

What Clinicians Should Know About the 2014 Ebola Outbreak

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CME Activity

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Abstract

The ongoing Ebola outbreak that began in Guinea in February 2014 has spread to Liberia, Sierra Leone, Nigeria, Senegal, Spain, and the United States and has become the largest Ebola outbreak in recorded history. It is important for frontline medical providers to understand key aspects of Ebola virus disease (EVD) to quickly recognize an imported case, provide appropriate medical care, and prevent transmission. Furthermore, an understanding of the clinical presentation, clinical course, transmission, and prevention of EVD can help reduce anxiety about the disease and allow health care providers to calmly and confidently provide medical care to patients suspected of having EVD.

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The first recorded Ebola outbreak began in September 1976 in Zaire (now the Democratic Republic of the Congo) after the index case received a chloroquine injection for malaria at Yambuku Mission Hospital.¹ Although the patient's malaria symptoms initially resolved, he then developed an aggressive infection with hemorrhagic sequelae 5 days after the injection. Within a week, several other patients who had received injections at the clinic or who were close household contacts of patients developed a

similar illness. During a 2-month period, 318 cases of viral hemorrhagic fever were identified in 55 nearby villages, with 88% mortality.

The virus was found to be related to, but distinct from, the Marburg virus and was named after the Ebola River, which traversed through the affected region. Since that time, there have been approximately 20 identified outbreaks of Ebola virus disease (EVD) that have occurred sporadically in Africa, mostly in central and east Africa (Table).² The 2014 outbreak is the first to occur in West Africa.

TABLE. Chronology of Ebola Outbreaks in Africa

| Year(s) | Country(ies) | Ebola subtype | Reported human cases (No.) | Reported deaths among cases (No. [%]) |
|-----------------------------|---|------------------|----------------------------|---------------------------------------|
| 1976 | Zaire (currently Democratic Republic of the Congo) | Zaire virus | 318 | 280 (88) |
| 1976 | Sudan (currently South Sudan) | Sudan virus | 284 | 151 (53) |
| 1979 | Sudan (currently South Sudan) | Sudan virus | 34 | 22 (65) |
| 1994 | Gabon | Zaire virus | 52 | 31 (60) |
| 1995 | Democratic Republic of the Congo (formerly Zaire) | Zaire virus | 315 | 250 (79) |
| January-April 1996 | Gabon | Zaire virus | 37 | 21 (57) |
| July 1996-January 1997 | Gabon | Zaire virus | 60 | 45 (75) |
| 1996 | South Africa | Zaire virus | 2 | 1 (50) |
| 2000-2001 | Uganda | Sudan virus | 425 | 224 (53) |
| October 2001-March 2002 | Gabon | Zaire virus | 65 | 53 (82) |
| October 2001-March 2002 | Republic of the Congo | Zaire virus | 57 | 43 (75) |
| December 2002-April 2003 | Republic of the Congo | Zaire virus | 143 | 128 (89) |
| November-December 2003 | Republic of the Congo | Zaire virus | 35 | 29 (83) |
| 2004 | Sudan (currently South Sudan) | Sudan virus | 17 | 7 (41) |
| 2007 | Democratic Republic of the Congo | Zaire virus | 264 | 187 (71) |
| December 2007-January 2008 | Uganda | Bundibugyo virus | 149 | 37 (25) |
| December 2008-February 2009 | Democratic Republic of the Congo | Zaire virus | 32 | 15 (47) |
| May 2011 | Uganda | Sudan virus | 1 | 1 (100) |
| June-October 2012 | Uganda | Sudan virus | 11 ^a | 4 (36) ^a |
| June-November 2012 | Democratic Republic of the Congo | Bundibugyo virus | 36 ^a | 13 (36) ^a |
| November 2012-January 2013 | Uganda | Sudan virus | 6 ^a | 3 (50) ^a |
| February 2014-present | Guinea, Liberia, Sierra Leone, Nigeria, Senegal, Spain, United States | Zaire virus | 4655 ^{a,b} | 2431 (52) ^{a,b} |
| August 2014-present | Democratic Republic of the Congo | Zaire virus | 68 ^{a,b} | 49 (72) ^{a,b} |

^aLaboratory-confirmed cases only.
^bAs of October 13, 2014.
 Adapted from <http://www.cdc.gov>.²

As stated by Dr Peter Piot, one of the researchers who first identified Ebola virus in 1976, "In general, it is an infection that causes epidemics only if basic hospital hygiene is not respected, and is really a disease of poverty and neglect of health systems."³

THE 2014 WEST AFRICAN EBOLA OUTBREAK

The ongoing outbreak in West Africa is the largest Ebola outbreak in recorded history.^{2,4} The first cases occurred in Guinea in December 2013. Cases were identified in neighboring Liberia in March 2014, and in April the outbreak spread into Sierra Leone. In July 2014, EVD was introduced in Nigeria by an ill traveler from Liberia, with subsequent transmission to health care workers. In September 2014, Senegal had an EVD case imported from Guinea. On September 30, 2014, the first case of EVD was diagnosed in the United States

in a patient who had recently traveled from Liberia to Dallas, Texas. He did not have symptoms when leaving West Africa but developed symptoms approximately 4 days after arriving in the United States. He was hospitalized in Dallas and despite supportive care, mechanical ventilation, and hemodialysis, he died on October 8. Two members of the health care team caring for this patient have subsequently been diagnosed as having EVD. Similar transmission of EVD to a health care worker in Spain has been reported, where a nursing assistant developed EVD after caring for 2 repatriated Spanish missionaries who contracted EVD in West Africa. As of October 21, 2014, the West African Ebola outbreak had resulted in 9216 confirmed or suspected cases, with 4555 deaths (Figure 1). Case counts are likely an underestimate of the true number of cases owing to underdiagnosis and underreporting of cases. A separate outbreak of EVD, unrelated

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