

Chapter 2

Initial Outbreak Period (December 2013–May 22, 2014)



Abstract The 2013–2016 Ebola outbreak began in a small Guinean village. A 2-year-old boy contracted Ebola, most likely after coming into contact with free-tailed bats, possibly by playing with them. The epidemiology of the outbreak initially followed the course of previous Ebola outbreaks. A small number of people were infected and local officials and international aid agencies worked to identify and isolate patients. Significant concern was raised when Ebola cases began to appear in Guinea’s capital, Conakry, and in the neighboring country of Liberia. The disease was also thought to have spread to Sierra Leone, although no positive samples were collected from that country. By the middle of May 2014, it appeared that the outbreak had run its course. No new cases had been seen for some time, and all known patients had either recovered or died. What was not known was that undetected transmission chains remained. Ebola continued to spread, helped by local customs such as traditional burial practices where the body of the deceased is washed and touched. The stage was set for the rapid expansion of Ebola that would occur in the late spring and early summer of 2014.

2.1 Day-by-Day Outbreak Entries (December 2013–May 22, 2014)

December 2, 2013 (Monday)

Emile Ouamouno, the first known victim of the 2013–2016 Ebola outbreak, becomes ill (Baize et al. 2014; Yan and Kinkade 2014). His symptoms include fever, black stools, and vomiting (Baize et al. 2014; Yan and Kinkade 2014). Retroactive epidemiological analysis suggests that this child is the index case for the subsequent Ebola outbreak (Baize et al. 2014). Ouamouno was a 2-year-old boy who lived in the village of Meliandou, Guinea. The village is located about 6 miles northeast of the town of Guéckédou. Ouamouno probably became infected while playing near a hollow tree that housed a colony of insectivorous, free-tailed bats (species *Mops condylurus*) (Saéz et al. 2015). The tree stood about 50 m from his house. Children from the community frequently played near the tree and often captured and played with bats (Saéz et al. 2015).

December 6, 2013 (Friday)

Emile Ouamouno dies (Baize et al. 2014).

March 10, 2014 (Monday)

The Guinean Ministry of Health is notified about the outbreak of an unidentified, highly fatal disease in the south-central part of the country (Baize et al. 2014).

March 12, 2014 (Wednesday)

MSF is notified about the unidentified, deadly disease in Guinea (Baize et al. 2014).

March 14, 2014

The Guinean government dispatches a team to Guéckédou to investigate the recent disease outbreak (Baize et al. 2014).

March 22, 2014 (Saturday)

Ebola is officially identified as the disease causing the outbreak in Guinea (Médecins Sans Frontières 2014a). This is the first time Ebola has occurred in West Africa. To date, six Ebola cases have been confirmed and 49 suspected cases have been identified. At least 29 people have died (Médecins Sans Frontières 2014a). Disturbingly, the disease does not seem to be confined to a single area. Three of the suspected cases have occurred in Conakry, Guinea's capital city, about 250 miles from Guéckédou (Lazuta 2014a). The disease might also be in neighboring Sierra Leone. Medical personnel in Sierra Leone are working to determine if a 14-year-old boy has died from Ebola in the town of Buedu in the eastern Kailahun District (Samb 2014).

MSF has set up an isolation hospital in Guéckédou, Guinea and is in the process of setting up a second clinic in Macenta, Guinea. Guéckédou, a city of ~220,000, appears to be the epicenter of the outbreak. MSF plans to airlift additional medical personnel and 33 tons of supplies to the area to compliment the 24 MSF medical staff already in Guinea (Médecins Sans Frontières 2014a).

March 23, 2014 (Sunday)

UNICEF confirms that Ebola has spread to Guinea's capital, Conakry (Bah 2014). This is a serious turn of events and raises concerns that the outbreak could quickly become considerably worse. Conakry has a population of about two million, and sanitation in the city is generally poor (UNICEF n.d.; Lazuta 2014b). These factors could allow the disease to spread rapidly among the urban population.

As of March 22, 2014, there have been 49 Ebola cases and 29 deaths in Guinea (Disease Outbreak News 2014a).

March 25, 2014 (Tuesday)

Guinea has banned the sale and consumption of bats to try to curb the spread of Ebola (BBC 2014a). Bats, especially fruit bats, are thought to be a reservoir for the Ebola virus. Local residents enjoy eating bats, which they often prepare in a spicy pepper soup (BBC 2014a).

March 26, 2014 (Wednesday)

Ebola is believed to have reached Liberia. Eight suspect cases, including five deaths, have been recorded by Liberian health officials. Most of the cases have been in people who are thought to have come to Liberia from Guinea (Reuters 2014a).

The WHO reports a total of 86 suspected Ebola cases, including 59 deaths in southeast Guinea (Reuters 2014a).

March 27, 2014 (Thursday)

There are now 103 suspected Ebola cases in Guinea (Lupkin 2014). Red Cross volunteers are disinfecting the homes and bodies of Guinean Ebola victims, while medical teams track down contacts of known Ebola cases (Reuters 2014e).

Two Ebola deaths are believed to have occurred in Sierra Leone (Reuters 2014b).

March 29, 2014 (Saturday)

The Ebola strain circulating in West Africa appears to be *Zaire ebolavirus*. This is an exceptionally dangerous species of Ebola. In past outbreaks, *Zaire ebolavirus* has had a fatality rate of up to 90% (Camara and Marone 2014).

Guinea's Ministry of Health says that eight people have tested positive for Ebola in Conakry and one person has died. The Ministry asks that citizens report any suspected Ebola cases and requests that people avoid touching anyone who might have the disease. Due to the public health risk posed by the virus, Ebola patients in Conakry are being treated free of charge (Lazuta 2014b).

There are six suspected Ebola cases in Sierra Leone, including five deaths (Lazuta 2014b).

Senegal has closed its border with Guinea to try to keep Ebola from entering (Camara and Marone 2014).

March 30, 2014 (Sunday)

The WHO confirms that two blood samples from Liberia have tested positive for Ebola (Auerbach 2014). One of the Liberian victims was a 35-year-old woman who died on March 21, 2014. She was the wife of a Guinean man who had recently returned to Liberia after becoming sick while visiting Guinea. The second victim is the woman's sister (Auerbach 2014). Since at least March 26, 2014, officials have suspected that Ebola has been in Liberia, but these are the first confirmed cases in the country.

Youssou Ndour, a Senegalese music performer, has canceled a weekend concert in Conakry, Guinea because of the Ebola outbreak. He is worried that bringing a large number of people together could help spread the disease (Auerbach 2014).

April 1, 2014 (Tuesday)

In the past 3 days, 19 new suspected Ebola cases have been identified in Guinea. This brings the total number of suspected cases in the country to 122 (UN News Service 2014). Even so, the WHO stresses that the current West African Ebola event should be considered an outbreak, not an epidemic (Schlein 2014). WHO spokesman Gregory Härtl says that it is vital to break the chains of transmission and to conduct thorough contact tracing of all suspected cases. He also says that while the spread of Ebola to Conakry, Guinea is a serious development, it is not necessarily

unusual for Ebola to affect major cities. For example, cases occurred in Libreville, Gabon in the late 1990s (Schlein 2014).

The Ebola outbreak has started to affect social customs in Guinea. People no longer shake hands, and relatively few people attend funerals (BBC 2014b).

People in Liberia did not initially believe that Ebola posed a real danger. Many thought that local officials were using the threat of the disease to obtain funds. As more information has become available, however, this belief is starting to change. At one point, Liberian schools were closed, but they have now reopened (BBC 2014b).

The government of Sierra Leone has banned people from bringing corpses from Guinea into Sierra Leone for burial. It is hoped that this will reduce the risk of importing Ebola into Sierra Leone (BBC 2014b).

April 2, 2014 (Wednesday)

A single Ebola victim seems to have initiated the outbreak in Conakry, Guinea. A sick man came to Conakry from Dabola, Guinea, for treatment. All subsequent cases in Conakry are linked to this initial victim. To date, there have been 12 suspected Ebola cases in Conakry and 4 deaths. One of the deaths was the initial victim (Samb and Nebehay 2014).

Due to the outbreak, some mining companies in Guinea have locked down operations and withdrawn international staff (Samb and Nebehay 2014).

Suspected Ebola cases have been reported in The Gambia. These reports have been refuted by the country's director of Health Promotion and Education. He says that an elderly man was tested for the disease but tested negative (Samb and Nebehay 2014).

April 3, 2014 (Thursday)

Firmin Bogon of Guéckédou, Guinea recently lost ten relatives to Ebola. His sister returned ill from Sierra Leone on February 27, 2014. She was taken to the hospital where she was diagnosed with typhoid fever. She actually had Ebola. Not realizing she was highly contagious, her family took care of her at home. She died around March 3, 2014 and was given a traditional burial. A few days later, the people who had treated her began to fall ill. Since Bogon's sister death, nine other people have died, including Bogon's wife (BBC 2014c).

Medical experts are trying to reassure the public about Ebola. They point out that compared with other diseases, like influenza, Ebola is relatively easy to contain. Ebola is not airborne, and transmission requires direct contact with bodily fluids. They also say that even though cases have been found in several countries, most of the victims have come from a very small geographic area. Hence, the outbreak is not as widely distributed as it might seem (Sheets 2014).

Foreign traffic to Ebola-affected areas is slowing. A Brussels Airlines flight traveling between Brussels, Belgium and Conakry, Guinea arrived in Guinea today with 55 passengers. It left with 200 (Reuters 2014c).

April 5, 2014 (Saturday)

A mob attacked an Ebola clinic in Macenta, Guinea today (Associated Press [2014a](#); Reuters [2014c](#)). They accused the MSF staff of bringing Ebola into the country. Rocks were thrown at staff members, but no one was hurt. In response, MSF has evacuated all of their personnel and closed the clinic (Reuters [2014c](#)). At least 14 people have died from Ebola in Macenta since the outbreak began.

Dr. Michel Van Herp of MSF says the current Ebola outbreak is of an unprecedented scale. Other outbreaks have been relatively localized, but this one is spread among a variety of communities in three separate countries (Cobiella [2014](#)).

Ebola may have reached Mali. Three suspected cases have been isolated in the country and are undergoing tests (Reuters [2014c](#)).

April 7, 2014 (Monday)

Airport checkpoints have been set up in Guinea to screen passengers for Ebola before they leave the country (Vibes [2014](#)). Travelers are observed for signs of illness, and their temperatures are taken before they are allowed to board outgoing planes (Quist-Arcton [2014a](#)). Two recent cases have occurred where passengers have left Guinea with Ebola-like symptoms. In late March, a Canadian man was isolated in Saskatoon with an Ebola-like illness. Officials have not said what illness the patient actually had, but he did not have Ebola (Associated Press [2014b](#)). On March 31, 2014, a man became sick in Minnesota after returning from West Africa. He tested positive for Lassa fever (Minnesota Department of Health [2014](#)). Although neither of these patients had Ebola, the events demonstrate that air travel could help spread the disease.

April 9, 2014 (Wednesday)

To date, 158 Ebola cases have been reported, including 101 deaths (Sonricker Hansen [2014](#)).

Despite Ebola's high fatality rate, some people survive the disease. At least seven people in Guinea have recovered and been released from isolation centers. Dr. Marie-Claire Lamah, an MSF doctor in Conakry, Guinea, says that their whole team was cheering when the first patients were released. The very first survivor was an 18-year-old woman named Rose Komano. She was released from a medical ward in Guéckédou (Mazumdar [2014](#)).

April 10, 2014 (Thursday)

Aid groups are working to increase Ebola awareness across Africa. Agencies such as UNICEF, the Red Cross, and the WHO are using text messaging, robocalls, radio shows, TV programs, and door-to-door contacts to distribute information about Ebola. UNICEF is also providing soap, chlorine, and gloves to people affected by the outbreak (UNICEF [2014](#)).

April 11, 2014 (Friday)

Challenges are being faced by Ebola survivors when they attempt to integrate back into their communities. When a survivor returns home, they are often shunned by neighbors who are afraid the survivor is still contagious. Henry Gray, the MSF

coordinator in Guinea, stresses that survivors pose no risk. However, it is hard to get community members to accept this (Quist-Arcton 2014b).

April 14, 2014 (Monday)

The US Department of Defense has opened a laboratory in Monrovia, Liberia, to test Liberian samples for Ebola. Previously, Liberian samples were sent to Guinea for testing (Reuters 2014d).

Institutions across the world are working to develop Ebola treatments. Currently, only supportive treatments such as hydration and fluid replacement are available for Ebola patients. San Diego-based Mapp Biopharmaceutical has developed a cocktail of monoclonal antibodies that help a patient's body identify and attack the virus (Thompson 2014).

April 15, 2015 (Tuesday)

Officials in Guinea believe that the Guinean Ebola outbreak is almost under control. A government spokesman says that the number of new cases has fallen rapidly. Once no new cases emerge, the official says the outbreak can be considered controlled (Reuters 2014d).

The Gambia has banned flights from Guinea, Sierra Leone, and Liberia from landing in its territory. The ban is in place as of today, but The Gambia apparently began preparing the ban earlier. A letter about the ban was issued to airlines on April 10, 2014 (AFP 2014a).

April 16, 2014 (Wednesday)

The Ebola virus circulating in West Africa is 97% similar to the *Zaire ebolavirus* strain that caused the recent outbreaks in the Democratic Republic of the Congo and Gabon (Baize et al. 2014). The strain is genetically different enough to suggest that it has evolved separately from other Ebola strains. The case fatality rate in the current outbreak is 86% among confirmed cases (Baize et al. 2014). Baize et al. (2014) also appear to have identified Emile Ouamouno as the first known case. Their first case, identified as patient S1, was a 2-year-old boy who became ill on December 2, 2013, and died on December 6, 2013. Emile Ouamouno had not yet been identified by the media as the likely index case.

Nigeria is concerned that Ebola may reach the country. It has begun a public education campaign to help inform citizens about the virus (Christian Today 2014).

April 17, 2014 (Thursday)

A senior Guinean health official says the government will no longer release Ebola death toll numbers because they might frighten the country's citizens. The Guinean government has previously said that 106 people have died from Ebola in Guinea (Al Jazeera 2014).

April 18, 2014 (Friday)

Sixteen patients are being treated for Ebola at Donka Hospital in Conakry, Guinea. Eleven are being treated in Guéckédou, Guinea. Overall, Donka Hospital has 40 beds available for Ebola patients. Guéckédou has 20 beds (Médecins Sans Frontières 2014b).

April 22, 2014 (Tuesday)

There have been 208 clinical cases of Ebola, including 139 deaths, in Guinea through April 20, 2014. In Liberia, 34 clinical cases have occurred through April 21, 2014. The last confirmed Liberian case appeared on April 10. In Sierra Leone, there have been 19 clinical cases. However, as of yet, no Sierra Leone samples have tested positive for Ebola (Disease Outbreak News [2014b](#)).

Fear of Ebola is mounting in Conakry, Guinea. Passengers recently abandoned a bus in the city when a pregnant woman vomited (Diallo [2014](#)).

April 23, 2014 (Wednesday)

One anonymous Guinean Ebola survivor has seen nine family members contract Ebola. Only three have survived, including the informant. The survivor says his first symptoms were headache, backache, diarrhea, and vomiting. He was initially diagnosed with malaria but was later determined to have Ebola. MSF doctors at a clinic comforted him and provided him with moral support. Unfortunately, when people in the clinic died, the doctors had to collect the bodies and sterilize the area, while other patients watched. As the informant started to get better, he began to tolerate food and water again. Soon his diarrhea stopped. He felt exhilarated when he officially recovered from Ebola and was released from the hospital (BBC [2014d](#)).

April 28, 2014 (Monday)

Faith healer Finda Nyuma, locally known as Mendinor, becomes ill (AFP 2015). Nyuma was a significant Ebola vector. Numerous women who attended her funeral became sick and spread the disease (AFP 2015; Gire et al. [2014](#); Menezes [2014](#)). Nyuma was a well-known and respected healer who lived near the border of Guinea and Sierra Leone. She claimed that she could heal Ebola and was visited by patients seeking a cure (AFP 2015). There is some confusion about the timing of Nyuma's illness and debate about the role she played in spreading the disease. The most commonly accepted account – that Nyuma became ill at the end of April 2014 and her funeral led to additional Ebola infections – is presented here. Sack et al. (2014) say that Nyuma became ill at the end of March 2014 and died around April 8, 2014. Others (e.g., Blayden [2015](#)) strongly deny that Nyuma helped ignite the subsequent outbreak.

Ebola survivors continue to be stigmatized when they return to their communities. Because of this, the Guinean Ministry of Health is no longer naming the neighborhoods with suspected Ebola cases (Lazuta [2014c](#)).

April 30, 2014 (Wednesday)

Guinea believes its Ebola outbreak is under control. Guinean President Alpha Condé expressed confidence that disease was being contained and said there have been no new cases in recent days (AFP [2014b](#)).

Finda Nyuma dies of Ebola (AFP 2015).

May 1, 2014 (Thursday)

There is currently one Ebola patient in Conakry, Guinea, three in Guéckédou, and none in Macenta (Médecins Sans Frontières [2014c](#)).

May 2, 2014 (Friday)

The West African Ebola outbreak may be winding down. Only a few confirmed cases remain in Guinea, and no new cases have been reported from Liberia in over 3 weeks. With the decline in cases, a MSF Ebola clinic in Macenta, Guinea, has been placed on standby (Médecins Sans Frontières 2014c). The incubation period for Ebola is 21 days (World Health Organization 2015). The outbreak will be considered officially over once two incubation periods (42 days) have passed without a new case appearing (World Health Organization 2015).

May 6, 2014 (Tuesday)

Senegal reopened its border with Guinea at 0800 h this morning (Reuters 2014e).

May 7, 2014 (Wednesday)

Guinea has reported a total of 231 Ebola cases and 155 deaths. Liberia has reported 13 cases (Smith 2014).

May 14, 2014 (Wednesday)

There have been no new Ebola cases in Conakry, Guinea, since April 26, 2014 (AFP 2014c).

The Gambia has lifted its flight bans for Sierra Leone and Liberia. The ban on flights from Guinea presumably remains in effect. The Gambia says that it will reevaluate its bans as the situation warrants (AFP 2014c).

May 15, 2014 (Thursday)

Guinea reports two new Ebola deaths. This brings the total number of fatalities in the country to 157 (Watts 2014).

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