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Ebola Information, Guidelines and Corrections Response

Ebola, previously known as Ebola hemorrhagic fever, is a rare and deadly disease caused by infection with one of the Ebola virus strains. Ebola can cause disease in humans and nonhuman primates (monkeys, gorillas, and chimpanzees). Those who contract the Ebola virus are said to have **Ebola Virus Disease** (**EVD**).

The Centers for Disease Control (CDC) believes that Ebola poses no significant threat to the United States today, because of our sophisticated and robust Public Health system which can track and treat viral diseases in a way that quickly controls spread, and because of the sophistication of American hospitals, which are better equipped to manage and control the spread of viral diseases than hospitals and clinics in emerging countries are today.

So, while chances are slim that US Jails or Prisons will receive or house offenders exposed to Ebola or with EVD, it is still wise to establish an Infection Control response to Ebola in preparation for the unlikely receipt of offenders who have been exposed or who are showing symptoms. And, since EVD in its early stages can mimic influenza, it is important to educate correctional healthcare employees how to screen for and identify differences in influenza and EVD. It is also important to educate corrections officers, offenders, and correctional healthcare personnel on prevention, care, and treatment of EVD.

Ebola is caused by infection with a virus of the family *Filoviridae*, genus *Ebolavirus*. There are five identified Ebola virus strains, four of which are known to cause disease in humans. The fifth has caused disease in nonhuman primates, but not in humans.

Ebola viruses are found in several African countries. Ebola was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks have appeared sporadically in Africa. The natural reservoir host of Ebola virus remains unknown. However, on the basis of evidence and the nature of similar viruses, researchers believe that the virus is animal-borne and that bats are the most likely reservoir. Four of the five virus strains occur in an animal host native to Africa.

Current Outbreak

There have been several Ebola outbreaks in the past several years; however, the 2014 Ebola epidemic is the largest in history, affecting multiple countries in West Africa. Although the risk of an Ebola outbreak in the United States is very low, CDC and partners are taking precautions to prevent this from happening. On 9/30/2014, CDC confirmed the first travel-associated case of Ebola to be diagnosed in the United States. CDC and partners are taking precautions to prevent the spread of Ebola within the United States. CDC is working with other U.S. government agencies, the World Health Organization (WHO), and other domestic and international partners and has activated its Emergency Operations Center (EOC) to help coordinate technical assistance and control

activities with partners. CDC has deployed teams of public health experts to West Africa and will continue to send experts to the affected countries.

Symptoms of Ebola

Symptoms may appear anywhere from 2 to 21 days after exposure to Ebola, but the average is 8 to 10 days. Recovery from Ebola depends on the patient's immune response. People who recover from Ebola infection develop antibodies that last for at least 10 years.

Symptoms of Ebola include:

- Fever (greater than 38.6°C or 101.5°F)
- Severe headache
- Muscle pain
- Weakness
- Diarrhea
- Vomiting
- Abdominal (stomach) pain
- Unexplained hemorrhage (bleeding or bruising)

Transmission

Because the natural reservoir host of Ebola viruses has not yet been identified, the manner in which the virus first appears in a human at the start of an outbreak is unknown. However, researchers believe that the first patient becomes infected through contact with an infected animal.

When an infection does occur in humans, the virus can be spread in several ways to others. Ebola is spread through direct contact (through broken skin or mucous membranes) with

- blood or body fluids (including but not limited to urine, saliva, feces, vomit, sweat and semen) of a person who is sick with Ebola
- objects (like needles and syringes) that have been contaminated with the virus

Ebola may also be spread through interaction with infected animals. Exposure to the disease can occur through touching bats or nonhuman primates (like apes or monkeys) or blood, fluids, or raw meat prepared from these animals.

Ebola is not spread through the air or by water, or in general, food.

Healthcare providers caring for Ebola patients and the family and friends in close contact with Ebola patients are at the highest risk of getting sick because they may come in contact with infected blood or body fluids of sick patients, therefore, use of protective equipment is essential.

During outbreaks of Ebola, the disease can spread quickly within healthcare settings (such as a clinic or hospital). Exposure to Ebola can occur in healthcare settings where hospital staff are not wearing appropriate protective equipment, including **masks**, **gowns**, **gloves** and **eye protection**.

Dedicated medical equipment (preferable disposable, when possible) should be used by healthcare personnel providing patient care. Proper cleaning and disposal of instruments, such as needles and syringes, is also important. If instruments are not disposable, they must be sterilized before being used again. Without adequate sterilization of the instruments, virus transmission can continue and amplify an outbreak.

Once someone recovers from Ebola, they can no longer spread the virus. However, Ebola virus has been found in semen for up to 3 months. People who recover from Ebola are advised to abstain from sex or use condoms for 3 months.

Risk

All cases of human illness or death from Ebola have occurred in Africa (with the exception of several laboratory contamination cases: one in England and two in Russia). Healthcare providers caring for Ebola patients and the family and friends in close contact with Ebola patients are at the highest risk of getting sick because they may come in contact with the blood or body fluids of sick patients.

High risk exposures

A high risk exposure includes any of the following:

- Percutaneous (e.g., needle stick, sharing needles, tattoo equipment) or mucous membrane exposure to blood or body fluids of EVD patient
- Direct skin contact with, or exposure to blood or body fluids of, an EVD patient without appropriate personal protective equipment (PPE)
- Processing blood or body fluids of a confirmed EVD patient without appropriate PPE or standard biosafety precautions
- Direct contact with a dead body without appropriate PPE in a country where an EVD outbreak is occurring

Low risk exposures

A low risk exposure includes any of the following:

- Household contact with an EVD patient
- Other close contact with EVD patients in health care facilities or community settings. Close contact is defined as:
    - being within approximately 3 feet of an EVD patient or within the patient's room or care area for a prolonged period of time (e.g., health care personnel, household members) while not wearing recommended personal protective equipment (i.e., standard, droplet, and contact precautions)
    - having direct brief contact (e.g., shaking hands) with an EVD patient while not wearing recommended personal protective equipment.

***Brief interactions, such as walking by a person or moving through a hospital, do not constitute close contact

No known exposure

Having been in a country in which an EVD outbreak occurred within the past 21 days and having had no high or low risk exposures.

Prevention

There is no FDA-approved vaccine available for Ebola.

Those persons who are **in an area affected by an Ebola outbreak** or **in an area with questionable Ebola patient**, should do the following:

- Practice careful hygiene.
- Avoid contact with blood and body fluids.
- Do not handle items that may have come in contact with an infected person's blood or body fluids.

Healthcare workers who are addressing a person **who may have EBV** should follow these steps:

- Wear protective clothing, including masks, gloves, impermeable gowns, and goggles or face shields.
- Practice proper infection control and sterilization measures.
- Isolate patients with Ebola from other patients.

- Avoid direct contact with the bodies of people who have died from Ebola.
- Notify health officials if you have had direct contact with the blood or body fluids, such as but not limited to, feces, saliva, urine, vomit, and semen of a person who is sick with Ebola. The virus can enter the body through broken skin or unprotected mucous membranes in, for example, the eyes, nose, or mouth.

When cases of the disease do appear, there is increased risk of transmission within healthcare settings. Therefore, healthcare workers must be able to recognize a case of Ebola and be ready to use appropriate infection control measures. The aim of these techniques is to avoid contact with the blood or body fluids of an infected patient.

Appropriate procedures for healthcare workers who are addressing a person with **confirmed EBV** include:

- Isolation of patients with Ebola from contact with unprotected persons.
- Wearing of protective clothing (including masks, gloves, impermeable gowns, and goggles or face shields) by persons caring for Ebola patients.
- The use of other infection-control measures (such as complete equipment sterilization and routine use of disinfectant).
- Avoid touching the bodies of patients who have died from Ebola.

Healthcare workers should also have the capability to request diagnostic tests or prepare samples for shipping and testing elsewhere.

Diagnosis

Diagnosing Ebola in a person who has been infected for only a few days is difficult, because the early symptoms, such as fever, are nonspecific to Ebola infection and are seen often in patients with more commonly occurring diseases, such as influenza, malaria, and typhoid fever.

However, if a person has the early symptoms of Ebola and has had contact with the blood or body fluids of a person sick with Ebola, contact with objects that have been contaminated with the blood or body fluids of a person sick with Ebola, or contact with infected animals, they should be isolated and public health professionals notified.

Samples from the patient can then be collected and tested to confirm infection.
Laboratory tests used in diagnosis include:

Timeline of Infection	**Diagnostic tests available**
Within a few days after symptoms begin	Antigen-capture enzyme-linked immunosorbent assay (ELISA) testing IgM ELISA Polymerase chain reaction (PCR) Virus isolation
Later in disease course or after recovery	IgM and IgG antibodies
Retrospectively in deceased patients	Immunohistochemistry testing PCR Virus isolation

Treatment

No specific vaccine or medicine (e.g., antiviral drug) has been proven to be effective against Ebola. Symptoms of Ebola are treated as they appear. The following basic interventions, when used early, can significantly improve the chances of survival:

- Providing intravenous fluids (IV)and balancing electrolytes (body salts).
- Maintaining oxygen status and blood pressure.
- Treating other infections if they occur.

Some experimental treatments developed for Ebola have been tested and proven effective in animals but have not yet been tested in randomized trials in humans. Recovery from Ebola depends on the patient's immune response. People who recover from Ebola infection develop antibodies that last for at least 10 years, possibly longer.

Corrections Response

While it is unlikely that US Jails or Prisons will receive or house offenders exposed to Ebola or with EVD, it is wise to establish an Infection Control response to Ebola in preparation for an unexpected case of Ebola. Preparations should be made in collaboration with the local or State Public Health Department. The Public Health Department will have the most accurate information on risk and response in each specific locale. Preparation could include intake screening where offenders who may have been exposed or who have signs and symptom of Ebola virus could be identified. Screening could include questions about recent travel to endemic areas and could include a notation of oral temperature.

***NH Department of Corrections is in active dialogues with NH Public Health Officials.

Intake Screening

Based upon local Public Health Department recommendation, intake screening policy could be adopted which would aid in identifying offenders who may have been exposed to Ebola virus, or who have signs and symptoms of EVD. Intake screening could include questions about (NHDOC has a draft form prepared but will not deploy until necessary):

- Fever
- Headache
- Joint and muscle aches
- Weakness
- Fatigue
- Diarrhea
- Vomiting
- Stomach pain
- Lack of appetite
- Unusual bleeding

An **oral temperature should always be taken**. Thermometers should be routinely checked for accuracy, reliability, and validity.

Every newly admitted offender should be asked questions about travel to or recent close association with others who have traveled to West Africa (Guinea, Liberia, Nigeria, Senegal, Sierra Leone or other countries where EVD transmission has been reported by WHO) within 21 days (3 weeks) of symptom onset.

If both criteria are met, then the patient should be moved to a private room with a bathroom, and STANDARD, CONTACT, and DROPLET precautions followed during further assessment and/or transfer.

IMMEDIATELY Report Person Under Investigation (PUI) for Ebola to facility healthcare leadership. Facility healthcare leadership will assess the situation and will arrange for transport of the patient to a local hospital for diagnosis and treatment. Healthcare leadership will report PUI to correctional leadership, local and state Public Health Authorities (271-4496- After hours 1-800-852-3345), and U.S. Centers for Disease Control and Prevention (CDC). The CDC is contacted by calling the CDC Emergency Operations Center (EOC) at 770-488-7100 or via email at eocreport@cdc.gov .

Infection Prevention and Control of PUI/suspected/confirmed

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. Early recognition and identification of patients with potential Ebola is critical.

After transfer from the correctional setting, **implement environmental infection control measures**: Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials is of paramount importance, as blood, sweat, vomit, feces, urine and other body secretions represent potentially infectious materials should be done following written infection control protocols.

A correctional facility managing a suspected Ebola patient **prior to Emergency room transfer** should follow these CDC recommendations:

- Limit activities, especially during transport to the infirmary or isolation cell that can increase the risk of exposure to infectious material (e.g., airway management, cardiopulmonary resuscitation, use of needles).
- Limit the use of needles and other sharps as much as possible. All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers.
- Phlebotomy, procedures, and laboratory testing should be limited to the minimum necessary for essential diagnostic evaluation and medical care.
- **Use of Personal protective equipment (PPE)**
- Use of standard, contact, and droplet precautions is sufficient for most situations when treating a patient with a suspected case of Ebola as defined above. Healthcare personnel should wear:
    - 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), including but not limited to double gloving, disposable shoe covers, and leg coverings.
- Pre-hospital resuscitation procedures such as endotracheal intubation, open suctioning of airways, and cardiopulmonary resuscitation frequently result in a large amount of body fluids, such as saliva and vomit. Performing these procedures in a less controlled environment increases risk of exposure for healthcare and corrections personnel. If conducted, perform these procedures under safer circumstances (e.g., inside the infirmary).
- During pre-hospital resuscitation procedures (intubation, open suctioning of airways, cardiopulmonary resuscitation):
    - In addition to recommended PPE, respiratory protection that is at least as protective as a NIOSH-certified fit-tested N95 filtering face piece respirator or higher should be worn (instead of a facemask).
    - Additional PPE must be considered for these situations due to the potential increased risk for contact with blood and body fluids including, but not limited to, double gloving, disposable shoe covers, and leg coverings.
    - If blood, body fluids, secretions, or excretions from a patient with suspected Ebola come into direct contact with the healthcare provider's skin or mucous membranes, then the healthcare

provider should immediately stop working. They should wash the affected skin surfaces with soap and water and report exposure to a supervisor for follow-up.

- Recommended PPE should be used by healthcare personnel as follows:
  - PPE should be worn upon entry into the scene and continued to be worn until personnel are no longer in contact with the patient.
  - PPE should be carefully removed without contaminating one's eyes, mucous membranes, or clothing with potentially infectious materials.
  - PPE should be placed into a medical waste container at the hospital or double bagged and held in a secure location.
  - Re-useable PPE should be cleaned and disinfected according to the manufacturer's reprocessing instructions and DOC, County, or healthcare Vendor policies.
  - Instructions for putting on and removing PPE have been published online at http://www.cdc.gov/HAI/prevent/ppe.html and http://www.cdc.gov/vhf/ebola/pdf/ppe-poster.pdf[PDF - 2 pages](http://www.cdc.gov/vhf/ebola/pdf/ppe-poster.pdf).
  - Hand hygiene should be performed immediately after removal of PPE.

All information in this document was retrieved from the CDC website.