Ebola Response Guidelines for Alabama's First Responders

Satellite Conference and Live Webcast
Monday, December 15, 2014
9:00 – 10:30 a.m. Central Time

Produced by the Alabama Department of Public Health
Video Communications and Distance Learning Division

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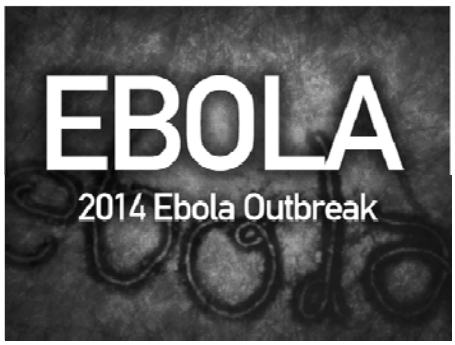

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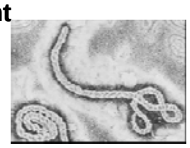
Objectives

- Identify the signs and symptoms of Ebola
- Describe patient treatment in the EMS setting in Alabama
- Describe proper infection control, waste management and environmental infection control in the EMS setting in Alabama

Ebola Virus

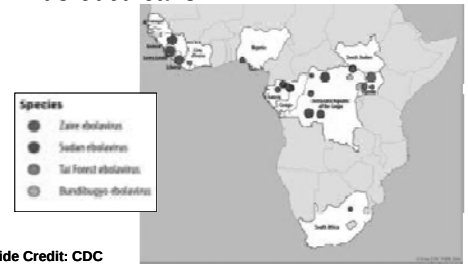
- Viral Hemorrhagic Fever
  - Filovirus
  - Severe disease with high case fatality
  - No specific treatment or vaccine



Slide Credit: CDC

Ebola Virus

- > 20 previous Ebola and Marburg virus outbreaks



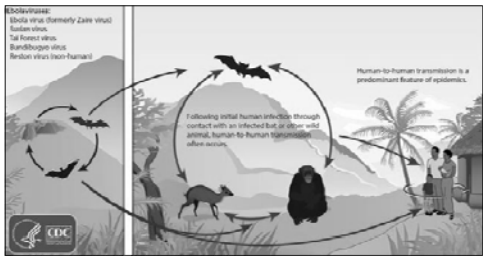
Slide Credit: CDC

Ebola Virus

- Zoonotic virus – bats the most likely reservoir, although species unknown
- Spillover event from infected wild animals (e.g., fruit bats, monkey, duiker) to humans, followed by human - human transmission

Slide Credit: CDC

Ebola Virus



Slide Credit: CDC

2014 Ebola Outbreak

- This is the largest Ebola epidemic in history
- CDC's response to Ebola is the largest international outbreak response in CDC's history

Slide Credit: CDC

2014 Ebola Outbreak

- Outbreak Distribution, Total Cases Reported as of 12/10/2014

Slide Credit: CDC
http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html, Accessed 12/11/14

Ebola Cases and Deaths

- As of December 7, 2014, a total of 17,941 cases of Ebola (11,288 laboratory - confirmed) and 6,388 deaths have been reported

Slide Credit: CDC
Source: http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html, Accessed 12/11/14

Ebola Cases and Deaths

Countries with wide - spread transmission

Country	Total Cases	Laboratory-Confirmed Cases	Total Deaths
Guinea	2,292	2,051	1,428
Liberia	7,719	2,830	3,177
Sierra Leone	7,897	6,375	1,768
Total	17,908	11,256	6,373

Countries with an initial case or cases and/or localized transmission

United States	4	4	1
Mali	8	7	6
Total	12	11	7

Previously affected countries

Nigeria	20	19	8
Senegal	1	1	0
Spain	1	1	0
Total	22	21	8

Slide Credit: CD Source: http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html, Accessed 12/11/2014

Ebola Virus Disease Case Definition

- Person Under Investigation
  - Elevated body temperature or subjective fever or Ebola compatible symptoms, AND
  - Epidemiologic risk factors within the 21 days before the onset of symptoms

Slide Credit: CDC
Source: http://www.cdc.gov/vhf/ebola/hcp/case-definition.html, Accessed 12/11/14

Ebola Virus Disease Case Definition

- Confirmed Case
  - Laboratory - confirmed diagnostic evidence of Ebola virus infection

Slide Credit: CDC
Source: http://www.cdc.gov/vhf/ebola/hcp/case-definition.html, Accessed 12/11/14

Symptoms

- Severe headache
- Fatigue
- Muscle pain
- Vomiting
- Diarrhea
- Abdominal pain
- Unexplained hemorrhage

Slide Credit: CDC
Source: http://www.cdc.gov/vhf/ebola/hcp/case-definition.html, Accessed 12/11/14

EVD Cases (United States)

- EVD has been diagnosed in the United States in four people, one (the index patient) who traveled to Dallas, Texas from Liberia, two healthcare workers who cared for the index patient, and one medical aid worker who traveled to New York City from Guinea
  - One of these patients died

Slide Credit: CDC
http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/united-states-imported-case.html.

EVD Cases (United States)

- During this outbreak, five health workers and one journalist have been infected with Ebola virus while in West Africa and transported to hospitals in the United States
  - Five of these patients have recovered

Slide Credit: CDC

EVD Cases (United States)

- One of the health workers died on November 17 after being transported from Sierra Leone to Nebraska Medical Center

Slide Credit: CDC

Ebola Virus Transmission

- Virus present in high quantity in blood, body fluids, and excreta of symptomatic EVD - infected patients
- Opportunities for human - to - human transmission
  - Direct contact (through broken skin or unprotected mucous membranes) with an EVD - infected patient's blood or body fluids

Slide Credit: CDC

Ebola Virus Transmission

- Sharps injury (with EVD - contaminated needle or other sharp)
- Direct contact with the corpse of a person who died of EVD
- Indirect contact with an EVD - infected patient's blood or body fluids via a contaminated object (soiled linens or used utensils)

Slide Credit: CDC

Ebola Virus Transmission

- Ebola can also be transmitted via contact with blood, fluids, or meat of an infected animal

Slide Credit: CDC

Human-to-Human Transmission

- Infected persons are not contagious until onset of symptoms
- Infectiousness of body fluids (e.g., viral load) increases as patient becomes more ill
  - Remains from deceased infected persons are highly infectious

Slide Credit:
CDCSource: http://www.cdc.gov/vhf/ebola/pdf/infections-spread-by-air-or-droplets.pdf Accessed 12/11/14

Human-to-Human Transmission

- Human-to-human transmission of Ebola virus via inhalation (aerosols) has not been demonstrated

Slide Credit:
CDCSource: http://www.cdc.gov/vhf/ebola/pdf/infections-spread-by-air-or-droplets.pdf Accessed 12/11/14

Human-to-Human Transmission

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Early Clinical Presentation

- Acute onset; typically 8 - 10 days after exposure (range 2 - 21 days)
- Signs and symptoms
  - Initial: Fever, chills, myalgias, malaise, anorexia

Slide Credit: CDC

Early Clinical Presentation

- After 5 days: GI symptoms, such as nausea, vomiting, watery diarrhea, abdominal pain
- Other: Headache, conjunctivitis, hiccups, rash, chest pain, shortness of breath, confusion, seizures
- Hemorrhagic symptoms in 18% of cases

Slide Credit: CDC

Early Clinical Presentation

- Other possible infectious causes of symptoms
  - Malaria, typhoid fever, meningococcemia, Lassa fever and other bacterial infections (e.g., pneumonia) - all very common in Africa

Slide Credit: CDC

Clinical Features

- Nonspecific early symptoms progress to:
  - Hypovolemic shock and multi - organ failure
  - Hemorrhagic disease
  - Death

Slide Credit: CDC

Clinical Features

- Non - fatal cases typically improve 6 - 11 days after symptoms onset
- Fatal disease associated with more severe early symptoms
  - Fatality rates of 70% have been reported in rural Africa

Slide Credit: CDC

Clinical Features

- Intensive care, especially early intravenous and electrolyte management, may increase the survival rate

Slide Credit: CDC

Clinical Management of EVD: Supportive, but Aggressive

- Hypovolemia and sepsis physiology
  - Aggressive intravenous fluid resuscitation
  - Hemodynamic support
- Electrolyte and acid - base abnormalities

Slide Credit: CDC. Reference: Fowler RA et al. Am J Respir Crit Care Med. 2014

Clinical Management of EVD: Supportive, but Aggressive

- Symptomatic management of fever and gastrointestinal symptoms
  - Avoid NSAIDS
- Multisystem organ failure can develop and may require
  - Oxygenation and mechanical ventilation

Slide Credit: CDC. Reference: Fowler RA et al. Am J Respir Crit Care Med. 2014

Clinical Management of EVD: Supportive, but Aggressive

- Correction of severe coagulopathy
- Dialysis

Slide Credit: CDC. Reference: Fowler RA et al. Am J Respir Crit Care Med. 2014

Patient Recovery

- Case - fatality rate 35% in the 2014 Ebola outbreak
  - Case - fatality rate is likely much lower with access to intensive care
- Patients who survive often have signs of clinical improvement by the second week of illness
- Prolonged convalescence

Slide Credit: CDC, References: 1WHO Ebola Response Team. NEJM 2014; 2Feldman H & Geisbert TW. Lancet 2011; 3Ksiazek TG et al. JID 1999; 4Sanchez A et al. J Virol 2004; 5Sobarzo A et al. NEJM 2013; and 6Rowe AK et al. JID 1999.

Key Time Periods – Ebola Outbreak 2014[1]

- Mean incubation period: 11.4 days
- Mean time* after symptom onset to:
  - Hospitalization: 5.0 ± 4.7 days
  - Discharge: 16.4 ± 6.5 days
  - Death: 7.5 ± 6.8 days
- Mean length of hospital stay: 6.4 days

[1] Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014
* ± SD.

Healthcare Providers in the U.S.

- CDC encourages all U.S. healthcare providers to:
  - Assess patients for Ebola - like symptoms

Slide Credit: CDC

Healthcare Providers in the U.S.

- Ask patients with Ebola - like symptoms about their travel histories to determine if they have traveled to West Africa within the last three weeks and had potential exposure to Ebola patients
- Know what to do if they have a patient with Ebola symptoms:

Slide Credit: CDC

Healthcare Providers in the U.S.

- First, properly isolate the patient in a separate room with a private bathroom or covered bedside commode
- Then, follow infection control precautions to prevent the spread of Ebola - Avoid contact with blood and body fluids of infected people

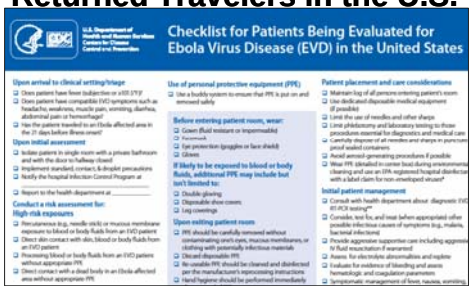
Slide Credit: CDC

Healthcare Providers in the U.S.

- Contact their state or local health department if they suspect a possible case of Ebola

Slide Credit: CDC

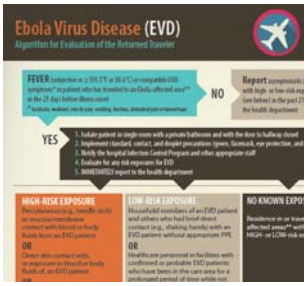
Evaluating Patients and Returned Travelers in the U.S.



**CDC Website to check current affected areas: www.cdc.gov/vhf/ebola
Algorithm available at http://www.cdc.gov/vhf/ebola/pdf/ebola-algorithm.pdf
Checklist available at http://www.cdc.gov/vhf/ebola/pdf/checklist-patients-evaluated-us-evd.pdf

Slide Credit: CDC

Evaluating Patients and Returned Travelers in the U.S.



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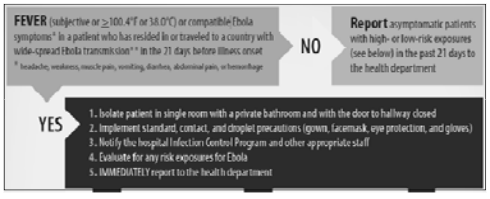
Algorithm available at http://www.cdc.gov/vhf/ebola/pdf/ebola-algorithm.pdf
Checklist available at http://www.cdc.gov/vhf/ebola/pdf/checklist-patients-evaluated-us-evd.pdf

Slide Credit: CDC

Evaluating Patients and Returned Travelers in the U.S.



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Checklist available at http://www.cdc.gov/vhf/ebola/pdf/checklist-patients-evaluated-us-evd.pdf

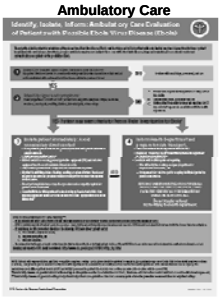
Slide Credit: CDC

Identify, Isolate, Inform

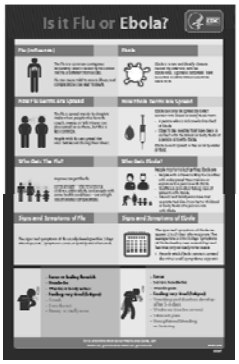
Emergency Department

http://www.cdc.gov/vhf/ebola/pdf/ed-algorithm-management-patients-possible-ebola.pdf, Accessed 12/01/14

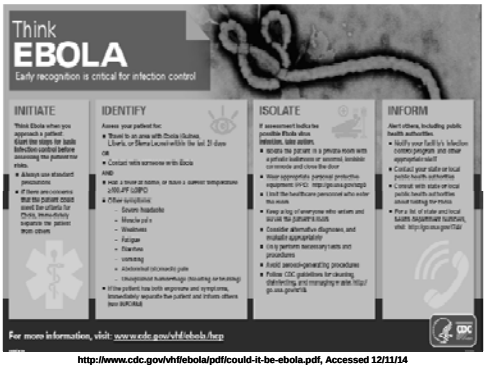
Ambulatory Care



http://www.cdc.gov/vhf/ebola/pdf/ambulatory-care-evaluation-of-patients-with-possible-ebola.pdf,Accessed 12/01/14



http://www.cdc.gov/vhf/ebola/pdf/is-it-flu-or-ebola.pdf, Accessed 12/11/14



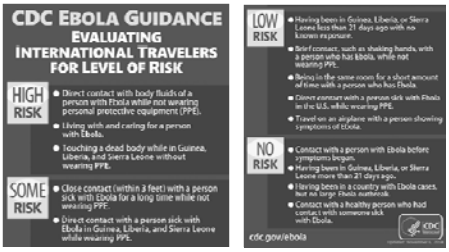
http://www.cdc.gov/vhf/ebola/pdf/could-it-be-ebola.pdf, Accessed 12/11/14

Monitoring and Movement of People with Ebola

- **CDC created interim guidance to provide public health authorities with a framework for evaluating people's level of exposure to Ebola and initiating appropriate public health actions on the basis of exposure level and clinical assessment**

Slide Credit: CDC

Monitoring and Movement of People with Ebola



Slide Credit: CDC

Interim Guidance for Monitoring and Movement of Persons with EVD Exposure

- **CDC has created guidance for monitoring people exposed to Ebola virus but without symptoms**

Slide Credit: CDC
www.cdc.gov/vhf/ebola/hcp/monitoring-and-movement-of-persons-with-exposure.html

Interim Guidance for Monitoring and Movement of Persons with EVD Exposure

RISK LEVEL	PUBLIC HEALTH ACTION		
	Monitoring	Restricted Public Activities	Restricted Travel
HIGH risk	Direct Active Monitoring	Yes	Yes
SOME risk	Direct Active Monitoring	Case-by-case assessment	Case-by-case assessment
LOW risk	Active Monitoring for some; Direct Active Monitoring for others	No	No
NO risk	No	No	No

Slide Credit: CDC
www.cdc.gov/vhf/ebola/hcp/monitoring-and-movement-of-persons-with-exposure.html

Considerations for EMS: Screening

- **Screening for Ebola starts with the Public Safety Answering Point**

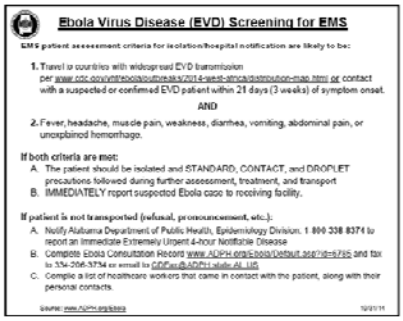
Considerations for EMS: Screening

- **If patient has Ebola - like symptoms (fever, headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage), AND**
- **Has traveled to a country with widespread Ebola transmission OR been in contact with an individual with confirmed Ebola virus disease**

Considerations for EMS: Screening

- **Implement your Ebola Plan AND Call the Alabama Trauma Communications Center (ATCC)**

Screening of Suspected Cases



Ebola Virus Disease (EVD) Screening for EMS

EMS patient assessment criteria for isolation/hospital notification are likely to be:

1. Travel in countries with widespread EVD transmission per www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html or contact with a suspected or confirmed EVD patient within 21 days (3 weeks) of symptom onset.

AND

2. Fever, headache, muscle pain, weakness, diarrhea, vomiting, abdominal pain, or unexplained hemorrhage.

If both criteria are met:

A. The patient should be isolated and STANDARD, CONTACT, and DROPLET precautions followed during further assessment, treatment, and transport
B. IMMEDIATELY report suspected Ebola case to receiving facility.

If patient is not transported (refusal, pronouncement, etc.):

A. Notify Alabama Department of Public Health, Epidemiology Division, 1 800 338 8374 to report an Immediate Extremely Urgent 4-hour Notifiable Disease
B. Complete Ebola Consultation Record www.ADPH.org/Ebola/Default.aspx?id=6795 and fax to 334-206-3734 or email to CDCrep@ADPH.state.AL.US
C. Compile a list of healthcare workers that came in contact with the patient, along with their personal contacts.

Source: www.ADPH.org/ebola 10/31/14

http://www.adph.org/ebola/assets/ADPH_EVD_Hosptial_Screening.pdf, Accessed 12/11/14

Considerations for EMS: Consultation

- **What happens when I call ATCC?**
  - **ATCC will connect you to an ADPH Office of EMS Medical Director who can then assist you in the risk stratification of the patient and provide guidance for your response based on the risk stratification and current CDC guidance**

Considerations for EMS: Consultation

- This may involve telephone communication with the patient as well
- As we have learned from our recent experiences, in many cases we will be able to determine that the patient is at No Identifiable Risk and therefore will not require Ebola precautions

Considerations for EMS: Consultation

- Calling ATCC for ADPH physician consultation is mandatory in these cases!

Considerations for EMS: Isolation

- Patients should be separated from other individuals as much as possible
  - For example, in the back of the ambulance with the door closed or in a room with the door closed
- Limit exposure as much as possible

Considerations for EMS: Isolation

- Use the minimum number of EMS Providers necessary to safely transport the patient
- When moving the patient to and from the ambulance, clear and secure pathways of travel in order to avoid accidental contamination of bystanders

Considerations for EMS: PPE

- Do NOT have physical contact with the patient without donning the proper Personal Protective Equipment (PPE)
- Standard, contact, and droplet precautions

Three Principles of Guidance for PPE in the U.S.

- Principle # 1: Rigorous training
- Principle # 2: No skin exposed when PPE is worn
- Principle # 3: Onsite manager (Incident Command)

Source: http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html Accessed 12/01/14

Three Principles of Guidance for PPE in the U.S.

- Trained observer must supervise each step of every PPE donning / doffing procedure

Source: http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html Accessed 12/01/14

Considerations for EMS: PPE

- 2 pairs of nitrile gloves with extended cuffs on the outer pair
- Impermeable gown to mid - calf with boot covers to mid - calf OR unibody suit with separate shoe or boot covers
- N - 95 face mask

Considerations for EMS: PPE

- Full face shield
- Hood extending to shoulders
- Apron when patient has copious fluid production

Considerations for EMS: PPE Doffing

- Removal of used PPE is a high - risk process
- Structured procedure with trained observer and designated area for removal to ensure safety
- If tape is used to secure the PPE, remove it gently to avoid splashing of fluids

Considerations for EMS: PPE Doffing

- Consider disinfection of PPE with disinfecting wipes prior to removal
- Avoid splashing or spraying cleaning fluids onto PPE due to the risk of accidental contamination from splashing

Considerations for EMS: PPE Training

- Where can I find specific PPE training reference materials?
  - http://www.cdc.gov/vhf/ebola/hcp/ppe-training/index.html?s_cid=cs_021

Considerations for EMS: Patient Care

- It is acceptable to remove medical equipment from patient care compartment to avoid contamination
- Only dedicated medical equipment that is preferably disposable should be used for the care of Ebola patients
- Medical equipment use should be kept to a minimum

Considerations for EMS: Patient Care

- Basic Life Support care only for known Ebola patients
  - Needles and other sharps should not be used in the EMS setting for these patients

Considerations for EMS: Patient Care

- Avoid aerosol generating procedures such as airway management, suctioning, inhaled nebulizer treatments, and cardiopulmonary resuscitation
- Use caution as Ebola patients may suffer from delirium, resulting in erratic behavior

Considerations for EMS: Medical Waste

- 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
  - https://www.osha.gov/SLTC/bloodbornepathogens/index.html

Considerations for EMS: Medical Waste

- Medical waste contaminated with Ebola virus is a Category A infectious substance regulated as a hazardous material under the U.S. Department of Transportation's (DOTs) Hazardous Materials Regulations
  - http://phmsa.dot.gov/hazmat/transporting-infectious-substances

Considerations for EMS: Medical Waste

- <u>Used PPE and other Medical Waste must be double bagged and placed into a designated medical waste container at the receiving hospital or disposed of according to federal guidelines</u>

Considerations for EMS: Medical Waste

- Alabama Department of Environmental Management Medical Waste Program
  - http://www.adem.state.al.us/alEnviroRegLaws/files/Division17.pdf

Considerations for EMS: Medical Waste

- CDC Medical Waste Management Guidance
  - http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html

Medical Waste Management

- Ebola - associated medical waste that has been inactivated (e.g., autoclaved) or incinerated may be transported as regulated medical waste
- Ebola - associated waste that has been properly inactivated or incinerated is no longer considered a Category A infectious substance and is no longer infectious

http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html, Accessed 10/20/14

Medical Waste Management

  - http://www.cdc.gov/vhf/ebola/hcp/survivability-ebola-medical-waste.html
  - http://www.epa.gov/waste/nonhaz/industrial/medical/programs.htm
- ADEM maintains a list of permitted medical waste disposal companies: (334) 271-7700

http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html, Accessed 10/20/14

Considerations for EMS: Environmental Decon

- Draping: The interior of the ambulance's patient compartment may be draped in water-impermeable barrier such as plastic sheeting prior to patient transport in order to facilitate easier decontamination after completion of the transport

Considerations for EMS: Environmental Decon

- Containment: Patients who are producing copious amounts of fluids may require measures to contain fluids during transport such as adult undergarments, absorbent pads, and water-impermeable sheeting around the patient for transport in order to limit contamination of the ambulance patient compartment

Considerations for EMS: Environmental Decon

- All surfaces in the patient care area must be cleaned and disinfected after transport
- Persons performing environmental cleaning and disinfection should wear recommended PPE

Considerations for EMS: Environmental Decon

- EPA - registered hospital disinfectants with a label claim for one of the non - enveloped viruses may be used to disinfect environmental surfaces
- Disinfectant should be available in spray bottles or as commercially prepared wipes for use during transport

Considerations for EMS: Environmental Decon

- Alternately, a 1:50 dilution of household bleach that is prepared fresh daily can be used to disinfect environmental surfaces
- A 1:10 dilution of household bleach that is prepared fresh daily can be used to treat spills before covering with an absorbent material and wiping up

Considerations for EMS: Personal Decon

- Hand hygiene should be performed frequently
- Shower with soap and water after caring for a patient with suspected Ebola, particularly if the patient is experiencing copious fluid production or if there is any suspicion of self - contamination

Considerations for EMS: Post - Exposure

- EMS personnel who are exposed to blood, bodily fluids, secretions, or excretions from a patient with suspected or confirmed Ebola should immediately wash the affected skin surfaces with soap and water

Considerations for EMS: Post - Exposure

- Mucous membranes should be irrigated with a large amount of water or eyewash solution
- Contact occupational health and supervisors and receive medical evaluation and follow up care; monitoring requirements will be determined in consultation with ADPH

Considerations for EMS: Reporting

- Confirmed or suspect cases of any viral hemorrhagic fever, including Ebola, must be reported immediately to the ADPH

Considerations for EMS: Reporting

- After patient care is concluded, EMS personnel must contact the ADPH Epidemiology Division at 1-800-338-8374.
  - This is IN ADDITION to the initial consultation with the ADPH OEMS physician through ATCC

Considerations for EMS: Reporting

- If the patient is transported to a hospital, you will be asked to provide patient information and the name of the facility to which the patient was transported

Considerations for EMS: Reporting

- If the patient is deceased or is not transported, you must complete the ADPH Ebola Virus Disease Consultation Record and submit to ADPH
  - Fax: 1-334-206-3734
  - Email: cdfax@adph.state.al.us

What is ADPH Doing?

- Established an Ebola Planning and Response Team
  - Epidemiology
  - Emergency Preparedness and Response
  - Healthcare: Medical, Nursing, Emergency Medical Services, Pharmacy, Laboratory, Dental

What is ADPH Doing?

  - Communications
  - Legal
- Actively monitoring individuals that have arrived from West Africa
- Developing, updating and disseminating guidance and information
- Working with partners

What is ADPH Doing?

- **Responding to inquiries from healthcare providers, the public and media**
- **Toolkits: Hospital, EMS, Nursing, Urgent Care, Pharmacy, Laboratory and other facilities**

ADPH Ebola Website Public

www.adph.org/ebola

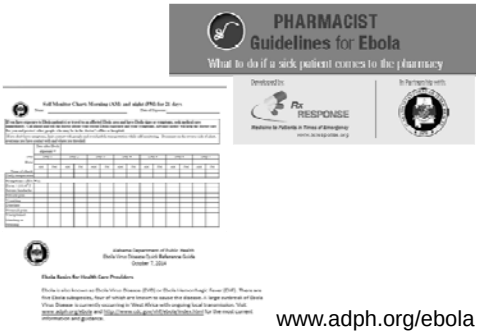
ADPH Ebola Website Healthcare Providers

www.adph.org/ebola

ADPH Resources

www.adph.org/ebola

ADPH Resources



www.adph.org/ebola

For More Information

www.adph.org/ebola

References

- **http://www.cdc.gov/vhf/ebola/**
- **https://www.osha.gov/SLTC/bloodbornepathogens/index.html**
- **http://phmsa.dot.gov/hazmat/transporting-infectious-substances**
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