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Date: October 16, 2014
To: San Francisco Emergency Responders
From: John Brown, MD
DEM-EMS Agency Medical Director
Subject: **Recommendations for Emergency Responders on Ebola**

The Department of Emergency Management-EMS Agency is working closely with the Department of Public Health to monitor the Ebola outbreak situation in Africa and to develop the local response within San Francisco. **It is important to remember that while Ebola is a contagious disease, transmission can be completely prevented by strict adherence to personal protective measures. It is our goal to prevent any provider from developing this disease.** Current local response goals are focused on providing information about the situation as it evolves, communicating personal protection measures and ensuring early identification and containment of any potential cases. We are requesting that you share the information contained in this letter with your staff.

EBOLA SITUATION

The 2014 Ebola outbreak is one of the largest in history. This outbreak first appeared in West Africa affecting the countries of Guinea, Liberia, and Sierra Leone (Although small numbers of cases occurred in Nigeria and Senegal, these countries do not have active spread of Ebola at this time). The first case of Ebola diagnosed in the U.S. was confirmed by the CDC on September 30th and occurred in a traveler from Liberia to Dallas, Texas who died. Two nurses who cared for the patient are now hospitalized with Ebola. As of the date of this letter, there are no confirmed cases of Ebola in San Francisco.

Ebola is a viral disease that initially causes non-specific symptoms like fever, chills, headaches, muscle ache, loss of strength and fatigue. As the disease progresses patients develop high fever, diarrhea, vomiting, rash and abdominal pain, along with decreased liver and kidney function. As the illness progresses, affected people may experience both internal and external bleeding.

Ebola is only infectious when the patient is symptomatic. Risk for transmission is associated with direct contact with blood or body fluids (urine, fecal material, saliva, perspiration, or aerosolized secretions) of an individual who is SICK with the disease. Individuals without symptoms cannot transmit the disease.

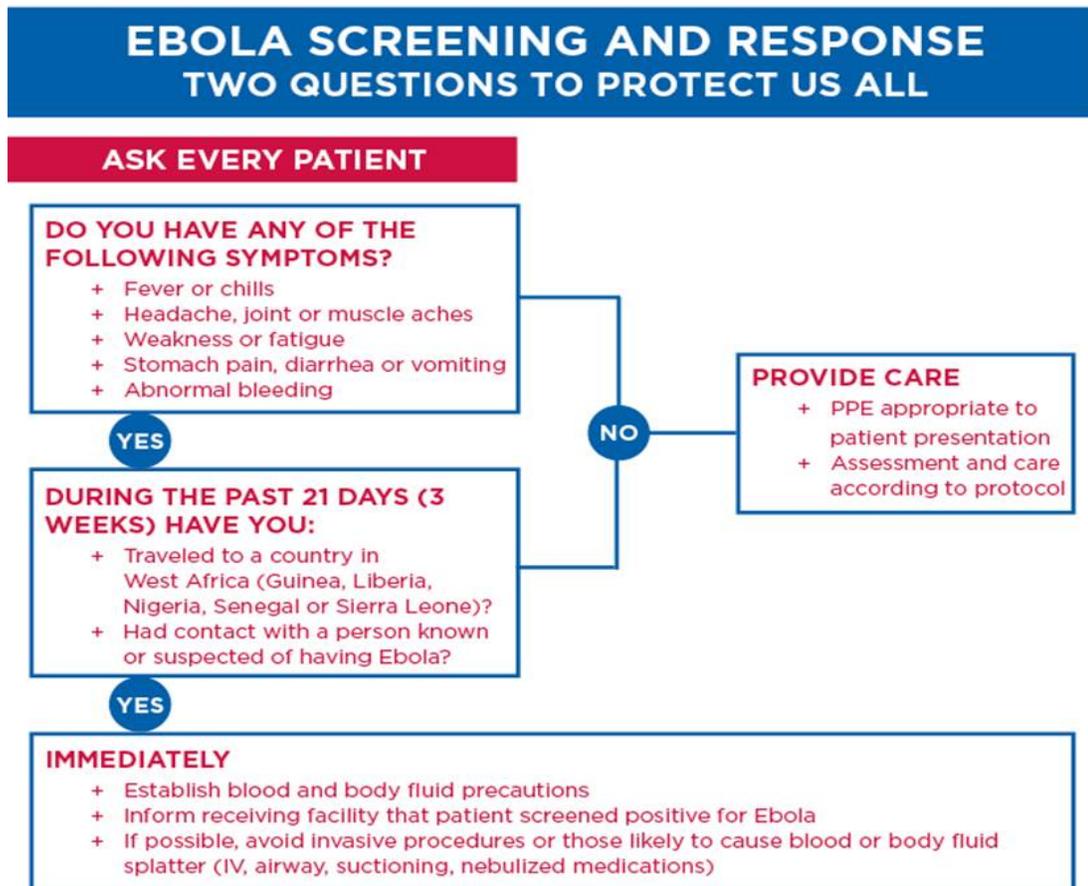
Ebola has a high risk of death, killing between 25% and 90% of those infected with the virus (average is 70%). There is no vaccine for this virus. Clinical care is supportive. Early recognition and appropriate infection control precautions are critical for disease control.

EARLY IDENTIFICATION: SYMPTOMS AND RISK FACTORS

Questioning patients on the presence or absence of Ebola symptoms and whether or not they have risk factors such as recent travel to areas affected by Ebola identify which patients need special precautions when in contact with EMS personnel.

1. **Assess ALL patients in the field for symptoms and risk factors of Ebola through screening questions.**
2. Symptoms:
 - Fever
 - Severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage.
3. If the patient has symptoms of Ebola, then ask about risk factors within the past 21 days (3 weeks) before the onset of symptoms:
 - Residence in—or travel to—an area where Ebola transmission is active (currently defined as Guinea, Sierra Leone, and Liberia); OR
 - Contact with blood or other body fluids or human remains of a patient known to have or suspected to have Ebola; OR
 - Direct handling of bats or primates from disease-endemic areas.
4. If there are symptoms AND risk factors present, immediately implement for suspected cases **standard, contact, droplet and airborne precautions.**
5. Minimize aerosol-generating or invasive procedures such as nebulizer treatments or IV starts; utilize alternative therapies such as extraglottic airways instead of intubation if possible. (see next section of this memo for further detail.
6. If there are risk factors present and NO symptoms, immediately implement standard, contact and droplet precautions and proceed with normal EMS patient care.
7. Do early notification of the receiving hospital so that they can adequately prepare their staff for a patient with a possible contagious disease. Follow the EMS Agency Policy 5000 Destination as usual for determining where to transport the patient.

8. Field crews are responsible for notification of the San Francisco Department of Public Health Communicable Disease Unit at **(415) 554-2830**. If possible, notify prior to transporting patient or as soon as possible after delivering the patient.



INFECTION CONTROL PRECAUTIONS

The principles of public health infection control precautions remain sound and effective. Your best defense against Ebola remains practicing good infection control. EMS personnel can safely manage a patient with suspected or confirmed Ebola by following recommended isolation and infection control procedures. Field crews should immediately implement **standard, contact, and droplet precautions** if the patient has symptoms AND risk factors present.

- 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.
- Limit activities, especially during transport that can increase the risk of exposure to infectious material. 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 possible, perform these procedures under safer circumstances (e.g., stopped vehicle, hospital destination).

- 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.
- **Always wash your hands before and after every patient encounter using soap and water or an alcohol-based hand cleaner.**
- Guidelines, training information and training resources on infection control and PPE are found on the CDC website at <http://www.cdc.gov/HAI/prevent/ppe.html>

PERSONAL PROTECTIVE EQUIPMENT

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

For patients with no Ebola risk factors (no travel or exposure history or symptoms outlined above), EMS personnel should do:

- Standard universal precautions

For suspected Ebola patients (travel history or exposure history outlined above) that have no symptoms, EMS personnel should wear:

- Gloves (double gloves)
- Gown (fluid resistant or impermeable)
- Shoe covers, boots, and booties
- Eye protection (goggles or face shield that fully covers the front and sides of the face).
- N-95 filtering facepiece respirators which are fluid-resistant or a higher level of respiratory protection, such as PAPR or SCBA respirators.
- Use of a hood or other device that covers the head and neck so that there is no exposed skin.

For suspected or confirmed Ebola patients that have symptoms, EMS personnel should wear:

- Level C Personal Protective equipment, that includes an Air Purifying Respirator or equivalent such as SCBA, fluid-impermeable Tyvek suit with foot, hand and full face and head covering (hood).
- Additional PPE might be required in certain situations (e.g., large amounts of blood and body fluids present in the environment), including but not limited to heavier duty gloves, additional shoe covers, and leg coverings.
- If known fluid exposure occurs during patient care (splash on exterior of protective gear) wipe immediately with cleaning solution described below.

The CDC is emphasizing that the proper removal of PPE is important to preventing an exposure:

- PPE should be carefully removed without contaminating one’s eyes, mucous membranes, or clothing with potentially infectious materials.
- Use the “buddy system” to observe application and removal of PPE. This involves having another staff member observe someone donning and doffing PPE to “spot” any missed or incorrect steps in the process. The “buddy” who is observing must be trained and knowledgeable in donning and doffing PPE.
- Hand hygiene should be performed immediately after removal of PPE.

Infection Control Precautions Ebola	
Symptoms vs. Risk	Level
Asymptomatic / NO Risk Factors	Universal (Standard) Precautions
Symptomatic / NO Risk Factors	Standard, Contact, Droplet
Asymptomatic / Has Risk Factors	Standard, Contact, Droplet
Symptomatic / Has Risk Factors	Standard, Contact, Droplet AND Air-Borne
Confirmed Ebola	Standard, Contact, Droplet AND Air-Borne

Instructions for putting on and removing PPE have been published online at <http://www.cdc.gov/HAI/prevent/ppe.html> and <http://www.cdc.gov/vhf/ebola/pdf/ppe-poster.pdf> [PDF - 2 pages].

SCENE SAFETY GUIDELINES FOR SUSPECTED EBOLA PATIENTS

- Put on the PPE before entering the scene if you are advised that the patient is suspected or confirmed for having Ebola.
- Question patients at a distance with the Ebola screening questions (minimum 3 feet). Put on the appropriate PPE for suspected cases of Ebola if identified through your screening questions.
- Place a surgical mask on suspect patients whenever possible.
- Remember to remove gloves used for patient contact prior to touching equipment or parts of the vehicle that are clean.
- 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.
- PPE should be worn upon entry into the scene and continued to be worn until personnel are no longer in contact with the patient.

VEHICLE CLEANING

The following are general guidelines for cleaning or maintaining EMS transport vehicles and equipment after transporting a patient with suspected or confirmed Ebola:

- Always do proper cleaning and dispose of used PPE, patient linens or other equipment used during the call.
- Use the same level of PPE recommended for patient care when cleaning/disinfecting the equipment or ambulance after a patient encounter. Consider use of additional barriers (e.g., rubber boots or shoe and leg coverings, heavier-duty, fluid-impermeable overgloves) if needed for cleaning and disinfection.
- 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.
- Blood spill or spill of other body fluid or substance (e.g., feces or vomit) should 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 labeled as effective 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 should be used according to those instructions. Examples are: List from Vicki Wells
- Alternatively, a solution with 1 cup bleach to 9 cups water (1:10 dilution of household bleach for final working concentration of 500 parts per million or 0.5% hypochlorite solution) that is prepared fresh daily (i.e., within 12 hours) can be used to treat the spill before covering with absorbent material and wiping up. After the bulk waste is wiped up, the surface should be disinfected as described in the bullet above.
- 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 a regulated medical waste.
- Medical waste generated in the care of patients with known or suspected Ebola is subject to the current procedures set forth by local, state and federal regulations for blood borne pathogens and hazardous material. The Ebola virus is classified as a Category A infectious substance and regulated by the U.S. Department of Transportation's (DOT) Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180). Any item transported offsite for disposal that is contaminated or suspected of being contaminated with a Category A infectious substance must be packaged and transported in accordance with these regulations. See CDC website and the Calif. Dept. of Public Health Communicable Disease website links at the end of this document for further details.

For additional information, see CDC's [Interim Guidance for Emergency Medical Services \(EMS\) Systems and 9-1-1 Public Safety Answering Points \(PSAPs\) for Management of Patients with Known or Suspected Ebola Virus Disease in the United States.](#)

GUIDELINES FOR PERSONNEL WHO HAVE AN EXPOSURE

- 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 individual should immediately stop working. Immediately 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.

- Exposures must be reported to an occupational health provider and supervisor. Follow-up services may include a medical evaluation and tracking including fever monitoring twice daily for 21 days, after the last known exposure.
- **Always report potential Ebola exposures to the San Francisco Department of Public Health Communicable Disease Services at (415) 554-2830.**
- 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 must notify the San Francisco Department of Public Health (SFDPH) Communicable Disease Services at (415) 554-2830.**
 - **SFDPH will provide instructions on where to seek medical treatment in consultation with the supervisor and the patient.**
 - **If the employee is experiencing a medical emergency, contact 911. Inform the 911 call taker of your Ebola exposure and that you are symptomatic.**
 - 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.

RECOMMENDED EMPLOYER ACTIONS

1. Check your PPE supplies to ensure items are present and in good working order. Review manufacturers' training materials if that was provided.
2. Ensure that EMS personnel with patient contact have been properly Fit Tested and provided the proper N95 mask, goggles, shoe covers, etc.
3. Staff wearing respirators must be medically evaluated to see if it is safe for them to wear the respirator.
4. Staff must be trained on and practice PPE donning and doffing. Integrate the "buddy system" to spot technique as recommended by the CDC. Do refresher trainings.
5. Work closely with your occupational health staff to ensure the health of your workforce.
6. This memo is based on current information and guidelines provided by the Centers for Disease Control, the California Dept. of Public Health and the San Francisco Dept. of Public Health. **This is an evolving situation and information may changes quickly.** We will

provide updates as necessary. You can also keep abreast of updates by viewing the following websites:

San Francisco Dept. of Public Health (SFDPH)

www.sfdph.org

Calif. Dept. of Public Health Communicable Disease

<http://cdph.ca.gov/programs/cder/Pages/Ebola.aspx>

Centers for Disease Control

www.cdc.gov