

Notifiable diseases of the Infectious Diseases Control Law revised on May 21, 2015	95	Ebola hemorrhagic fever: Japan's medical community's response.....	108
Ebola virus and Ebola virus disease	96	Ebola hemorrhagic fever: National Institute of Infectious Diseases's contribution to laboratory diagnosis	109
Epidemiology of Ebola virus disease in West Africa	96	Ebola hemorrhagic fever: National Institute of Infectious Diseases's contribution to epidemiologic response.....	111
Clinical care of Ebola virus disease patients: Experience from Liberia	98	Notice from Ministry of Health, Labour and Welfare: influenza virus strains to be included in the influenza HA vaccine in Japan, 2015/16 season	112
Ebola virus disease: Experience from deployment to Sierra Leone	99	Three patients diagnosed with chikungunya fever after returning from South America, October 2014-February 2015.....	112
Molecular epidemiology of Ebola virus	100	Isolation of <i>Clostridium tetani</i> from purulent exudates of a crush injury caused by a weight stone used for pickling	113
Ebola virus disease: Current status of vaccines and therapeutics development	101	Laboratory practice/infrastructure of prefectural and municipal public health institutes (PHIs) –summary of a pathogen laboratory diagnosis survey conducted in May 2014	114
Preventing spread of Ebola virus disease: The international community's response strategy	103		
Imported Ebola hemorrhagic fever cases: Response measures taken and challenges identified	104		
Preparedness for and countermeasures against Ebola hemorrhagic fever in Japan.....	106		

<THE TOPIC OF THIS MONTH>

Ebola hemorrhagic fever in West Africa, as of May 2015

Ebola hemorrhagic fever is one of the viral hemorrhagic fevers that include Lassa fever, Marburg disease and Crimean-Congo hemorrhagic fever. More recently, it is being called Ebola virus disease (EVD), as it is not always associated with hemorrhage. Ebola virus's genome is a single-stranded RNA with negative polarity. It belongs to the genus *Ebolavirus*, family *Filoviridae*; five species, *Zaire*, *Sudan*, *Bundibugyo*, *Tai Forest*, and *Reston* are known, among which *Zaire ebolavirus* is considered the most virulent and a causative agent of the present Ebola hemorrhagic fever outbreak in West Africa (see pp. 96 & 100 of this issue).

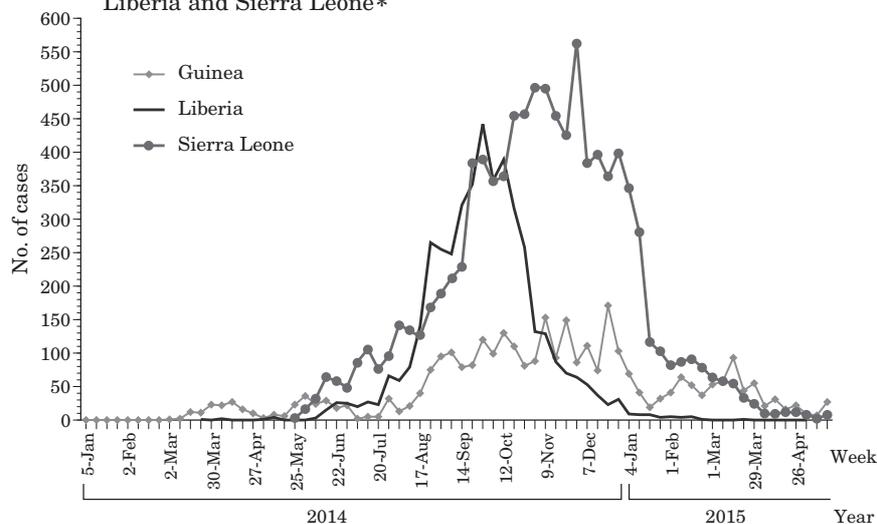
Ebola hemorrhagic fever was first reported from Sudan and the Democratic Republic of Congo (former Zaire) in 1976. The natural reservoir of Ebola virus is wild animals, such as bats. Human outbreaks begin with the index case having contact with the infected animals' body fluids, subsequently spreading from person to person through the patients' blood or body fluids. Incubation period is 2-21 days. Cases remain non-infectious during the incubation period. Typically, the disease starts with sudden fever, profound malaise, myalgia, headache and throat pain, which is followed by vomiting, diarrhea, rash, liver and renal dysfunctions, with a bleeding tendency. Treatment is supportive, such as provision of intravenous fluids (see pp. 98, 101 & 108 of this issue).

Ebola hemorrhagic fever outbreaks in Africa

Since 1976, nearly 30 Ebola hemorrhagic fever outbreaks have been reported, mostly from Central Africa, such as Uganda and the Democratic Republic of Congo. During 1976-2013, the median number of patients per outbreak was 44 (range 1-425) and that of deaths 29 (range 1-280). The duration of the epidemics was from several weeks to ~4 months (see p. 96 of this issue).

Since cases of Ebola hemorrhagic fever from Guinea in West Africa were reported to the World Health Organization (WHO) in March 2014, the outbreak expanded to neighboring Sierra Leone and Liberia, and became the largest Ebola hemorrhagic fever

Figure. Confirmed weekly Ebola virus disease cases reported from Guinea, Liberia and Sierra Leone*



* WHO Ebola Situation Report - 20 May 2015 (<http://apps.who.int/ebola/en/ebola-situation-reports>)
Guinea (Patient database), Liberia (Situation report, as of 6 May 2015), Sierra Leone (Patient database up to 1 May 2015, Situation report from 8 March 2015)

(Continued on page 94')

(THE TOPIC OF THIS MONTH-Continued)

outbreak ever experienced (see p. 96 of this issue). The index case is believed to have been a two-year-old child that became ill in December 2013. As of 20 May 2015, a total of 26,969 patients (including probable and suspected cases) and 11,135 deaths were reported to WHO; 3,635 (2,407 deaths) were from Guinea, 10,666 (4,806 deaths) from Liberia, and 12,632 (3,907 deaths) from Sierra Leone. The number of new infections peaked in the latter half of 2014 and have declined in 2015 (Figure). As of 20 May 2015, Guinea and Sierra Leone reported around 10 new cases per week, considerably lower than 100 cases per week during the peak period. Liberia was declared free of Ebola transmission on 9 May 2015 (see p. 96 of this issue).

Suspected transmission route: As with previous Ebola hemorrhagic fever outbreaks, the 2014 epidemic likely began with animal-to-human transmission. The virus then spread to multiple persons through infected patients' blood and body fluids, infected corpses and the water used for cleansing corpses during traditional burial rituals. Through repetition of such practices, transmission was amplified (see pp. 96, 99 & 100 of this issue). In addition, in the three West Africa countries, medical facilities also became sites of transmission, as implementing sufficient infection prevention and control measures were challenging (see pp. 98 & 99 of this issue). Importations of Ebola hemorrhagic fever patients from West Africa have been reported from Nigeria, Senegal, Mali, the USA, Spain, UK and Italy, as of 14 May 2015. However, all of them were able to break the transmission chain by implementing appropriate measures, such as isolation of confirmed or suspected Ebola hemorrhagic fever patients and quarantine of those who had history of contact with Ebola hemorrhagic fever patients (see p. 104 of this issue).

Sex and age: Majority of patients were 15-44 years of age in all three West African countries. Incidence per 100,000 population within the age groups of 0-14 years, 15-44 years and ≥ 45 years were, respectively, 11, 39 and 53 in Guinea; 33, 120 and 132 in Liberia; and 79, 211 and 279 in Sierra Leone. Sex differences were not observed (see p. 96 of this issue).

Prevention and control measures

Given the transmission route of Ebola hemorrhagic fever, standard prevention and control measures against contact infections are important. Minimizing contact with infected corpses, appropriate isolation and care of Ebola hemorrhagic fever patients, tracing contacts of confirmed Ebola hemorrhagic fever patients and their quarantine can break the transmission chain (see p. 103 of this issue). Vaccines and therapeutics are under development but none of them have been approved for clinical use (see p. 101 of this issue).

The international community, in coordination with the three affected West African countries, took systematic actions to prevent the spread of the Ebola epidemic. WHO declared a "Public Health Emergency of International Concern" and played a leading role in public health actions against Ebola. Many countries, including Japan, dispatched experts to the three African countries via WHO (see pp. 98, 99, 108 & 111 of this issue). In September 2014, the United Nations launched the UN Mission for Ebola Emergency Response (UNMEER) and coordinated the support activities of UN agencies and partners (see p. 103 of this issue).

Laboratory Diagnosis in Japan

In Japan, Ebola hemorrhagic fever is a category I infectious disease under the Infectious Diseases Control Law (see pp. 95 & 106 of this issue). Physicians who have made the diagnosis of Ebola hemorrhagic fever shall immediately notify the case (see <http://www.nih.go.jp/niid/images/iasr/36/424/de4241.pdf> for notification criteria).

"Suspected cases" are defined as "cases diagnosed as such by physicians based on such information as clinical manifestations, travel history to Ebola virus endemic countries, and contact history with Ebola hemorrhagic fever patients". Suspected cases are sent to medical institutions designated for specified infectious diseases (see pp. 106 & 108 of this issue) for isolation. The blood specimens are immediately sent to the National Institute of Infectious Diseases (NIID) for Ebola virus genome detection. NIID conducts several Ebola virus genome tests at the same time: real-time PCR & conventional PCR targeting at the L gene and the conventional PCR targeting at the NP gene (see p. 109 of this issue). As of May 2015, those with high fever ($\geq 38^{\circ}\text{C}$) who have stayed in Guinea or Sierra Leone in the past 21 days or those who are feverish with a history of contact with viral hemorrhagic fever patients' body fluids in the past 21 days, are defined as viral hemorrhagic fever-suspected patients (Notice by Director, Tuberculosis and Infectious Diseases Control Division, Health Service Bureau, Ministry of Health, Labour and Welfare [Ken-kan-hatsu 0511 No.2]). From 27 October 2014 to 19 May 2015, seven suspected cases were reported; all of them were negative for Ebola virus genome test (see pp. 108 & 109 of this issue).

Measures to be taken

Although incident cases of Ebola hemorrhagic fever patients in the three West African countries have been decreasing as of May 2015, the three West African countries and the international community need to maintain their vigilance until the end of the outbreak is definitively confirmed. In addition, to be better prepared for cases of viral hemorrhagic fever, including Ebola hemorrhagic fever, there is a need to maintain laboratory diagnostics and infrastructure (see p. 109 of this issue).

The statistics in this report are based on 1) the data concerning patients and laboratory findings obtained by the National Epidemiological Surveillance of Infectious Diseases undertaken in compliance with the Law Concerning the Prevention of Infectious Diseases and Medical Care for Patients of Infections, and 2) other data covering various aspects of infectious diseases. The prefectural and municipal health centers and public health institutes (PHIs), the Department of Food Safety, the Ministry of Health, Labour and Welfare, and quarantine stations, have provided the above data.