

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. 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 6, 2014

Adapted from CDC Guidance 08/01/2014

Michigan Department
of Community Health



Background

As of August 4, 2014, according to WHO, a total of 1,603 cases and 887 deaths (case fatality 55%) 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 fatality rate can vary from 40-90%.

EVD is characterized by sudden onset of fever ($\geq 101.5^{\circ}$ 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 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 ($\geq 101.5^{\circ}$ 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

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/ μ L 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.

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

If testing is indicated, immediately notify MDCH. Healthcare providers should collect serum, plasma, or whole blood in plastic tubes. Serum should be collected in a red top or serum separator tube and whole blood collected in a purple, green, or blue top tube. A minimum sample volume of 4 mL of serum, plasma, or whole blood should be shipped refrigerated on ice packs, or serum or plasma may be sent frozen on dry ice, by overnight delivery in accordance with federal and international guidelines to the Michigan Department of Community Health's Bureau of Laboratories (http://www.michigan.gov/mdch/0,4612,7-132-2945_5103---,00.html). MDCH will forward specimens to the CDC. For additional detailed instructions, please refer to CDC's Specimen Submission Information page at <http://www.cdc.gov/ncezid/dhcpp/vspb/specimens.html>.

Make sure that both forms (MDCH and the CDC) are submitted with the specimen.

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 an additional detailed resource on handling of EVD-suspect patient samples in a laboratory setting, see the [2005 Australian Government Department of Health and Aged Care](#) document on laboratory precautions.

Laboratory guidance is also available from the Belgium Superior Health Council at:

http://www.health.belgium.be/internet2Prd/groups/public/@public/@shc/documents/ie2divers/19097511_en.pdf.

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>

Suspected Case

Illness in 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 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; 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.

Confirmed Case

A suspected case with laboratory-confirmed diagnostic evidence of ebolavirus infection.

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

Ver. 1.0
August 6, 2014

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)

- | | |
|--|--|
| <input type="checkbox"/> Fever (_____°F) | <input type="checkbox"/> Diarrhea |
| <input type="checkbox"/> Malaise | <input type="checkbox"/> Rash |
| <input type="checkbox"/> Myalgia | (describe _____) |
| <input type="checkbox"/> Headache | <input type="checkbox"/> Petechiae |
| <input type="checkbox"/> Abdominal pain | <input type="checkbox"/> Hemorrhage (specify |
| <input type="checkbox"/> Nausea | sites: _____) |
| <input type="checkbox"/> Vomiting | |

Clinical Findings:

- Thrombocytopenia (<150,000 cells/ μ l): 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: _____
