

EBOLA VIRUS

Ebola virus (EV) causes Ebola Hemorrhagic Fever (EHF), an often fatal illness in humans. It was first discovered in 1976 near the Ebola River in the Democratic Republic of the Congo (DRC). Outbreaks appear sporadically. An outbreak began in Guinea, West Africa in March 2014. As of 2 October 2014, countries have reported over 6,000 confirmed or suspected cases and over 3,000 deaths in Guinea, Liberia, Sierra Leone, Nigeria and Senegal.¹

On August 8th, the World Health Organization advised that:

- The Ebola outbreak in West Africa constitutes an ‘extraordinary event’ and a public health risk to other States.
- The possible consequences of further international spread are particularly serious in view of the virulence of the virus, the intensive community and health facility transmission patterns, and the weak health systems in the currently affected and most at-risk countries.
- A coordinated international response is deemed essential to stop and reverse the international spread of Ebola.²

WHAT ARE THE SYMPTOMS

EHF is a severe, acute illness often characterized by the sudden onset of fever, intense weakness, muscle pain, headache, nausea and sore throat. This is followed by vomiting, diarrhea, impaired kidney and liver function, and in some cases, both internal and external bleeding.^{3,4} The case fatality rate can be as high as 90 percent. Symptoms may appear anywhere from 2 to 21 days after exposure to EV though 8-10 days is most common.⁵

Diagnosing EHF in an individual who has been infected for only a few days is difficult, because the early symptoms, such as red eyes and a skin rash, are nonspecific to EV infection and are seen in patients with more commonly occurring diseases.⁶

HOW IS IT TRANSMITTED

EV infection is most likely animal-borne with fruit bats being the most likely source in Africa. A chain of infection is established when the saliva or feces of infected bats infect wildlife, such as monkeys, apes and pigs. Outbreaks in humans are thought to start when the first patient becomes infected through contact with an infected animal either in the process of slaughtering or through consumption of blood, milk or raw or under cooked meat.

Human-to-human transmission is caused by direct contact with the blood or secretions of an infected person and exposure to objects (such as needles) that have been contaminated with infectious material.^{7,8} A person must have symptoms to spread EV to others.⁹ EV does not spread through the air or by water, or in general, food.¹⁰ EV is temperature sensitive, therefore if food products are properly prepared and cooked, humans cannot become infected by consuming them.¹¹ EV can be inactivated by heating for 30 to 60 minutes at 60°C, boiling for 5 minutes.¹²

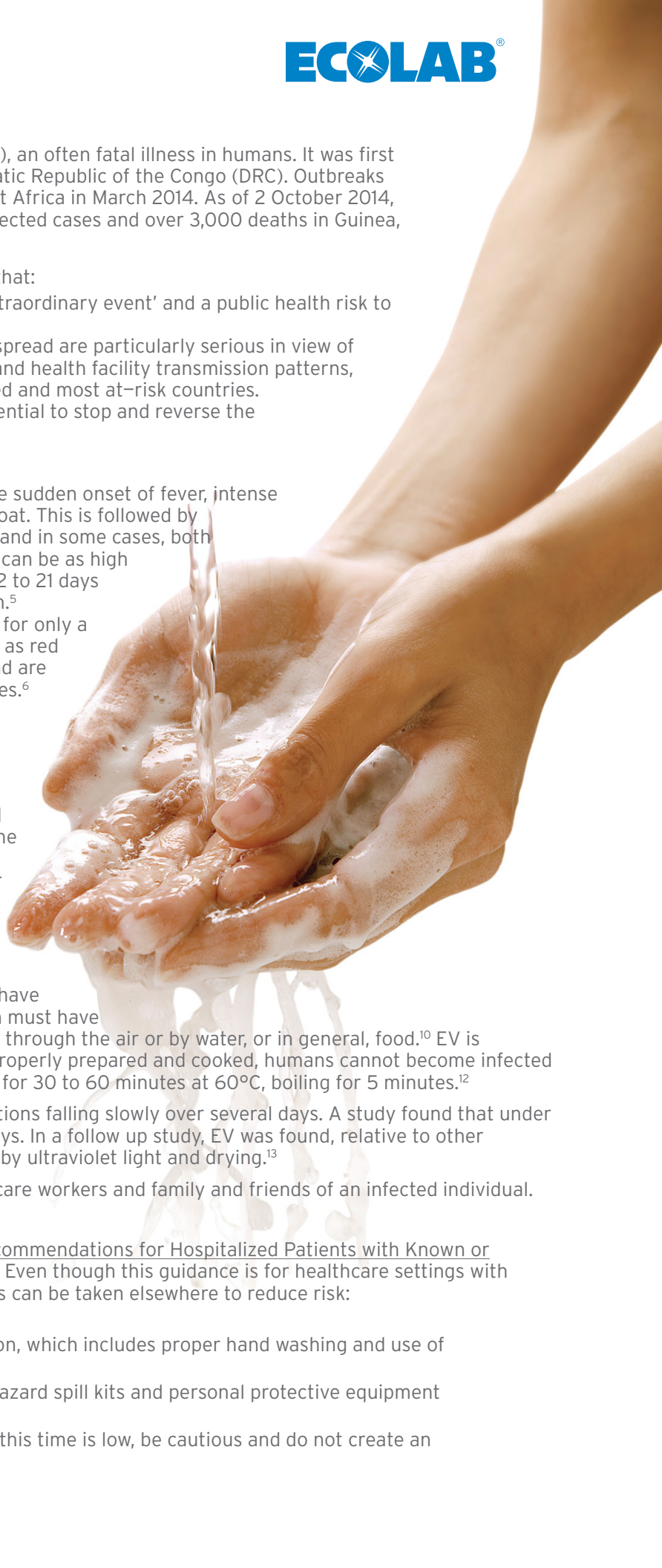
EV can remain viable on solid surfaces, with concentrations falling slowly over several days. A study found that under ideal conditions EV could remain active for up to six days. In a follow up study, EV was found, relative to other enveloped viruses, to be quite sensitive to inactivation by ultraviolet light and drying.¹³

During outbreaks, those at highest risk include health care workers and family and friends of an infected individual.

PREPAREDNESS

CDC has released [Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Hemorrhagic Fever in U.S. Hospitals](#).¹⁴ Even though this guidance is for healthcare settings with confirmed or suspected cases of EV, the following steps can be taken elsewhere to reduce risk:

- **Follow local public health recommendations.**
- Reinforce personal hygiene throughout your operation, which includes proper hand washing and use of alcohol-based hand sanitizers.
- Stock properly applicable disinfectant products, biohazard spill kits and personal protective equipment for clean-up.
- Remind associates that the risk of contracting EV at this time is low, be cautious and do not create an environment of fear.



CLEANING AND DISINFECTION

- **Consult with local health authorities on all necessary procedures.**
- Clean and disinfect hard, non-porous surfaces and high touch point areas with a disinfectant effective against non-enveloped viruses.
 - According to the US CDC, although there are no EPA-registered hospital disinfectant products with specific label claims against EV, enveloped viruses such as EV are susceptible to a broad range of hospital disinfectants used to disinfect hard, non-porous surfaces. In contrast, non-enveloped viruses (e.g. Norovirus) are more resistant to disinfectants. As a precaution, selection of a disinfectant product with a higher potency than what is normally required for an enveloped virus is being recommended at this time.¹⁵
 - In regions with no access to disinfectant products, household bleach (5.0% chlorine concentration) is recommended at 1:100 use dilution to disinfect surfaces in healthcare settings.¹⁶
- For the clean-up of vomiting and diarrhea events, use a biohazard spill kit along with recovery procedures for cleaning, disinfecting and disposing of bodily fluids. Bodily fluid clean-up must always be done wearing appropriate personal protective equipment such as gloves, gowns, masks and eye protection.

PERSONAL HYGIENE

Consult with local health authorities on all necessary procedures. Healthcare professionals and others who are caring for patients with EHF should strictly follow all infection prevention procedure and practices communicated by the WHO and the U.S. CDC.^{17, 18, 19}

1. Ensure that hand wash stations are fully stocked with approved hand soap and disposable towels. All dispensing equipment should be operational.
2. Ensure hand wash signage is in place; consider documentation of hand wash training and compliance.
3. Ensure proper hand washing techniques and frequencies are being practiced. Clean hands and exposed portions of arms for at least 20 seconds, using a cleaning compound in a hand washing sink following the procedure below:
 - a. Rinse hands under clean, running warm water.
 - b. Apply hand soap.
 - c. Rub together vigorously for at least 10 to 15 seconds paying particular attention to removing soil from underneath the fingernails. Thoroughly rinse under clean, running warm water.
 - d. Dry hands using hand dryer or disposable towels.
 - e. Use disposable paper towels when touching surfaces, faucet handles on the hand wash sink or the handle of the restroom door to avoid hand recontamination.
4. Ensure the use of gloves and/or use of utensils when handling ready-to-eat foods.

Note: Glove use does not replace the need for hand washing. Employees should be trained on proper hand washing and gloving procedures.

Sources:

- ¹ <http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html>
- ² http://www.who.int/csr/don/2014_08_08_ebola/en/
- ³ http://www.who.int/csr/don/2014_04_ebola/en/
- ⁴ <http://www.who.int/mediacentre/factsheets/fs103/en/>
- ⁵ <http://www.cdc.gov/vhf/ebola/symptoms/index.html>
- ⁶ <http://www.cdc.gov/vhf/ebola/diagnosis/index.html>
- ⁷ http://www.who.int/csr/don/2014_04_ebola/en/
- ⁸ <http://www.who.int/mediacentre/factsheets/fs103/en/>
- ⁹ <http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/qa.html>
- ¹⁰ <http://www.cdc.gov/vhf/ebola/transmission/index.html>
- ¹¹ <http://www.who.int/csr/disease/ebola/note-ebola-food-safety/en/>
- ¹² <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/ebola-eng.php>
- ¹³ <http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>
- ¹⁴ <http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html>
- ¹⁵ <http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>
- ¹⁶ <http://www.cdc.gov/vhf/abroad/pdf/african-healthcare-setting-vhf.pdf>
- ¹⁷ http://www.who.int/csr/bioriskreduction/infection_control/en/
- ¹⁸ <http://www.cdc.gov/vhf/ebola/>
- ¹⁹ <http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html>