

ANTHROPOLOGIE MÉDICALE

Medical anthropology and Ebola in Congo: cultural models and humanistic care.

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Manuscrit n° 2761-2. "Atelier sur les fièvres hémorragiques virales". Reçu le 21 janvier 2005. Accepté le 12 juillet 2005.

Résumé : Anthropologie médicale et fièvre due au virus Ebola au Congo : modèles culturels et soins humanistes.

Rarement des médecins anthropologues se sont impliqués dans la lutte contre les maladies à forte mortalité telles que la fièvre hémorragique due au virus Ebola (FHVE). On rapporte ici les résultats de deux interventions distinctes mais néanmoins complémentaires pendant les premières phases d'une épidémie en République du Congo en 2003. La première approche souligne l'importance de la compréhension des modèles culturels des populations locales ainsi que les explications politiques et économiques de la maladie alors que la deuxième approche propose une prise en charge des malades plus humanitaire qui prend en compte, une fois identifiées, les croyances et pratiques locales.

Summary:

Seldom have medical anthropologists been involved in efforts to control high mortality diseases such as Ebola hemorrhagic fever (EHF). This paper describes the results of two distinct but complementary interventions during the first phases of an outbreak in the Republic of Congo in 2003. The first approach emphasized understanding local peoples cultural models and political-economic explanations for the disease while the second approach focused on providing more humanitarian care of patients by identifying and incorporating local beliefs and practices into patient care and response efforts.

maladie émergente
virus Ebola
modèle culturel
Congo
Afrique intertropicale

emerging disease
Ebola virus
cultural model
Congo
Sub Saharan Africa

Introduction

Medical anthropologists are involved in the control of several infectious and parasitic diseases throughout the world, but only recently have anthropologists (or any social scientists for that matter) conducted field studies on high mortality emerging diseases such as Ebola hemorrhagic fever (EHF). HEWLETT and AMOLA (5) provided the first systematic medical anthropological field study of Ebola (Uganda 2000-2001), but the research occurred during the final months of the outbreak so the impact of the study in control efforts was limited. This initial anthropological study and support from emerging disease specialists at World Health Organization (WHO) led to policy changes in response procedures that included the early involvement of medical anthropologists. The policy changes, as well as the organized physical resistance to international efforts to control Ebola in Gabon and Congo in 2001-2002 (9), contributed, in part, to a WHO decision to invite medical anthropologists to participate in the initial international response team to the 2003 Republic of Congo (RC) Ebola outbreak.

This paper describes the contributions of medical anthropologists and identifies two distinct but complementary medical anthropological approaches to control efforts. The first

approach emphasizes understanding local people's perceptions, feelings, and responses to the disease (i.e., their cultural models for EHF). This knowledge can then be incorporated into all aspects of control efforts (i.e., clinical care, collecting laboratory samples, health communication, burying the dead, etc.). The second approach emphasizes identifying specific features of clinical care and intervention efforts that are not culturally sensitive or appropriate. This approach is sometimes called "clinical medical anthropology" (9). Both approaches aim at providing more humanistic interventions. Ideally, more humanistic care and interventions lead to more rapid and efficient control of EHF.

Background

“Cultural” or “explanatory” models refer to an individual's or culture's explanations and predictions regarding a particular illness. Some of the questions asked when trying to understand a cultural model include: How do individuals refer to the illness? How do they explain it (i.e., cause)? What do they see as appropriate treatments? What do they do to prevent the illness? Patients, physicians, healthcare workers, and local people in different parts of the world have cultural models for different illnesses. Providing care and treatment

for a particular disease is often based upon negotiating these different models. Individuals within a culture can vary enormously in their beliefs and adherence to particular explanatory models due to variation in personal experiences (e.g., experiences with the disease, exposure to alternative models, etc.). The biomedical cultural model for EHF is the one most familiar to Western trained health care workers and is outlined in the last column in table 1.

Five Ebola outbreaks have occurred in the Gabon-Congo border area since 1996. The 2003 outbreak had 143 cases and 129 fatalities (90% case fatality rate) in the Mbomo and Kéllé health districts of the RC. Fifty-three percent of cases were males and ages of patients ranged from 5 days to 80 years. The origin of this outbreak in humans has been traced to forest hunters who handled infected gorillas or antelopes. The outbreak started in late December 2002 and was declared over in early June 2003 (2).

The Kelle and Mbomo sub-districts of RC are some of the most remote tropical forest locations within RC. Kéllé sub-district has a population of about 4000 inhabitants, the majority being from the Mbeti ethnic group (also known as Mbete, Mbere). Mbomo sub-district has a population of about 7700 and four ethnic groups occupy the region. The Mboko are the predominant group in and around Mbomo, while the Kota predominate in areas to the east and north of town. The third and fourth ethnic groups are sometimes referred to by local peoples as "pygmies"; the Mongome live in villages, principally between the towns of Mbomo and Mbandza while the Bakola live in forest or village camps to the northwest of Mbomo (i.e., road towards Gabon).

The Mbeti, Mboko and Kota farm a variety of crops, such as manioc, plantains, peanuts and pineapple near their villages, but they also have family-based territories several kilometers

in the forest where they maintain hunting and fishing camps and collect wild fruits and tubers (3). The Mbeti are matrilineal and patrilineal while the Kota and Mboko are patrilineal and patrilineal.

Studies have not been conducted with the Mongome and Bakola of this region so little is known about these ethnic groups. The Mongome are more sedentary, farm the same crops mentioned in the previous paragraph and are integrated into village life. The Bakola are more mobile, moving their camps several times a year, rely more heavily on forest products and share their foods extensively with most members of a camp. Bakola interviewed indicated they did not have fields and that they hunted with nets and guns from villagers. They collected a variety of forest leaves, tubers, nuts and fruits.

Finally, it is important to mention a few things about the social-political context of the outbreak. The government banned all travel into or out of the area, the border with Gabon was closed, all schools and churches were closed, all large public events were banned (e.g., dances, night clubs, soccer matches, large funerals - small burial rituals were allowed), and all traditional greetings by shaking hands were banned (community members developed an alternative novel greeting of snapping both fingers twice). People were told not to eat any type of game meat. There was general tension and uncertainty in the community but most people went about their daily tasks.

Methods

The group divided into two teams in order to evaluate the situation in two health districts, Mbomo and Kéllé. The HEWLETTS (medical anthropologists) traveled to Mbomo while EPELBOIN (medical anthropologist/physician)

Table 1.

		Diagnostic procedures. <i>Procedures de diagnostic.</i>			
english gloss	sorcery	Religious Sect	illness	epidemic	EHF (biomedical)
term	ekundu/ezanga	La Rose Croix	ekono/thaba	opepe	Ebola
basic description	sorcerer sends spiritual objects into victims	Christian sect devoted to study of mystical aspects of life	illness	illness that comes rapidly with the air/wind and effects many people	EHF biomedical model
signs and symptoms	rapid death, fever, pain and inflammation of stomach	many deaths within the family	fever, vomiting, diarrhea with blood	many people sick or die at same time	fever, vomiting, diarrhea with blood
cause	conflict in the family, lack of sharing, accumulation	family member wants wealth, power, sacrifices family members	"dirty" items (puss, feces, etc.); sexual contact with sick	dirty items, but comes with the wind	filovirus
transmission	powerful object with spirit sent into body	manipulating objects from victim (hair, picture)	contact with dirty items or infected person	air, close contact with infected	contact with bodily fluids of patients
risk group	usually adults, people who argue, do not share, economically successful family members	family members close to person seeking power, wealth	anyone in contact with dirty items or infected person	anyone	anyone in contact with bodily fluids of victim
patho-physiology	eats vital organs. Can attack any part of the body	can attack any part if the body	damage to major bodily organs	varies by specific epidemic	damage to major bodily organs
treatment	traditional healer identifies person who sent object; locate and destroy object with sorcerer; go to church to pray for God's assistance	traditional healer identifies persons ending illness; praying at church	traditional healer treats with herb, bark; biomedical person treats with drugs	traditional healer treats with bark, herbs, etc.; biomedical person treats with drugs	none, hydrate, control vomiting
prognosis	good if objects destroyed, otherwise death	not good unless person causing can be identified and stopped	varies by illness; very poor with Ebola as new for traditional healers and biomedicine	often not good as makes many sick	death is common
prevention	cords, vaccination from traditional healer, drinks, secret society to prevent attack, special dances	powerful protection objects (fetish)	Aavoid contact with polluted substances or people	move away from air movements in forest, field camp; hunt or chase away	avoid contact with infected individuals

and FORMENTY (WHO Ebola specialist) traveled to Kéllé. Mbomo and Kéllé towns are about 100 km apart, but it took one full day to drive the distance. The two teams emphasized the two medical anthropology approaches described above. The Mbomo team focused on understanding local cultural models of Ebola and identifying beliefs and practices that may amplify or help control the outbreak, while the Kéllé team focused on cultural sensitivity of clinical and intervention strategies (i.e., clinical medical anthropology).

Research methods were constrained due to the limited time to conduct the research and concerns over security. Since we were the initial team and all Ebola cases and their contacts had not been determined we were cautious in our movements and interviews. Also, four teachers were assassinated a few days before our arrival because of their perceived role in the outbreak. The assassinations occurred in Kéllé and consequently the research team in that location was particularly impacted (e.g., limited movement in the community). Security was better in Mbomo and the team was able to move about in the community and conduct open-ended and semi-structured interviews with individuals and small groups (5-30) of villagers. In Mbomo, informal group meetings were conducted with the following: Five groups of women, four groups of children, three groups of Red Cross volunteers, one group of nurses, one group of teachers, three village chiefs and council of elders in three neighborhoods within Mbomo, general village meetings in four rural villages, and separate meetings with Bakola and Mongome in two villages. Interviews were also conducted with the following individuals in Mbomo: the physician at the national park, Ministry of Health (MOH) medical chief, two traditional healers, and the director of Lossi Reserve. Team members also attended daily morning meetings with all Mbomo health personnel and the regional EHF crisis committee meetings a few times a week (chaired by Sub-District Chief).

The methods of the Kéllé team varied due to different contexts (e.g., more cases, more deaths, more security issues, more EHF cases at the hospital than in Mbomo). Like the Mbomo team, they attended daily crisis committee meetings and conducted open-ended interviews with traditional healers and medical personnel (nurses, physicians, Red Cross volunteers, MOH medical team) as well as sub-district administrative authorities and military personnel sent to provide security. Methods were different in that they interviewed EHF patients and their families at the hospital and isolation ward (none existed in Mbomo), attended and participated in several funeral ceremonies, and established the isolation ward at the Kéllé hospital.

The results of this study are very limited. Research was conducted in 11 days, in part due to the time it took to get to and from the site (2 days in each direction), but also because of the need to provide medical anthropology data as quickly as possible to incoming national and international teams (over 25 different individuals from 10 different national and international institutions participated in control efforts). We hope this study encourages other medical anthropologists and social scientists to conduct long-term ethnographic research on Ebola.

Results

Cultural Models

The Mbomo team used the methods described above to identify cultural models of EHF. Table I summarizes five cultural

models described by individuals. Each ethnic group had terms for these models but only terms for the two predominant groups in Mbomo (if different terms existed, Mboko term is listed first, Kota term is listed second) are listed. It is important to point out that the models vary between individuals and individuals move in and out of the cultural models as their experiences, knowledge and risk of exposure change. The models are modified by individual experience and the models are often modified over time.

Sorcery

Individuals often attributed early cases of EHF to sorcery. It is outlined in the first column in table 1. Beliefs and practices in sorcery are common features of central African life and are linked to a relatively (by Western standards) egalitarian, cooperative and sharing way of life (REF). Individuals who accumulate, argue and do not share with the extended family are thought to be sorcerers or targets of sorcery. Those who accumulate are thought to have killed family members in order to obtain their success and wealth, or an individual can be jealous of another's wealth and use a sorcerer to send sickness to the one who has accumulated. Sorcery death is often used to explain a relatively rapid death of a healthy adult. Two brief examples are given below. The first is an explanation given for the first cases in the 2002 outbreak near the Gabon border, while the second is the explanation given for the 2003 outbreak in Mbomo.

The 2002 outbreak was attributed to a group of "pygmies" who went into the forest to hunt and fish. The men hunted and women fished. One woman caught some fish, wrapped it in a pouch and hid it for later; another woman found the package and ate it. The woman with the fish was angry and said "you must not like me since you always eat whatever food I hide. You must want to live alone". This led to a quarrel between the women. Later in the day, the men found a dead gorilla, prepared and ate it. In the days that followed people got sick and died rapidly. The family conflict/quarrel and the generation of sorcery was viewed as the cause of the deaths, even though people seemed to realize that the dead gorilla may have contributed in some way.

In Mbomo, the second, third and fourth deaths were all males in one family (brothers and nephew). The first cases within the family were taken to the health center. However, due to a misunderstanding with health personnel they went to the church and finally to a traditional healer who identified an older brother as responsible as having caused the initial outbreak. The older brother was a teacher in village 40 km away and had been promoted several times and was now an inspector. His accumulation of wealth and lack of sharing with the family made him a sorcery suspect. Family members burned down his home in Mbomo and sent a group to his new village to kill him. Police were able to stop the family before they succeeded. The family adhered to the sorcery explanation until wives (in-laws) of the men started to die. The in-laws saw this as a natural illness, the and sought health center assistance.

A sorcerer has a personal object, such as a piece of bark, which has a powerful spirit. The sorcerer sends the object into a victim, often the stomach, causing pain and inflammation. Only a traditional healer can see this object and identify the individual who sent it. If the sorcerer is identified and his objects are destroyed the person will get better. Some people suggested that going to a church and praying may also help treat individuals infected with sorcery. Several of the first cases in Mbomo were taken to a church to pray and try to

exorcise the sorcery, as one village man said so “God can show his superior powers”.

Individuals can protect themselves from sorcery. Traditional healers cut and insert medicines, make protective cords and herbal drinks. Protective spirits also exist, but this usually entails joining a secret society/cult, such as nzobi (the name of the protective spirit). This spirit knows sorcery and can determine guilt or innocence of an accused sorcerer. If an individual is accused of sorcery she/he goes to nzobi cult members and says, “if I am the one killing let me die now”. Cult members have them come back in a week or so and ask them to bring drinks and cigarettes for a dance for nzobi. Nzobi determines guilt or innocence. Anyone can join the cult by paying money. Most members are men, but women can reportedly join. Nzobi is a Mbeti term and was frequently linked to Ebola deaths in Kéllé, although it was seldom mentioned in Mbomo. All ethnic groups described protective sects/dances for sorcery.

La Rose Croix

The Rose Croix is an international Christian sect or organization that seeks to understand mystical forces and promote spiritual renewal (6). The group traces its history back to the Egyptians and the traditions of the Mystery Schools. It was established in the Netherlands in 1924 and reached central Africa in the 1950s-1960s. Individuals in Mbomo indicated that a sect of Rose Croix intellectuals was established in central Africa and that it eventually became secret and incorporated elements of sorcery. Informants indicated members join the sect to become wealthy and politically powerful. Members reportedly obtain this power through mystical means, often by sacrificing family members to the group. They take objects (e.g., photograph, hair) that represent the person they want to harm and then stab or shoot the object in a ritual to kill them. Praying is also part of ritual.

Traditional healers and several community members indicated the Rose Croix was a major force in the recent outbreak. A traditional healer indicated that La Rose Croix members and a group of sorcerers found a powerful poison and were working together to cause the deaths. The healer said he helped to identify and destroy those who were responsible in Kéllé and produced a list of about 12 individuals, which included the four teachers in Kéllé. Teachers in Mbomo said they had not been accused of belonging to Rose Croix, but were well aware that the four teachers killed in Kéllé were accused of being members of the Rose Croix. Several people in Kéllé also felt there was a relationship between Rose Croix and Red Cross volunteers doing health education. The Red Cross volunteers were working with Euro-Americans who are linked to the study of mystical powers of the Rose Croix because it is of European origin.

The Rose Croix explanatory model is similar to the sorcery explanatory model. Both focus on supernatural mechanisms to maintain sharing and egalitarianism. Those who obtain more political power, status and money are suspect. In terms of EHF control, they both assume that the illness is transmitted by a spirit/object; one cannot catch the illness by contact with sick individuals.

Illness and epidemic

By the time we arrived most local people in Mbomo indicated that EHF was an epidemic illness. The “illness” and “epidemic” cultural models are summarized in columns three and four in table I. As the deaths continued local people started to

suggest that it was not sorcery. Local people identified a set of criteria that led them to believe that this was not sorcery, but an illness linked to the air or wind. Local criteria for distinguishing the two included:

- Sorcery kills a few people at time. Village elders and chiefs were particularly influential in establishing this point. One elderly woman said “you see my white hair, never have I seen or heard of this, it cannot be sorcery. I have lived with sorcery for long now, but this, with so many people dying, it is only sickness killing people.”

- Sorcery usually kills within particular families, but epidemic illness can kill anyone. As one woman said, “This illness is killing everyone”

- Sorcery is a human condition. “Sorcery does not kill without reason, does not kill everybody, and does not kill gorillas or other animals. Ebola is a real illness because it kills indiscriminately and also kills gorillas and other animals” (Mbomo woman).

Illnesses are generally acquired from things that are perceived as “dirty” or polluting, including people who do not wash, chickens, dogs, cats, feces, puss, polluted water and urine. The “pygmies” (Bakola) were sometimes implicated in the origin of many illnesses because they were perceived by farmers as dirty-i.e., they did not wash very often, slept on the floor with their dogs, and did not wash pots and pans. Ebola is now often categorized with other locally identified illnesses such as somet (trypanosomiasis), obila (leprosy), pebu (fever/malaria), lingutu (measles), kutukutu (smallpox), sida (HIV/AIDS), ngarra (skin infection all over the body), sophisi (gonorrhoea) and mbandja (chest illness).

But EHF was distinguished from other local illnesses in that it was a type it was associated with the air and wind and attacks anyone and often causes death. We have translated “opepe” as epidemic. In 2002 the Ebola “air” came from a village near the Gabon border, while in 2003 it was coming from the south (Kéllé area). Individuals had mixed opinions as to whether “opepe” did or did not come with a spirit.

Individuals indicated that one way to prevent attacks of epidemic illness was to move to a forest camp (most farmers had forest hunting or fishing camps) or a camp in your fields. This gets you away from the air and contacts. Epidemic illnesses were transmitted by contact with infected individuals. The local people did not have a standardized protocol for killer epidemics as found in Northern Uganda (Hewl et al and Amola 2003), but they consistently listed ways to prevent and control epidemic (opepe) illness (ekono) infection.

- Move away from areas with infected individuals.

- Children were especially at risk so it was particularly important to keep children away from infected individuals and move them to the forest if possible.

- Close and monitor the village; do not let people in, particularly those from infected area.

- Isolate victims; separate living from infected, tell others to stay away.

- Organize a dance with traditional healers to hunt and chase opepe away. Like Uganda (Hewl et al and Amola 2003), this dance spreads from village to village within hours as everyone in the area helps to chase it away. Traditional healers could sometimes see opepe coming and they would organize the dance. In 2002, a traditional healer in a village near the Gabon border saw the epidemic coming but did not tell anyone. These dances do not occur very frequently since the establishment of health centers. The dances were viewed as “traditional” and therefore not a valued practice.

As outlined in table 1 both traditional healers or biomedical health workers can treat local explanatory models of epidemic illness. Each type of epidemic illness has its own treatment. Some traditional healers said they could treat some of the symptoms of EHF, such as vomiting, but said they could vaccinate or provide protective cords for EHF.

It was interesting that many villagers as well as one of the traditional healers indicated that most epidemic diseases, including Ebola, occurred during a particular season—the short dry season right after the heavy rains. This is the time when many flowers and fruits appear in the forest. It is a season of high risk because other epidemic illnesses, such as measles, the flu and whooping cough occur frequently during this season.

Finally, it is important to point out that the terms and concepts for illness (e.g., “ekono”) and epidemic (e.g., “opepe”) are not unique to this area and are common in many Bantu-speaking areas of Africa (4, 7, 8). “Opepe” is clearly consonant with the word “mphepo” in “Chichewa and Chinyanja and several related languages in Southern Africa, which has a literal translation to “wind” but refers to particular local illnesses (PETERS, personal communication). In the 2000 Uganda outbreak, the term “gemo” was used to explain how EHF came with the “wind” and infected many people (HEWLETT and AMOLA 2003). While the Congo studies are very limited they suggest it may be possible to generalize these findings to other parts of central, east and southern Africa.

The Biomedical Model

Local people consistently and regularly incorporated the biomedical explanatory model into their response to the signs and symptoms of EHF. In 2002 the first EHF cases went to the health clinic for treatment. The nurse gave them prescriptions for a variety of medications but the family did not have the money to purchase the drugs. This year the first EHF patients in Mbomo went to the hospital and received care from the national park physician. The first patient died at the hospital while the second patient was placed in isolation for one day and was receiving treatment when the family was told it may be Ebola. In part due to the stigma associated with Ebola, the family determined it was something else and took the patient to a church to pray for him. The next morning the Sub-District Chief told the family to remove him from the church and consequently they took him home. Family members privately asked medical personnel to assist with medical treatment at home, but they refused. Medical people said they could not touch the person and that he would have to be taken to an isolation unit at the hospital. The family got angry and solidified their belief that sorcery was the cause of the illness. But even though this family stated it was sorcery, they kept their children away from sick individuals. Their children also could not enter the home of sick individuals and sick family members were left alone in a house.

Other signs that local people incorporated the biomedical model:

- several people in the group interviews asked if there was a pill to treat the disease; and,
- the powerful healer who was one of the few people to strongly indicate this outbreak was due to sorcery, asked for gloves and bleach. The healer felt there were different phases to the illness and that controlling contact was one phase; sorcery was another phase.

It is important to remember that an EHF outbreak occurred in the same area in the previous year about and that Red Cross volunteers started health education before human EHF cases

were identified (2). Teachers were instructing their students about the biomedical model in classes before the school was closed and the Red Cross was transmitting this model reportedly since October 2002.

An important point is that local people use a variety of models and often will use them simultaneously even though they may be somewhat inconsistent with each other.

Political-Economic Explanations

While sorcery was generally associated with early cases of EHF some local people felt that the actual origin of the outbreak was associated with Euro-Americans. A long history of French colonialism and exploitation exists in the region and this continues to lead to a general mistrust of Euro-Americans. Currently, the European Economic Community (EEU) funds the large game parks and reserves (Odzala and Lossi) in the area. The parks have enormous political and economic impact as they are the prime source of employment in the region (e.g. park staff, ecoguards, tourist staff).

This general mistrust has led some individuals to hypothesize that Ebola was caused by European and American park administrators who wanted to stop local people from hunting in the parks and reserves. Individuals in one village saw several planes flying over the park shortly before the outbreak. Others reported that European and American researchers (many conduct research at the park) walked in and out of the park just days before the outbreak started. Some people hypothesized that the planes and/or the researchers poisoned the animals with Ebola. By poisoning the animals and starting an epidemic, the government could ban local people from going into the forest. Anti-poaching campaigns are a big part of park’s activities and Ebola was seen as another way to control local people.

The World Health Organization is perceived as a Euro-American organization and in some villages this general mistrust extended to members of the their teams. In one instance, local people felt that in 2002 WHO gave Gabonese Ebola victims thousands of dollars, but gave nothing to Congolese victims. It was explained that the president of Gabon gave the money not WHO.

Fear of Euro-Americans also existed in the village close to the national park. People did not want us to take any pictures of the village, graves in particular, because they said the European park administrator took pictures of Ebola graves and showed them in Europe. People felt this scared tourists away from coming to the park. Many people in the village depend upon tourist and other park activities.

At the other end of the political economic spectrum, some local people were quick to blame “pygmies” (i.e., Mongome or Bakola) for the Ebola outbreak. Pygmies live in the forest, have regular contact with animals, eat anything, and are dirty (e.g., do not wash, sleep on floor, sleep with dogs, many people share the same bed).

It is important to point out that only about ten men (no women) identified political-economic explanations when asked explicitly about the causes of EHF. Also, political-economic reasons for EHF were more likely to emerge informally over a meal or beer and least likely to be mentioned in more organized community meetings or focus groups.

Implications of Explanatory Models

Most of the local behaviors and beliefs were being addressed by the excellent health education efforts of the Red Cross volunteers. The risks of washing and sleeping next to the body

of an Ebola victim, transmission by bodily fluids, contact with dead infected forest animals, were part of health education messages. But health educators and medical personnel were not aware or did not consider the possibility that existing, so-called "traditional" beliefs and practices actually might contribute to EHF control efforts. We suggested that the following beliefs and practices be built upon and emphasized in health education:

- local people had terms for contagious illness and dangerous epidemic;
- local people had ways to distinguish sorcery from natural illness and were moving towards changing their explanations for EHF towards epidemic natural illness
- local categories of illness and epidemic led people to move away, isolate, and limit contacts with the infected individuals
- local people viewed children as especially vulnerable and made special efforts to keep them away from the sick, even when sorcery was the explanation.
- local people used multiple explanatory models and health care systems at the same time, even in the initial stages of the outbreak
- villages were closed and monitored by local chiefs and communities
- last year's experiences enabled the community to adopt epidemic illness explanations much earlier than last year and this led to earlier community mobilization
- concepts and metaphors of chasing away and hunting of epidemic (opepe) could be incorporated into health education messages.

The explanatory models should also be useful for physicians working with Ebola patients and epidemiologists collecting field data. Anthropological studies in Mbomo also focused on women, children and health care workers but these data will not be presented here.

Traditional Healers

Should traditional healer activities be stopped during an Ebola epidemic? Should traditional healers be incorporated into control efforts? In the Ugandan outbreak all traditional healing practices were stopped because it was thought that traditional healers were amplifying the outbreak by treating Ebola patients. Health officials thought they infected patients with their unsanitary methods and cutting the skin to insert medicines. Traditional healing practices were banned during the outbreak, but later it was determined that they did little to amplify the outbreak (5).

Many people seek the services of traditional healers, especially in rural areas. Healers always had many patients waiting whenever we went to interview them. When we arrived in one village at 9 A.M., nobody was at health clinic, but 15 people were waiting to see the traditional healer. While we do not have precise numbers, there are clearly more traditional healers in the area than biomedical clinicians, and their services can be much cheaper and more flexible than biomedical health services.

Many different types of traditional healers (nganga) existed in the area. Some specialized in child illnesses while other were specialists in curing sterility, broken bones or sorcery. One healer indicated that EHF was an epidemic illness while the another suggested sorcery. Traditional healers can provide protection from sorcery or epidemic illness. They can make cords, insert medicines (vaccinate), obtain objects (e.g., bark), or make drinks that protect the patient. Healers interviewed wanted to collaborate and work with medical personnel, they

also wanted gloves and bleach to protect themselves (even the healer who indicated sorcery was the cause).

As noted in the section on the Rose Croix, some traditional healers wanted to collaborate with biomedical workers, but were also involved in the assassination of teachers thought to be responsible for the outbreak.

Traditional healers often want to assist in outbreak situations, but one has to be cautious as to the implications of their involvement. We suggest that:

- A special effort should be made to provide health education and protective gear (e.g., gloves, bleach) to traditional healers. Many people seek treatment from traditional healers during an outbreak especially at the start because the hospital or clinic may be seen as polluted. Also, healers often (all interviewed in this study) want to help control the outbreak.
- Temporarily ban or ask healers to stop cutting to inserting protective medicines (i.e., vaccinations). Healers indicated that they could develop other ways to provide protection and that this would not be problematic.
- Do not explicitly or systematically incorporate healers in this region into control efforts. Some healers saw EHF as a natural illness others saw it as sorcery. Healers who promote sorcery explanations can potentially contribute to a decrease in treatment-seeking at the hospital/clinic because sorcery it is not viewed as contagious or treatable by biomedicine. Also, many people indicated that traditional healers cured by day, but were sorcerers by night. They had power and could use it either way. Any explicit collaboration could increase the position and authority of beliefs in sorcery.

Humanitarian care and interventions

During the 2001-2002 EHF outbreaks in Gabon and Congo the international intervention teams were evacuated twice because of local armed resistance against the teams (10). Over a hundred people died in these outbreaks but local people organized and resisted international assistance. Why? Several factors contributed to this situation, but it was at least, in part, due to the lack of an understanding of local history, perceptions and practices. For instance, during 1995-1996 Gabon outbreaks, French and American teams were not cooperative with each other so local people often had two sets of researchers coming through their villages taking blood samples twice and asking the same epidemiological questions. Researchers from both teams seldom reported back to the local people. The 2001-2002 outbreak was primarily rural and international teams tried to establish epidemic control strategies developed in urban EHF outbreaks (e.g., Gulu, Uganda and Kikwit, Democratic Republic of Congo where most cases went to large hospitals, isolation wards of infected patients were established, and it was possible to bring suspect cases to the hospital). In part due to lack of trust of Euro-Americans, local people in this region did not want to take sick family members to the isolation wards in large towns and initially did not believe the illness was caused by the Ebola virus.

Given the problems with previous outbreaks, such as in Uganda (5), alternative culturally sensitive control strategies were developed by WHO:

- if isolation units are established, tarps should not enclose the ward so family members could see loved ones and observe the treatments they received in isolation (transparency of hospital activities);
- home health care should be an option for infected and suspect cases (families would be trained in barrier techniques by the Red Cross);

- traditional burial ceremonies at home should be permitted with protective gear.

The aims and methods of the Kéllé team were distinct from the Mbomo team due to differences local conditions described above and the background of Dr Epelboin. He is a physician and anthropologist and is responsible for establishing culturally sensitive care for Central Africans in Paris hospitals. He identifies ways to incorporate African systems of belief and practice into biomedical clinical practices. Local conditions influenced work in Kéllé because local people had resisted international interventions in 2002 and were very suspicious during the 2003 outbreak due to a dramatic increase in the number of Ebola deaths and the assassination of four school teachers. Establishing rapport and trust with the community was essential so the international team demonstrated empathy by sharing in the grief local people were experiencing attending and supporting burial ceremonies and expressing condolences to the families who lost loved ones. Over time the team introduced the use of a disinfectant (bleach) in the communal hand washing ceremony at the burial. It was explained that this increased cleanliness and also symbolically demonstrated solidarity of the group (1).

The burning of clothes and other personal effects of the deceased was also an issue of potential tension. Medical workers generally burned the effects at any location near the hospital, but the Kéllé team suggested that some personal items be placed in the coffin or in the grave of the deceased and that infected clothing and bedding be burned at a location important for the family. Nothing should be burned without consulting the family. In this region of Congo some objects of the deceased (e.g., shoes) are generally placed on top of the grave. This was not possible with Ebola victims so the local people suggested placing these objects in the grave or coffin.

The Kéllé team pointed out the importance of expressing empathy and understanding the emotional, social and economic costs of the loss of loved one on spouses and children. In particular, they pointed out that several health care workers died in providing professional services, but little attention or support was provided to their families after their loss.

In terms of being sensitive to inter-personal relations the Kéllé team made several observations and suggestions. National and international team members often ride around town in large new Toyota vehicles with their windows rolled up. They also frequently used antibiotic hand lotions after they visited a community. These were symbols community members took to indicate the distancing between us and them. The Kéllé team suggested health workers should not roll up their windows when they drive through town and that they should wait until they leave a location before applying antibiotic hand-washes.

The Kéllé team also established a culturally sensitive isolation unit. They placed a picket fence around the unit so family members would know how close they could get to the ward and made the surrounding area comfortable so the family could come and watch their loved ones in isolation. No tarp was placed around the isolation ward and cultural protective objects ("fetishes") were allowed in the unit.

The primary lesson of the Kéllé control efforts is that greater empathy and solidarity with individuals, families, and community members is needed. Due to particular histories

with colonials and international teams, there is considerable mistrust of Euro-Americans and other outsiders in the region. It is also important to integrate biomedical and local cultural practices and beliefs, when possible. It is not easy to know where or how to intervene in these situations, especially since decisions are needed quickly. It is essential that the medical anthropologist in these situations already have extensive knowledge about the cultures and histories of central African peoples and cultures.

Discussion and conclusions

This paper describes two complementary medical anthropological approaches to an EHF outbreak in Congo. The data are very limited given the conditions described above, but it is one of the only field studies of a rapid killer epidemic by medical anthropologists. The first approach focused on how local people explained and perceived the outbreak, while the second approach emphasized demonstrating empathy to local people and identifying ways to integrate biomedical and local cultural practices and beliefs. Both approaches emphasize the importance of understanding the feelings and perceptions of local people in trying to control an outbreak. The first approach contributed to EHF control efforts by providing national and international biomedical personnel a better understanding of how their patients viewed Ebola, and assisted health educators and clinicians to identify health-enhancing or health-lowering beliefs or practices into their health education messages. The second approach contributed to EHF control by making specific changes in health care delivery, such as how organize the isolation unit and how to bury Ebola victims. The two approaches are complementary and both are essential elements of effective disease control programs. We were fortunate in this case to have had medical anthropologists with different backgrounds and expertise. Medical anthropologists working alone, which is the norm, should strive to integrate or at least have some knowledge and understanding of different approaches.

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