



Ebola response in the Republic of Congo

Marco Visser

The ability of medical organizations to respond quickly and effectively to outbreaks of Ebola has evolved significantly in recent years. Medecins Sans Frontieres (MSF) has responded to several epidemics of Ebola across Africa, and was called to stem an outbreak in 2003 in heavily forested Cuvette Ouest in the Republic of Congo (ROC). The isolation measures taken and an overview of the latest developments are presented.

Ebola is a viral haemorrhagic fever (VHF), named after a river in the Democratic Republic of Congo (DRC), where it was first discovered in 1976. There are four subtypes of the disease, with case-fatality rates of 50 to 90 per cent. It is transmitted through direct and indirect contact with infected body fluids. Although the natural reservoir has so far not been identified, it is known that outbreaks start when people have contact with infected non-human primates, e.g. gorillas and chimpanzees, that are being hunted, prepared and consumed. The onset of clinical disease is acute, with the abrupt start of fever, frontal headache, weakness, muscle pain, slow heart rate, conjunctivitis and abdominal pain. Two to three days later, patients experience nausea, vomiting of blood, bloody diarrhoea and haemorrhaging in the mouth and nasal passages, followed by prostration. A rash then appears and death may follow in six to nine days after the start of symptoms. The body fluids of patients suffering from Ebola are extremely infectious and thus pose serious risks to caregivers in the health-care setting and in the community. The actual virus itself is, however, fragile and can be destroyed by a disinfectant such as chlorine.

Earlier outbreaks of Ebola occurred in the DRC, Sudan, Uganda, Gabon and the ROC. The remote border area of Gabon and the ROC has now been the scene of three subsequent outbreaks. The first patient of the last outbreak fell ill on 11 October and died on 16 October 2003, with symptoms characteristic of VHF. Within a week,

two other people became sick and died with similar clinical signs. By 4 November, information received in Brazzaville indicated that there had been seven suspected VHF deaths. With laboratory confirmation of 'Ebola Zaire' from a case who died on 10 November, the third epidemic in Cuvette Ouest was officially declared.

As soon as the news reached the MSF-Holland headquarters in Amsterdam the decision was taken to send a team to help in the response. MSF had responded during earlier outbreaks in the ROC, Gabon and Uganda. On 14 November the team – consisting of one medical doctor, one water, sanitation and hygiene specialist and one logistician – arrived in Brazzaville. Other responding personnel were from the Congolese Ministry of Health, the Congolese Red Cross and the World Health Organization.

Isolation centre

After a horrendous four-day trip over 800 km of muddy roads, the team arrived in Mbomo, the heart of the outbreak. As there is no medication for Ebola patients, the focus of an intervention lies in limiting the scale of the outbreak by preventing patients from infecting others. Preparing an isolation centre is therefore the first priority (see Figure 1). Part of the existing health centre was converted; it was cleaned out and a bamboo fence erected around it. The centre was divided into wards for suspected and probable cases. Cases can only be clinically diagnosed, as no

rapid field test for confirmation exists. This makes it necessary to separate the individual patients in the wards by putting up plastic sheeting between each bed. In this way, the risk of an Ebola-positive patient infecting a negative patient is limited.

Latrines were constructed for both wards. A laundry site was appointed at the back of the building, where the various chlorine solutions were prepared, sprayers were filled and laundry was washed. In an Ebola isolation centre, two chlorine solutions are used: a 0.05 per cent and a 0.5 per cent solution. The 0.05 per cent solution is used for washing hands, dishes and scrub suits. With the 0.5 per cent solution, gloved hands, aprons, goggles, floors, latrines and beds are disinfected. The numerous footbaths are also filled with the stronger solution. Furthermore, drinking water needs to be available for drinking and preparing Oral Rehydration



The journey to reach Mbomo was very difficult

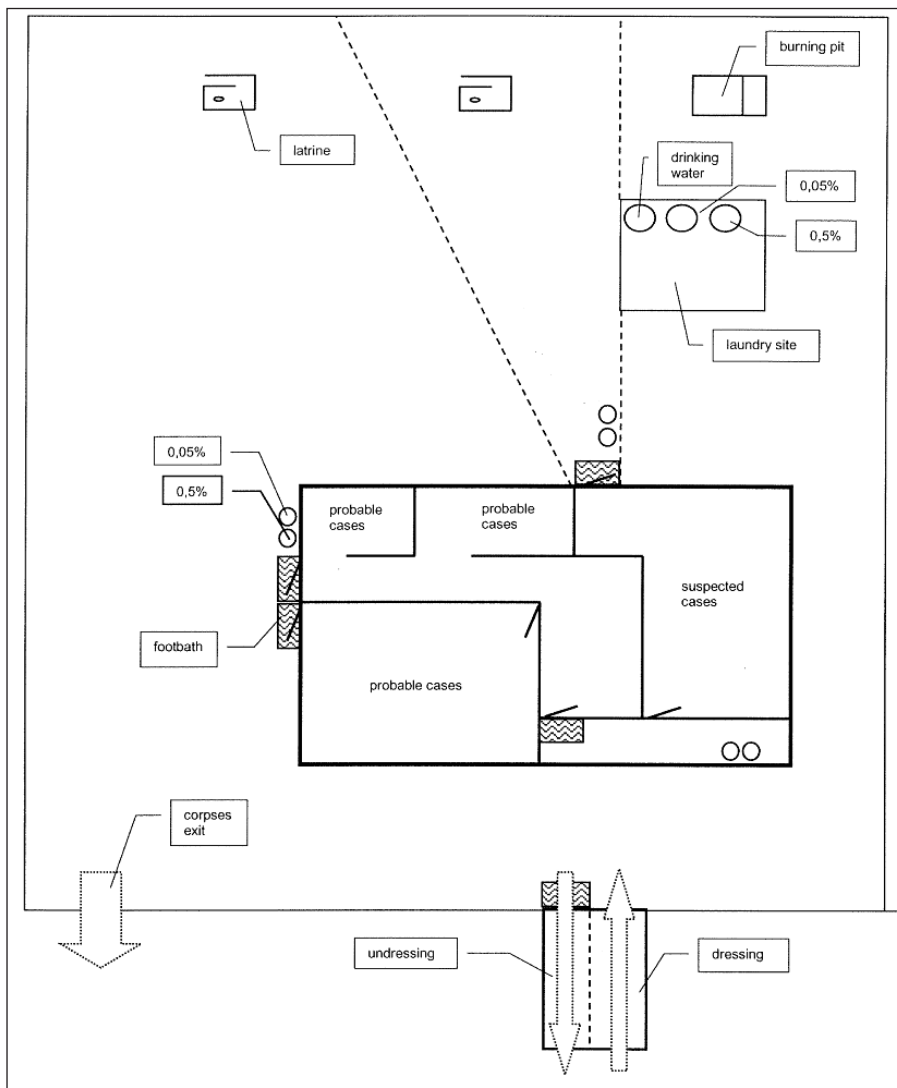


Figure 1. The layout of the isolation centre

Solution (ORS), and this water also requires chlorination (at a rate calculated to achieve free residual chlorine of 0.2–0.5 mg/l 30 minutes after chlorination).

A strict regime prevents items used inside the isolation centre ending up outside, and vice versa. This mainly includes items such as drinking cups and plates, as the amount of medical material is limited as much as possible. Treatment, if any, consists of rehydration and oral anti-malarial medication. Unlike a cholera treatment centre, the use of injectibles is strictly limited. ORS is used as much as possible rather than infusions. This is to minimize the chances of a prick from a needle.

Protective clothing

All staff working in the centre need to wear the necessary protective material

to block all possible transmission routes. This consists of a scrub suit, a surgical gown, rubber apron, rubber boots and a double pair of gloves. A mouth cap, a hood and goggles protect the head. Working under extreme conditions with high temperatures and humidity makes it impossible for anyone to work in the centre for more than two hours at a time. This has implications for running a centre properly, as many work-shifts are required and thus a large number of staff. Unfortunately human resources were a major constraint during this intervention in Mbomo. Despite good efforts by Red Cross volunteers, only nine Congolese staff were designated to work in the centre, after rapid on-the-job training. Four of them worked with the MSF doctor on patient care and two others cleaned the wards. One person prepared the chlorine solutions and took care of

the waste, one did the laundry and another sprayed all incoming and outgoing staff, the latrines and the exterior of the building.

Dressing and undressing is an exertion in itself and needs to be done with great care, preferably in pairs. In this way one can assist and control the other. In Mbomo, a tent was erected for this purpose at the entrance of the isolation centre. It was divided into four compartments, two for incoming and two for outgoing staff. Although putting on the protective clothing needs to be done with great care, undressing is even more complicated. When undressing, one needs to take care not to come into contact with anything that could be contagious. For this, strict steps need to be followed with spraying or hand washing in between each step.

The bulk of the waste is generated in the tent, as most protection material is single-use only. This is put into plastic waste bags, which are closed, sprayed and put into a second bag. This is then taken to an outside pit, where it is burnt. However, aprons, goggles and scrub suits are reused and therefore taken to the laundry site where they are soaked overnight in the correct chlorine solution, rinsed and put in the sun to dry.

Burial

Burying the deceased has to be done under strict hygienic conditions, since the viral load continues to build up in the corpses after death. The corpse is put in two body bags into a coffin. Corpse, bags and coffin are sprayed extensively with 0.5 per cent chlorine solution. The coffin is placed in a grave of at least two metres depth, preferably in a special burial site within or close to the isolation centre. Unfortunately this was not the case in Mbomo: the burial team had to drive some 3 km away, as the community did not want to have a cemetery in the village.

Home-care kit

Many of the people in Cuvette Ouest see Ebola as an act of sorcery rather than a medical issue. Some link the arrival of the strangely dressed (foreign) aid workers with people dying, and even blame them for bringing the

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disease. Patients and their relatives are very hesitant to come to the isolation centre because, from their perspective, you will certainly die after entering the centre.

To address this, two strategies have been identified. First of all, community education during and before an epidemic, is crucial. This has been done during all outbreaks. Secondly – something that had not previously been tried – home-care kits can be provided to families with a suspected case in the house. To prevent contamination of those families taking care of the patient, some means of protection needs to be available. The kits included household gloves, soap, bleach, a basin, a jerry can and a hand sprayer. When the kits are provided to the family, instructions are given on patient handling, protecting oneself and preparation of the correct chlorine solution from bleach. The kits seem promising in helping to control the epidemic, but further investigation is required before firm conclusions can be drawn.

Outlook

Over the years a lot of expertise has been acquired on Ebola control. As case management is limited to palliative care, control measures are mainly focused on reducing the spread of the disease. This is preferably done by keeping patients in an isolation centre, but a second-best alternative could be the isolation of patients at home with the provision of home-care kits.



Complicated cleansing procedures must be followed when undressing after caring for patients

Furthermore, community education activities have to be stepped up during an outbreak. Of much concern at present, the disease seems to have now become endemic in non-human primates, with dead gorillas continuing to be found infected with the virus. If this is the case, a major behavioural change is required to prevent Ebola becoming endemic in the human population. This includes avoiding hunting primates for food; and recognizing symptoms and seeking treatment from the clinic when it does arise.

MSF has responded to this by starting a longer-term basic healthcare pro-

ject with a large mobilization component in Cuvette Ouest. Through this activity, a relationship of trust can be established and community health education provided more effectively. Health staff will be given training and resources to implement general precautions. In case of a new outbreak, the reaction will be quicker because health-care personnel are present and prepared. Additional preparations involve pre-positioning material and manpower and refurbishing health centres and other infrastructure. On a national level, MSF will advocate for more attention, capacity and support from those responsible for providing health-care and managing epidemics.

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About the author

Marco Visser is a Water and Sanitation Adviser with Médecins Sans Frontières-Holland and has taken part in two Ebola responses in the Republic of Congo.



Burials must follow strict hygiene guidelines