



North Carolina Department of Health and Human Services  
Division of Public Health

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July 31, 2014

To: North Carolina Health Care Providers and Laboratories  
From: Zack Moore, MD, MPH, Communicable Disease Branch  
Scott Zimmerman, DrPH, MPH, HCLD (ABB), State Laboratory of Public Health  
Re: **Ebola Hemorrhagic Fever (3 pages)**

This memo is intended to provide information to all North Carolina health care providers and laboratories regarding Ebola hemorrhagic fever (Ebola HF) and management of suspected cases.

### Summary

National and international health authorities are currently working to control a large, ongoing outbreak of Ebola involving areas in West Africa. A map of affected areas is available at <http://www.cdc.gov/vhf/ebola/resources/distribution-map-guinea-outbreak.html>. All cases of human illness or death have occurred in Africa; no case has been reported in the United States.

### Clinical and Epidemiologic Features

Ebola hemorrhagic fever is a rare and deadly disease. The disease is native to several African countries and is caused by infection with one of the ebolaviruses (Ebola, Sudan, Bundibugyo, or Tai Forest virus). It is spread by direct contact with a sick person's blood or body fluids. It is also spread by contact with contaminated objects or infected animals.

The incubation period for Ebola HF is usually 8–10 days, but could potentially range from 2–21 days. The risk for person-to-person transmission of hemorrhagic fever viruses is greatest during the latter stages of illness when viral loads are highest. Ebola is not transmissible during the incubation period (i.e., before onset of fever).

Symptoms include fever, headache, joint and muscle aches, sore throat, and weakness, followed by diarrhea, vomiting, and stomach pain. Skin rash, red eyes, and internal and external bleeding may be seen in some patients.

### Case Investigation and Testing

- Ebola hemorrhagic fever (HF) should be suspected in febrile persons who, within 3 weeks before onset of fever, have either:
  - Traveled in the specific local area of a country where Ebola HF has recently occurred;
  - Had direct unprotected contact with blood, other body fluids, secretions, or excretions of a person with Ebola HF; or
  - Had a possible exposure when working in a laboratory that handles Ebola HF viruses.

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- **Clinicians caring for patients meeting these criteria should immediately implement isolation precautions (see below) and contact their local health department or the state Communicable Disease Branch (919-733-3419; available 24/7) to discuss laboratory testing and control measures.**
- Decisions about testing for Ebola in cases meeting these criteria will be made on a case-by-case basis.
- Even following travel to areas where Ebola HF has occurred, persons with fever are more likely to have infectious diseases other than Ebola HF (e.g., common respiratory viruses, endemic infections such as malaria or typhoid fever). Clinicians should promptly evaluate and treat patients for these more common infections even if Ebola is being considered. Testing for Lassa fever should also be considered if Ebola HF is suspected, since there is overlap in terms of clinical features and geographic areas where exposures could occur.
- Testing for Ebola is currently available through the United States Army Medical Research Institute of Infectious Diseases (USAMRIID). Prior consultation and approval from public health officials is required.
- Appropriate specimen types and volumes are listed below.

| Specimen Type                                     | Quantity           | Testing                | Transport   |
|---|--------------------|------------------------|---|
| <b>Serum (preferred specimen type)</b>            | ≥ 3ml              | Culture, PCR, Serology | Refrigerated (4°C), placed on cold packs if shipment is to be received within 72 hrs. Specimens should be shipped as a Category A substance using UN 2814 guidelines. |
| Uncoagulated whole blood (purple top)             | ≥ 3ml              | Culture, PCR           |   |
| Nasal swab in VTM or other respiratory secretions | Swab in 1–3 ml VTM | Culture, PCR           |   |

- For consultation on specimen collection and packaging, contact the North Carolina State Laboratory of Public Health (NCSLPH) Bioterrorism and Emerging Pathogens (BTEP) Unit at 919-807-8600.
- The samples should be packaged in an International Air Transportation Association (IATA) or Department of Transportation 49, Code of Federal Regulations 173 approved container and shipped as a Category A substance using UN 2814 guidelines. Comprehensive guidance on packing and shipping these types of potentially infectious substances can be found at the following website: <https://clinmicro.asm.org/index.php/bench-work-resources/conducting-daily-operations/packaging-and-shipping>. *Note: All specimen primary containers must be wrapped in bubble wrap and placed in a secondary container with absorbent material sufficient to contain all potentially infectious liquids. The secondary container must be able to withstand 95 kPa pressure differential and contain an o-ring sealant.*
- All specimen submissions must have a completed USAMRIID Testing and Submission Form (provided by the NCSLPH BTEP Unit). The completed form should be housed in a zip-top baggie and placed in between the outer box and the secondary container. The BTEP Unit will provide the shipping address upon testing approval.

#### Infection Control

- Transmission of Ebola HF in healthcare settings has been associated with reuse of contaminated needles and syringes and with provision of patient care without appropriate barrier precautions to prevent exposure to virus-containing blood and other body fluids (including vomitus, urine, and stool).
- Although unproven, airborne transmission of Ebola HF is a hypothetical possibility during procedures that may generate aerosols.

- The following recommendations should be followed when caring for persons with suspected Ebola HF:
  - Patients who are hospitalized or treated in an outpatient healthcare setting should be placed in a private room and Standard, Contact, and Droplet Precautions should be initiated.
  - Patients with respiratory symptoms also should wear a face mask to contain respiratory droplets prior to placement in their hospital or examination room and during transport.
  - Caretakers should use barrier precautions to prevent skin or mucous membrane exposure of the eyes, nose, and mouth with patient blood, other body fluids, secretions (including respiratory droplets), or excretions.
  - Although transmission by the airborne route has not been established, hospitals may choose to use Airborne Precautions for patients with suspected Ebola HF who have severe pulmonary involvement or who undergo procedures that stimulate coughing and promote the generation of aerosols.
- Additional recommendations are available at <http://www.cdc.gov/vhf/abroad/healthcare-workers.html>.

#### Treatment

- Supportive care only; no antivirals are currently available for treatment of Ebola HF.

#### Reporting

- Physicians are required to contact their local health department or the state Communicable Disease Branch (919-733-3419) as soon as Ebola or any other hemorrhagic fever virus infection is reasonably suspected.

This is an evolving situation and recommendations are likely to change as new information becomes available. Updated information and guidance are available from the CDC at <http://www.cdc.gov/vhf/ebola>.