



on the trail of
CONTAGION

One team's quest to find a potential Ebola case in Liberia reveals how difficult it will be to end the epidemic

By **Kai Kupferschmidt**, *in Bong County, Liberia*

The only map we have to guide us in our hunt for the Ebola virus looks like a child's drawing, with a simple hospital sketched in the middle and paths snaking away in all directions. It is taped to a wall in the hospital itself, in Fenutoli, a small city in Bong County, in the heart of Liberia. Our team drove here this morning from the regional town of Gbarnga: 90 minutes on pavement, then another hour on a red dirt road. We have come in search of a woman.

Her last name may be Washington or Moses. She may be pregnant. She may be ill. The only thing the search team knows for sure is that she has been in contact with two people who recently died of Ebola. We

need to find her, explains Arthur Mutaawe Lubogo, an epidemiologist from Uganda, and bring her to the county holding center where she can be monitored for 21 days.

The woman's story isn't unusual. She came to the hospital seeking medical care, but when the doctors called an ambulance to take her to a treatment unit to be tested for Ebola, she disappeared into the jungle. County surveillance officer Emmanuel Dweh, who leads the search team, has heard that she fled to a village called Fenemetaa, at the very end of one winding path on the little map. We can only get there on foot, about 2.5 hours through the jungle, a young nurse tells us.

Our party gathers: Dweh; Lubogo and another epidemiologist from the African Union; two people from Doctors Without

Borders (MSF); and a handful of journalists. We pack some water and set off.

TRACING CONTACTS IS CRUCIAL for stopping an Ebola outbreak. You need to find every patient, identify everyone they have interacted with, and monitor them during Ebola's 21-day incubation period. Anyone who starts showing symptoms has to be isolated before he or she infects anyone else. Liberia's official goal is to find each and every contact, but at the height of the epidemic, when tens of thousands of people had been in contact with patients, the task was impossible. Now that the number of cases has declined sharply (*Science*, 28 November 2014, p. 1039), following contacts is much easier, which should make it possible to end the epidemic.

Liberian epidemiologist Emmanuel Dweh at the start of a contact tracing mission to find a woman who has fled to a remote village.

But at a late November meeting in the ministry of health in Liberia's capital, Monrovia, contact tracers talked about the huge difficulties they still faced. They were supposed to tell contacts living in Monrovia not to leave their homes, but there was no system in place to provide people in quarantine with food. There were no thermometers to check them for fever.

And then there's the fact that many people are as afraid of the contact tracers as they are of the disease. They often run away into the jungle for fear of being taken to a treatment unit. Instead they seek help or solace from traditional healers, which puts new people at risk. "This is a new phenomenon and a very worrying one," says Mosoka Fallah, who heads the contact tracing effort in Monrovia. Early prevention messages were counterproductive, says Almudena Marí Sáez, an anthropologist who has worked in Guinea and Liberia, because they emphasized that Ebola is deadly and incurable. "People said, 'Well if you cannot help us, why should we come to you at all?'"

We had seen the consequences that morning on the way to Fenutoli. In a quarantined town named Telata, the empty stalls of a normally bustling market lined the road. Earlier that month, a man from the village had taken in the children of his sister, who had died of Ebola in the capital. When the kids started dying, the man declared that someone who wished him ill had transformed his own spirit into a leopard, which attacked the children—traditional understandings of infection remain common here. The man finally fell sick himself and went to the Bong County treatment unit, where the beds around him soon filled up with other family members, friends, and neighbors. In a cruel irony, he was one of the few to survive.

AS WE SET OFF INTO THE JUNGLE to find the missing woman, thickets of bamboo tower over us. The air smells of wet earth and, strangely, cooked rice. We cross streams and swamps, often bridged by no more than a few logs. Once I lose my balance and fall into a small stream. There are no helping hands as I clamber out, my boots soaking

wet. "We have a no touching policy," I'm told.

The villages along the way are mostly deserted, only a shadow glimpsed behind a hut or a flicker of movement in the trees hinting at any life. In one village, a pot is simmering on an open fire, abandoned. A village elder, a thin man with a weathered face and a small gray beard, appears at a window but does not come out. Dweh asks him if he knows about Ebola. Yes, he says, but no one in the village has symptoms, and he has not heard of the woman we're seeking.

In another village, we find a man called Leopold Glepoli. Dweh has heard that he is a traditional healer who treated the woman. We need to take him to Fenutoli, Dweh tells him, so he can be taken by ambulance to a holding center for Ebola contacts—a couple of tents in a stadium in Gbarnga, where contacts can await the end of the incubation period. If a contact falls ill in one of the

of water, and the sun will set in just a few hours. We turn back.

ON THE WAY BACK, we pick up Glepoli. He is still angry but says he wants to prove his "innocence." Darkness filters slowly into the jungle, the path fades, and the bridges are even more harrowing. Fortunately, Glepoli knows the way. Morten Rostrup, a Norwegian physician working for MSF, tells the story of a multiday trek through the Liberian jungle 15 years ago, during the second civil war. Rostrup and a colleague had heard that a mysterious fever was killing many people in a remote village. "We thought even then that it could be Ebola," he says. But when they arrived at the village, there were no more patients, only graves.

The hours go by and we grow thirsty, hungry, and exhausted. Fran Miller, the other

MSF worker, offers me her last sip of water. "Don't touch the bottle with your mouth," she says. "Pour it into your mouth." When it gets completely dark, we use flashlights, iPhones, whatever we have, to light the way ahead. Then we see other lights approaching through the thicket. It's a search party from Fenutoli, sent out by the drivers, who expected us back hours ago.

After another 30 minutes, we reach the top of a small hill and see Fenutoli below us. It's about 7 p.m. The whole village has come out to meet us. There is applause as we stumble out

of the jungle, dirty and exhausted. Surrounded by the villagers, Glepoli insists that he hasn't been in contact with sick people. A huge cloud flashes with lightning in the distance and Glepoli is working up a rage again, shouting that he doesn't want to go to the holding center. But there is no way to get him there anyway: The ambulance isn't coming today. The villagers don't want him to stay either, so he slips back into the jungle to return to his village.

Glepoli did not get sick. And the woman named Washington or Moses was later found. She "surrendered to the Bong County Health Team," Dweh writes me in an e-mail a few weeks later. Her 21 days passed without her getting sick. In an epidemic that is filled with heartbreak and sad stories, it was the best outcome anyone could hope for. But that night, a happy end seemed as elusive as the fireflies flickering in the depths of the forest. ■



This simple, hand-drawn map helped guide an Ebola team during a 9-hour trek through the Liberian jungle.

remote villages, it becomes almost impossible to get them to a treatment unit. Glepoli, a small man, denies having had any contact with a sick person and angrily rejects the plan. It's already past 1 p.m., and the team decides to push on.

The map proves by and large correct, but Fenemetaa is much farther than the nurse told us. When we arrive after 4.5 hours of strenuous walking, we don't find bodies, sick people—or anyone at all, except for four young men, lounging about in T-shirts, shorts, and sandals. Dweh asks them about the woman and tells them about Ebola. He calls the virus a dangerous poison that she may be carrying inside her.

It's not clear if the men understand. But they say the woman hasn't been in the village. Later, they tell Dweh that she was there but has left. "They are lying," Dweh says, his head low, his eyes sad. "I can see it in their faces." But it is late, we're almost out