EBOLA VIRUS

Guidance for Michigan local health departments and healthcare providers

Interim Guidelines for Evaluation of US Patients Suspected of Having Ebola Virus Disease (EVD)

This is a rapidly evolving situation. This document is based on the CDC's "[Guidelines for Evaluation of US Patients Suspected of Having Ebola Virus Disease](#)" released August 1, 2014 and [“CDC Health Alert 365: CDC Ebola Update #1”](#) released August 13, 2014. We anticipate that CDC will continue to update their Ebola guidance and thus would advise monitoring their website at: http://www.cdc.gov/vhf/ebola/index.html

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Information and contacts

All suspect cases should be immediately reported to MDCH for evaluation and/or approval for diagnostic testing:
Contact the Communicable Disease Division at 517-335-8165 M-F, 8:00 AM-5 PM, 517-335-9030 after hours and weekends.

For laboratory testing information: Contact Janice Matthews-Greer in the MDCH Virology Section at (517) 335-8099.

Michigan Department of Community Health
Communicable Disease Division
Revised August 15, 2014
Adapted from CDC Guidance as of 08/13/2014

Michigan Department of Community Health

MDCH

Background

As of August 9, 2014, according to WHO, a total of 1,848 cases and 1,013 deaths had been reported across the four affected countries of Guinea, Liberia, Sierra Leone and Nigeria. This is the largest outbreak of Ebola Virus Disease (EVD) ever documented and the first recorded in West Africa. The death rate in some Ebola outbreaks can be as high as 90%, but in this outbreak it is currently around 55%-60%.

EVD is characterized by sudden onset of fever (≥ 101.5° F) and malaise, accompanied by one or more of the following:

- myalgia
- severe headache
- abdominal pain

- vomiting
- diarrhea

Patients may progress to develop more severe signs or symptoms including hemorrhagic symptoms (petechia, ecchymosis, bruising) and multi-organ dysfunction, including hepatic damage, acute kidney disease, and central nervous system involvement, leading to shock and death. See the case definition for Ebola Virus Disease at: http://www.cdc.gov/vhf/ebola/hcp/case-definition.html

In outbreak settings, Ebola virus is typically first spread to humans after contact with infected wildlife and is then spread person-to-person through direct contact with bodily fluids such as, but not limited to, blood, urine, sweat, semen, and breast milk. The incubation period is usually 8–10 days (ranges from 2–21 days). Patients can transmit the virus while febrile and through later stages of disease, as well as postmortem, when persons touch the body during funeral preparations.

Case Evaluation Criteria

Early recognition is critical for infection control. Healthcare providers should be alert for and evaluate suspected patients for Ebola virus infection who have both consistent symptoms and certain epidemiologic risk factors.

 1) Clinical criteria, which includes fever (≥101.5°F) and additional symptoms such as severe headache, myalgia, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage;

AND

2) Epidemiologic risk factors within the past 3 weeks before the onset of symptoms, such as :

- Contact with blood or other body fluids of a patient known to have or suspected to have EVD;
- Residence in—or travel to—an area where EVD transmission is active (currently Guinea, Liberia and Sierra Leone); or
- Direct handling of bats, rodents, or primates from disease-endemic areas

Malaria diagnostics should also be a part of initial testing because it is a common cause of febrile illness in persons with a travel history to the affected countries.

Initial Patient Management

Early recognition and identification of suspect EVD patients is critical. Suspect patients should be immediately placed in isolation or a single patient room with private bathroom and door closed. Refer to the CDC's "[Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Hemorrhagic Fever in U.S. Hospitals](#)" for complete details. Additional initial patient care considerations include:

- 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
- All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers

Information regarding initial evaluation, clinical presentation and clinical course, pathogenesis, laboratory findings, and treatment for patients suspected of EVD can be found in "[Ebola Virus Disease Information for Clinicians in U.S. Healthcare Settings](#)."

Diagnostic Testing Criteria

Testing of patients with suspected EVD should be guided by the risk level of exposure. Based on the following criteria, if testing is indicated, **notify MDCH immediately.**

High-risk exposure:

- Percutaneous or mucous membrane exposure or direct skin contact with body fluids of a person with a confirmed or suspected case of EVD without appropriate personal protective equipment (PPE),
- Laboratory processing of body fluids of suspected or confirmed EVD cases without appropriate PPE or standard biosafety precautions, or
- Participation in funeral rites or other direct exposure to human remains in the geographic area where the outbreak is occurring without appropriate PPE.

CDC recommends testing for all persons with onset of fever within 21 days of having a high risk exposure.

For persons with a high-risk exposure but without a fever, testing is recommended only if there are other compatible clinical symptoms present and blood work findings are abnormal (i.e., thrombocytopenia <150,000 cells/μL and/or elevated transaminases) or unknown.

Low Risk Exposure:

- Persons who spent time in a healthcare facility where EVD patients are being treated (encompassing healthcare workers who used appropriate PPE, employees not involved in direct patient care, or other hospital patients who did not have EVD and their family caretakers), or
- Household members of an EVD patient without high-risk exposures as defined above.
- Persons who had direct unprotected contact with bats or primates from EVD-affected countries would also be considered to have a low-risk exposure.

Testing is recommended for persons with a low-risk exposure who develop fever and either:

- Other symptoms and unknown or abnormal blood work findings
  OR
- Abnormal blood work findings, but no other symptoms.

Asymptomatic persons with high- or low-risk exposures should be monitored daily for fever and symptoms for 21 days from the last known exposure and evaluated medically at the first indication of illness.

No known exposure:

Persons with no known exposure were present in an EVD outbreak affected country in the past 21 days with no low risk or high risk exposures.

Contact MDCH for evaluation regarding testing for persons who have traveled to an EVD-affected country within 21 days but do not meet the criteria for high or low risk exposure above.

Laboratory Specimen Guidance

Preferred Specimens for Ebola Testing

If testing is indicated, **immediately notify MDCH** (517-335-8165 M-F, 8:00 AM-5 PM, 517-335-9030 after hours and weekends). A minimum volume of 4mL whole blood preserved with EDTA (purple top) in *plastic* collection tubes can be submitted to MDCH BOL for EVD testing. Do not submit specimens in glass containers. **Contact MDCH BOL before any specimens are collected and submitted.** Specimens should be stored at 4°C. Standard labeling should be applied for each specimen.

Laboratory Specimen Collection

Early recognition and identification of suspect EVD patients is critical. Additional patient care considerations include:
- 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.
- All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers.
- Do not use a pneumatic tube system for transporting suspected EVD specimens.

Packaging and Shipping Clinical Specimens to MDCH BOL

Please complete both the MDCH Specimen and CDC Submission Forms.
All specimens should be packaged and shipped to MDCH BOL on ice packs as Category A Infectious Substance in accordance with federal and international shipping regulations. MDCH will forward specimens to the CDC.

Link to MDCH Specimen Submission Form:
http://www.michigan.gov/documents/DCH-0583TEST_REQUEST_7587_7.pdf
(Be sure to write or type the test requested, i.e. "Ebola virus serology" and/or "Ebola virus PCR" into the blank space found under "Hepatitis" at the bottom right side of page 1.)

Link to CDC Specimen Submission Form:
http://www.michigan.gov/documents/mdch/HUMAN_form-50-34_410210_7.pdf

For additional information, please refer to the "What's New" section on the MDCH BOL home page:
http://www.michigan.gov/mdchlab

Additional information regarding specimen submission can be found in CDC's document "Interim Guidance for Specimen Collection, Transport, Testing, and Submission for Patients with Suspected Infection with Ebola Virus Disease."

Recommended Infection Control Measures for Healthcare Providers

U.S. hospitals can safely manage a patient with EVD by following recommended isolation and infection control procedures, including standard, contact, and droplet precautions. Early recognition and identification of patients with potential EVD is critical. Any U.S. hospital with suspected patients should follow CDC's Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Hemorrhagic Fever in U.S. Hospitals (http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html). These recommendations include the following:

- **Patient placement:** Patients should be placed in a single patient isolation room (containing a private bathroom) with the door closed.
- **Healthcare provider protection:** Healthcare providers should wear: gloves, gown (fluid resistant or impermeable), eye protection (goggles or face shield), and a facemask. Additional PPE might be required in certain situations (e.g., copious amounts of blood, other body fluids, vomit, or feces present in the environment), including but not limited to double gloving, disposable shoe covers, and leg coverings.
- **Aerosol-generating procedures:** Avoid aerosol-generating procedures. If performing these procedures, PPE should include gloves, a gown, disposable shoe covers, either a face shield that fully covers the front and sides of the face or goggles, and respiratory protection (N95 filtering facepiece respirator or higher) and the procedure should ideally be performed in an airborne isolation room.

Environmental infection control

Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials is paramount, as blood, sweat, emesis, feces and other body secretions represent potentially infectious materials. Appropriate disinfectants for Ebola virus and other filoviruses include 10% sodium hypochlorite (bleach) solution, or hospital-grade quaternary ammonium or phenolic products. Healthcare providers performing environmental cleaning and disinfection should wear recommended PPE (described above) and consider use of additional barriers (e.g., shoe and leg coverings) if needed. Face protection (face shield or facemask with goggles) should be worn when performing tasks such as liquid waste disposal that can generate splashes. Follow standard procedures, per hospital policy and manufacturers' instructions, for cleaning and/or disinfection of environmental surfaces, equipment, textiles, laundry, food utensils and dishware.

Additional Resources

CDC's Ebola Hemorrhagic Fever Home Page:

http://www.cdc.gov/vhf/ebola/index.html

Case Definition for Ebola Virus Disease (EVD):

http://www.cdc.gov/vhf/ebola/hcp/case-definition.html

Person Under Investigation (PUI)

A person who has both consistent symptoms and risk factors as follows: 1) Clinical criteria, which includes fever of greater than 38.6 degrees Celsius or 101.5 degrees Fahrenheit, and additional symptoms such as severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage; AND 2) Epidemiologic risk factors within the past 21 days before the onset of symptoms, such as contact with blood or other body fluids or human remains of a patient known to have or suspected to have EVD; residence in—or travel to—an area where EVD transmission is active*; or direct handling of bats, rodents, or primates from disease-endemic areas.

Probable Case

A PUI who is a contact of an EVD case with either a high or low risk exposure (see below).

Confirmed Case

A case with laboratory confirmed diagnostic evidence of ebola virus infection.

Contacts of an EVD Case

Contacts of an EVD case have different levels of exposure risk, as follows:

High risk exposures

A high risk exposure includes any of the following:

- Percutaneous, e.g. the needle stick, or mucous membrane exposure to body fluids of EVD patient
- Direct care or exposure to body fluids of an EVD patient without appropriate personal protective equipment (PPE)
- Laboratory worker processing body fluids of confirmed EVD patients without appropriate PPE or standard biosafety precautions
- Participation in funeral rites which include direct exposure to human remains in the geographic area where outbreak is occurring without appropriate PPE

Low risk exposures

A low risk exposure includes any of the following

- Household member or other casual contact[1] with an EVD patient
- Providing patient care or casual contact[1] without high-risk exposure with EVD patients in health care facilities in EVD outbreak affected countries*

No known exposure

Persons with no known exposure were present in an EVD outbreak affected country* in the past 21 days with no low risk or high risk exposures.

[1] *Casual contact is defined as a) being within approximately 3 feet (1 meter) or within the room or care area for a prolonged period of time (e.g., healthcare personnel, household members) while not wearing recommended personal protective equipment (i.e., droplet and contact precautions–see Infection Prevention and Control Recommendations); or b) having direct brief contact (e.g., shaking hands) with an EVD case while not wearing recommended personal protective equipment (i.e., droplet and contact precautions–see Infection Prevention and Control Recommendations). At this time, brief interactions, such as walking by a person or moving through a hospital, do not constitute casual contact.*

* Outbreak affected countries include Guinea, Liberia, Sierra Leone, and Lagos, Nigeria, as of 4-August-2014

Interim Guidance for Monitoring and Movement of Persons with Ebola Virus Disease Exposure
http://www.cdc.gov/vhf/ebola/hcp/monitoring-and-movement-of-persons-with-exposure.html

Guidance on Air Medical Transport for Patients with Ebola Virus Disease
http://www.cdc.gov/vhf/ebola/hcp/guidance-air-medical-transport-patients.html

Ebola Hemorrhagic Fever Fact Sheet:
http://www.cdc.gov/vhf/ebola/index.html

Information for Prospective Travelers

Please see the CDC guidance for People Working and Living Abroad at http://www.cdc.gov/vhf/abroad/working-living-abroad.html

Information for Airlines

Please see the CDC's updated "Interim Guidance about Ebola Virus Infection for Airline Flight Crews, Cleaning Personnel, and Cargo Personnel" at http://www.cdc.gov/quarantine/air/managing-sick-travelers/ebola-guidance-airlines.html

Procedures for Handling EVD Suspect Human Remains (Updated CDC Guidance pending)

If the patient dies, handling of the body should be minimized. The remains should not be embalmed. Remains should be wrapped in sealed leak-proof material and cremated or buried promptly in a sealed casket. If an autopsy is necessary, the MDCH and CDC should be consulted regarding appropriate precautions.

Questions and Answers on experimental treatments and vaccines for Ebola:
http://www.cdc.gov/vhf/ebola/outbreaks/guinea/qa-experimental-treatments.html

Information for Close Contacts and Household Members: (No CDC guidance at this time)

MDCH Supplemental EVD Case Investigation Form

Date form completed: __/__/____   *Completed by:* _____

*Agency Name:*_____

Patient Information:

MDSS#: _____

Last name _____ First name _____ Middle _____

DOB __/__/____   Sex _____ (M/F)

Address: _____ County of Residence: _____

Phone Number: _____ Alt Phone: _____

Date of Illness onset: __/__/____

Hospitalized: Y/N   Date of Hospitalization: __/__/____

Name of Hospital: _____ City: _____

Contact Precautions: (Check all that apply)

- □ Standard
- □ Contact
- □ Droplet
- □ Other_____

Name of attending physician: _____

Contact information of physician: _____ (office) _____(cell/page)

_____ _(email)

Is suspect case a healthcare worker?:   Y/N

Clinical Signs & Symptoms: (check all that apply)

- □ Fever (_____°F)
- □ Malaise
- □ Myalgia
- □ Headache
- □ Abdominal pain
- □ Nausea
- □ Vomiting

- □ Diarrhea
- □ Rash
  (describe_____
  _____)
- □ Petechiae
- □ Hemorrhage (specify
  sites:_____)

Clinical Findings:

- □ Thrombocytopenia (<150,000 cells/μl): Date __/__/____
- □ Hepatic Failure: Date __/__/____; AST_____, ALT_____, ALK PHOS_____, T. Bili_____
- □ Acute Kidney Disease: Date __/__/____ (BUN _____, Creatinine_____)
- □ Impaired Coagulation: Date __/__/____ (INR_____)
- □ Other_____
  _____

Travel and Exposure History:

Travel History in 3 weeks prior to illness onset (location and dates):

_____
_____

High risk EVD exposure in 21 days prior to illness onset?   □ Yes   □ No   □ Unknown

Check all that apply:

- □ Percutaneous or mucous membrane exposure or direct skin contact with body fluids of a person with a confirmed or suspected case of EVD without appropriate personal protective equipment (PPE),
- □ Laboratory processing of body fluids of suspected or confirmed EVD cases without appropriate PPE or standard biosafety precautions, or
- □ Participation in funeral rites or other direct exposure to human remains in the geographic area where the outbreak is occurring without appropriate PPE.

Low Risk EVD exposure in 21 days prior to illness onset?   □ Yes □ No □Unknown

Check all that apply:

- □ Persons who spent time in a healthcare facility where EVD patients are being treated (encompassing healthcare workers who used appropriate PPE, employees not involved in direct patient care, or other hospital patients who did not have EVD and their family caretakers), or
- □ Household members of an EVD patient without high-risk exposures as defined above.
- □ Persons who had direct unprotected contact with bats or primates from EVD-affected countries.

Contacts with similar illness: List _____-
_____

_____

Notes: _____

_____