FEATURE

EBOLA

Preparedness for Environmental Services Professionals

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Produced by the National Institute of Allergy and Infectious Diseases (NIAID), under a magnification of 25,000X, this digitally-colorized scanning electron micrograph depicts numerous filamentous Ebola virus particles (red) budding from a chronically-infected VERO E6 cell (blue).

Centers for Disease Control and Prevention (CDC) has released updated Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Hemorrhagic Fever in U.S. Hospitals. Standard, contact, and droplet precautions are recommended for any patients with known or suspected Ebola hemorrhagic fever. Though these recommendations focus on the hospital setting, the recommendations for personal protective equipment (PPE) and environmental infection control measures are applicable to any health care setting. This guidance is not intended to apply to persons outside of health care settings. As additional information becomes available, these recommendations will be re-evaluated and updated as needed.[1]

The natural reservoir host of ebolaviruses, and the manner in which transmission of the virus to humans occurs, remain unknown. This makes risk assessment in endemic areas difficult. During outbreaks of Ebola HF, those at highest risk include health care workers and the family and friends of an infected individual. Medical professionals in the United States should consult the CDC Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Hemorrhagic Fever in U.S.

Because the natural reservoir of ebolaviruses has not yet been proven, the manner in which the virus first appears in a human at the start of an outbreak is unknown. However, researchers have hypothesized that the first patient becomes infected through contact with an infected animal. When an infection does occur in humans, there are several ways in which the virus can be transmitted to others. These include:

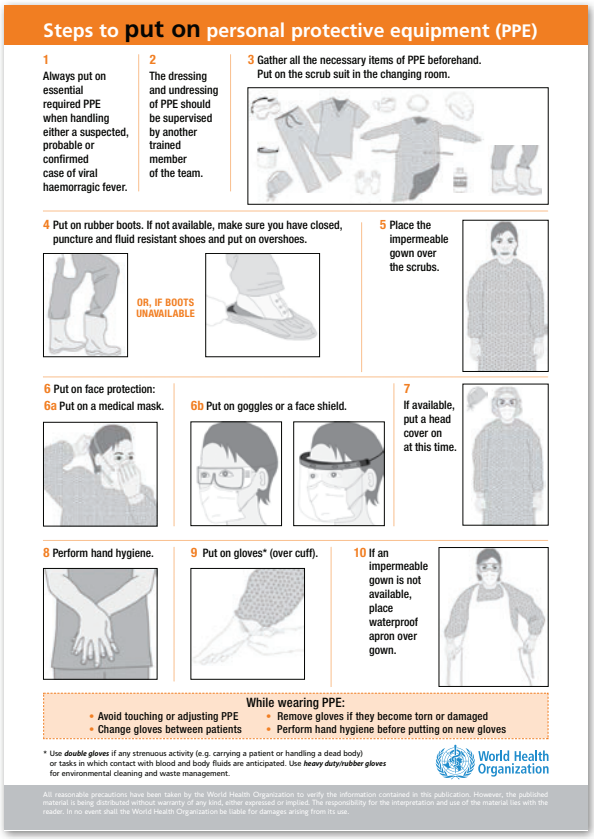
- Direct contact with the blood or secretions of an infected person
- Exposure to objects (such as needles) that have been contaminated with infected secretions

The viruses that cause Ebola HF are often spread through families and friends because they come in close contact with infectious secretions when caring for ill persons. During outbreaks of Ebola HF, the disease can spread quickly within health care settings (such as a clinic or hospital). Exposure to ebolaviruses can occur in health care settings where hospital staff are not wearing appropriate PPE, such as masks, gowns, and gloves. Proper cleaning and disposal of instruments, such as needles and syringes, is also important. If instruments are not disposable, they must be sterilized before being used again. Without adequate sterilization of the instruments, virus transmission can continue and amplify an outbreak.

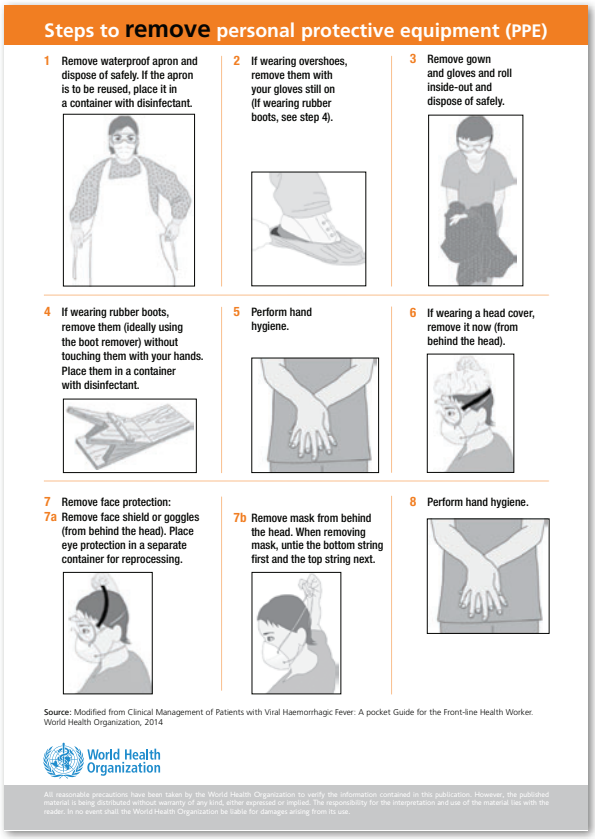
Infection Prevention Guidance from CDC

CDC offers the following additional guidance:

- **Medical equipment:** All non-dedicated, non-disposable medical equipment used for patient care should be cleaned and disinfected according to manufacturer's instructions and hospital policies**.** Dedicated medical equipment should be used for the provision of patient care.[2]
- **Environmental cleaning and disinfection:** The EPA has worked closely with CDC to develop the CDC Interim Guidance for Environmental Infection Control in Hospitals for Ebola virus. Although there are no EPA-registered products with specific label claims against the Ebola virus, enveloped viruses such as Ebola are susceptible to a broad range of hospital disinfectants used to disinfect hard, non-porous surfaces. In contrast, non-enveloped viruses are more resis-



SOURCE: World Health Organization



SOURCE: World Health Organization

tant to disinfectants. As a precaution, the selection of a disinfectant product with a higher potency than what is normally required for an enveloped virus is being recommended by CDC at this time. EPA-registered hospital disinfectants with label claims against non-enveloped viruses (e.g., norovirus, rotavirus, adenovirus, poliovirus) are broadly antiviral and capable of inactivating both enveloped and non-enveloped viruses and are used to disinfect environmental surfaces in rooms of patients with infectious diseases.

- **Proper use of healthcare-grade disinfectants for Ebola virus:** Disinfectant products should be used in accordance with the manufacturer's instructions for the specific label claim and in a manner consistent with environmental infection control recommendations.
- **Hand hygiene:** In health care settings, hand hygiene can be performed by washing with soap and water or using alcohol-based hand rubs. If hands are visibly soiled, use soap and water, not alcohol-based hand rubs.
- **Disinfection of PPE prior to taking off:** CDC recommends disinfecting visibly contaminated PPE using an EPA-registered disinfectant wipe prior to taking off equipment. Additionally, CDC recommends disinfection of gloved hands using either an EPA-registered disinfectant wipe or alcohol-based hand rub between steps of taking off PPE.

Putting On and Removing PPE

In addition, the World Health Organization (WHO) has released a detailed report on proper handling of Ebola virus patients by health care providers, as well as proper steps for handling PPE. For specific information on the WHO recommendations, please visit their dedicated website for Ebola virus at www.who.int/csr/resources/publications/ebola/filovirus_infection_control/en.

Additional PPE recommendations are also available from the University of Nebraska Medical Center and Emory Healthcare Biocontainment Center at http://app1.unmc.edu/nursing/heroes/pdf/vhfppe/doffingBiologicalPPE-EbolaPatients-8.5x11-CC-v1.01.pdf or www.emoryhealthcare.org/ebola-protocol/ehc-message.html.

EVS professionals can find updated resources on the Association for the Healthcare Environment (AHE) dedicate Ebola Virus Disease resource website at www.ahe.org/ahe/learn/ebola_reference.shtml#.VEdDh410ztU. ●

REFERENCES

[1] Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Hemorrhagic Fever in U.S. Hospitals, Electronically Accessed on August 20, 2014 from www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html, US Centers for Disease Control and Prevention.

[2] Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus, Electronically Accessed August 20, 2014 from www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html, US Centers for Disease Control and Prevention.

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