



Ebola Virus Disease (EVD) In-Service EMS Training Outline



Background (World Health Organization, 2014)

The current outbreak in West Africa (first cases notified in March 2014) is the largest and most complex Ebola outbreak since the Ebola virus was first discovered in 1976. There have been more cases and deaths in this outbreak than all others combined. It has also spread between countries starting in Guinea then spreading across land borders to Sierra Leone and Liberia.

Transmission (Centers for Disease Control and Prevention, 2014)

Ebola is spread through direct contact (through broken skin or mucous membranes in, for example, the eyes, nose, or mouth) with:

- blood or body fluids (including but not limited to urine, saliva, sweat, feces, vomit, breast milk, and semen) of a person who is sick with Ebola
- objects (like needles and syringes) that have been contaminated with the virus
- infected animals
- Ebola is not spread through the air or by water, or in general, by food. However, in Africa, Ebola may be spread as a result of handling bushmeat (wild animals hunted for food) and contact with infected bats. There is no evidence that mosquitos or other insects can transmit Ebola virus. Only mammals (for example, humans, bats, monkeys, and apes) have shown the ability to become infected with and spread Ebola virus.

Controlling infection in health-care settings:

Health care workers should always take standard precautions when caring for patients, regardless of their presumed diagnosis. These include basic hand hygiene, respiratory hygiene, use of personal protective equipment (to block splashes or other contact with infected materials), safe injection practices and safe burial practices.

The Acting Commissioner of Health of the State of New York issued an Order on October 17, 2014 directing all NYS Certified EMS agencies to take certain actions. The Order is an important, legal document intended to protect New Yorkers from the risks of Ebola transmission and avoid a potential outbreak of the disease.

The order requires EMS agencies to:

1. Identify to the NYSDOH at least two lead points of contact for EVD preparedness and response activities, one of whom must be available 24 hours per day, seven days per week.
2. The lead points of contact must be assigned to the role of 24/7 Ebola Lead in the Health Commerce System (HCS).
3. Provide all Covered Personnel with personal protective equipment (PPE) that, at a minimum, meets the applicable specifications.
4. Conduct in-person training for all Covered Personnel, on donning and removing PPE, including physically practicing donning and removing PPE in the setting that will be used for Patients. A

designated trainer with infection control expertise selected by the Covered Entity must be present at the training to assess whether Covered Personnel have initially achieved satisfactory competence. The training used must, at a minimum, meet the applicable specifications as required under the Commissioner's Order.

5. The Covered Entity must reassess Covered Personnel every month after initially achieving satisfactory competence, and must retrain any Covered Personnel who do not demonstrate satisfactory competence upon reassessment. Only staff who have demonstrated satisfactory competence are allowed to provide care to patients.
6. The Covered Entity must maintain a log that identifies all Covered Personnel who have received training, the dates they obtained satisfactory competence, and dates and results of monthly reassessments.
7. Maintain a log of all personnel coming into contact with a patient, or a patient's area or equipment, regardless of the level of PPE worn at the time of contact. Covered Entities shall measure the temperature twice daily of all personnel who come in contact with a patient, a patient's area or equipment, or obtain the temperatures from off-duty personnel. The log must describe each person's measured temperatures and any symptoms. "Contact" for the purposes of this provision is defined as coming in physical contact, entering a patient room, coming within three feet of a patient, or performing laboratory testing on a specimen from a patient.
8. Implement a written protocol to safely contain, store and dispose of regulated medical waste in all settings where patients will be cared for that is in compliance with the applicable specifications.

The web link to the Order is:

http://www.health.ny.gov/diseases/communicable/ebola/docs/commissioner_order.pdf

Signs and Symptoms

- Fever
- Severe headache
- Muscle pain
- Weakness
- Diarrhea
- Vomiting
- Abdominal (stomach) pain
- Unexplained hemorrhage (bleeding or bruising)

Symptoms may appear anywhere from two to 21 days after exposure to Ebola, but the average is eight to ten days.

Recommendations for 9-1-1 Public Safety Answering Points (PSAPs)

http://www.health.ny.gov/diseases/communicable/ebola/docs/ems/interim_guidance_ems.pdf

State and local EMS authorities may authorize PSAPs and other emergency call centers to use modified caller queries about Ebola when they consider the risk of Ebola to be elevated in their

community (e.g., in the event that patients with confirmed Ebola are identified in the area). This will be decided from information provided by local, state, and federal public health authorities, including the city or county health department(s), state health department(s), and CDC.

It will be important for PSAPs to question callers and determine if anyone at the incident presents with the risk factors set forth in the bullets below. This should be communicated immediately to EMS personnel before arrival and to assign the appropriate EMS resources. PSAPs should review existing medical dispatch procedures and coordinate any changes with their EMS medical director and with their local public health department.

- PSAP call takers should screen callers for symptoms and risk factors of Ebola. Callers should be asked if they, or someone at the incident, have fever of greater than 38.6 degrees Celsius or 101.5 degrees Fahrenheit, and if they have additional symptoms such as severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained bleeding.
 - If PSAP call takers suspect a caller is reporting symptoms of Ebola, they should screen callers for risk factors within the past three weeks before onset of symptoms. Risk factors include:
 - Contact with blood or body fluids of a patient known to have or suspected to have Ebola;
 - Residence in—or travel to—a country where an Ebola outbreak is occurring (a list of impacted countries can be accessed at the following link: <http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html>); or
 - Direct handling of bats or nonhuman primates from disease-endemic areas.
 - If PSAP call takers have information alerting them to a person with possible Ebola, they must make sure any first responders and EMS personnel are made confidentially aware of the potential for Ebola before the responders arrive on scene.

Recommendations for EMS and Medical First Responders, Including Firefighters and Law

Enforcement Personnel

These EMS personnel practices should be based on the most up-to-date Ebola clinical recommendations and information from appropriate public health authorities and EMS medical direction.

Patient assessment

Interim recommendations:

1. Address scene safety:
 - If PSAP call takers advise that the patient is suspected of having Ebola, EMS personnel should put on the PPE appropriate for suspected cases of Ebola before entering the scene.
 - Keep the patient separated from other persons as much as possible.
 - Use caution when approaching a patient with Ebola. Illness can cause delirium, with erratic behavior that can place EMS personnel at risk of infection, e.g., flailing or staggering.
2. During patient assessment and management, EMS personnel should consider the symptoms and risk factors of Ebola:
 - All patients should be assessed for symptoms of Ebola (fever and additional symptoms such as severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage). If the patient has symptoms of Ebola, then ask the patient about risk factors within the past three weeks before the onset of symptoms, including:
 - Contact with blood or body fluids of a patient known to have or suspected to have Ebola;
 - Residence in—or travel to— a country where an Ebola outbreak is occurring (a list of impacted countries can be accessed at the following link: <http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html>); or
 - Direct handling of bats or nonhuman primates from disease-endemic areas.
 - Based on the presence of symptoms and risk factors, put on or continue to wear appropriate PPE and follow the scene safety guidelines for suspected case of Ebola.
 - If there are no risk factors, proceed with normal EMS care.

Prehospital Medical Treatment

There are no approved treatments available for EVD. Clinical management should focus on supportive care. Clinical management should focus on supportive care for:

- Hypovolemia;
- electrolyte abnormalities;
- shock;
- hypoxia;
- hemorrhage control;
- Recommended care, in consultation with Physician Medical Control, includes:
 - Maintenance of blood pressure
 - IV Fluids

- High flow, high volume oxygen
- pain management

EMS Transfer of Patient Care to a Health care Facility

EMS personnel must notify the receiving health care facility when transporting a suspected Ebola patient, so that the receiving health care facility may prepare all appropriate infection control precautions prior to patient arrival.

Additional guidance for Air Medical transport of patients with confirmed or suspected Ebola, can be found at: <http://www.cdc.gov/vhf/ebola/hcp/guidance-air-medical-transport-patients.html>

Inter-facility Transport

(Centers for Disease Control and Prevention, 2014)

EMS personnel involved in the air or ground inter-facility transfer of patients with suspected or confirmed Ebola should wear recommended PPE.

Infection Control

EMS personnel can safely manage a patient with suspected or confirmed Ebola by following recommended isolation and infection control procedures, including standard, contact, and droplet precautions. Particular attention should be paid to protecting mucous membranes of the eyes, nose, and mouth from splashes of infectious material, or self-inoculation from soiled gloves. Early recognition and identification of patients with potential Ebola is critical. An EMS agency managing a suspected Ebola patient should follow these CDC recommendations:

- Limit activities, especially during transport that can increase the risk of exposure to infectious material (e.g., airway management, cardiopulmonary resuscitation, use of needles).
- Limit the use of needles and other sharps as much as possible. All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers.
- Phlebotomy, procedures, and laboratory testing should be limited to the minimum necessary for essential diagnostic evaluation and medical care.

Use of Personal protective equipment (PPE)

EMS providers must provide all personnel with PPE that, at a minimum meets the applicable specifications required under the Commissioner's Order (http://www.health.ny.gov/diseases/communicable/ebola/#commisioner_order).

Pre-hospital resuscitation procedures such as endotracheal intubation, open suctioning of airways, and cardiopulmonary resuscitation frequently result in a large amount of body fluids, such as saliva and vomit. Performing these procedures in a less controlled environment (e.g., moving vehicle) increases risk of exposure for EMS personnel. If conducted, perform these procedures under safer circumstances (e.g., stopped vehicle, hospital destination).

During pre-hospital resuscitation procedures (intubation, open suctioning of airways, cardiopulmonary resuscitation):

- In addition to recommended PPE, respiratory protection that is at least as protective as a NIOSH-certified fit-tested N95 filtering face piece respirator or higher should be worn (instead of a facemask).
- Additional PPE must be considered for these situations due to the potential increased risk for contact with blood and body fluids including, but not limited to, double gloving, disposable shoe covers, and leg coverings.

If blood, body fluids, secretions, or excretions from a patient with suspected Ebola come into direct contact with the EMS provider's skin or mucous membranes, then the EMS provider should immediately stop working. The EMS provider should wash his or her affected skin surfaces with soap and water and report exposure to an occupational health provider or supervisor for follow-up.

Recommended PPE should be used by EMS personnel as follows:

- PPE should be worn upon entry into the scene and continued to be worn until personnel are no longer in contact with the patient.
- PPE should be carefully removed without contaminating one's eyes, mucous membranes, or clothing with potentially infectious materials.
- PPE should be placed into a medical waste container at the hospital or double bagged and held in a secure location.
- Re-useable PPE should be cleaned and disinfected according to the manufacturer's reprocessing instructions and EMS agency policies.
- Hand hygiene should be performed immediately after removal of PPE.

Donning and Doffing of PPE

All EMS agencies must conduct in-person training for personnel on donning and removal of PPE, including physically practicing donning and removing PPE in the setting that will be used for patients. A designated trainer with infection control expertise selected by the provider must be present at the training to assess whether personnel have initially achieved satisfactory competence. The training use must, at a minimum, meet the applicable specifications required under the Commissioner's Order. The guidelines may be found at:

<http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html>

The EMS agency must reassess personnel every month after initially achieving satisfactory competence and must retrain any personnel who do not demonstrate satisfactory competence upon reassessment. Only staff who have demonstrated satisfactory competence are allowed to provide care to persons under investigation for Ebola, a confirmed case, or the body of a person who has expired from EVD. Each EMS agency must maintain a log that identifies all personnel who have received training, the dates they obtained satisfactory competence, and dates and results of monthly reassessments.

Each instructor and agency must customize the training materials to adapt to the specific types and brands of PPE that their providers are expected to utilize during patient encounters, treatment and transport. The PPE manufacturer's guidelines must be followed to assure proper donning and doffing.

Cleaning EMS Transport Vehicles after Transporting a Patient with Suspected or Confirmed Ebola

EMS providers must implement a written protocol to safely clean and disinfect vehicles and equipment after transporting a patient with suspected or confirmed Ebola that complies with applicable specifications required under the Commissioner's Order, including:

- EMS personnel performing cleaning and disinfection must wear recommended PPE (described above) and consider use of additional barriers (e.g., rubber boots or shoe and leg coverings) if needed. Face protection (facemask with goggles or face shield) should be worn since tasks such as liquid waste disposal can generate splashes.

- Patient-care surfaces (including stretchers, railings, medical equipment control panels, and adjacent flooring, walls and work surfaces) are likely to become contaminated and should be cleaned and disinfected after transport.
- A blood spill or spill of other body fluid or substance (e.g., feces or vomit) must be managed through removal of bulk spill matter, cleaning the site, and then disinfecting the site. For large spills, a chemical disinfectant with sufficient potency is needed to overcome the tendency of proteins in blood and other body substances to neutralize the disinfectant's active ingredient.
- An EPA-registered hospital disinfectant with label claims for viruses that share some technical similarities to Ebola (such as, norovirus, rotavirus, adenovirus, poliovirus) and instructions for cleaning and decontaminating surfaces or objects soiled with blood or body fluids must be used according to those instructions. After the bulk waste is wiped up, the surface should be disinfected as described in the bullet above.
- Contaminated reusable patient care equipment must be placed in biohazard bags and labeled for cleaning and disinfection according to agency policies. Reusable equipment should be cleaned and disinfected according to manufacturer's instructions by trained personnel wearing correct PPE. Avoid contamination of reusable porous surfaces that cannot be made single use.
- Use only a mattress and pillow with plastic or other covering that fluids cannot get through. To reduce exposure among staff to potentially contaminated textiles (cloth products) while laundering, discard all linens, non-fluid-impermeable pillows or mattresses as appropriate.

The Ebola virus is a Category A infectious substance regulated by the U.S. Department of Transportation's (DOT) Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180). Any item transported for disposal that is contaminated or suspected of being contaminated with a Category A infectious substance must be packaged and transported in accordance with the HMR. This includes medical equipment, sharps, linens, and used health care products (such as soiled absorbent pads or dressings, kidney-shaped emesis pans, portable toilets, used Personal Protection Equipment [e.g., gowns, masks, gloves, goggles, face shields, respirators, booties] or byproducts of cleaning) contaminated or suspected of being contaminated with a Category A infectious substance.

Cleaning and Disinfection Guidelines specified by the Order may be found at:

<http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>

Follow-up and/or reporting measures by EMS personnel after caring for a suspected or confirmed Ebola patient

- EMS personnel must be aware of the follow-up and/or reporting measures they should take after caring for a suspected or confirmed Ebola patient.
- EMS agencies must develop policies for monitoring and management of EMS personnel potentially exposed to Ebola. EMS agencies must maintain a log of all personnel coming into contact with a patient (as defined under the Commissioner's Order) or a patient's area or equipment, regardless of the level of PPE worn at the time of contact. EMS agencies shall measure the temperature twice daily of all personnel who come in contact with a patient, a patient's area or equipment, or obtain the temperatures from off-duty personnel. The log must describe each person's measured temperatures and any symptoms.
- EMS agencies should develop sick leave policies for EMS personnel that are non-punitive, flexible and consistent with public health guidance
- Ensure that all EMS personnel, including staff who are not directly employed by the health care facility but provide essential daily services, are aware of the sick leave policies.
- EMS personnel with exposure to blood, bodily fluids, secretions, or excretions from a patient with suspected or confirmed Ebola should immediately:
 - Stop working and wash the affected skin surfaces with soap and water. Mucous membranes (e.g., conjunctiva) should be irrigated with a large amount of water or eyewash solution;
 - Contact occupational health/supervisor for assessment and access to post-exposure management services; and
 - Receive medical evaluation and follow-up care, including fever monitoring twice daily for 21 days, after the last known exposure.
- EMS personnel who develop sudden onset of fever, intense weakness or muscle pains, vomiting, diarrhea, or any signs of hemorrhage after an unprotected exposure (i.e., not wearing recommended PPE at the time of patient contact or through direct contact to blood or body fluids) to a patient with suspected or confirmed Ebola should:
 - Not report to work or immediately stop working and isolate themselves;
 - Notify their supervisor, who should notify local and state health departments;
 - Contact occupational health/supervisor for assessment and access to post-exposure management services; and
 - Comply with work exclusions until they are deemed no longer infectious to others.

Ebola Medical Waste Management

- Medical waste generated in the care of patients with known or suspected EVD is subject to procedures set forth by local, state and federal regulations. Each agency must have a written plan to safely contain, store and dispose of regulated medical waste. Minimum specifications for medical waste may be found at:
 - http://www.health.ny.gov/regulations/nycrr/title_10/
 - <http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html>
 - <http://www.dec.ny.gov/chemical/99119.html>

Additional reference and guidance is available at:

- http://www.health.ny.gov/diseases/communicable/ebola/#ems_providers
 - http://www.health.ny.gov/diseases/communicable/ebola/docs/commissioner_order.pdf
 - http://www.health.ny.gov/diseases/communicable/ebola/commissioners_orders_q_and_a.htm
 - http://www.health.ny.gov/diseases/communicable/ebola/docs/ems/ems_checklist_ebola_preparedness.pdf
 - <http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>
 - <http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-emergency-medical-services-systems-911-public-safety-answering-points-management-patients-known-suspected-united-states.html>
 - <http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html>
-
- For questions on CDC guidance, please contact **1-800-CDC-INFO (1-800-232-4636)**.
 - **Relevant DOT guidance is available at <http://www.phmsa.dot.gov/>.** For questions on DOT guidance or the HMR requirements, please contact DOT's Pipeline and Hazardous Materials Safety Administration's (PHMSA's) Hazardous Materials Information Center at **1-800-467-4922, 9:00 am-5:00 pm Eastern Standard Time**.
 - **Relevant OSHA guidance is available at <https://www.osha.gov/SLTC/ebola/index.html>.** For questions on OSHA guidance, please contact **1-800-321-OSHA (6742)**.
 - **New York State Department of Health, Bureau of EMS at NYSEMSEbola@health.ny.gov** or 518-402-0996.