-of-households and herders showed that there was an increased number of deaths among domestic animals in recent months; these deaths were preceded by affected animals losing appetite, having difficulty walking, seizure-like activity, and death of many small ruminants. Many cows had spontaneous abortions recently. An unusual number of birds have also been seen dead.
  - f) Families mainly engage in small scale cross-border trading and hunting. Some families are involved in the processing of gold ore. There is also some logging activity.
2. Results of laboratory testing were generally negative.
    - a. The initial testing of the serum specimens sent to UVRI/CDC-Uganda from the referral hospital showed antibody tests (IgM) were negative for yellow fever, Ebola, Marburg and Rift Valley Fever viruses.
    - b. Blood cultures from hospitalized children did not demonstrate any bacterial growth after 48-72 hours.
    - c. Only 2 blood smears taken from ill children hospitalized were confirmed positive for malaria (*P. falciparum*) and children were treated according to protocol.
    - d. The hospital laboratory reported that samples of cerebrospinal fluid (CSF) taken from three children hospitalized with seizures or coma in the first two days of the outbreak showed no bacteria on Gram Stain (centrifuged specimen); also had normal CSF protein and glucose concentrations. The CSF cell count was normal; an average of 4 white blood cells (WBCs) per mL (range: 0-6), with 90% lymphocytes. All CSF specimens showed no growth in the microbiology laboratory at 48-72 hours.
    - e. All sampled children had evidence of moderate or severe anemia (mean haemoglobin concentration = 7.9 mg/dL; range: 5.5 to 8.4 (WHO reference norm: 10-14 mg/dL).

Round 4.      Ask yourself:

1. What would you do?

2. Who should be involved?

3. What communication and to whom is appropriate at this time?

4. Other?

And then proceed into action as you normally would under these circumstances.

## Message 3: Additional lab report

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### RESULTS:

A separate tube of blood was collected from several symptomatic children who met the case definition, as well as children from Misori still hospitalized. These samples were promptly sent to The Government Chemist Laboratory to test for lead (Pb) and other toxic metals (e.g., mercury). Results of laboratory testing of blood samples taken from the five children with evidence of moderate or severe anemia (mean haemoglobin concentration = 7.6; range: 6.5 to 9.4), as well as three adults working in the gold ore processing and smelting activity. Blood lead (Pb) levels or “BLLs” in sampled children were a mean (average) of 62 mcg/dL (range: 34 to 176), a level associated with anemia, vomiting and abdominal pain, renal disease (or renal failure), mental status abnormalities, convulsions, coma and potentially death (the WHO/CDC standard of childhood toxicity is defined as a maximum of 10 mcg/dL\*).<sup>1,2</sup> Adult workers sampled had a mean BLL concentration of 83 mcg/dL, substantially above the level of concern for adults with occupational exposure to Pb (40 mcg/dL).

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<sup>1</sup> WHO guidelines on Pb toxicity in young children: <http://www.who.int/ceh/publications/leadguidance.pdf>

<sup>2</sup> WHO article on Pb in drinking water: [http://www.who.int/water\\_sanitation\\_health/diseases/lead/en/](http://www.who.int/water_sanitation_health/diseases/lead/en/)

## Message 4

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### VETERINARY LABORATORY RESULTS

Animal samples taken as part of the post mortem were negative for hemorrhagic septicaemia, Rift Valley fever and rabies.

## Round 5: Field Response

Round 5. Ask yourself:

1. What would you do?
2. Who should be involved?
3. What communication and to whom is appropriate at this time?
4. Other?

And then proceed into action as you normally would under these circumstances.

## Message 5: Message from the DG

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**From:** Dr. Jane Ruth Aceng 31 August 2013 10:00 am  
**To:** Dr. Issa Makumbi  
**Subject:** Urgent request for summary

*Dear Dr. Makumbi,*

*The Minister has had a query on the Misori outbreak from the Minister of Health in the DRC. Kindly prepare a summary of the situation and actions taken to date.*

*Thanks,*

*Dr. Aceng*

## Message 6: Message from MSF

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**From:** Joost Van Mitten, MSF

August 31, 2013 1:00 pm

**To:** Dr. Makumbi

**Subject:** Lead poisoning?

*Dear Dr. Makumbi,*

*I heard about the cases in Basindi District and they sound quite similar to the cases I saw in Nigeria during the 2010 lead poisoning related to gold mining. You may want to test for lead toxicity.*

*Joost Van Mitten  
Emergency Health Advisor  
MSF*

## Message 3/7: Test results

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### RESULTS:

A separate tube of blood was collected from several symptomatic children who met the case definition, as well as children from Misori still hospitalized. These samples were promptly sent to The Government Chemist Laboratory to test for lead (Pb) and other toxic metals (e.g., mercury). Results of laboratory testing of blood samples taken from the five children with evidence of moderate or severe anemia (mean haemoglobin concentration = 7.6; range: 6.5 to 9.4), as well as three adults working in the gold ore processing and smelting activity. Blood lead (Pb) levels or “BLLs” in sampled children were a mean (average) of 62 mcg/dL (range: 34 to 176), a level associated with anemia, vomiting and abdominal pain, renal disease (or renal failure), mental status abnormalities, convulsions, coma and potentially death (the WHO/CDC standard of childhood toxicity is defined as a maximum of 10 mcg/dL\*<sup>3,4</sup>). Adult workers sampled had a mean BLL concentration of 83 mcg/dL, substantially above the level of concern for adults with occupational exposure to Pb (40 mcg/dL).

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<sup>3</sup> WHO guidelines on Pb toxicity in young children: <http://www.who.int/ceh/publications/leadguidance.pdf>

<sup>4</sup> WHO article on Pb in drinking water: [http://www.who.int/water\\_sanitation\\_health/diseases/lead/en/](http://www.who.int/water_sanitation_health/diseases/lead/en/)