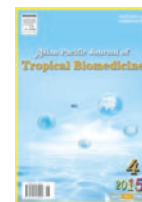


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Ebola outbreak in West Africa: a neglected tropical disease

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ABSTRACT

Neglected tropical diseases (NTDs) are remediable injustices of our times. Poverty is the starting point, and the ultimate outcome, of NTD. Ebola is just one of many NTDs that badly need attention. Ebola exacerbates West Africa's poverty crisis. The virus spreading in Guinea, Liberia and Sierra Leone has led to food shortages and neglect of other devastating tropical illnesses. A health crisis that was ignored for months until it was out of control is now beginning to get the attention required, if not the resources. So far, the world's nations have contributed far less than the \$ 1 billion. The U.N. estimates would need to control the epidemic before it becomes endemic. Past outbreaks of Ebola have flared up in remote, forested communities, disconnected from much of the outside world. But the outbreak in West Africa has not slowed yet, and it worsens there the chances of it spreading to other countries. Ebola draws attention to NTD. Ebola is not only a health emergency, but also it's a poverty crisis. The current Global Ebola crisis presents a multitude of challenges in terms of our capacity to respond; the future is even less predictable. Ebola outbreak represents inequity in health as the occurrence of health differences considered unnecessary, avoidable, unfair, and unjust, thus adding a moral and ethical dimension to health inequalities. Health equity does not refer only to the fairness in the distribution of health or the provision of health care; rather, it is linked with the larger issues of fairness and justice in social arrangements.

1. Introduction

Ebola is a neglected tropical disease (NTD). The current epidemic, which was recognized in 2014, is located in four countries and it has killed thousands of people[1]. This made the Western World turn its eyes to a NTD that they had almost not paid attention to. However, this infection is not the only one which produces deaths in Africa, where there are other terrible NTDs. The developed world does not pay attention to these other diseases[2]. One of the most present and lethal disease is the malaria, which affects 207 million people in the world. Every 30 seconds, a child dies due to this pandemic disease somewhere in the world, and more than 3400 millions of people

are at risk of suffering from it. In 2012, this disease caused 627000 deaths; the victims were mainly children under five years old who live in low-income countries[3]. Another greatly forgotten disease is the pandemic of tuberculosis. Each year, there are 9 million new cases, 95% in poor countries, and it kills 1.7 million people. The emergence and spread of strains which are multi-resistant to most of the effective drugs have led to a situation in which the disease is increasingly out of control[1]. As if this were not enough, one of the classic pathologies which is related to poverty is cholera, a diarrheal disease which, if it is not treated, can cause death within hours, thus increasing the potentially explosive nature of outbreaks.

It is estimated that each year there are between 3 and 5 million cases of cholera in the world, which cause more than 100000 deaths. The cause of the infection is ingestion of contaminated water or by the bacillus *Vibrio cholerae*. Thus, outbreaks appear especially after a disaster, when water supply systems are contaminated with the arrival of human groups to overcrowded refugee camps, where it is likely that not everyone has access to potable water. That is why the presence of cholera in one location is considered a key indicator

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of underdevelopment[2].

2. Ebola epidemic in 2014

An unprecedented epidemic of Ebola virus has been causing thousands of deaths in West Africa since 2014 (Guinea, Liberia, Nigeria and Sierra Leone). The Ebola virus was first identified in 1976 in Yambuku, Zaire (now Democratic Republic of Congo) and Nzara, South Sudan[4]. The Ebola virus is a zoonotic pathogen, and its circulation among humans is rare, which explains the fact that the outbreaks are intermittent and unpredictable. The most likely reservoir seems to be a fruit bat, although the link has not been confirmed[5].

The virus has caused more than 30 outbreaks since it was identified in 1976, with less than 1 600 deaths before 2014. In most cases, the virus started in rural areas and the epidemics were controlled with routine public health measures, such as the identification of cases, contact tracing, and isolation and quarantine of the patient to break the chain of transmission. These public health measures have a proven efficacy record for the control of epidemics[3].

3. Clinical aspects of Ebola

The typical symptoms include fever, profound weakness and diarrhea. A maculopapular rash has been described, as well as laboratory abnormalities including elevated transaminases, marked lymphopenia, and thrombocytopenia. Bleeding complications occur in less than half of infected people, and heavy bleeding is relatively rare. It is essential to have a thorough and fast travel history. The incubation period is typically 5-7 days[5].

Once it is suspected that it is the Ebola virus, the diagnosis must be confirmed. In the absence of effective healing strategies, the diagnosis becomes an essential tool. The detection is largely based on molecular testing techniques using the polymerase chain reaction (PCR). Blood samples usually start to show positive results by PCR, one day before symptoms appear. The laboratory test with PCR is sensitive and specific real time, and it can give results within hours. The exchange of information in real time, about the PCR results, is completely essential to improve the response capacity. The antigen detection can be performed in parallel or used as a confirmatory test for immediate diagnosis, while assays for detection of antibodies (*e.g.*, IgM and IgG) are mainly secondary tests which are important in epidemiological surveillance. Moreover, confirmed diagnoses remain essential to the process of searching contacts, which is time-dependent, and to overcome obstacles to reintroduce the survivors in their community. Ebola patients need to quickly receive an effective basic support, which can make a difference between life and death in an infected patient[6].

4. Ebola virus transmission

Ebola is a zoonotic disease, which means that the virus guests in nature are wild animals (mainly fruit bat, but also monkeys and porcupines) that can transmit the infection to a person to start an outbreak. The transmission occurs when a person manipulates an infected animal and touches blood, feces or organs, or through

consumption of raw meat of wild animals[4].

The Ebola outbreak may have started due to a zoonotic transmission, and it has remained in the population through person to person transmission. The infection spread occurs through transmission by the direct contact (through injuries in the skin or mucous membranes such as the lips, nostrils and eyes) with body fluids such as blood, vomit or secretions of sick people (urine, saliva, feces, sweat and semen). Likewise, the transmission can also occur through the contact with objects contaminated with body fluids of a sick person such as clothing, bedding or disposable medical supplies[5].

In some way, traditional practices such as bathing the bodies before burial and the contact with the body during the funeral also contribute to spread the infection, because Ebola virus can persist up to several hours after the death of an infected person[3].

As of the moment of infection with the virus, the disease takes between 2 and 21 days to manifest. Ebola is not contagious unless the infected person has symptoms. The infected person begins to infect others when he/she develops the symptoms and the infection spreads mainly to health workers, family members and people in close contact with the sick person[5].

Excluding these concrete opportunities of exposure to the virus, the common people are not in a high risk of infection. Ebola virus only spreads when the people are sick. A patient must have symptoms to spread the disease to others[6].

As regards travelers, the possibility that a person who has been exposed to Ebola travels outside his/her country exists if the free movement of passengers is allowed. However, the risk of infecting the other passengers is very low. A person only transmits the infection when he/she develops the symptoms, and person to person transmission only occurs when there is direct contact with the body fluids of a sick person[7]. That is to say that for a passenger to get Ebola, he/she must share with his/her seat partner a napkin or cutlery contaminated with blood or vomit. Ebola is a disease in which the virus needs this kind of close contact with secretions, in an environment that does not have the minimum health standards[8].

5. Prevention

Experience tells us that Ebola outbreaks can be controlled, even without a vaccine or cure[9]. Three interventions have stopped every previous outbreak: active research of cases and contacts, an effective community response and preventive education. The first intervention is the meticulous control in health care settings. Taking into account that the first symptoms are nonspecific, patients may expose caregivers (family members), health workers and other patients to the disease before the infection is diagnosed[10].

Secondly, community support must be achieved to change old local burial practices, in order to avoid contact with body fluids of people who have died from Ebola, at least until the outbreak is controlled. This is a culturally sensitive issue which requires a culturally appropriate approach. Finally, the handling and consumption of bushmeat hunted for sustenance should be discouraged[4].

The efforts to have a culturally appropriate health education are essential to identify cases successfully and to track contacts. If the opportunity to detect a single case is lost or if a single contact

becomes ill and it is not isolated, or if a dangerous funerary practice occurs, another chain of transmission can start[7]. It is also important to implement programs of social communication and mobilization to help the affected populations to understand and comply with the control measures and to help health authorities to understand how these measures can be introduced in a culturally sensitive way. In the coming months, this should be the main measure to be successful in preventing new infections[11].

6. The health system of West Africa

Since the Ebola virus was first identified in 1976, no previous outbreak of Ebola virus has been as big or persistent as the current epidemic and none has spread beyond East and Central Africa[12]. In early 2014, the epidemic emerged in a remote region of Guinea, near the borders with Sierra Leone and Liberia. Since then, the epidemic has grown dramatically due to several factors. On the one hand, these countries have few resources to address major health challenges, such as malaria and other endemic tropical diseases, some of which may be confused with Ebola[13].

On the other hand, a large amount of people in these countries do not have a salaried job. The job search contributes to fluid movements of population through its porous borders. The area where the borders of the three countries is now called “hot zone”, because transmission is intense and the people living in these three countries continue reinfected[14].

The epidemic has become so great that the three most affected countries, Guinea, Liberia and Sierra Leone, face enormous challenges as regards implementing control measures which are necessary to stop the disease[11].

The current epidemic in West Africa is unprecedented in scale and it is exceptionally widespread, not primarily due to the biology of the virus, but for the attributes of the affected populations and because control efforts have not been enough to stop the spread of the infection[13].

The infrastructure of health care is not adequate and the essential supplies, including personal protective equipment, are scant. Health workers have been disproportionately affected because of the tremendous demands of patient care and due to the difficulty of implementing control measures to prevent the infection. Even worse, an unprecedented number of health personnel risked their lives and died. The loss of this important human resource impedes significantly the outbreak control. This can lead to close hospitals, especially when staff refuses to go to work, because they are afraid of dying[15].

If we add to these problems a fast-spreading virus with a high mortality rate, it is understood that the scope of the challenge is enormous. Traditional practices such as corpse washing before burial have facilitated the transmission of infection. An urgent priority is to change longstanding burial practices that involve intimate contact with the bodies, which are highly infectious. This recommended that control measure is, of course, easier to state than to implement[16].

7. Ebola 2014: an international public health issue

The last Ebola outbreak in West Africa has once again

demonstrated the limited capacity of public health systems to respond to NTDs, which are highly virulent. The intense media coverage has allowed every citizen in the world to become aware of what can happen when a lethal virus starts in an environment of extreme poverty and where health systems are dysfunctional[14].

We are witnessing many human tragedies of the outbreak: abandonment of rural villages and children who became orphans, economic and social disruption in the capital cities of the countries, extreme daily difficulty to live in the quarantine areas and uncollected corpses[17]. The outbreak is, in all its dimensions, unprecedented. It is an emergency of international concern and a crisis of medical and public health, but also a social problem. Now, a year after the outbreak started, fear remains the most difficult barrier to overcome. The fact that Ebola has no cure feeds the fear and perpetuates these dangerous behaviors. When it was publicly known that health professionals had been infected, the outbreak of Ebola was suddenly worldwide called “epidemic”.

Due to the wide spreading of the media, the fear associated with a virulent and deadly infectious disease started worldwide and spread faster than the virus itself[13].

Some people may wonder why the outbreak of Ebola virus in West Africa is so big, so serious and difficult to contain. These questions can be answered by a single word: poverty. The most affected countries (Guinea, Liberia and Sierra Leone) are among the poorest countries in the world. These are just some of the many challenges to overcome in the worst outbreak of Ebola in the history of almost four decades of this disease. However, with the formidable combination of poverty and dysfunctional health systems, it is not possible to think about an early end of the outbreak[18].

The disintegration of the health care systems in the affected countries is already having a big impact on the health of populations beyond Ebola. These effects on the health system only worsen as the epidemic progresses: in West Africa we will see much more suffering and more deaths during childbirth, and malaria and tuberculosis and HIV-AIDS[2].

The Ebola outbreak is out of control because the world community has taken too long to react. Current international response to Ebola has been too slow and remains dangerously inadequate. The world can not be indifferent and let the people of West Africa suffer in such an extraordinary scale[19].

8. Ebola map 2014-2015

This epidemic is a tragic illustration of the importance of improving global health security. Every day, the transmission of the disease remains unchecked and the likelihood of spreading to unaffected countries increases. It is also important to mention that the epidemic is occurring in West Africa, where there had not been an Ebola outbreak before. Ebola has reached the point in which it could be considered an endemic infection due to a very inadequate and late global response[20]. For the medium term, the risk of constant spread of the epidemic should be taken into account and the possibility that the Ebola become endemic in West Africa shall be assumed, a perspective never contemplated before. If this happens, West Africa could become a reservoir for the virus to spread to other parts of Africa and beyond[21].

The typical efforts “to control the outbreak” are not enough any more for such a big epidemic. What is required is action at a big scale, a humanitarian strategy and a combination of typical public health measures with efficient and secure procedures, which include supplies and human resources, among others[22]. Moreover, a proper response requires an appreciation of the culture of societies in the affected countries and the implementation of interventions with the consent of the population[23].

Paradoxically, in the first world there is an “urgency to delete” everything related to Ebola[24]. At the same time, there is a conviction that as Western Africa is not the whole world, but only a piece of the planet plagued by a deadly epidemic, it has now become a threat because the disease has the potential to spread to other countries, including the rich ones[25,26].

The self-preservation gregarious instinct prevented honest souls in real time disclosure of what was happening[27]. The best defense against an epidemic is to fight it where it started, and this requires good health services. To remember this may help to understand the indifference to the epidemic of Ebola. Africa is not well-equipped to deal with the epidemic in the midst of a crisis in public health[28]. Moreover, the first world countries have a debt to African countries, and they have an ethical obligation to strengthen the weak infrastructure of public health[29]. We have to be one step further from this outbreak, but at this time we are five steps behind[30].

9. How committed the Vatican has been against Ebola epidemic?

To understand the silence of His Holiness against the epidemics that are killing thousands of Africans, a simple exercise in historical memory is needed. When Christianity was declared by Constantine, as state religion, the gates were opened to start all sorts of contradictions. Be it known, for example, that Christianity played no role in the struggle for the abolition of slavery, did not fight slavery trade, nor manifested against black trade[31]. During the Jewish genocide in the Second World War, relations between the Vatican and Hitler’s Germany were warm, and certainly Pius XII was not at the cutting edge of the circumstances in those terrible moments. In 1941, when the collaborationist government of Vichy (France) consulted the Vatican on racist measures against the Jews, he received the answer that he should not object, provided that the persecution and detention were applied “with justice and charity”[32]. Moreover, the bishop of Berlin asked, due to the course the German politics were taking, that the Pope made a strong claim in favor of the unfortunate Jews, and His Holiness responded that “this matter did not concern him.” Pius XII gave an enormous strategic importance to German Catholicism, sustained by the idea of ending communism[33].

On 26th December, 2014, in his traditional blessing *urbi et orbi* (to the city and the world), the Pope Francis made a tepid call for commitment “to all who have political responsibilities”. Moreover, he asked “Christ to be close to those suffering from disease, particularly victims of Ebola epidemic, especially in Liberia, Sierra Leone and Guinea.” This makes the voice of the Holy Father not deeply appellent. Basically, His Holiness is indicating that the Africans who are suffering must accept it “to achieve immortal life”.

Any parallelism to Pope Alexander VI during the evangelization of the “natives of the Americas” in 1493 is not a coincidence[34]. It is clear that the Vatican is not “the Lord’s vineyard”, but a sea of contradictions[35].

10. Conclusions

Ebola epidemic in West Africa grows exponentially. The causes of the exponential growth and duration can be understood if one takes into account the socio-economic context in which the outbreak develops. Liberia, Sierra Leone and Guinea are among the 20 countries with the lowest index of human development, with more than 50% of the population living below the poverty line[25].

The epidemic has surpassed health systems which were already swamped and which could barely fight the most prevalent diseases in the region such as malaria, sleeping sickness, Lassa fever or other diarrhea which cause more deaths every day to the poorest people than the Ebola itself[29].

In this context, the international community faces an increased risk of transmission to new countries and a health crisis in the region. Control efforts of other endemic NTDs as malaria are being disregarded and an increase in the number of cases of this disease is feared[36]. Basically, it is a matter of negligence. This is a disease that, unluckily for Africa, but luckily for the rest of the world, is going to remain in the place where the following two conditions exist: firstly, a place where the virus can perpetuate (in this case, it is the fruit bat); secondly, where there is no public health system[30]. One of the features of a health system is that it is sustainable. The West Africa’s system is not. It is clear that we have to work harder to ensure that resources and necessary actions are at the cutting edge of the needs of the affected countries[27].

We can not claim that there are comparable problems which are more important or more urgent. We can not accept that “there is another issue” which made us postpone the Ebola. There will always be another matter. We have come a long way, but we have not reached the place we wanted.

More than 30 Ebola epidemics have occurred in the last 38 years in the poorest countries of Africa. But that hundreds of thousands of people die in Africa due to AIDS, malaria, armed massacres or hunger is not something new at all[24].

The increasing spread of the epidemic shows that Ebola is the most deadly disease of the poor contemporary world. Not only Ebola is the misery that kills the most, but its combination caused this horrific epidemic[37]. The current epidemic is reaching the limits that the classical containment can handle and it is in serious danger of going out of control[38]. We are worried about the fact that without a massive increase in the response (beyond what is planned in scale and urgency) it will be impossible to bring the epidemic under control[39]. Rich nations must share knowledge and resources to assist African countries to combat the epidemic[34].

Once again, the Ebola exemplifies the 90/10 rule, 90% of research is focused on diseases that affect 10% of the world population[36]. The investments of the drug industry aim to combat diseases that affect people in rich countries[38]. But it is not attractive to invest in diseases which affect poor countries[40]. That the first world carries

out an efficient approach in the focus of the epidemic as well as an honest and reliable research to stop the rapid spread of the epidemic are as likely as snow falling in any country of Africa.

Conflict of interest statement

We declare that we have no conflict of interest.

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