

# **Ebola Virus Disease Update**

**MSDH Office of Epidemiology  
October 15, 2014**



# EBOLA VIRUS

- A hemorrhagic fever virus native to Africa with bats serving as the likely reservoir.
- Transmission events to humans associated with “bush meat” preparation or consumption



# EBOLA VIRUS DISEASE

MISSISSIPPI STATE DEPARTMENT OF HEALTH

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- Public Services
- Disease Control
- Health and Safety
- Licensure
- Regulation
- Data and Statistics

You can't get Ebola through the air.

You can't get Ebola through food.

You can't get Ebola through water.

**Ebola:** Get the facts

A carousel of three informational cards. The first card is teal and features a red prohibition sign over a white icon of air with curved lines. The second card is light yellow and features a red prohibition sign over a white icon of a plate with a fork and knife. The third card is light green and features a red prohibition sign over a white icon of water droplets. Navigation arrows are visible on the left and right sides of the carousel.

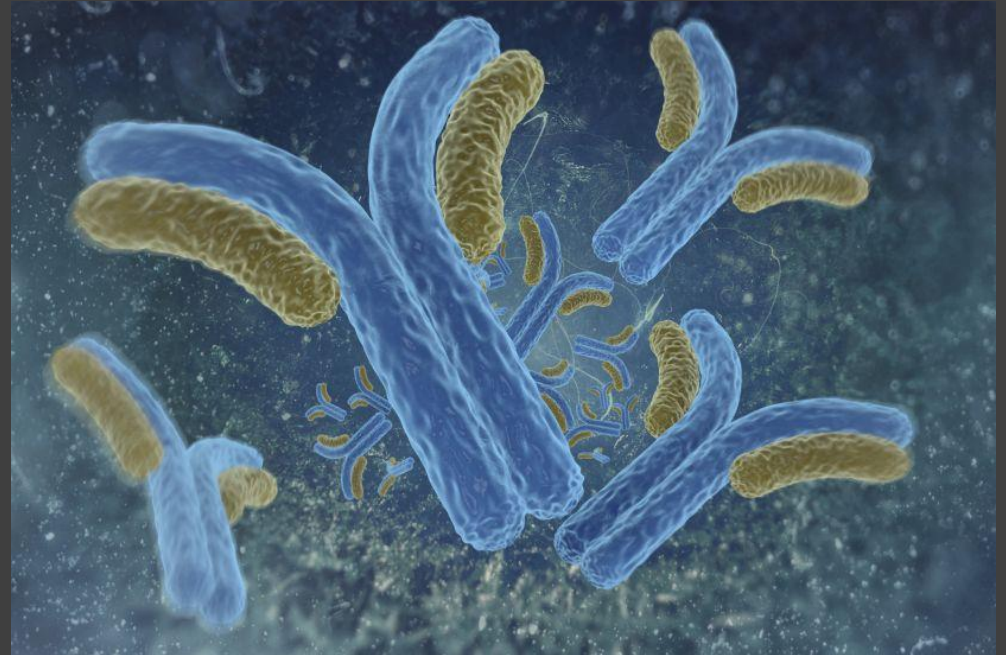
# SYMPTOMS OF EBOLA VIRUS DISEASE

- Early symptoms include
  - Fever
  - Muscle pain
  - Vomiting, diarrhea and abdominal pain
- Late complications
  - Bleeding
  - Swelling
  - Coma
  - Death (~70% in current outbreak)



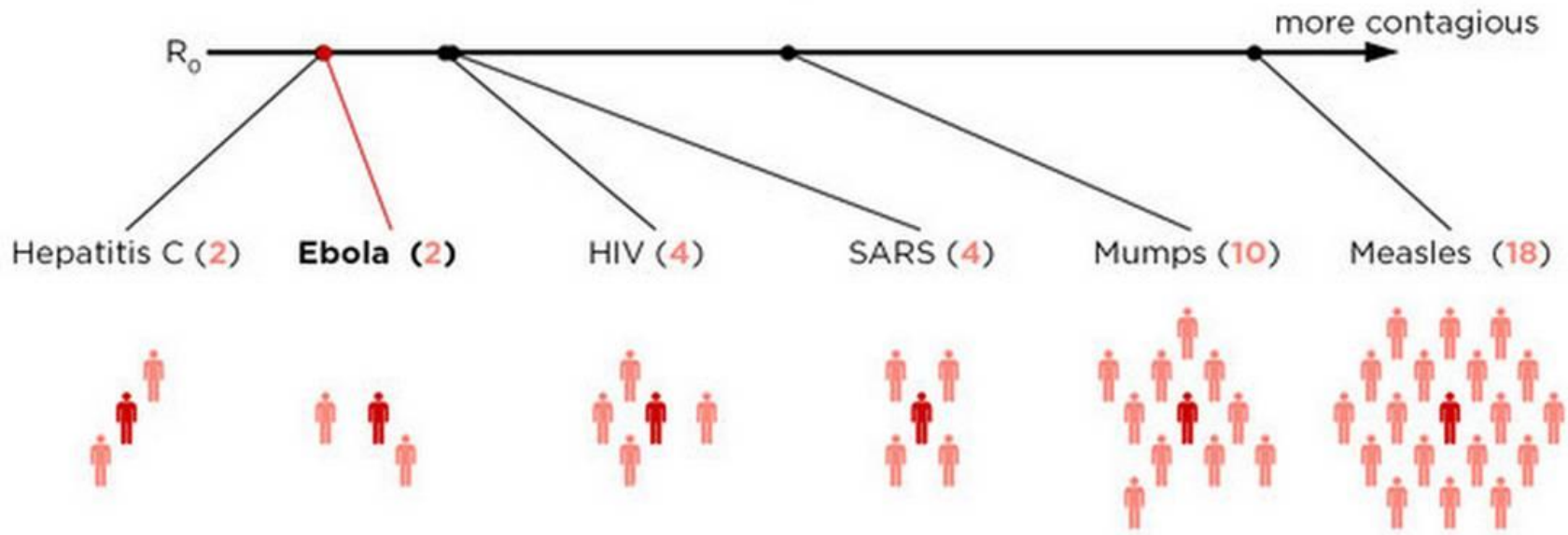
# TREATMENT OF EBOLA

- Supportive
- Experimental
  - ZMapp
  - Brincidofovir



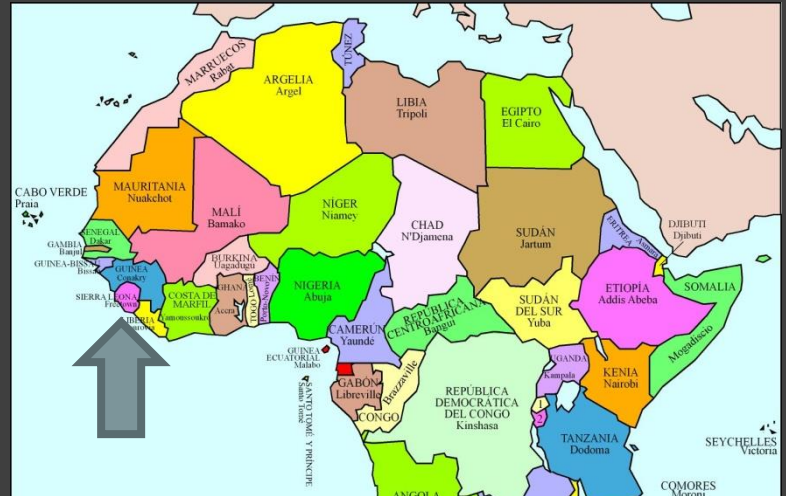
# HOW CONTAGIOUS IS EBOLA?

The number of **people** that **one sick person** will infect (on average) is called  $R_0$ . Here are the maximum  $R_0$  values for a few viruses.



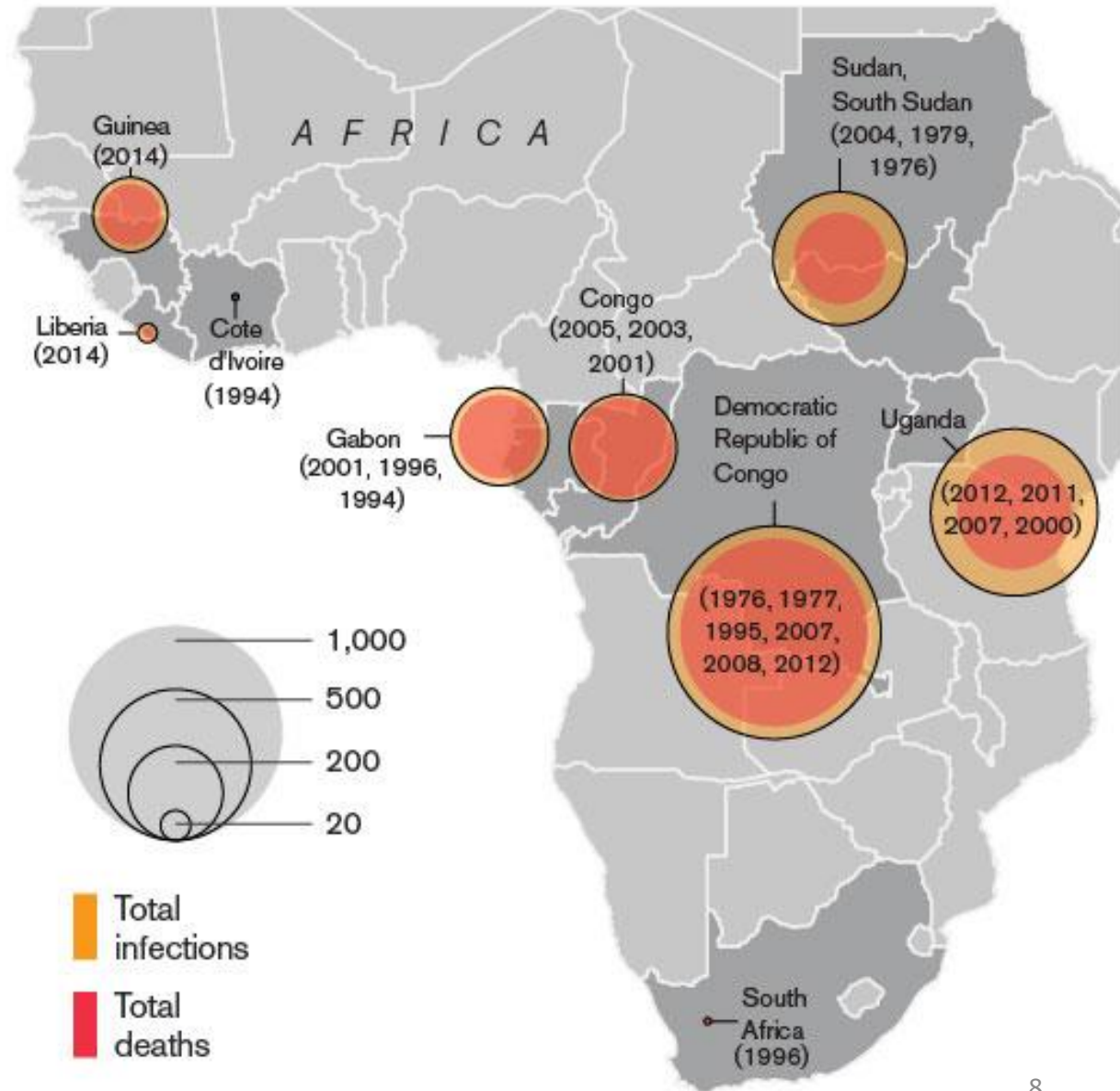
# PREVENTING EBOLA TRANSMISSION

- Early identification of suspects
  - Recent travel to Guinea, Liberia or Sierra Leone
  - Direct contact with confirmed case
- Prompt isolation
- Use of Personal Protective Equipment



# Major Ebola Outbreaks

Confirmed cases and years





# EBOLA IN AFRICA

## Totals for Guinea, Liberia & Sierra Leone

- Total Case Count: 8376
- Total Deaths: 4024

## Guinea

- Total Case Count: 1350
- Total Deaths: 778

## Liberia

- Total Case Count: 4076
- Total Deaths: 2316

## Sierra Leone

- Total Case Count: 2950
- Total Case Deaths: 930

## Nigeria

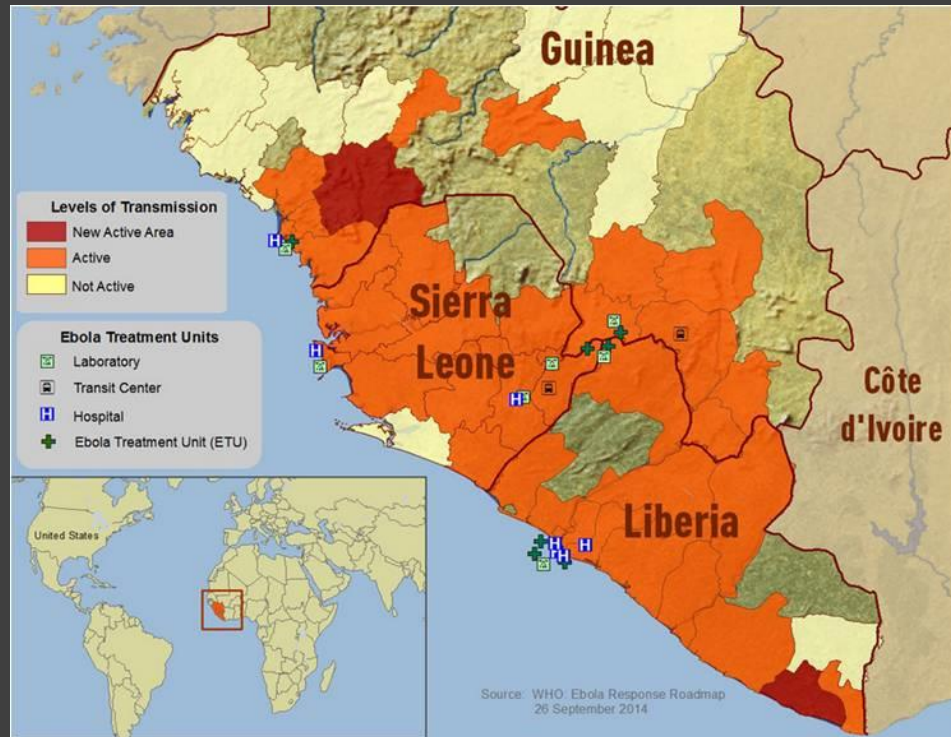
- Total Case Count: 20
- Total Case Deaths: 8

## Senegal

- Total Case Count: 1
- Total Case Deaths: 0

\* All as of October 8, 2014

Total cases worldwide: 8400



# EBOLA IN THE U.S.

- Transported from Africa following illness: **5**
- Arrived in U.S. from Liberia (asymptomatic) and developed symptoms in U.S.: **1**
- **Transmission to HCW in US: 2**



# U.S. Travel Associated Ebola Case

Incubation period – 9 days

9/15/2014: Unprotected contact with Ebola case in Liberia

9/19: Departs Liberia for U.S. but denies contact with Ebola

9/20: Arrives in Dallas

9/24: Onset of symptoms

September 2014

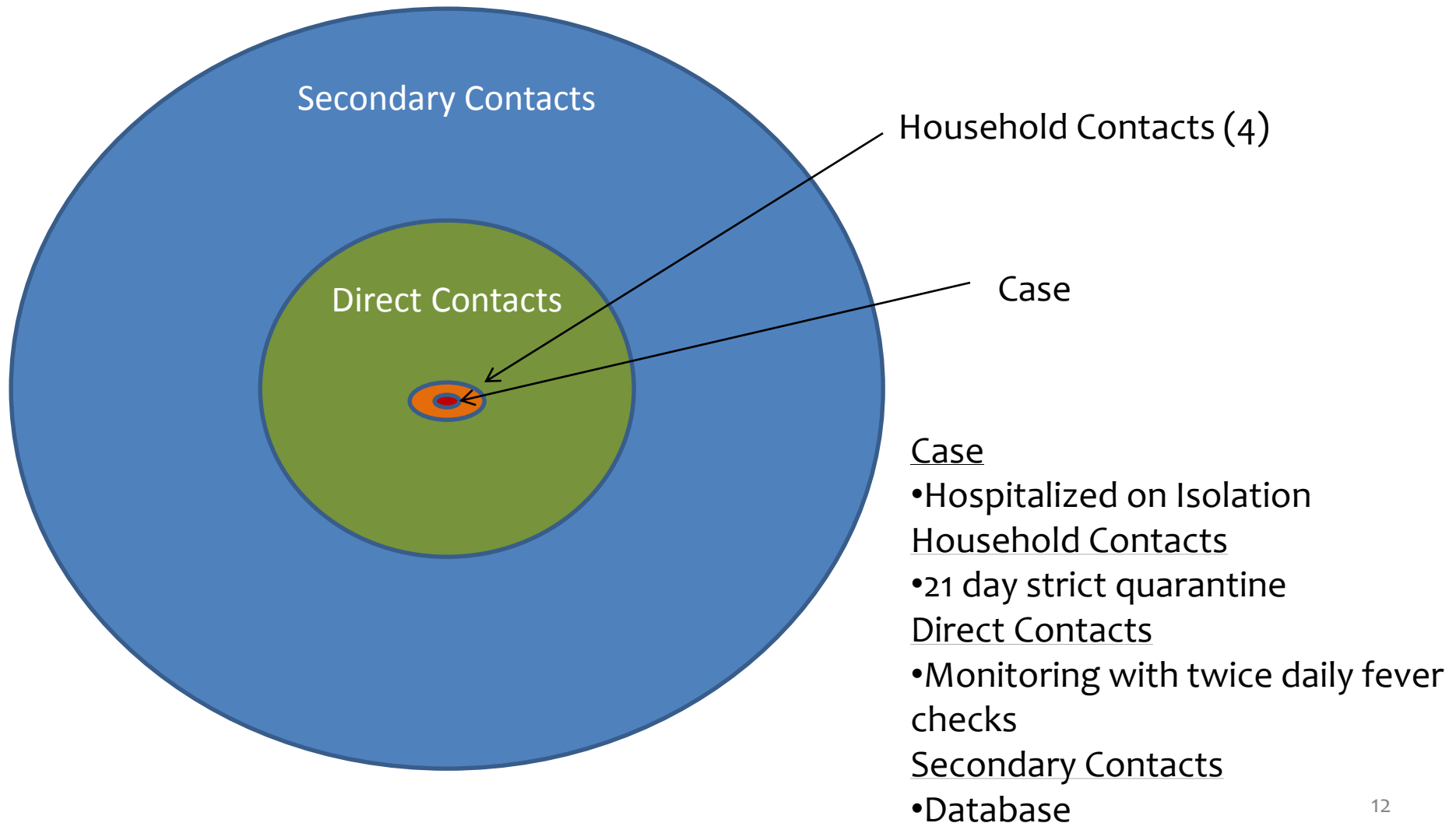
9/25: Seeks medical care at ER but discharged

9/28: Returns to hospital by ambulance, critically ill

9/30: Tests positive for Ebola


10/8:  
Died

# Contact Tracing and Quarantine



# KEYS TO PREVENTING EBOLA IN MS

- Early Identification of Ebola suspects
  - **Currently only individuals who have personally travelled to Liberia, Guinea or Sierra Leone; or are direct contacts to Texas case are at potential risk of Ebola**
- Immediate isolation of Ebola suspects
- Immediate consultation with MSDH and activation of response plans




MISSISSIPPI STATE DEPARTMENT OF HEALTH

This is an official  
MS Health Alert Network (HAN) Advisory

MESSAGE ID: MSHAN-20141003-00371-ADV (Health Advisory)  
RECIPIENTS: All Physicians, Hospitals, and Health care Providers - Statewide  
DATE: October 03, 2014

SUBJECT: *Evaluating Patients for Possible Ebola Virus Disease:  
Recommendations for Healthcare Personnel and Health Officials*

- The early identification of patients at risk of Ebola Virus Disease (EVD) is required to prevent subsequent transmission.
- Individuals at risk for EVD (those with a febrile illness and travel to an affected west African country within the last 21 days) should be immediately placed on contact and droplet isolation and the Mississippi State Department of Health Office of Epidemiology should be contacted immediately at 601 576-7725 (after hours 601 576-7400).



MISSISSIPPI STATE DEPARTMENT OF HEALTH

**Ebola Virus Disease Quick Reference Guide**

August 14, 2014

(Updated October 6, 2014)



## Public Health Emergency

Public Health and Medical Emergency Support for a Nation Prepared

PHE Home > Preparedness > Responders Clinicians & Practitioners > Ebola

 Search

# Ebola Information for Public Health and Medical Professionals in U.S. Healthcare Settings

The resources provided here are intended to help healthcare professionals better detect a patient that may be infected with Ebola; protect yourself, your colleagues, and other patients from exposure; and respond with appropriate patient care. These resources include clinical definitions, practical checklists and more that you can use to help educate your colleagues or your community.



### EMS Providers

EMS personnel, agencies and systems can take steps now to prepare for a patient that may be infected. These resources can help EMS professionals better evaluate risks, identify potentially infected patients, identify concrete steps that you can take to prepare to handle issues related to patient management, and more. [Learn More >>](#)



### Clinicians & Healthcare Workers

Clinicians and healthcare workers need to take the time now to learn what they need to do to most effectively manage an Ebola patient. These resources can help you diagnose and treat a patient; collect, transport, test and submit specimens; safely monitor and transport a patient; and protect staff. [Learn More >>](#)



### Hospitals & Healthcare Facilities

Hospitals and healthcare facilities can more effectively manage an incident in their hospitals if they plan ahead. This section includes information to enhance emergency management, infection control, patient management, communication procedures and more. [Learn More >>](#)



### Healthcare Coalitions & Systems

Healthcare coalitions and systems can help keep everyone safe by working together effectively. The resources in this section highlight concrete activities that can help detect possible Ebola cases, protect employees, improve coordination, and respond appropriately. [Learn More >>](#)



### Subscribe & Stay Informed

Frequently monitor [CDC's Ebola website](#) and [subscribe to updates](#) from CDC for the most current information. CDC is available 24/7 for consultation. State and local health departments with questions should contact the CDC Emergency Operations Center (EOC) at 770-488-7100 or via email at [eocreport@cdc.gov](mailto:eocreport@cdc.gov).

#### Join the Conversation

#### Join the Hospital Preparedness Call



#### Preparing your Healthcare System for Ebola

#### In the Spotlight

- ▶ [From the HHS Assistant Secretary for Preparedness and Response: An Open Letter to All U.S. Healthcare Professionals](#)
- ▶ [Webinar: Ebola Preparedness for the U.S. Healthcare System](#)

#### Checklists for:

- ▶ [EMS Personnel, Agencies and Systems](#)
- ▶ [Healthcare Providers](#)
- ▶ [Hospitals](#)
- ▶ [Healthcare Coalitions](#)

This page last reviewed: October 10, 2014





## Ebola (Ebola Virus Disease)

Ebola (Ebola Virus Disease)

About Ebola

2014 West Africa Outbreak +

2014 Democratic Republic of the Congo Outbreak

Outbreaks +

[CDC](#) > [Ebola \(Ebola Virus Disease\)](#) > [Healthcare Workers](#)

### 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



## Who is this for?


### Managers of:

- 9-1-1 Public Safety Answering Points (PSAPs)
- EMS Agencies
- EMS Systems
- Law Enforcement Agencies
- Fire Service Agencies
- EMS Providers and Medical First Responders



# WHAT IS THIS FOR?

Guidance for handling inquiries and responding to patients with suspected Ebola symptoms, and for keeping workers safe.



Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People.™

SEARCH

CDC A-Z INDEX ▾

## Ebola (Ebola Virus Disease)

[CDC](#) > [Ebola \(Ebola Virus Disease\)](#) > [Healthcare Workers](#)

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### 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

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# KEY POINTS

- Likelihood of contracting Ebola is **extremely low** unless a person has direct unprotected contact with the blood or body fluids (like urine, feces, vomit, sweat, and semen) of a person who is sick with Ebola



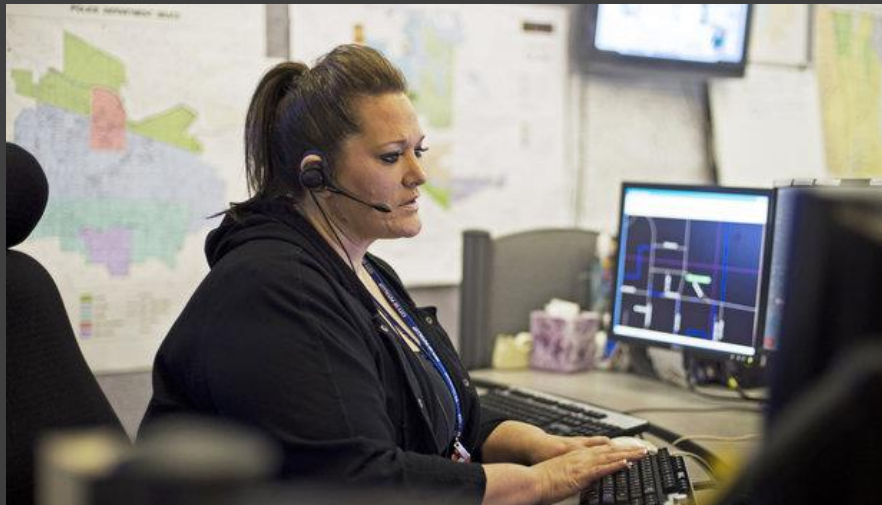
# KEY POINTS

- When risk of Ebola is elevated in your community, it is important for PSAPs to question callers about:
  - Residence in, or travel to, a country where an Ebola outbreak is occurring
  - Signs and symptoms of Ebola (such as fever, vomiting, diarrhea) and
  - Other risk factors, like having physical contact with body fluids of someone who is sick with Ebola



# KEY POINTS

- PSAPs should tell EMS and medical first response personnel this information **before** they get to the location so they can put on the correct personal protective equipment (PPE)



# KEY POINTS

- EMS should check for symptoms and risk factors for Ebola. Staff should notify the receiving healthcare facility **in advance** when they are bringing a patient with suspected Ebola, so that proper infection control precautions can be taken.



# RECOMMENDATIONS FOR 9-1-1 PSAP

- Call takers should consider screening for symptoms/risk factors of Ebola
- If call taker suspects caller is reporting symptoms of Ebola, they should screen for risk factors within the past 3 weeks before onset of symptoms. Risk factors include:
  - Contact with blood/body fluids of a patient known to have or suspected to have Ebola;
  - Residence in - or travel to – a country where Ebola outbreak is occurring ([www.cdc.gov/vhf/ebola/outbreaks](http://www.cdc.gov/vhf/ebola/outbreaks))
  - Direct handling of bats or nonhuman primates from disease-endemic areas



# 9-1-1 PSAP

If PSAP call takers have information alerting them to a person with possible Ebola, they should make sure any first responders and EMS personnel are made **confidentially** aware of the potential for Ebola before the responders arrive on scene.



# MISSISSIPPI FIRST RESPONDERS

- Interim recommendations for response to a suspected Ebola patient:
  - Patient Assessment
    - Address scene safety
      - Proper PPE
      - Keep the patient separated from other persons as much as possible
      - Use caution when approaching



# MISSISSIPPI FIRST RESPONDERS

– During Patient Assessment

- Assess for symptoms

- Fever greater than 101.5 degrees Fahrenheit

- Additional symptoms

- » Severe headache

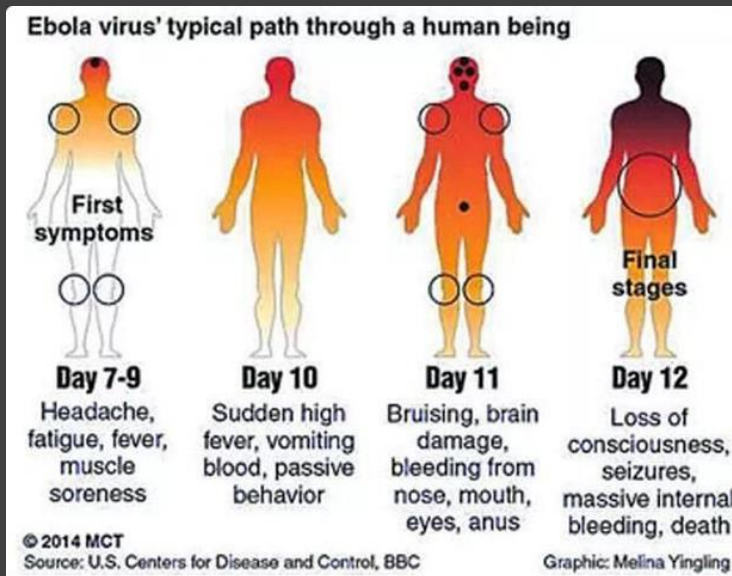
- » Muscle pain

- » Vomiting

- » Diarrhea

- » Abdominal pain

- » Unexplained hemorrhage





# MISSISSIPPI FIRST RESPONDERS

- If the patient has symptoms of Ebola, then ask the patient about risk factors within the past 3 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 Ebola outbreak is occurring ([www.cdc.gov/vhf/ebola/outbreaks](http://www.cdc.gov/vhf/ebola/outbreaks))
  - Direct handling of bats or nonhuman primates from disease-endemic areas





# MISSISSIPPI FIRST RESPONDERS

- 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.





# Mississippi Screening Tool

Yes  No  Caller reporting febrile illness (or nausea, vomiting, abdominal pain or unexplained bleeding)?

  Presentation not consistent with Ebola Virus Disease. Dispatch EMS as appropriate.

Yes  No  Travel to Guinea, Sierra Leone, or Liberia in past 21 days\* (or known direct contact to confirmed Ebola Virus case in the U.S.)?

  Not at risk of Ebola Virus Disease.

**Possible Ebola Virus Disease. Instruct caller to remain in place and avoid physical contact with others. Dispatch EMS as appropriate, and inform EMS that caller is potential Ebola case and that appropriate precautions are required. Notify MSDH Office of Epidemiology at 601 576-7725 (601 576-7400 after hours).**

\*Returning travelers from other countries in Africa are not at risk of Ebola at this time.



# MISSISSIPPI EMS

- EMS personnel should notify the receiving healthcare facility when transporting a suspected Ebola patient, so that appropriate infection control precautions can be prepared **prior** to patient arrival.



# MISSISSIPPI EMS



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.



# MISSISSIPPI EMS

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.



# MISSISSIPPI EMS

Early recognition and identification of patients with potential for 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, CPR, use of needles)



# MISSISSIPPI EMS

- Limit the use of needles and other sharps as much as possible.
- Phlebotomy procedures, and laboratory testing should be limited to the minimum necessary for essential diagnostic evaluation and medical care.





# PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Standard contact, and droplet precautions

- Gloves

- Gown (fluid resistant or impermeable)

- Eye protection (goggles or face shield that fully covers the front and sides of the face)

- Facemask

- Additional PPE might be required in certain situations (e.g., large amounts of blood and body fluids present in the environment)

- May include double gloving, disposable shoe covers and leg coverings.

**HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)**  
EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. Remove all PPE, before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

- 1. GLOVES**
  - Outside of gloves are contaminated!
  - If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
  - Using a gloved hand, grasp the wrist area of the other gloved hand and peel off first glove
  - Hold removed glove in gloved hand
  - Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
  - Discard gloves in an infectious\* waste container
- 2. GOGGLES OR FACE SHIELD**
  - Outside of goggles or face shield are contaminated!
  - If your hands get contaminated during goggles or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
  - Remove goggles or face shield from the back by using head band or ear pieces
  - If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in an infectious\* waste container
- 3. GOWN**
  - Gown front and sleeves are contaminated!
  - If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
  - Undo your gown ties, taking care that sleeves don't contact your body when reaching for ties
  - Pull gown away from back and shoulder, touching inside of gown only
  - Turn gown inside out
  - Fold or roll into a bundle and discard in an infectious\* waste container
- 4. MASK OR RESPIRATOR**
  - Front of mask/respirator is contaminated! — DO NOT TOUCH!
  - If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
  - Grasp bottom ties or straps of the mask/respirator, then the ears at the top, and remove without touching the front
  - Discard in an infectious\* waste container
- 5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE**

\*An infectious waste container is used to dispose of PPE that is potentially contaminated with Ebola virus.

PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE




# PERSONAL PROTECTIVE EQUIPMENT (PPE)

- During pre-hospital resuscitation procedures (intubation, open suctioning of airways, CPR), in addition to recommended PPE, respiratory protection that is at least as protective as a NIOSH-certified fit-tested N95 filtering facepiece respirator or higher should be worn (instead of a facemask).



# OCCUPATIONAL 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 EMS provider should immediately stop working. They should wash the affected skin surface with soap and water and report the exposure to their supervisor and/or occupational health provider for follow-up.



# PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Should be worn upon entry into the scene and continued to be worn until personnel are no longer in contact with the patient.
- Should be carefully removed without contaminating one's eyes, mucous membranes, or clothing with potentially infectious materials.



Should be placed in a medical waste container at the hospital or double bagged and held in a secure location



# PERSONAL PROTECTIVE EQUIPMENT (PPE)


**HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)**  
EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Remove all PPE before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

- 1. GOWN AND GLOVES**
  - Sweep front and sleeves and the outside of gloves are contaminated!
  - If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer.
  - Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands.
  - While removing the gown, fold or roll the gown inside-out into a bundle.
  - As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into an infectious<sup>o</sup> waste container.
- 2. GOGGLES OR FACE SHIELD**
  - Outside of goggles or face shield are contaminated!
  - If your hands get contaminated during goggles or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer.
  - Remove goggles or face shield from the front of the goggles or face shield.
  - If the lens is reusable, place in designated receptacle for reprocessing. Otherwise, discard in an infectious<sup>o</sup> waste container.
- 3. MASK OR RESPIRATOR**
  - Front of mask/respirator is contaminated — DO NOT TOUCH!
  - If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer.
  - Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front.
  - Discard in an infectious<sup>o</sup> waste container.
- 4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE**

<sup>o</sup> An infectious waste container is used to dispose of PPE that is potentially contaminated with Ebola virus.

PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE



- Review CDC Guidelines “Sequence for Putting on and Removing PPE”.
- Hand hygiene should be performed immediately after removal of PPE

- To reduce staff exposure, discard all linens, non-fluid-impermeable pillows or mattresses, and textile privacy curtains as a **regulated medical waste**.



# OSHA – CLEANING/DECON OF EBOLA ON SURFACES

- Use EPA registered disinfectant suitable for non-enveloped viruses.
  - Treat contamination/spills
  - Disinfect surfaces.
- If Commercial products are unavailable, use 1:10 solution of bleach to water.
- **NEVER** mix chemicals together.



# ADDITIONAL CDC GUIDANCE



## Detailed Emergency Medical Services (EMS) Checklist for Ebola Preparedness

The U.S. Department of Health and Human Services (DHHS) Centers for Disease Control and Prevention (CDC) and Office of the Assistant Secretary for Preparedness and Response (ASPR), in addition to other federal, state, and local partners, aim to increase understanding of

The screenshot shows the CDC website interface. At the top left is the CDC logo with the tagline "CDC 24/7: Saving Lives. Protecting People.™". To the right is a search bar and a "CDC A-Z INDEX" dropdown menu. The main heading is "Ebola (Ebola Virus Disease)". Below this is a breadcrumb trail: "CDC > Ebola (Ebola Virus Disease) > Healthcare Workers". The main content area is titled "Guidance on Air Medical Transport for Patients with Ebola Virus Disease". It includes social media sharing options for Recommend, Tweet, and Share. A "Who this is for" section states: "Operators of air medical transport (AMT) services that are considering transport of patients with Ebola virus disease (EVD) and healthcare providers who will be onboard. This guidance applies to AMT flights of any duration and using any type of aircraft. **The guidance does not apply to**". On the right side, there is an "On this Page" section with a link to "Background". On the left side, there is a sidebar menu with items: "Ebola (Ebola Virus Disease)", "About Ebola", "2014 West Africa Outbreak", "2014 Democratic Republic of the Congo Outbreak", and "Outbreaks".





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Emergency Medical Services (EMS)



MISSISSIPPI  
Emergency Medical Services

The mission of Mississippi Emergency Medical Services (EMS) is to organize, regulate, and maintain a statewide program to improve emergency medical care. Mississippi EMS strives to maintain and promote the highest standards of prehospital care for the citizens and visitors of Mississippi.

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- ▶ **Ebola Virus Disease Screening for EMS**  
October 1, 2014
- ▶ **Interim Guidance for EMS and 9-1-1 Answering for Patients with Known or Suspected Ebola Virus Disease**
- ▶ **Detailed Emergency Medical Services (EMS) Checklist for Ebola Preparedness**  
October 1, 2014
- ▶ **Free EMS Healthcare Coalition Training in Senatobia, MS**  
June 23, 2014

Upcoming Meetings

- ▶ **EMS Council Meeting**  
10/22/2014 1:00 PM
- ▶ **EMS Rules and Regulations**  
11/5/2014 1:00 PM
- ▶ **Medical Direction Training and Quality Assurance Committee**  
11/12/2014 10:00 AM
- ▶ **EMS Functionality**  
11/19/2014 10:00 AM
- ▶ **EMS Advisory Council**  
2/11/2015 1:00 PM
- ▶ **EMS Critical Care Paramedic Subcommittee**  
3/18/2015 1:00 PM
- ▶ **Calendar of all Mississippi public meetings**  
Select Department of Health to see public meetings scheduled for MSDH





# QUESTIONS

*Please provide:*

- Your name
- Your organization

*Thank you for being part of today's call !*

