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## *Ebola Outbreak in the Democratic Republic of Congo: A Case Study*

### **Introduction**

Ebola virus is a deadly zoonotic disease that was first discovered in the Democratic Republic of Congo (DRC) in 1976. It is initially spread to humans upon contact with the bodily fluids and tissues of infected animals such as primates or bats. It is then transmitted human-to-human via direct contact with bodily fluids. In May of 2018, the DRC declared its 9<sup>th</sup> Ebola outbreak since 1976 after two cases were confirmed in the Bikoro region.<sup>1-2</sup> The Ministry of Health (MoH) along with international partners quickly established an outbreak response that included the deployment of supplies, laboratory materials, transportation, and operational support.<sup>2</sup> Between May 2018 and July 2018, this outbreak resulted in 54 cases and 33 deaths.<sup>2</sup>

### **Facts of the Case**

On May 3, 2018, the Equateur Province Health Division had notified the Democratic Republic of Congo's MoH of 21 cases of hemorrhagic fever and 17 community deaths.<sup>3</sup> Upon evaluating the situation, the investigation team consisting of the MoH, Medecins Sans Frontieres (MSF), and the World Health Organization, it was found that there were two patients who tested positive for *Zaire ebolavirus*, which is the deadliest strain of Ebola.<sup>3</sup> Five days later, on May 8, 2018, this was declared an outbreak. Further investigation found additional cases in the neighboring health zones of Wangata and Iboko. By May 30, 2018, a total of 50 cases were reported in the DRC - 21 in Bikoro, 25 in Iboko and 4 in Wangata.<sup>3</sup> 25 deaths were also reported during this time.<sup>3</sup> The last case was reported on July 3, 2018, which brought the total to 54 cases and 33 deaths. This outbreak was declared over on July 24, 2018, following a 21-day period of no new cases.

### **Epidemiological Aspects of the Event**

The DRC MoH gathered data on cases and deaths in three health zones from the Equateur Province Health Division – Bikoro, Wangata, and Iboko. Data from the field was collected using a standardized case investigation form, which was then entered into an electronic database. For outbreak investigations, data was primarily collected retrospectively through medical records. Current cases were classified as suspected, probable, or confirmed. Confirmation required the detection of the Ebola virus by RT-PCR testing. Contacts were then identified, and contact tracing efforts began. It was found that most of the confirmed cases were exposed through direct contact with sick people prior to illness.<sup>3</sup> The second most common exposure was through funeral participants.<sup>3</sup>

### **Management of the Event**

There was a rapid, well-coordinated, and well-resourced response during this outbreak since the first Ebola case was diagnosed. The DRC MoH responded quickly upon notification from the Equateur Province Health Division. The MoH deployed Rapid Response Teams to investigate the cases and deaths that were reported in the Bikoro region. Samples taken via RT-PCR test were sent to a lab in Kinshasa for confirmation. After confirming positive Ebola cases, the WHO was immediately notified. The WHO set up its Incident Management System to fully dedicate its resources to the response efforts. They provided essential technical and operational support to the MoH activating a multi-agency Emergency Operations Centre to coordinate the response on

all levels.<sup>4</sup> In addition, the MSF created an Ebola treatment center in the Bikoro region. This multi-agency response included early identification, isolation of cases, contact tracing, safe burial practices, and community mobilization.<sup>3</sup> To supplement these efforts, a new Ebola vaccine (rVSV-ZEBOV) was also distributed under emergency use. Implementation of this vaccine was a key factor in the overall strategy to control the outbreak.

This response was managed very well as it was able to be contained and eliminated after 54 cases. As a comparison, previous Ebola outbreaks in the DRC have resulted in hundreds and thousands of more cases that were able to spread more quickly across regions. The 2014 West Africa Ebola outbreak is what highlighted the need for a more rapid and coordinated response such as this one. Many authorities and the public are familiar with Ebola because of these previous outbreaks. Global health partners have also increased their monitoring, stockpiled vaccines and medicines, and have response teams on-call.

There are several gaps in outbreak management that can be addressed to better prepare for the next Ebola outbreak. The first is the leadership which can be challenging in the DRC. They have a weak health care system due to its history of conflict and political challenges. Efforts should be made to strengthen their leadership to ensure a timely response to outbreaks. Also, the DRC relies heavily on international aid which leads to logistical challenges that can prevent timely response efforts. In addition to those logistical challenges, Kinshasa is the nearest laboratory to these three health districts as well as the closest airport. Bikoro is a couple of hundred miles up the river from the city and getting there by road can take two days and four ferries. Its airstrip is also overgrown making it impossible to reach by airplane. This makes it difficult to send supplies and personnel in a timely manner as well as getting samples to the laboratory. Due to the frequent number of outbreaks, the DRC has been known to have it would be a good investment to establish laboratories throughout the region, especially in remote areas.

### **Communication of the Event**

According to UNICEF and its partners, over 300,000 people were reached with their awareness-raising campaign within the first month.<sup>5</sup> This campaign consisted of activities led by community workers who made home visits, reached out to particularly vulnerable groups of people, and mobilized community leaders, churches, and mass media.<sup>5</sup> This active community involvement was essential in containing the spread of Ebola. The communication strategy for the vaccination campaign was to provide vaccine education to health care workers and their contacts and spread information on the Ebola vaccine.<sup>5</sup> The WHO also coordinated communication with the neighboring countries to prepare them if the situation were to change.

### **Summary**

Between May 8<sup>th</sup> and July 24<sup>th</sup>, 2018, the Democratic Republic of Congo experienced its 9<sup>th</sup> Ebola outbreak with a total of 54 cases and 33 deaths. The Ministry of Health responded quickly by notifying appropriate international partners to establish a coordinated outbreak response. They investigated all cases and contacts throughout the Bikoro, Wangata, and Iboko health zones. The main takeaway from this outbreak is that early detection, contact tracing, safer burial practices, and community engagement are key in controlling Ebola outbreaks. In addition, this is the first outbreak in which the new Ebola vaccine was used since it was found to be 100% effective in the previous testing which was also a key factor. Going forward, the rollout of this vaccine can be proven to be essential in controlling the spread of Ebola.

## References

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