



Review

Control of Ebola virus disease (EVD): An entry point for personal and environmental hygiene in the West African sub-region

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Abstract

The scourge of EVD in the West African Sub region is the world's worst Ebola outbreak recorded in history to date. The epidemic has negatively impacted on the lives and livelihood of people in the affected countries. This paper aims at using the incidence of Ebola to reinforce the need for improved personal and environmental hygiene among individuals and populations in order to reduce the spread of such diseases, especially in Sub-Saharan Africa. The spread of EVD and other communicable diseases can be highly minimized by simply taking steps to improve hygiene practices. It is also pertinent to review certain traditional practices which are hazardous to human health and wellbeing in order to ensure a healthier population. Communities need to be sensitized on the importance of avoiding traditional burial rites that include washing and touching of the deceased as this role should be left to those trained and equipped to do so. With adequate attention given to personal and environmental hygiene, the impact of the scourge would be highly reduced.

Keywords: EVD, communicable diseases, epidemic, environmental hygiene, traditional practices.

INTRODUCTION

Ebola Virus Disease (EVD), formerly known as Ebola Haemorrhagic fever is a severe and often fatal illness that is transmitted to humans from wild animals and it spreads in the human population through human-to-human transmission (WHO EVD Fact Sheet, 2015). The virus is transmitted through physical contact with tissues or body fluids of infected animals or humans and this can occur when bush meat is handled or consumed, when caring for the sick or in preparing the dead for burial (Du Toit, 2014). Physical contacts also include hand shaking, hugs and sharing of utensils which are habits that are common in Africa. Secretions in which the Ebola virus can be found include saliva, sweat, urine, blood, tears, semen and breast milk (Bausch et al, 2007). Personal and environmental hygiene are therefore key issues to address in controlling EVD. So far, management of this disease is by supportive care as there is no treatment or vaccine for the infection although there are a number of drugs and vaccines being developed (Gatherer, 2014).

This paper aims at using the incidence of Ebola to reinforce the need for improved personal and environmental hygiene among individuals and populations in order to reduce the spread of such diseases, especially in Sub-Saharan Africa.

Epidemiology

In 1976, the Ebola virus was discovered to be the cause of a major outbreak of haemorrhagic fever in the Democratic Republic of Congo (DRC) (then known as Zaire) but the transmission had largely ceased when International Health teams arrived to deal with the outbreak because medical facilities had been shut due to the high number of deaths among staff (Peters and LeDuc, 1999). There was also another small outbreak in Sudan in 1977 and a case in DRC in 1979 after which there were no more cases of the disease for 15 years

until an outbreak occurred in Cote d'Ivoire in 1994, Gabon in 1994, 1995 and 1996 and DRC in 1995. A common feature of all these outbreaks was that they occurred in sites near tropical forests along rivers, as was the first outbreak reported in 1976, and transmission of the virus occurred among human and non-human primates (Peters and LeDuc, 1999).

The most recent EVD outbreak in West Africa emerged in December 2013 in Guinea and was reported in March 24, 2014 by the World Health Organization. It then rapidly spread to Liberia, Sierra Leone, Nigeria, Senegal and Mali (WHO Ebola Situation Report, 2015; WHO Ebola Response Team, 2015). So far, 21, 296 cases have been reported with 8, 429 deaths with Liberia, Guinea and Sierra Leone being worst hit (Figure 1 and Table 1) (WHO Ebola Situation Report, 2015; Baize et al, 2014). It is presumed that the outbreak was from an animal source, the fruit bats which are potential reservoirs of the virus and are abundant in the West African sub region (Leroy et al, 2005). The disease spread to the urban areas unlike the previous outbreaks in Africa that occurred in remote forested areas. The incubation period for the disease ranges from 2 to 21 days (Feldmann and Geisbert, 2011). The disease had an aggregated case fatality rate of 78% with fewer deaths among those hospitalised (Wong et al, 2014). The outbreak was characterised by fever, severe diarrhoea, vomiting and a high fatality rate, with haemorrhage being less frequent (Gostin et al, 2014).

Factors that Potentiated the Spread of EVD

Certain cultural beliefs and traditional practices contributed to the spread of EVD in the sub-region. Such practices included physical contacts such as hand shaking, hugs and sharing of utensils which are habits that are common in Africa (Dowell et al, 1999). The problem with Ebola is that it is spread through social connective acts that are not strange in any way. Caring, kindness, normal parenting, helping the sick and honouring the dead put people in danger during the crisis. These habits encouraged transfer of secretions in which the Ebola virus could be found such as saliva, sweat, urine, blood, tears, semen and breast milk among the people interacting (Bausch et al, 2007).

Home-based management of EVD patients, hiding of EVD patients and customary treatment of dead bodies also fuelled the epidemic (WHO EVD West Africa – update 2014). This was due to the unreserved participation of family members in caring for the sick or in preparing the dead for burial which exposed them to the infected secretions (Du Toit, 2014). The areas of concentration of EVD in the worst hit countries have been identified to have a high population density and this may have accounted for the sustained transmission of the Ebola infection in these countries. Furthermore, a rapid

population growth, poverty and poor health infrastructure in these countries may have all contributed to this unprecedented outbreak (Alexander et al, 2014).

Also in West Africa, there is extensive movement of people within and across borders for social and economic reasons with high migration rates (Awumbila et al, 2014). This facilitated rapid spread of the infection in Guinea, Liberia and Sierra Leone as people visited sick relatives and attended burial ceremonies of relatives. These practices led to the transmission of the disease within communities and amplified the outbreak. Furthermore, there was mistrust, apprehension and resistance to adopt recommended public health preventive measures in some communities which enhanced the spread of the disease (WHO EVD West Africa – update 2014).

The virus is also known to be transmitted through physical contact with tissues or body fluids of infected animals which occurs when infected bush meat is handled or consumed without cooking as the virus is also known to survive for 3 weeks at low temperatures (Piercy et al, 2010). Bush meat consumption is common in Africa. It is a preferred source of protein and an identified source of Ebola virus transmission from wildlife reservoirs to the human population. In Liberia, a 2004 public opinion survey found that bush meat ranked second behind fish amongst residents of Monrovia as a preferred source of protein (Russell, 2014). The meat usually changes hands from hunters to wholesalers, market traders and restaurant owners who cook and serve bush meat in stews (Cowlshaw, 2005). The Ebola virus can be inactivated when cooked at 60°C for 60 minutes or boiled for 5 minutes and the disease has been identified in game-hunters but not those who ate the meat after cooking (Public Health Agency of Canada, 2014).

Traditional burial practices have also been linked to the EVD outbreak in West Africa. Family members usually have the role of preparing the deceased for burial and these practices include washing, touching and dressing of the deceased and Ebola infection requires direct physical contact with bodily fluids from a clinically ill person (Dowell et al, 1999; Gostin et al, 2014). Such practices were identified to have accounted for about 60% of EVD infections in Guinea (Chan, 2014). Also funerals last for days with many members of the community involved in the festivities and some communities also perform ceremonial hand washing and kissing of the dead at the end. Many dead are buried beside their homes so that spirit of the dead is '*happy and does not feel forgotten*' (HCA, 2014).

Also, health seeking at traditional healers was another factor that potentiated the spread of the virus as many infected individuals visited traditional healers for care and this led to further transmission of the Ebola virus since the healers knew little about the mode of transmission of the disease (Alexander et al, 2014). Traditional healers are known to use a wide variety of treatment methods

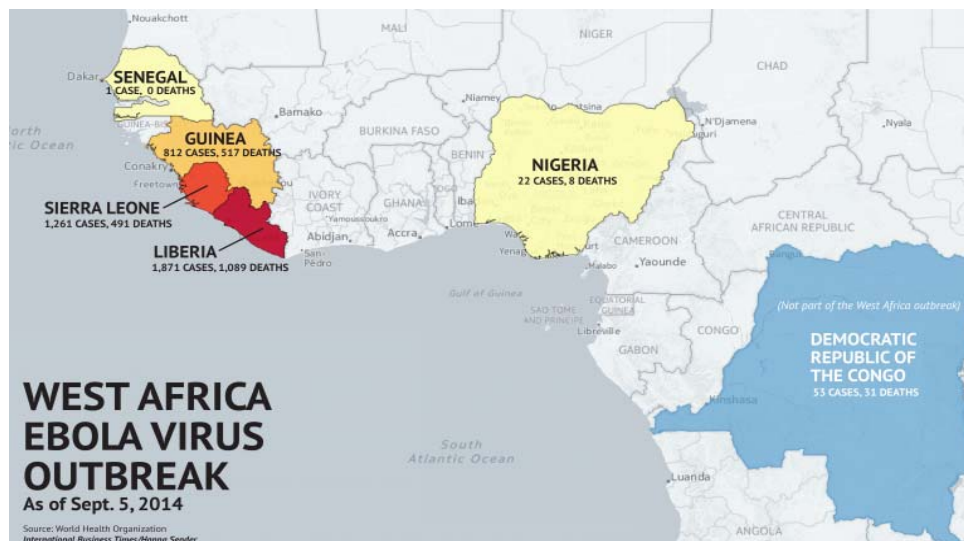


Figure 1: Countries in West Africa affected by EVD

Source: (IBTimes, 2014).

Table 1: WHO Ebola Situation Report as at 21 January 2015

Country	Number of Cases	Number of Deaths
Guinea	2 871	1 876
Liberia	8 478	3 605
Sierra Leone	10 340	3 145
Mali	8	6
Nigeria	20	8
Senegal	1	0
Spain	1	0
United Kingdom	1	0
United States of America	4	1
Total	21 724	8 641

which include bathing, massaging and cutting with sharp instruments and these might have led to the spread of the virus (HCA, 2014). Ordinarily, many do not visit hospitals except when they are very ill and the fear and anxiety over the current outbreak also led to distrust of modern healthcare providers causing infected individuals to hide from authorities and visit traditional healers or family members for care, thereby enhancing the spread of disease (Ross, AGP et al, 2014). Furthermore, it is customary in many communities to stand by the ill to show respect and honour (HCA, 2014; WHO. EVD, West Africa – update 2014).

RECOMMENDATIONS

Increasing knowledge among individuals and populations about the factors that potentiated the spread of the EVD is important in the West African sub-region in controlling

the further spread of the disease as well as preventing future outbreaks.

Personal hygiene plays a key role in the control of EVD since the virus is known to be transmitted through contact with tissues and body fluids of symptomatic individuals. Community leaders can play a role in halting the spread of the infection if they are empowered with knowledge of the mechanisms of spread of the disease. They are in positions that can influence the hygiene practices of people in their communities and these include frequent hand washing with soap and water, sanitary disposal of faeces, urine and vomit from ill individuals and the community as a whole. They can also help in re-orientating the community's health seeking behaviour and emphasize the importance of seeking care in modern health facilities rather than at the traditional healers' because it is more likely that the health worker

would be more cautious in handling the body fluids and human waste.

Communities also need to be sensitized on the importance of avoiding traditional burial rites that include washing and touching of the deceased (from whatever cause of death) and this role should be left to those trained and equipped to do so. The dead should be buried immediately and in deep graves away from the home since the Ebola virus is known to survive for up to 3 weeks without disinfection or inactivation.

Game hunters and forest users need to be educated on practices that would prevent them from contracting the virus so as not to serve as links for the transmission of the virus from wildlife to the human population. They have to be taught on the use of protective gear/dressing required when handling/dressing game as well as cooking requirements that will lead to the destruction of the virus before consumption. Also they need to learn that an ill animal discovered in the forest should be left alone and not taken home for consumption.

Since human infections that pass from one person to another commonly do so while caring for the sick or washing/kissing/touching the dead, it will also be necessary to institute environmentally based interventions, such as decontamination of surfaces, hygiene and sanitation efforts (Li et al, 2009; Boone and Gerba 2007). It is important that communities are often reminded about hygiene measures when spitting because this, in conjunction with the social distancing, played a large role in the control of the 1918-1919 influenza pandemic (Tomes, 2010).

Local authorities should also supply safe water to communities to strengthen their hygiene and sanitation efforts. Communities need to be sensitized on the need for sanitary waste disposal because many individuals lack knowledge and understanding of the linkages between unsafe waste disposal (e.g. excreta and tissues) and health problems. Also, the misconception that faeces of children are harmless needs to be corrected (Water Aid, 2015).

Furthermore, sanitary toilets need to be provided at strategic sites by local authorities, especially on routes used by travellers, with adequate soap and water supply in these toilets to facilitate good hygiene practices.

Provision of soap, water and toilet facilities should also be the basic minimum in schools and work places in order to encourage adequate personal hygiene. The Center for Disease Control says the most important way to prevent the transmission of dangerous diseases is to frequently wash the hands with soap and water and /or use a hand sanitizer. If soap and water are not available it is recommended to use a hand sanitizer that contains at least 60% alcohol or contains a 'persistent antiseptic' which can destroy different types of micro -organisms including epidemic prone bacteria and viruses (CDC, 2014). Use of hand sanitizer is therefore encouraged at personal and institutional levels.

CONCLUSION

The spread of EVD and other communicable diseases can be highly minimized by simply taking steps to improve personal and environmental hygiene. It is also pertinent to review certain traditional practices which are hazardous to human health and wellbeing in order to ensure a healthier population.

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