Forensic Science International 279 (2017) 302–309

Contents lists available at ScienceDirect

Forensic Science International

journal homepage: www.elsevier.com/locate/forsciint

# The Ebola epidemic in Liberia and managing the dead—A future role for Humanitarian Forensic Action?

Stephen Cordner[a,b,*], Heinrich Bouwer[c], Morris Tidball-Binz[d]

[a] Monash University, Australia
[b] International Programmes, Victorian Institute of Forensic Medicine, Australia
[c] Victorian Institute of Forensic Medicine, Australia
[d] Forensic Unit, International Committee of the Red Cross, Geneva, Switzerland

ARTICLE INFO

*Article history:*
Received 31 March 2017
Received in revised form 12 April 2017
Accepted 18 April 2017
Available online 25 April 2017

*Keywords:*
Ebola virus disease
West Africa
Humanitarian Forensic Action
Managing the dead

ABSTRACT

With some of their economies, communities and health systems weakened by decades of war and poor governance, it was no accident that an epidemic of Ebola virus disease broke out in west Africa. Being spread in part by contact with body fluids of those who had died from the disease, funerary rites and the way dead bodies were managed were important modes of transmission. The Liberian Red Cross, supported by the International Federation of Red Cross and Red Crescent Societies and the International Committee of the Red Cross, undertook the challenging task of managing the dead bodies in Monrovia during the epidemic. The work was undertaken by volunteers, not health care workers, who were trained and equipped for this task. The authors observed their work and were impressed. Valuable lessons were learned for mortuaries generally, and for Humanitarian Forensic Action involving the management of highly infectious human remains.



## 1. Introduction to Liberia

> "The Ebola virus disease outbreak in west Africa affected impoverished post-conflict countries with weak health systems and no experience with Ebola" [1]

It is very difficult for those who have not been exposed to resource constrained contexts to understand the challenges. Table 1 sets some of these out, the comparators being averaged out over the three countries in west Africa and the three high income countries for data from 2012.

A proper appreciation of the epidemic requires some understanding of the context within which it erupted (see Box 1).

## 2. Ebola virus disease (EVD)

Ebola is a member of the Filovirus family and causes a severe, often fatal, illness in humans and non-human primates. The virus is 800–1000 nm long with a lipid envelope and it persists at room temperature. The illness is highly infectious, the virus spreading by direct contact with the body fluids of infected patients, including soiled surfaces, equipment and linen. The virus has been found in the blood, saliva, faeces, breast milk, tears and semen. It is quite easily eliminated with heat, alcohol based cleaners and sodium or calcium based hypochlorite bleaches [3].

Current evidence suggests that the reservoir hosts are probably bats, while other animals and people are incidental hosts [4]. Humans seem to become infected with the virus after handling, or otherwise coming into direct contact with, tissues from infected non-human primates and other species, for example in the wild. It is not thought that Ebola virus can be spread by mosquitos. Once a virus has entered human populations, it can rapidly spread from person to person, especially within families, hospitals, and during funerary rites where contact with the bodily fluids of infected individuals becomes more likely. Before outbreaks are confirmed in areas of weak surveillance, Ebola is often mistaken for malaria or one of a myriad of other infections endemic to the region: typhoid fever, yellow fever, Lassa haemorrhagic fever, varicella, measles, dengue, staphylococcal or streptococcal infection, gram-negative sepsis, toxic shock syndrome, meningococcaemia, leptospirosis or dysentery [5].

The onset of symptoms following infection with the Ebola virus varies, the incubation period being from 2 to 21 days. Infection causes significant immune suppression and a systemic inflammatory response, leading to multi-organ failure and shock. Patients may develop vomiting and diarrhoea; kidney and liver function

* Corresponding author. Fax: +613 9682 7353.
*E-mail address:* stephen.cordner@vifm.org (S. Cordner).

http://dx.doi.org/10.1016/j.forsciint.2017.04.010
0379-0738/

**Table 1**
Population indicators: West Africa (Liberia, Guinea and Sierra Leone) and three high income countries (US, UK and Australia) compared [2].

| Comparator | West Africa | High income countries |
|---|---|---|
| Gross national income per head ($US) | 1110 | 43,270 |
| Malaria: confirmed cases (average/country) | 970,000 | 0 |
| Maternal mortality (per 100,000 live births) | 915 | 10 |
| Neonatal mortality (per 1000 live births) | 30.1 | 3.0 |
| % population living in an urban area (%) | 41 | 84 |
| Fertility rate per female (live births per female) | 4.8 | 1.9 |
| Median age of the population (years) | 18.7 | 37.9 |

**Box 1.** Liberia—some history

The first immigrants were freed North American slaves which gave Liberia its name. They arrived in 1820 in what is now the capital Monrovia named after US President Monroe. In 1847 these settlers declared their independence from the American Colonization Society, which had bought and governed the land. The new Republic, Africa's first, established trade links, and although punctuated by violent disputes with the indigenous population and colonial competitors, its history was largely peaceful until 1980. The country was dominated by the True Whig Party with oppression and exclusion of non-American Liberians from institutions and the economy, especially land, until 12 April 1980. Then, Master Sergeant Samuel Doe seized power, executed President Tolbert, and 133 years of American Liberian political and economic domination was replaced by the Peoples Redemption Council. One closed political system was replaced by another. By the mid 1980's, the standard of living was declining drastically, aggravated by human rights abuses, corruption and ethnic tension. In 1989, Charles Taylor, formerly Doe's procurement officer, challenged him and the country plunged into civil war. This came to be regarded as one of Africa's bloodiest conflicts. Complicated events involving the Economic Community of West African States, the UN, US and the Organization of African Unity (now the African Union) over the next 6-8 years led to Taylor clearly winning elections in 1997. Over 6 years of Taylor's rule, unemployment and illiteracy remained over 75% and infrastructure – electricity, schools, hospitals – remained unavailable. Taylor's political style was reminiscent of his predecessor.
Liberia, Sierra Leone and Guinea squabbled and fought, accusing each other of supporting their rebels. In 2003 the UN Special Court for Sierra Leone indicted Taylor for "bearing the greatest responsibility" for atrocities in Sierra Leone since November 1996. Taylor resigned under great pressure from the US and went into exile in Nigeria. Elections in 2005 resulted in Ellen Johnson-Sirleaf being elected President, Africa's first female head of state. Things in Liberia subsequently were pursuing a generally positive trajectory. Successful elections were held in 2011 with the re-election of President Johnson-Sirleaf. Post electoral violence in Ivory Coast in 2010/11 resulted in 200,000 refugees fleeing to Liberia adding further strain to the country's decimated economy.

may be affected; and some patients may experience bleeding, both internal and external. EVD has a case fatality rate in different outbreaks ranging from 25% to 90% [6].

## 3. A brief history of Ebola, including the 2014/15 outbreak

The disease was first identified in 1976 in two simultaneous outbreaks, one in Nzara in South Sudan (formerly Sudan), and the other in Yambuku, a village in the Democratic Republic of Congo (formerly Zaire) near the Ebola River, from which the disease takes its name. Since then there have been several outbreaks, mainly confined to Equatorial Africa (Table 2).

In west Africa, the disease first appeared in a two year old child in Guinea (as distinct from Guinea Bissau, or Equatorial Guinea) in December 2013 but was misdiagnosed [7]. It was not until March 21, 2014 that Ebola was confirmed with the report of 49 cases in Guinea, and two days later in Liberia. The diagnosis of Ebola was delayed in Sierra Leone until late May [8]. Briefly, it was felt that the threat was easing and in Liberia the outbreak appeared to halt. But it re-emerged in the capital Monrovia in June and within 2–3 weeks it had overwhelmed local capacity to respond.

Guinea, Sierra Leone and Liberia all have weak health systems. There are only 150 doctors for Liberia's 4 million population. The symptoms and signs of Ebola virus disease, particularly in its early stages, are not much different to those of other endemic diseases such as malaria and other conditions listed in the previous section. The point is that early in an epidemic, especially in the absence of a surveillance system, Ebola does not stand out, and the opportunity for early intervention is lost. In contrast, later in the epidemic every acute fever is attributed to Ebola, and all of the non-Ebola conditions are not treated when the health system collapses, as it did in Liberia. Being unprepared, health care workers became infected. Lack of knowledge of the disease was aggravated by lack of basic personal protective equipment (gloves, masks, aprons and goggles). Not surprisingly, many health workers decided to stay at home, not so much because of fear but because of lack of

**Table 2**
Ebola virus disease Outbreaks 2000–2014 [5].

| Year | Place | Infections/deaths[a] |
|---|---|---|
| 2000–2001 | Uganda | 425/224 |
| 2001–2003 | Gabon, Republic of Congo (multiple outbreaks) | 313/264 |
| 2004 | South Sudan | 20/5 |
| 2007 | Republic of Congo | 249/183 |
| 2007 | Uganda | 149/37 |
| 2011 | Uganda | 1/1 |
| 2012 | Uganda | 24/17 |
| 2012 | Republic of Congo | 77/36 |
| 2012 | Uganda | 7/4 |
| 2014 | Republic of Congo | 66/49 |
| 2014/15 | West Africa: Guinea, Sierra Leone and Liberia. | 28,610/11,308 |

[a] The number of infections in each outbreak may be based on different definitions: suspected, probable and/or confirmed cases. Likewise, all deaths may not be laboratory confirmed cases.

knowledge and tools. Thus in the early months of the epidemic, some of the hospitals in Monrovia effectively stopped working [9].

One measure of the unprecedented nature of the 2014/15 west African Ebola epidemic was the number of 'firsts' it generated. On 8 August 2014, the WHO declared the West African Ebola epidemic a 'public health emergency of international concern' [10]. This was the first such declaration ever by the WHO. (Notably, on 31 March 2014, Medecins Sans Frontieres had publicly declared "the outbreak as unprecedented due to the geographic spread of the cases [11]). An emergency UN Security Council meeting was held on 18 September, 2014—the first such meeting devoted to a health issue, the Ebola epidemic. Resolution 2177 (2014) unanimously declared the epidemic a threat to international peace and security [12]. The following day, all 193 members of the UN General Assembly passed their resolution (69/1) on measures to contain and combat the epidemic, jointly sponsored by 134 members—the greatest number to ever co-sponsor a motion in the history of the United Nations [13].

Nothing short of heroic efforts by Medecins Sans Frontieres (MSF), and others, established treatment centres for Ebola which eventually came to be trusted by an initially suspicious population. On 29 March 2016, the WHO declared the end of the west African EVD public health emergency, the largest EVD outbreak in history. By that date, 28,610 suspected, probable and confirmed cases had been reported, with 11,308 death [14].

## 4. Funeral rites in West Africa

Unprotected handling of the dead, including during funerals, was one of the modes of transmission of EVD in the epidemic. One funeral in Guinea, with rites very similar to those in Liberia, was investigated by the Centers for Disease Control and found to be linked to at least 85 confirmed Ebola cases. [15] This funeral was of a male midwife assistant, who also undertook circumcisions. The ceremony involved family and friends (obviously without personal protective equipment) washing, touching and kissing the body of the deceased. Eighteen people who attended the funeral and had direct contact with the deceased were subsequently confirmed as developing EVD. The 67 other cases had direct contact with at least one attendee at the funeral.

Following death, and as part of the funeral, the body is typically handled, washed by family members and friends and kept for mourning in the usually cramped domestic setting. The body may or may not be placed in a coffin and it may be some days between death and disposal of the body. Liberia is predominantly Christian and the dead are generally buried. Burials are not regulated and may be in cemeteries but are often not, and may be near to drinking water sources. The risks associated with this were such that during the epidemic the President of Liberia decreed that all dead bodies in the capital Monrovia and its surrounds would be cremated. Cremations were previously, in practice, limited to the local Hindu community.

## 5. The management of the dead in Monrovia during the epidemic

In Liberia, the Ministry of Health and Social Welfare (MOHSW) was tasked with the management of the dead bodies. At the beginning of the epidemic the ICRC together with the International Federation of Red Cross and Red Crescent Societies (IFRC) and the Liberian Red Cross Society (LRCS) offered assistance to the Government in the area of dead body management. These organisations had been involved with dead body management in previous years during the various armed conflicts that had plagued west Africa in the 1990's and early 2000's. Thus, the collection, transport and disposal of dead bodies in Monrovia and its surrounds were contracted by the MOHSW to the LRCS supported by the IFRC. This involved the collection, transport and disposal of all the dead, irrespective of whether they were confirmed, probable, suspected EVD, or whether they died of something else.

During September and early October 2014 (when SC and HB were in Monrovia) there were four dead body collection teams operational in Monrovia under the Operations Manager of the IFRC and LRCS. The LRCS also had a disaster response manager who employed the staff, mainly volunteers from the community, organised the maintenance of the vehicles, and obtained the materials needed (e.g. PPE, body bags) through LRCS logistics.

## 6. Collecting, transporting and cremating the dead

The four teams had 11 utility vehicles between them. Each team thus had at least two vehicles. Vehicle One was for the bodies and

**Fig. 1.** Members of a dead body collection team about to enter a dwelling in Monrovia, capital of Liberia.

**Fig. 2.** The dead body collection team removing a dead body from a dwelling in Monrovia.

had a driver who wore no PPE. Vehicle Two carried the team leader, a scout, a sprayer and 3–4 workers. A third vehicle carrying police would also usually accompany the team to help manage an angry public, a not infrequent reaction to the presence of a team.

A well publicized phone number would receive reports of deaths. These reports would be passed to the team so the bodies could be collected. On arrival at the home of a deceased person all but the driver, and sometimes the team leader, would don PPE under the supervision of a nurse. It was apparent at the time of collection, from agitated communication with families, that some bodies had often been dead for more than a day. The sprayer went into the property and sprayed the room and body, before the workers went in and placed an open body bag in a suitable place and then placed the body in the bag. The sprayer then sprayed the inside of the bag and the body before the bag was closed, and then sprayed the outside of the bag again before it was taken outside and placed on the back of the vehicle. If there was another body to be collected in the same area the workers sat on the back of the vehicle with the body, in full PPE, and moved to the next collection point, repeating the same procedure for collection of the body before the PPE was removed. (Figs. 1–4). Each team collected between 5 to 10 bodies per day before taking them to the crematorium, several miles outside the city, for cremation.

## 7. The crematorium

The crematorium was behind high concrete walls and outside the city. Inside the walls, within an open area of about half an acre, was a concrete slab with a very high roof over it, otherwise open to the elements. The bodies were placed on a large mattress or mesh of boards – carpentry off cuts – and once a day it was lit, taking 6 or more hours to accomplish its task. The capacity, according to one of the staff there, was 50 per day (Figs. 5–7).

## 8. Some lessons learned

i) **Weakened societies are at risk of epidemics, and unless supported, can be a risk to others**.

The major lesson – relearnt – from this epidemic is that damaged societies with weak health systems and little disease surveillance are very vulnerable to epidemics, including EVD. Such epidemics can then pose a threat to a region, or the world more

**Fig. 3.** Loading the dead body onto the vehicle. The members of the team would travel on the back of the vehicle with the bodies to the next body for collection.

**Fig. 4.** Gloved hands being sprayed with disinfectant by a nurse prior to removal of gloves and Personal Protective Equipment.

broadly. As mentioned, the UN Security Council agreed that the Ebola epidemic posed a threat to international peace and security.

ii) **The infectivity of dead bodies**.

The misconception that the dead are inherently infectious is a serious impediment to the handling of the dead following natural mass fatality disasters [16]. The misconception is often relied upon by the authorities to justify rapid, mass burials soon after natural disasters as the preferred way to deal with the dead. That is, preferred ahead of a more graduated response, including doing the modest amount necessary to help identify the dead.

However, in an epidemic of EVD, those dying from the disease are indeed infectious. As in the early stages of the epidemic in Monrovia, it may not be obvious who has died with or from EVD. Community approaches to handling the dead, which included kissing and touching a dead body, were a major contributor to virus transmission.

The practicalities of life in Monrovia were such that there were no health care workers to attend those who were dying from whatever cause, thus by September 2014 all the dead were treated as though they had died from EVD. At this time in Monrovia, no system was apparent to identify retrospectively whether those who died in the community (contrasted with those who died in treatment centres) had died from EVD. A system for this was in place by the end of October 2014 [17].

iii) **The infectious risk to members of the dead body collection teams**.

Table 3 below shows the percentage of the population in the three countries of West Africa dying from Ebola virus disease, compared with the percentage of the countries' health care workers (doctors, nurses and midwives).

Mortality among health care workers was high, much higher than the community generally, and as can be seen from Table 2, broadly proportional to it. Health care workers were caught unawares and unprepared. Health care workers in Guinea, Liberia and Sierra Leone paid a shockingly high price for looking after their countrymen and women. 500 health care workers died in west Africa, including 14 staff of MSF [19]. This sacrifice is insufficiently recognized.

MSF had trained the dead body collection teams run by the LRCS and IFRC. The members of such teams were volunteers mainly from non health care backgrounds. The leader of the team we engaged with was an ex-military medical orderly. The authors are not aware of any publication specifically reporting on the mortality of members of dead body collection teams. We were struck by the fact that when we were in Liberia (for a combined period of 6 weeks), we could find no one who knew of any member of a dead body collection team acquiring EVD, although one would think this must have occurred at some point. Our own observations of the teams were that they were well trained and demonstrated good


**Fig. 5.** The rurally located crematorium facility which served Monrovia. During the epidemic, the President of Liberia decreed that all the dead in Monrovia would be cremated.

**Fig. 6.** The crematorium furnace with members of the dead body collection team loading bodies onto the wooden fuel, itself on a concrete base.

discipline personally and as members of a team. However, some members of the teams reported stigmatization associated with the work they were doing.

iv) **Support for Dead Body Management Teams.**

As mentioned, our observation of the teams showed that they had been well trained. However, and not surprisingly in the circumstances, it was clear that they had little in the way of psychosocial support. Given the crucial role they were playing, this could have been a risk to the overall effort. Support of this kind to mortuary workers generally is often given low priority, and this lack of support can manifest itself in a range of ways. There were anecdotal reports amongst Dead Body Management team members of sleep disturbance, difficulty dealing with grieving families, and with seeing people dying in their homes when they picked up the dead. There are effective tools for dealing with such vicarious trauma, such as simple debriefing, and these tools need to be utilized [20]. In addition, the presence of a technical expert to accompany a DBM team would be very valuable. Such a person could support the team leader, help support team morale, make observations on the application of PPE and related procedures, and with the agreement of IFRC/LRCS, represent the expert technical aspects and needs of the teams at Case Management meetings at the MoHSW and elsewhere.

v) **Lessons for mortuary operations**.

The transfer from isolated deep central African villages to urban West Africa represented a major shift of locale for EVD. This served as a launching pad for cases to appear elsewhere in Africa (e.g. Nigeria) and in Europe and the US. The populations of Guinea, Sierra Leone and Liberia were traumatized as a result of recent armed conflicts, lived with poor public health infrastructure, and were suspicious of the authorities. They lived in very close quarters. There are many other urban populations around the world with similar characteristics, some of which may also have similar funerary practices. It is entirely plausible that a person with pre-clinical EVD will one day travel to such a centre. S/he will then become ill, and when being treated, dying and perhaps being

**Fig. 7.** Another view of the fuel and dead bodies in the crematorium. The smoke is from ashes of the previous day's fire which had been swept off the concrete in preparation for a new day.

**Table 3**
Health care worker mortality from Ebola virus disease [18].

| Country | % Population dying from EVD | % Health care workers dying from EVD |
|---|---|---|
| Guinea | 0.02 | 1.45 |
| Liberia | 0.11 | 8.07 |
| Sierra Leone | 0.06 | 6.85 |

handled after death, the virus may be transmitted to others. If public health surveillance is weak, the disease could gain a foothold before it is recognized, as was the case in West Africa. In this period, some of the dead may have begun arriving at funeral homes, hospital or public mortuaries and will be handled in the usual manner. If this handling is not sufficiently robust from a health and safety perspective, then staff, including mortuary staff will be seriously exposed.

Such staff can breathe more easily for the moment. The emergency has passed. But many hospitals around the world have undertaken serious re-evaluation of their procedures to deal with any patient who, however remotely, was thought possibly to have EVD. We think mortuaries, similarly, should review their procedures.

The experience in west Africa could be drawn upon to help prepare other countries considered to be at particular risk. Leaders of DBM teams in west Africa should be identified and used in training of key mortuary managers and forensic doctors in those countries. The African Society of Forensic Medicine network could assist in this, with WHO and Red Cross/Red Crescent support.

In relation to dead body management, the Victorian Institute of Forensic Medicine in Melbourne, Australia, and the Ontario Forensic Pathology Service in Toronto, Canada, have jointly developed guidelines for the management of deceased with suspected EVD in their settings. [21]

vi) **The epidemic has altered the international advice provided for managing dead bodies after disasters**.

At the time of the epidemic, the advice, contained in *The Management of Dead Bodies following a Disaster: A field manual for first responders* [16] was that dead bodies generally do not cause epidemics. As most people in disasters die from injuries or the direct effects of the natural disaster, and not from infectious disease, their bodies do not pose serious risks to the public generally, or to those handling them. The manual is directed at first responders, community based non experts who, in disasters which outstrip the ability of the authorities to respond, are relied upon to deal with the dead. The second (revised) edition of the Manual [22] now recognizes that while first responders might volunteer to deal with the dead in epidemics, they require special training and protective equipment before they can deal with any dead suspected of harbouring highly infectious agents. In other words, epidemics are regarded as a separate category of natural disaster to which the Manual does not apply.

vii) **Others**

There were a number of problems related to handling the dead in Monrovia. Mentioning them here is not intended as criticism as the circumstances were unprecedented, making the implementation of services extremely difficult. We should, however, remember the problems:

- Delays in collecting the dead have already been mentioned.
- In the direct experience of one of us (HB), a major bottleneck in managing the dead was the crematorium. It was not coping with the number of dead requiring cremation. MSF shipped in and set up additional incinerators to cremate bodies.
- It would have been a valuable demonstration of sensitivity for the plight of relatives if some of the ashes could have been saved and stored until such time as a suitable memorial for those who died during the epidemic was built to accommodate them.
- It was clear that any death certification or registration system that may have been in existence prior to the epidemic had broken down.

## 9. Conclusion

The emergence of an epidemic of EVD in west Africa is a stark reminder that, while the timing of specific disasters might be unpredictable, the circumstances of their occurrence are not. The history of west Africa, and the current parlous state of its civil society were such that it was no accident that an epidemic such as that caused by EVD spread as it did there. It is also a reminder of the need to be prepared for such disasters, including for managing the dead. In some cases this will likely require a humanitarian forensic intervention including for advice, training and implementation support. Furthermore, disease in one part of the world, with rapid international travel can easily appear in another.

Mortuaries should develop procedures for dealing with one or more cases of highly infectious transmissible disease such as EVD, whether a known case or suspected. All through the developed world, the number of hospital autopsies is reducing, and the competencies associated with dealing with the dead are possessed by fewer and fewer people. It is likely that a community affected by having to deal with one or more deaths from a highly infectious transmissible disease such as EVD will look to its mortuary services, which are most likely to be forensic mortuaries, for what will essentially be humanitarian forensic assistance. Those services would be well advised to plan accordingly and the lessons learned from the 2014–16 EVD epidemic provide elements for such planning.

## References

[1] L.O. Gostin, E.A. Friedman, A retrospective and prospective analysis of the west African Ebola virus disease epidemic: robust national health systems at the foundation and an empowered WHO at the apex, Lancet 385 (2015) 1902–1909.
[2] http://www.who.int/gho/countries/en/ (Accessed 8 October 2016).
[3] WHO, Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings, With Focus on Ebola, (2014) www.who.int/csr/resources/publications/who-ipc-guidance-ebolafinal-09082014.pdf —200k (Accessed 4 October 2016).
[4] G. Chowell, H. Nishiura, Transmission dynamics and control of Ebola virus disease (EVD): a review, BMC Med. 12 (2014) 196.
[5] WHO Ebola virus disease Fact Sheet 103. Jan 2016. http://www.who.int/mediacentre/factsheets/fs103/en/ (Accessed 5 September 2016).
[6] Ebola Outbreaks 2000–2014. CDC. http://www.cdc.gov/vhf/ebola/outbreaks/history/summaries.html (Accessed 13 April 2016).
[7] S. Baize, D. Pannetier, L. Oestereich, et al., emergence of Zaire Ebola virus disease in Guinea, N. Engl. J. Med. 371 (2014) 1418–1425.
[8] K. Sack, *et al.* Ebola's deadly escape. The New York times, Dec 30, 2014. http://www.nytimes.com/2014/12/30/health/how-ebola-roared-back.html (Accessed 4 October 2016).
[9] Paragraph excerpted, with permission, from S Cordner. Epidemic Ebola. Arena Magazine (Fitzroy, Victoria), No 132, Oct/Nov 2014:5–7.

[10] WHO Statement on the 1st meeting of the IHR Emergency Committee on the 2014 Ebola outbreak in West Africa. WHO Statement. 8 August, 2014. http://www.who.int/mediacentre/news/statements/2014/ebola-20140808/en/ (Accessed 4 October 2016).
[11] http://www.msf.org/en/article/ebola-pushed-limit-and-beyond (Accessed 11 2016).
[12] http://www.securitycouncilreport.org/un-documents/health-crises/ (Accessed 4 2016).
[13] http://www.un.org/ebolaresponse/resources.shtml (Accessed 4 2016).
[14] WHO, Ebola situation Report – 30 March, (2016) http://apps.who.int/ebola/current-situation/ebola-situation-report-30-march-2016 (Accessed 13 April 2016)..
[15] K.R. Victory, Ebola transmission linked to a single traditional funeral ceremony—Kissidougou, Guinea, December 2014–Jan 2015, MMWR 64 (April (14)) (2015) 386–388. (Accessed 13 April 2016) http://www.cdc.gov/mmWr/preview/mmwrhtml/mm6414a4.htm.
[16] WHO, ICRC, PAHO, The Management of Dead Bodies after disasters: A Field Manual for First Responders, (2006) https://www.icrc.org/eng/assets/files/other/icrc-002-0880.pdf (Accessed 11 October 2016).
[17] http://www.who.int/features/2014/ebola-swab-liberia/en/.
[18] D.K. Evans, M. Goldstein, A. Popova, Health care worker mortality and the legacy of the Ebola epidemic, Lancet Glob. Health 3 (August (8)) (2015) e439–e440.
[19] Medecins Sans Frontieres. http://www.doctorswithoutborders.org/our-work/medical-issues/ebola (Accessed 11 October 2016).
[20] http://www.vifm.org/about-us/vifm-publications/a-guide-to-debriefing-at-vifm-4/ (Accessed 11 2016).
[21] J. Leditschke, T. Rose, S. Cordner, N. Woodford, M. Pollanen, The development of a protocol for post mortem management of Ebola virus disease in the setting of developed countries, Forensic Sci. Med. Pathol. 11 (2015) 262–267.
[22] PAHO, WHO, ICRC, IFRCRC, Management of Dead Bodies after Disasters: A Field Manual for First Responders, 2nd Edition, (2016) http://www.who.int/hac/techguidance/management-of-dead-bodies/en/ (Accessed 30 December 2016).