The 2013-2016 West African Ebola virus outbreak: Local contexts and future issues

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ABSTRACT

Ebola is just one example of the many emerging and re-emerging diseases that continue to affect mainly the developing world.

We argue that the unprecedented high level of infections and deaths in the 2013-2016 West African Ebola epidemic, together with the more general impact of Ebola and other emerging diseases on societies, is reflective of the unpreparedness of affected countries prior to an outbreak. Typically, the healthcare systems of most low-income countries are inadequately prepared to be able to deal with such large and unexpected outbreaks.

In this paper, we attempt to analyse the emergence and spread of the West African Ebola epidemic, reviewing the situation in Guinea, Liberia and Sierra Leone prior to the 2013-2016 outbreak. We also highlight some of the additional societal burdens that the outbreak has placed on these countries.

By drawing lessons from this epidemic, as well as case studies of other (re-)emerging epidemic infections through a combination of literature searches and news reports, combined with the views of 10 international experts, we develop eight actions that might help potentially susceptible countries and the international community to prevent, contain or better respond to possible future outbreaks.

KEYWORDS

Ebola virus, Guinea, Liberia, Sierra Leone, healthcare system, capacity building, sustainable development

INTRODUCTION

Ebola is just one example of the many emerging and re-emerging diseases that continue to affect mainly the developing world.

By the end of 2014, the Ebola epidemic that began in Guinea in December 2013 (Baize *et al.*, 2014) and subsequently spread to Liberia and Sierra Leone had claimed 7,905 casualties. Another circa 12,301 people had become seriously ill (WHO, 2014a). The number of new infections peaked during the second half of 2015 and by the end of 2015, following an internationally-coordinated response, the World Health Organization announced that human-to-human transmission of Ebola virus had ended in Guinea and Sierra Leone and there were hopes that the epidemic in Liberia would be declared over by 14 January 2016. In total, the epidemic claimed 11,315 lives from among the 28,637 suspected cases (a 39.5% death rate) across 10 countries – more than 99% of which were in Guinea, Liberia and Sierra Leone (WHO, 2015a).

These figures, and the more general impact of Ebola and other emerging diseases on societies, is reflective of the affected countries' glaring unpreparedness prior to an outbreak. In the three West African countries most-affected by the Ebola virus, healthcare systems were desperately inadequate to be able to deal with such a massive and largely unexpected outbreak.

It is worth noting that, as in many other developing countries, healthcare systems in these three particular countries were already facing challenges dealing with other diseases. Besides tuberculosis, HIV/AIDS and malaria - diseases that are at centre of the global attention (and funding) - other (treatable) illnesses such as influenza, diarrhoea and whooping cough also contribute to serious endemic situations that must be addressed and that place continual stresses on local healthcare systems. Diarrhoea, which causes around 2.2 million deaths worldwide, especially among children in developing countries (WHO and UNICEF, 2000), is in fact prevalent wherever poverty is endemic and where basic hygiene and sanitation practices are lacking.

As well as the requirement for introducing good sanitation practices in both urban and rural areas, the Ebola virus case, as just one example of a (re-)emerging disease, constitutes another experience from which national governments and the international community must learn.

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Naturally, should such outbreaks occur, there is a need for national healthcare systems to be prepared, with adequate facilities to deal with both the initial diagnosis of the disease as well as providing suitable treatment to the initial patients.

Many (re-)emerging diseases are also zoonotic, and people living in rural areas regularly come into contact with infective wildlife or vectors. To avoid human tragedies like the ongoing 2013-2016 Ebola epidemic in West Africa, there is a need for rural workers to be informed of the risks of, for example, eating bush meat. In addition, should an outbreak situation arise, clear and effective communication – in ways that target audiences will understand and from sources they trust – should also be considered a vital component of any response (Rettner, 2014; Extance, 2015; Makri, 2015).

Thus, the context in which diseases emerge and re-emerge is important. Poverty, underdevelopment and political instability are among the issues that need to be considered. In fact, (re-)emerging diseases tend to affect fragile states and regions already devastated by conflicts (Fustukian and Cavanaugh, 2014).

In this paper, we attempt to analyse the emergence and spread of the epidemic in West Africa, reviewing the situation in the three countries worst-affected by the current 2013-2016 Ebola virus outbreak, namely Guinea, Liberia and Sierra Leone, prior to the outbreak. We also highlight some of the additional societal burdens that the outbreak has placed on these countries, including through the responses of neighbouring countries. By drawing lessons from this epidemic, as well as case studies of other (re-)emerging epidemic infections through a combination of literature searches and news reports, combined with the views of 10 experts in healthcare systems and development from around the world (identified throughout the text via footnotes), we consider some actions that might help potentially susceptible countries and the international community to prevent, contain or better respond to possible future outbreaks.

POVERTY, UNDERDEVELOPMENT AND POLITICAL INSTABILITY

With regard to poverty and underdevelopment, Guinea, Liberia and Sierra Leone rank 179th, 175th and 183rd, respectively, in the Human Development Index (HDI) of 2014 (UNDP, 2014) and have the majority of their populations living in extreme poverty, defined by the World Bank as living with less than US $1.25 per day. The general situation in the West African region is not any better. Indeed, Togo ranks 166th, Cote d'Ivoire 171st, Gambia 172nd, Guinea-Bissau 177th, Burkina Faso 181st and Niger 187th, so it is understandable how viruses

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and other diseases can have such a significant impact in a short space of time in the region. (On the brighter side, Mali (ranked 176th), Nigeria (ranked 152nd) and Senegal (ranked 163rd) all managed to identify and isolate infected patients, trace their contacts, and thus contain potential outbreaks). Analysing each affected country's situation before Ebola emerged is hence useful for understanding the role played by underdevelopment in the unprecedented spread of the disease.

All three countries most-affected by the 2013-2016 Ebola virus outbreak were recovering either from long periods of civil conflict or political unrest.

The current Ebola endemic began in a rural community in Guinea, a country where a problematic democratic process started in 2010 after almost 50 years of authoritarian rule (CIA, 2014). The political framework in Guinea is characterised by tension among the main political actors and access to such basic facilities as water and electricity is not equally distributed. In addition, in a situation where some 56 per cent of the population lives in poverty, access to health facilities is difficult. Facilities tend to be present in urban areas such as the capital Conakry, whereas in the rural areas, the lack of a proper infrastructure system isolates communities from the rest of the country (Institut National de la Statistique and MEASURE DHS, 2013). Not only does the country have high rates of maternal and infant mortality, but the spread of communicable diseases is a natural consequence of the lack of primary health services in remote areas. In addition, Guinea, as with neighbouring Liberia and Sierra Leone, records a very low number of physicians per head of population – in this case around one per 1,000 people. Political instability and poverty allowed the outbreak to spread to the rest of the nation and to neighbouring Liberia and Sierra Leone.

With two successive civil wars (1989-1997 and 1999-2003), internal conflict in Liberia left some 750,000 people dead and seriously damaged the country's fledgling economy and infrastructure. With its hospitals destroyed and medical personnel killed or having fled, there was little hope that the Liberian healthcare system could deal with such a large outbreak of any disease, let alone one as highly contagious and deadly as Ebola. With an average of 0.1 physicians per 1,000 people (essentially just fifty doctors to take care of its three million citizens: Piot, 2014), reconstructing Liberia's health system would have required a strong governmental commitment and funding tailored to the country's specific needs. In reality, foreign aid has funded 70– 80 per cent of the reconstruction, which has been concentrated in the capital Monrovia, leaving thousands of people living in rural areas without access to primary healthcare services (Kruk *et al.*, 2010). Not surprisingly, therefore, Liberia is the

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country most affected by Ebola – an indicator of the importance of the specific context in determining a country's overall preparedness.

Similarly to Liberia, Sierra Leone was also recovering from a long-lasting domestic war which ended in 2002. Even though there have been substantial improvements in the country's economy since then, the current Ebola outbreak has made reconstruction more difficult. The civil war, which began in 1991, killed more than 50,000 people and displaced some two million others. Not surprisingly, the healthcare system has also been compromised, being described as: 'chronically understaffed by poorly trained, overworked medical personnel. Only a fraction of Sierra Leone's 136 doctors were trained in infectious diseases control' (Fustukian and Cavanaugh, 2014). With more than 50 per cent of people living in severe poverty (World Bank, 2015) the West African Ebola outbreak devastated a healthcare structure that was already failing the poor (Williamson, 2014).

Thus the case of Sierra Leone is a paradigm of how a long internal conflict can have critical repercussions on a country's healthcare system. Prior to the civil war, in 1999, the country's health situation ranked among the worst in the world, with infant and under-five mortality rates standing at 170 and 286 per 1,000 live births, respectively: telling indicators. In addition, a huge amount of funds were diverted to military expenditure, making the reconstruction process even more difficult. Healthcare services thus tend to be distributed along foreign-decided programmes and not on any community-based strategy (Waters *et al.*, 2007).

LOCAL ISSUES AND FOREIGN AID

There are several issues arising from these brief overviews that concern not only the three most affected nations, but also the wider Africa region and a number of other developing countries. Indeed, across much of the African continent, there is inequity in accessing health services and facilities and in the availability of trained healthcare workers, who are mostly practicing in the cities. According to Touré *et al*. (2013) '90 per cent of pharmacists and dentists practice in urban areas' and the 'situation is the same for other cadres, as medical specialists (86 per cent), general physicians (63 per cent) and nurses and midwives (51 per cent) serve mainly urban areas'. If we consider that the number of medical personnel in these situations is already low, then these percentages are a clear indicator of the lack of healthcare workers outside urban areas. Yet, in rural areas people are often living in direct contact with domestic animals and wildlife and are thus exposed to zoonotic diseases. Indeed, many (re-)

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emerging diseases are carried by animals: Ebola is thought to be carried principally by fruit bats that are widely eaten in the West Africa region (Grant, 2014), camels are considered the source of transmission to humans of the MERS (Middle East respiratory syndrome) coronavirus, the Nipah virus infects fruit bats and pigs, and the SARS (severe acute respiratory syndrome) virus also circulates in bats as well as infecting masked palm civets (*Paguma* sp.), raccoon dogs (*Nyctereuteus* sp.) and ferret badgers (*Melogale* spp.). Informing workers in rural communities of the risks associated with animals, and introducing safe contact measures, can thus be considered essential for preventing such workers from contracting zoonotic illnesses. This could certainly be a suitable action for both the prevention and containment of future outbreaks. The 'One Health'[1] approach could hence represent a realistic solution for zoonotic diseases since 'understanding how populations get infected is key to preventing cases, outbreaks and epidemics,' as argued by Joel Breman[2]. However, this approach faces practical challenges linked to subsistence and social practices related to cultural beliefs and traditions. In the case of MERS, at least 707 cases have resulted in 252 deaths, mostly in the Middle East (WHO, 2014b). In this region, where camel milk and meat are customarily consumed, introducing safe contact measures is not an easy task (Enserink, 2014). Regarding Ebola, the widespread habit of eating fruit bats is a marginal consequence of poverty, which 'drives people to expand their range of activities to stay alive, plunging deeper into the forest to expand the geographic as well as species range of hunted game [...] enhancing their risk of exposure to Ebola virus and other zoonotic pathogens in these remote comers' (Fustukian and Cavanaugh, 2014). Granting some form of income to these communities could also be considered as a way to reduce these communities' dependence on wild animals. Thus, food insecurity is another aspect that needs to be considered when investigating outbreaks such as the West African one. Affected societies were in a situation where they were facing food and water shortages and for this reason they relied on not-so-safe ways of obtaining nourishment, with the result that the situation switched from being a challenge of subsistence to an alarming epidemic.

In addition, once Ebola became so widespread, going to work was basically impossible. Crops were not cultivated, local markets closed, and many people were not receiving any

[1] The One Health approach recognizes that the health of humans is connected to the health of animals and the environment (CDC definition: www.cdc.gov/onehealth, accessed 26 March 2015).

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form of income. To cope with this novel situation, many people were 'reducing the amount of food eaten at each meal and substituting lower-quality or less expensive food for preferred food' with the result that '85 per cent of households report eating fewer meals each day' (Alvarez, 2014). It is clear, therefore, that the Ebola emergency needed to be addressed on a number of different fronts in both short and long term senses.

This experience also highlights the consequences of foreign aid, deriving from both bilateral governmental aid and aid from private foundations, related to the prioritisation of some diseases to the detriment of others. For instance, great attention is dedicated toward diseases like tuberculosis, HIV/AIDS and malaria, but a significant number of people in the developing world are dying of simpler or re-emerging diseases. Ebola, for example, is not a 'new' virus. It was first discovered in 1976 (seven years before the AIDS virus), but by the time of the West African outbreak, no vaccine or therapy had been developed to the point of approved use. And Ebola is just one case. Research into other (re-)emerging diseases such as Nipah and SARS could also advance more quickly if more funding was available – but donors and funding agencies are naturally unable to focus on every (re-)emerging disease. This reflection gives ample room for debate but it is clear that funds should be allocated to build the capacity of basic healthcare services, including monitoring and diagnostic facilities, which are at the basis for the prevention of every disease. Indeed, Oladoyin Odubanjo[3] confirms that: 'the push should not be about adding on individual diseases to the priority list, but about an insistence on developing the health system as a whole, which will go a long way to address most diseases'. Following the same trend, during the 2013-2016 West African outbreak much attention has (understandably) been given to people with Ebola, leaving 'those with non-Ebola diseases without any place to go' (Zielinski, 2014). In other words, the emphasis on already stretched healthcare systems to treat Ebola patients has left those suffering from malaria and other illnesses, as well as pregnant women who are likely to require birthing assistance, without a healthcare safety-net.

It seems, therefore, that the global health agenda is set on a priority disease list basis rather than on an overall strategy to increase the capacity of healthcare systems in weak states. The Global Fund to fight AIDS, tuberculosis and malaria, for example, spent almost US$4 billion in 2013, with a focus on these three major diseases, of which just 2.5 per cent was spent on health systems strengthening, albeit a substantial US$760 million (The Global Fund, 2014).

[3] Executive Secretary of the Nigerian Academy of Science (NAS).

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The effects of foreign aid also raise two other issues: first, the over-dependence on external aid does not help to instil a sense of responsibility among national authorities. And second, it tends to focus mainly on large urban areas (where more people can be more easily targeted), at the expense of leaving rural communities aside. This point is actually of particular importance, as demonstrated again by the current Ebola outbreak. Dependence on foreign assistance is indeed a feature that characterises many realities of the developing world. It has even been argued that foreign aid to Africa is making 'the poor poorer and the growth slower' (Moyo, 2009). What is certain is that funds deriving from foreign support could be more effectively allocated, coordinated and distributed. Hence, an implicit question needs to be asked: what will happen once the West African Ebola outbreak is brought under control? Hopefully, greater attention will be given to reconstruction of the affected countries' healthcare systems as a whole. Given that the relative lack of physicians and the lack adequate training of medical personnel both contributed to the current tragic situation, the issues of training a new generation of doctors and healthcare practitioners urgently needs to be addressed. Indeed, a report from the US National Academy of Sciences concludes that: 'Support for health systems will help protect the United States standing investment in malaria, HIV and AIDS, and child health. By building local capacity to manage the health system, the United States would help reduce dependence on foreign aid. Capacity building is a long process, however. Success toward this goal should be measured in a longer time frame than Congress has previously allowed for development projects. ... An aid strategy that emphasises research and training, global public goods, efficient management, and rigorous program evaluation would go far to improving the health infrastructure of low- and middle-income countries' (IOM, 2014).

The improvement of these countries' healthcare systems should be thus founded on several basic actions. In this regard, Esi Awuah[4] also insists on the importance of introducing primary hygiene practices among local communities as a way to prevent the initial infection and subsequent diffusion of diseases. Indeed, she argues that 'the improvement of toilet technologies is important if we want people to avoid contact with contaminated human waste.' Such practices would reduce the numbers of people suffering from avoidable diarrhoea and already begin to free up valuable physician time and hospital beds.

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Protecting people from contracting (re-)emerging diseases such as Ebola, isolating cases, and putting in place efficient coordination practices in the case of an outbreak are the fundamental tools needed to deal with any outbreak. The cases of Nigeria, Senegal and Mali support this statement. When Ebola was 'imported' into Nigeria by a Liberian traveller, the country was able to avoid any potential contagion increasing to outbreak status. The Nigerian success was due to a quick response and to a rapid tracking and monitoring of people who had been in contact with affected people (WHO, 2014c). Joel Breman further adds that having designated staff and protocols in place, as well as safe burial procedures, played major roles in avoiding any spread. Senegal is another instance where 'an immediate, broad-based, and well-coordinated response can stop the Ebola virus, carried into a country in an affected traveller, dead in its tracks' (WHO, 2014d). The country authorities reacted very promptly and were able to track 74 contacts of the first case and to develop a nation-wide awareness campaign on Ebola symptoms and sanitation measures (WHO, 2014d). Yet, Kissaou TChedre[5] clearly points out that these countries are not completely 'safe'. In fact, 'the possibility of it spreading further should not be dismissed' (Barrios, 2014). Mali also managed to control the disease through efficient contact-tracking, with cases recorded through November 2014, but eventually being declared Ebola-free in January 2015 (WHO, 2015b).

Conclusions - 1

- *Addressing the issues of poverty, underdevelopment and food insecurity represent indispensable elements to the prevention of outbreaks of (re-)emerging diseases, as these have direct impact on low standards of sanitation and the sourcing of unsafe foods.*
- *The prevention of outbreaks also requires that both national and international funding are used for the improvement and the strengthening of national healthcare systems as a whole, rather than addressing single diseases.*
- *Once a potential outbreak is identified, coordination and awareness are key to preventing further spread of the disease.*

SIDE ISSUES AND OTHER POSSIBLE SOLUTIONS

Brain drain, policies and the role of academies

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It has already been discussed that one of the main factors that contributed to the rapid spread of the Ebola virus was the lack of trained and equipped medical personnel. A significant component of this shortage is 'brain drain', namely the migration of trained personnel to the developed world. Brain drain is caused by a number of factors, including political instability in trained individuals' home nations, the low level of scientific development of national institutions, and better career and earning prospects elsewhere (Serour, 2009). In fact, 'these challenges are often the result of misconceived macro-economic policies, as wage ceilings prevent meeting needs for health personnel' (Cometto *et al.*, 2013). The frustration deriving from both the low salary standards and the lack of funds allocated to scientific research are great incentives for leaving. Furthermore, the 'legacy of conflict also has contributed to a mentality that 'run and flee' is the best response to a crisis' (Zielinski, 2014). In sub-Saharan Africa, the brain drain percentage is 13 per cent (Serour, 2009), among the highest in the world. Others though argue that one of the inherent reasons for this migration is the fact that Western countries are in increasing need of healthcare staff and thus rely on trained personnel coming from low-income states, the alleged 'brain gain' phenomenon (Serour, 2009). A.P.R. Aluhiware[6] affirms that, basically 'rich countries are [...] poaching doctors and nurses from developing countries' by offering them better wages and career prospects. However it is viewed, 'this trend will continue until the needs of the professionals [in their home nations] become a priority', says Oladoyin Odubanjo. Enacting such an initiative should be a logical consequence of an overall strategy aimed at improving healthcare, research and development in these societies. Although the African Union (AU) has shown some good intentions, no tangible progress has been made in this regard. For example, in the April 2001 Abuja Declaration, AU member states set regional healthcare targets, pledging to allocate at least 15 per cent of their gross domestic product (GDP) to improve their national healthcare sectors (Anon., 2001). Even though some countries have reached the goal, setting a general target for all the AU member states (fifty-four in total) does not seem to take into appropriate consideration the differences in public budgets and each country's specific needs. Likewise, the target for each African country of spending 1 per cent of GDP on research and development, set in Africa's Science and Technology Consolidated Plan of Action (NEPAD, 2006), seems quite superficial if specific national factors are not considered. The extent in which laboratories and institutions are equipped, the number of universities and research

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centres and other variables are fundamental elements that should be carefully considered when establishing these kinds of objectives (Irikefe *et al.*, 2011).

Even so, it should be noted that a continent the size of Africa has just five laboratories equipped to WHO standards capable of analysing samples from purported viral haemorrhagic fevers and diagnosing Ebola – in Gabon, Kenya, Senegal, South Africa and Uganda (WHO, 2014e).

Fundamentally, decisions regarding expenditure on healthcare and on research and development should be based on valid evidence. Nonetheless, this does not yet appear to be easily feasible. Ahbor Ighoroje[7] defines the academic world as the 'custodian of research and development', which 'should exercise its power in setting the healthcare agenda'. Nonetheless, she also recognises the presence of a 'political issue' that prevents national and regional authorities from basing decisions purely on academic advice. Along the same lines, Esi Awuah argues that 'academies [of science] have no voice, they know what to do but governments basically do not listen to them. Establishing more formal links between the academic world and policy makers could indeed represent an effective measure to improve the healthcare system of a particular country. Yet, this would require 'good governance, good will, and ambition towards the future,' says Kissaou TChedre, who further adds that 'most African governments care more about their own well-being instead of working for their countries.'

Conclusions - 2

- *The academic world, including academies of science, can be a reliable source of solid evidence and data on national healthcare needs, and national governments should include academia in the process of setting the national healthcare agenda.*

Cultural contexts and communication

According to Peter Piot, the person who first isolated and described the Ebola virus, understanding local cultures and beliefs constitutes an essential component of the overall strategy to stop the West African Ebola outbreak (Mathers, 2014). Across much of Africa, religion and traditions are important elements of people's daily lives and they do, to some extent, condition individuals' approach to health and sanitation measures too. Hence,

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international responses to outbreaks such as Ebola in rural communities need to be correctly adjusted to local circumstances. Doing so, according the Melissa Parker, Reader in Medical Anthropology at the London School of Hygiene and Tropical Medicine, 'will increase their effectiveness and help bring this terrible Ebola epidemic under control' (Grant and Benson, 2014). For instance, the spread of Ebola can be reduced by implementing proper burial activities. It has been well documented that the widespread traditional practice of washing corpses before burial is 'in direct conflict with the procedures health officials must follow to minimise the risk that the disease will spread, because after death is a particularly dangerous time for Ebola infection' (Ohlheiser, 2014). Thus there is a need for educating the general population with regard to safe contact measures with both patients and corpses in order to protect themselves and their families, and eventually stop the diffusion of the virus. However, establishing trust between healthcare workers and local communities is not an easy task (Makri, 2015). Healthcare workers arriving in small rural villages with their protective suits, goggles and gloves, were perceived as scary and untrustworthy for local people who 'did not believe that an Ebola outbreak existed' or believing that the outbreak was a 'hoax, and a way for the government to raise money' (Rettner, 2014). In addition, according to Biello (2014), there is little trust in authorities and people do not go to treatment centres, which are seen as a 'death sentence'. In a recent interview, Peter Piot defined this on-site didactic process as 'the greatest challenge' (Piot, 2014). Patrick Kelley[8] suggests the possibility of working and collaborating with local leaders as a way to establish a liaison between individuals and medical staff.

To this end, protecting and educating women could be a valuable tool. Women, who make up some 60 per cent of Ebola victims, typically play important roles in affected societies. They are the primary care-givers within their families and communities and thus are also majorly exposed to the disease (Saul, 2014). Educating women on how to properly take care of both patients and corpses in the rural districts must be based on a good understanding of the relevance of gender roles in these societies (Wolfe, 2014). And, providing women and other local carers with adequate basic equipment such as masks, gloves, and so forth, is essential for improving protection (Lazuta, 2014). Introducing women to proper treatment practices is thus the first step towards both installing trust within rural communities and to help stop the spread of the virus.

[8] US Institute of Medicine, Director of the Board on African Science Academy Development.

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An additional scheme that could be implemented is that of training community health workers (CHWs). This approach consists of providing individuals belonging to specific communities with some training on how to deliver basic healthcare methods and services. Such an experiment was first tried in rural districts in Ethiopia, where communities now have access to primary healthcare (House of Commons IDC, 2014). The role of these workers should not be underestimated, as they 'act as an important link between formal health structures and primary care provision in the community, [...] and encourage communities to participate in preventive activities' (House of Commons IDC, 2014). Indeed, this experiment showed remarkable outcomes regarding the improvement of the health situation in the demonstration areas, leading to a significant decrease in child mortality rates.

Edsel Salvana[9] affirms that something similar has been experienced in the Philippines, where CHWs represent 'the first line [of healthcare] for most people'. He adds that some of these programmes involve 'step-ladder curriculums, where someone starts out as a midwife, spends time in the community, then trains to be a nurse, then trains as a physician and finally returns to the community'. Yet, these kind of operations require an investment and commitment from national authorities and this is not currently possible everywhere. For example, Ethiopia and the Philippines are demonstrating higher levels of national commitment compared to many West African countries, as TChedre points out, and their efforts could be replicated elsewhere.

Other important responses include that of the Ugandan Ministry of Health, which carried out an awareness campaign on Ebola symptoms for both healthcare workers and citizens after the 2000 outbreak in 2000 in Gulu in the north of the country (Fustukian and Cavanaugh, 2014). Issues of communication and fear easily arise when outbreaks occur. Such a situation is the logical consequence of poor governance and preparedness. Misconceptions about the disease created fear and chaos and made deep-rooted cultural methods take the place of information and public awareness campaigns (Anon., 2014d). In the case of Sierra Leone, 'high levels of distrust have led communities to avoid health facilities, associating them with the virus, relying instead on traditional healers or self-medication' (Fustukian and Cavanaugh, 2014). In addition, the country's population 'is failing to seek medical attention for any diseases [...], if they have malaria, the feeling is that they do not want to go near a hospital with Ebola cases' (Kitamura and Gbandia, 2014).

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In the same way, birthing complications have become the order of the day. Women are afraid to go to the hospitals and they cannot thus receive any required prenatal treatment (Boseley, 2014). Hence, the human toll is not limited to those with the virus but expands to people with other diseases and medical needs. Such is the fear of Ebola hospitals that people often resort to hiding their relatives with symptoms and avoid going to treatment centres for fear of contracting the virus (Makri, 2014).

Dealing with general panic is another component of the overall strategy against the further diffusion of any outbreak. Awareness campaigns should be grounded on scientific evidence and should inform people on symptoms, safe contact measures and treatment. In this regard, Garry Aslanyan[10] affirms that 'non-scientific fears are common and drive irrational decisions; citizens need to be taught critical thinking skills' but, at the same time, he also recognises that 'this is a generational agenda'. In fact, besides implementing a widespread information campaign during the outbreak, this Ebola experience should serve as a reference to develop effective dissemination strategies in future.

The lack of trust towards medical personnel is also a side effect of discrimination in access to healthcare facilities. Indeed, Haja Ramatulai Wurie, a researcher and lecturer in health systems development in Freetown, Sierra Leone, confirms this by saying that 'if people had equitable access to healthcare services they would be familiar with going to health facilities and would have more faith in health workers [and] what we are experiencing is [people] preferring to go to traditional healers as they are more accustomed to them' (Del Bello, 2014). Discrimination on health access along ethnic, gender and income lines is a reality across many affected societies. The difference between the rich and the poor is massive and as it has been underlined by Kissaou TChedre, who confirms that 'authorities and rich people go to Europe and America to get treated, while their people are stuck with poor healthcare systems'.

Trust concerns are emerging on other fronts too. The question of survivors is, in this regard, emblematic. Even though survivors are seen as 'celebrities' when they leave the Ebola treatment centres, says Benjamin Black of *Médecins Sans Frontières* (Black, 2014), their re-integration in the society is more complicated. In fact, 'in the traumatised, fearful communities struck by the disease, Ebola survivors are often stigmatised and destitute when they return' (Oosterhoff, 2014), whereas they could assist in taking care of patients with little

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or no risk of re-infection. Indeed, Maureen O'Leary[11] argues that 'survivors of Ebola, the families of the cases and healthcare workers all face stigmatisation' and that 'these groups will all need support to be accepted back into society'. An awareness campaign informing survivors of the 'dos and don'ts' after recovery is also lacking. For example, sexual activity and breastfeeding should in fact be avoided up to three months after release from hospital in order to protect others and to restrict virus circulation (Oosterhoff, 2014). Coupled with rapid preventive measures, effective communication policies and awareness campaigns are thus key to successfully controlling and eventually stopping the outbreak.

Conclusions - 3

- *Understanding the cultural context of communities affected by a disease is crucial to increasing awareness on safe practices, establishing trust, and avoiding potential panic situations.*
- *In many communities, women are the first healthcare givers and they often play important roles in these societies. Protecting and interacting with women is a valuable tool to protect the community as a whole and to stop the spread of a disease.*
- *Introducing a system of progressive training for community health workers can also bring significant benefits.*

INTERNATIONAL AND ECONOMIC RESPONSES

Ebola is on the priority list of the international community's security agenda, and its arrival in countries such as the United States and Spain increased the fear of a possible outbreak outside the West Africa region.

'If you have travelled from a country that has been affected by the Ebola virus disease outbreak you must stay away from public places and meeting people if you develop fever'[12]: this and other instructions are provided on information sheets provided on flights and in airports. Meanwhile, a major strategy for containing the Ebola virus implemented by the international community is based on cancelling flights to affected countries (Barrios, 2014) and closing borders. Indeed, on 4 November 2014 in Seoul, South Korea, Jim Young Kim,

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[12] This example is taken from a flight to India.

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President of the World Bank, declared: 'airline stocks have dropped, interest in tourism in those areas has slowed down, and so unless we get the epidemic under control, the impact could be enormous' (Zou, 2014). This lesson should have already been learned by the international community after SARS overwhelmed stock markets and real estate prices in Hong Kong in 2002 (Zou, 2014). Per Thoresson, at the UN Security Council Meeting of 12 November, reminded those present of the fact that 'it is the Ebola virus that should be isolated, not the countries affected' (Anon., 2014b). Flights were being suspended and neighbouring countries closed their borders. Côte d'Ivoire, for instance, closed its borders and imposed travel restrictions (Barrios, 2014). But such containment policies are having unintentional additional consequences on the economy of the affected countries (Alvarez, 2014), and trans-boundary and migration issues thus become important variables of the overall response (Anon., 2014c). Among the effects of Ebola on local economies are loss of incomes, the closing of farmers' markets, and the death or hospitalisation of the most productive workers. Not surprisingly, 'the agricultural sector has been disrupted by the Ebola crisis and government-imposed restrictions' (Alvarez, 2014) and cross-border trade no longer exists in these areas, making people (mostly women) lose their primary sources of income (Lazuta, 2014).

What could be done to avoid the spread of the virus to other countries in the region without affect the livelihoods of people and villages relying on cross-border activities?

There is no precise answer to this question but most probably closing the borders could be rather substituted by 'ensuring screening at borders' as affirmed by Oladoyin Odubanjo, while Joel Breman proposes the alternative of 'considering stipends for those providing food, water, transport and other essentials to villagers and towns affected by border closures'. And it is not just the border regions that are suffering side-effects of the epidemic. In Conakry, the capital of Guinea, for example 'people are even going into debt to provide food for their children' (Biello, 2014). When it is considered that this is happening in societies already afflicted by severe poverty and underdevelopment, the reconstruction process after the outbreak does not leave much room for optimism. In this respect, the economic impact of Ebola could be in the order of US$32.6 billion before 2016 estimates the World Bank (UNSC, 2014). Although this is not the first time that a re-emerging disease has had a great financial impact in a region, the lesson is yet to be learned. In 2010, cholera began spreading in Haiti: by July 2014, when UN Secretary-General Bank Ki moon called for US$2.2 billion to be raised to eliminate the disease from the country (Anon., 2014d) some 700,000 had been

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affected with 8,700 deaths. This Haitian experience also teaches us something about the importance of having an effective healthcare system that can at least provide basic services to the whole population without discrimination. However, four years after the start of the outbreak there are still no adequate water treatment systems or healthcare facilities (Quigley, 2014), leaving Haitians at the mercy of the ongoing outbreak and susceptible to outbreaks of other (re-)emerging diseases. As in the case of cholera, early treatment of Ebola also requires large quantities of safe drinking water that could help save peoples' lives in the early stages of the disease. Allocating funds to improve water systems, and other basic facilities could serve as an important control factor of future episodes.

In any case, West Africa, along with Haiti, some parts of Southeast Asia, as well as other parts of the developing world, will continue to be vulnerable to (re-)emerging diseases until eradicating poverty becomes a top priority (Kupferschmidt, 2014). Preparedness to future outbreaks must be founded on a strategy that targets 'the root of the problem: the deep-seated poverty that has allowed it to spread' (Quigley, 2014).

Conclusions - 4

- *Isolating countries affected by an infectious disease is not a solution. In contrast, it can actually drag people into a situation of even more severe poverty. Providing individuals in affected societies with some kind of secure income and basic welfare services should be considered.*

LESSONS AND PROSPECTS

One of the main lessons that can be learned from the 2013-2016 West African Ebola outbreak is that there is an urgent need to build functioning, equitable, nationwide healthcare systems in developing countries. Of course, we cannot expect great advances overnight, but there are some initial steps that can be taken in the near-term. As we saw, the first necessity is that of providing basic healthcare services throughout the territory of a specific country. Basic hygienic and sanitation norms should then be introduced. Political will to spur the reconstruction of healthcare facilities and infrastructures destroyed by years of internal conflicts is thus indispensable. Maureen O'Leary states, in fact, that 'distrust of governments as a hangover from the civil wars was a large factor in the public's refusal to heed public health warnings and advice regarding the epidemic'. Governments should therefore

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implement health policies and carry out awareness campaigns by building trust and reliability. To this end, funds, both national and international, should be well and clearly allocated to the needs of the entire population, not just the elite or to those fortunate enough to live in urban centres. The way out of poverty and underdevelopment is complex and requires a long-term strategy based on several factors. Improving people's standards of living is always a solution for preventing the spread of disease. Policies should thus be shaped around the necessity of granting some forms of income, ensuring food and water security to the whole population, especially the poorest and most marginalised. This would not only reduce the chances of the occurrence of possible future outbreaks but would also improve the general health situation in these realities, especially for what concerns treatable diseases related to access to water and nutrition (for example, diarrhoea, child malnutrition). Financial resources deriving from the international community and private foundations should be allocated to improve healthcare systems in these countries, rather than to target specific single diseases, as underlined by Hans Rosling, the former head of the Division of Global Health at the Karolinska Institute in Stockholm, Sweden (in Kupferschmidt, 2014).

Indeed, the risk is that Ebola will become another (re)-emerging disease from which few lessons will be learned and the long slow process of building adequate healthcare systems 'forgotten' by the international community as the next disaster hits the headlines.

This experience should instead provide the ultimate wake-up call for the international community to address the question of capacity building – for both healthcare and research and development – in the developing world (IAMP, 2013).

In this regard, regional organisations and institutions must play a major role. Regional authorities should give greater attention to health security in their member countries and should invest in the improvement of academic institutions and programmes. This would increase the number of medical personnel in these areas and will also attract funding and investments for projects designed for the development of healthcare systems in member countries or for specific treatable diseases affecting their populations. A national/regional approach would also be able to define the top priorities and issues that need to be addressed in a targeted country/region. To this end, academia, including academies of science and medicine, must play a central part. Basing decisions on the best available, peer-reviewed, scientific evidence is essential for success. According to Oladoyin Odubanjo 'academies must help to bridge the gap in knowledge and policy by providing evidence-based information to relevant authorities'.

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Nonetheless, applying such a scheme on a national level can be difficult. First, not all countries, especially in Africa, have national science academies. Also, governments can be corrupt, spending public money for their own particular interests. Perhaps regional supervision and collaboration might help, as suggested by Gary Aslanyan. What is certain is that the construction or strengthening of academic institutions and scientific research centres in the developing world would provide a significant part of the solution on many fronts. It would serve as a deterrent for the 'brain drain' phenomenon, keeping key personnel within the countries, as well as providing countries with local, indigenous scientific expertise and guidance concerning healthcare and development plans.

Building the capacity of healthcare systems in the developing world is a long-term process that includes even larger issues such as poverty and underdevelopment. The Ebola outbreak is just the latest instance that brings into focus the need to keep these questions in view. Once the emergency is over, the lessons learned during this tragic outbreak must not be forgotten. Both national governments and the international community have the moral duty of preparing countries to deal with both common 'every-day' ailments as well as (re)-emerging diseases to prevent future similar scenarios from occurring.

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