REPORT IMMEDIATELY TO ACDP

1. DISEASE REPORTING

1.1. Purpose of Surveillance and Reporting
1. To identify cases as early as possible to prevent transmission to others and improve health outcomes.
2. To determine risk factors for spread of Ebola.

1.2. Laboratory and Physician Reporting Requirements
1. Laboratories and healthcare providers are required to report known or suspected cases of Ebola virus disease immediately (day or night) to the local health department (LHD). If the reporter cannot reach the LHD promptly, they should call the Oregon Health Authority’s Acute and Communicable Disease Prevention Section (ACDP) at 971-673-1111.
2. Laboratories and healthcare providers will be expected to work with the Oregon State Public Health Laboratory (OSPHL) to complete the required paperwork to submit the specimens to a CDC-designated laboratory for testing. The OSPHL can provide guidance about transporting specimens. (See §3.4)

1.3. Local Health Department Reporting and Follow-Up Responsibilities
1. Report all suspect (i.e., Person Under Investigation [PUI]), probable, or confirmed cases of Ebola immediately to ACDP.
2. Begin investigation immediately. Enter case in Orpheus as “Ebola,” and use the Ebola case report form for the case interview.
3. Consult with ACDP about patient isolation and protection of contacts, including healthcare personnel; and about strategies for public health response, testing, enhanced surveillance, contact investigation, and monitoring.
4. Educate and consult with local providers and facilities to facilitate compliance with isolation and infection control procedures in the medical care of case patients.
5. Notify ACDP immediately upon any anticipated transfer of the patient.
6. Ensure that all potentially exposed contacts are identified, educated, and contacted at least once daily for 21 days after their last exposure to the case. See §5.0.
7. Enter details of the investigation and contact follow-up into Orpheus. Make sure to upload the interview form as an attachment, and fill in all yellow boxes.
8. Consult with ACDP before closing case and contact investigation activities for each suspected or confirmed Ebola case.

1.4. State Public Health Division Responsibilities
1. Provide consultation to LHD, Tribal, and private sector health professionals concerning:
   • isolation of cases and potential cases;
   • protection of healthcare personnel;
   • diagnostic evaluation;
   • required reporting and surveillance activities;
   • contact identification and follow-up.
2. Track inter-jurisdictional cases and contacts who move out of county or State of Oregon jurisdiction.
Ebola

3. Develop and maintain adequate information systems to provide needed case and contact surveillance, and ensure adequacy of response activities.
4. Provide surge capacity, if the Ebola outbreak and contact investigation overwhelm resources of the LHD.
5. Facilitate expert consultation with infectious disease specialists and CDC as needed.

2. THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Ebola virus disease, which may or may not manifest as hemorrhagic fever, is a rare and deadly infection of humans and nonhuman primates (monkeys, gorillas, and chimpanzees).

The Ebola virus is a member of the family Filoviridae, genus Ebolavirus. Five Ebola virus species have been identified, four of which are known to cause disease in humans: Ebola virus (Zaire ebolavirus); Sudan virus (Sudan ebolavirus); Tai Forest virus (Tai Forest ebolavirus, formerly Côte d'Ivoire ebolavirus); and Bundibugyo virus (Bundibugyo ebolavirus). The fifth, Reston virus (Reston ebolavirus), has caused disease in nonhuman primates, but infected humans have been asymptomatic.

2.2 Description of Illness

Though signs and symptoms vary, Ebola is usually characterized by abrupt onset of fever, headache, myalgias and fatigue. Early symptoms such as headache and fever are not specific to Ebola, or fever may be absent in the presence of other symptoms (~15% in one study), leading to misdiagnosis of Ebola on initial presentation. The duration of illness can range from a few days to a couple of weeks. As the disease progresses, patients may develop profuse diarrhea, vomiting, petechiae, bruising, shock and multi-organ dysfunction. Encephalopathy, hepatitis, tremors, and reduced white blood cell and platelet counts are frequently seen. Renal failure may occur. Mortality rates for Ebola have varied in different outbreaks, but can be as high as 90%. Of eight Ebola patients cared for in the U.S. as of May 2015, two (25%) have died.

The differential diagnosis includes a variety of viral and bacterial diseases, including tropical infections: malaria, other viral hemorrhagic fevers (e.g., Lassa), typhoid, dengue, influenza, hepatitis, staphylococcal or other bacterial sepsis, toxic shock syndrome, rubella, and measles, among others. Non-infectious diseases that present with bleeding also must be excluded (e.g., hemolytic uremic syndrome, leukemia).

There is evidence that asymptomatic infection accompanied by low viral levels (detectable only in monocytes) and the development of Ebola-specific antibodies does occur. These individuals appear to have a particularly robust acute inflammatory response.

2.3 Reservoirs

The natural reservoir of Ebola virus remains unknown. However, researchers believe that the virus is animal-borne and that African fruit bats are the most likely reservoir. Humans, bats, monkeys and apes are known to have been infected with the virus.

2.4 Sources and Routes of Transmission

Several outbreaks have been attributed to consumption of meat from an infected animal. Transmission of Ebola virus from person to person can occur via direct contact with blood or other body fluids (including but not limited to urine, saliva, sweat, feces, vomitus, breast milk and semen) from infected persons or grossly contaminated fomites. Medical equipment that has not been properly cleaned or sterilized has been responsible for the spread of Ebola (notably, re-used hypodermic syringes). Rarely, laboratory workers have been infected through handling of specimens. Although a handful of studies have shown infection of animals via aerosols created in the laboratory, airborne transmission between persons has never been documented. Evidence of virus has been found in semen up to 200 days after symptom onset.

2.5 Incubation Period

2–21 days, with an average of 8–10 days.

2.6 Period of Communicability or Infectious Period

Ebola virus is not detectable in the serum of patients before onset of illness, and no Ebola infection has been reported in persons who had contact with a case only during the incubation period (that is, before onset of fever). Viral load and risk for transmission appear to be greatest during the later stages of illness. Contaminated bedding, clothing and medical equipment may remain infectious for several days.
2.7 Epidemiology

Because the natural reservoir host of Ebola is unknown, the manner by which the virus first appears in a human at the start of an outbreak is often unknown. However, researchers believe that the first patient becomes infected through contact with an infected animal (e.g., by eating bush meat). Outbreaks are sustained by person-to-person spread.

The 2014 outbreak in West Africa is the largest ever, perhaps because transmission has not been limited to isolated, rural areas as has been typical in the past. Urban transmission, occurring in larger populations and higher densities, has sustained the outbreak and strained surveillance and healthcare infrastructure.

In the U.S., healthcare personnel caring for Ebola patients will probably be at highest risk compared to the general population.

2.8 Treatment

No vaccines, antiviral drugs, biologics or other medicines have been proven to be effective against Ebola. Treatment is supportive. The following basic interventions, when used early, can significantly improve the chances of survival:

- Provision of oral or intravenous (IV) fluids and electrolytes as needed to replenish losses.
- Maintenance of oxygenation and blood pressure.
- Treatment of other infections that may occur.

Experimental treatments may be available; during the 2014 outbreak, patients in the U.S. have received passive antibodies from Ebola survivors, investigational antiviral medications, and monoclonal antibodies. CDC and NIH will work with confirmed cases individually to determine treatment options.

3. CASE DEFINITIONS, DIAGNOSIS, AND LABORATORY SERVICES

3.1 Confirmed Case Definition

Confirmed Case: A case with evidence of Ebola virus infection based on testing (most likely Polymerase Chain Reaction (PCR)) at a CDC-certified public health laboratory. (Other possible confirmatory tests include ELISA antigen detection, viral isolation, and detection of Ebola antigens in tissues by immunohistochemistry.)

3.2 Suspect Case Definition

Suspect Case (a.k.a. Person under Investigation): A person without confirmatory laboratory evidence but with both consistent symptoms and risk factors as follows:

- Clinical criteria: fever ≥38°C (100.4°F) (or subjective fever), with severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage; AND
- Epidemiologic risk factors during the 21 days before symptom onset:
  - Percutaneous or mucous membrane exposure to blood or body fluids of an Ebola patient.
  - Direct skin contact with, or exposure to blood or other body fluids of an Ebola patient without appropriate personal protective equipment.
  - Laboratory processing blood or body fluids of a person with Ebola without appropriate PPE or standard biosafety precautions.
  - Direct contact with a human corpse, without appropriate PPE, in a country where an Ebola outbreak is occurring.¹
  - Household or other direct contact with an ill Ebola patient.
  - Being within 3 feet of an Ebola patient for a prolonged period of time while not wearing recommended PPE.
  - Healthcare worker who touched and cared for an ill Ebola patient whether or not PPE was worn.
  - Contact other than that described above with a confirmed or suspect Ebola case.
  - Residence in — or travel to or within — an area where Ebola transmission is active¹; OR,
  - Direct handling or consumption of bats or non-human primates from disease-endemic areas.

¹ See http://wwwnc.cdc.gov/travel/notices for current list
3.3 Persons Under Monitoring (PUM)

An asymptomatic person with possible Ebola exposure, undergoing 21 day of monitoring by LHD, along with travel and work restrictions if applicable. (See How to Monitor Persons Under Monitoring, Interim Monitoring Guidance for Local Health Departments)


3.4 Services Available at the Public Health Laboratory

OSPHL does not test for Ebola virus. The OSPHL, in coordination with ACDP, will assist healthcare facilities to arrange testing at the CDC or another CDC-designated public health laboratory. If testing is needed, contact the ACDP on-call epidemiologist to engage the OSPHL. More information may be found at https://public.health.oregon.gov/LaboratoryServices/SubmittingSamples/Pages/Ebola-Testing.aspx.

4. ROUTINE CASE INVESTIGATION

Any potential case of Ebola is a special situation requiring close collaboration between ACDP and LHD. Call ACDP as soon as possible at (971) 673-1111.

4.1 Isolation and Initial Evaluation of Suspected Case of Ebola— First responder responsibilities

If called about a suspected Ebola case, recommend that the following be done immediately.

- In the unlikely event that this person is not already known to public health as a PUM, collect
  1. demographic information,
  2. contact info including phone numbers, e-mail etc. for any family members or close friends who are with the patient,
  3. clinical data, including date of symptom onset and relevant symptoms,
  4. travel history in the 21 days prior to symptom onset, with travel dates and airlines, if available,
  5. potential exposures to Ebola, as outlined in §3.2 above.

For PUMs, who are already known in the public health system:

- contact the local health district for the predetermined medical health plan
- follow the medical plan as appropriate

If patient is in a healthcare setting:

- isolate the patient in a separate room with a private bathroom, and close the door (unless the patient’s condition requires ongoing monitoring). If the patient is in an emergency department with an “open” patient area, place the person in a bay, and close the curtains. If a clinic, isolate the patient in an examining room.
- contact the hospital infection preventionist or clinic manager, and activate the Ebola preparedness plan.

If patient is in a home or community setting:

- Isolate the patient in a room by himself or herself with the door closed as much as possible. Family and friends should avoid direct contact with the ill person and should not share the same bathroom.
- Local health department to arrange evaluation of the patient to determine if Ebola is in the differential and if transport to a hospital is indicated. Consider the health officer or EMS medical director as possible options for medical evaluation.
- Guidance for medical professional who will evaluate patient: Before approaching the patient, don standard, contact, and droplet PPE (face shield, impermeable gown, double gloves, and surgical mask; a fit-tested respirator or powered air-purifying respirator may be substituted for the surgical mask). At a distance of ≥6 feet, query the patient or proxy to confirm whether or not the patient has symptoms consistent with Ebola and risk factors for it, using Ebola Algorithm: Evaluating Inquiries (available in Interim Monitoring Guidance for Local Health Departments). If, based on the assessment, the ill person meets criteria as a Person Under Investigation.
  - Determine if the patient requires immediate life-saving care. If so, contact local Emergency Medical Services to arrange prompt in-the-field resuscitation using appropriate PPE, and
transport to the nearest facility that can provide the services required to stabilize the patient. Contact ACDP as soon as possible to coordinate further assessment, testing and care.

- If the ill person does not require immediate, life-saving care:
  - Coordinate with ACDP and the Tier 2 Ebola Assessment Hospital for your area to begin preparations for in-patient assessment and care.
  - Contact an emergency medical services agency in your region that has trained for and agreed to handle transport of suspect Ebola patients. If there is no EMS agency in your area that handles transport, work with ACDP to arrange safe, timely transport to a Tier 2 facility.

4.2 Contact Tracing

1. Identify all potentially exposed persons (people who had direct contact with the ill patient or his or her body fluids, since symptom onset) for subsequent monitoring.
   - Document all activities of the case patient between onset of symptoms and ultimate discharge from the hospital. This may be difficult if the case patient has died or is unresponsive. Interview the case, next of kin, and friends or others you can identify who have had recent contact. Document any travel, congregate activities likely to result in direct contact, and close contacts identified. If you talk to case-patient in person, wear appropriate PPE. See §5.4.
   - Document all household members, other persons with whom case has had mucous membrane, blood (e.g., via needle-sharing), sexual, other body-fluid-associated or prolonged face-to-face contact; and all healthcare workers (HCWs) who have cared for the patient.
   - Identify and document any laboratory workers who have handled the specimens without appropriate PPE or laboratory biosafety precautions.

2. Use the Contact Tracing Line List to record essential information about all above-identified contacts. The form is available in Interim Monitoring Guidance for Local Health Departments to interview the case or case’s proxies. Record the case in Orpheus – Disease “Ebola”. Make sure to document primary physician and referral hospital as well as emergency or alternate contact information.

4.3 Completion of Case Report Form

1. Use Section 6 of the Oregon Ebola Interview Form to collect needed clinical information. The form is available in Interim Monitoring Guidance for Local Health Departments.

2. When completed, upload this document to Orpheus and notify the ACDP Epi on-call that this has been done.

5. CONTROLLING FURTHER SPREAD

5.1 Monitoring of Potentially Exposed Persons

To establish monitoring for the people you have identified as contacts of the suspect or confirmed Ebola case patient, follow the procedures outlined in Interim Monitoring Guidance for Local Health Departments.

5.2 Isolation of Ebola Patient

Individuals with Ebola are considered infectious throughout their symptomatic illness, although viral loads appear to be lower during the first day or two of illness, then peak by day 8 or 9. Confirmed and suspect Ebola cases must be isolated throughout their clinical course, and all persons caring for them must observe strict personal protective precautions. (See §5.4.) Patients with confirmed Ebola should wear a respiratory mask and body suit when transported.

Virus has been found in semen as long as 6 months after onset of Ebola disease. Convalescing patients are advised to refrain from unprotected sexual activity until semen tests are negative.

5.3 Vaccines and Antiviral Prophylaxis

No licensed immunization or other prophylaxis is available to protect contacts of Ebola cases. Vaccines are under development.

5.4 Environmental Measures and Infection Control

For most current infection control recommendations, see:
www.cdc.gov/vhf/ebola/healthcare-us/hospitals/infection-control.html
Ebola

Personal Protective Barrier Precautions

Healthcare professionals are at risk for Ebola from accidental percutaneous and mucous membrane exposures to blood and body fluids. Rigorous attention to protocol for donning and doffing recommended personal protective equipment (PPE) is of paramount importance. See current CDC recommendations regarding selection and use of PPE for Ebola patients at www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html. Briefly:

• Make sure that hospital staff are trained and have been tested in the appropriate donning, doffing and use of currently recommended PPE prior to caring for suspected or confirmed Ebola patients.
• Institute 2-on-1 patient care buddy system having a trained healthcare professional observe the caregiver, using a checklist, to ensure both adequate care and personal protection in the patient room.
• Use N-95 (or better) respiratory protection with face shield, or Powered Air-Purifying Respirator (PAPR), whichever is available, and staff are trained in and comfortable using.
• Make sure all skin is covered before entry into patient room.
• Frequently disinfect gloves during care, and decontaminate at each step of doffing.

6. SPECIAL SITUATIONS

1. Domestic animal exposure. Dogs should be quarantined at home for 21 days. If not feasible, send the dog(s) to animal services with a specific isolation set up. The USDA can provide trailer transportation to the quarantine facility. Serological testing may be done. Animal will be confined. Consult with ACDP’s State public health veterinarian for specific recommendations. Cats, birds, fish, and reptiles do not appear to be at any risk. Pet chimpanzees, monkeys, etc. are another matter, and should be euthanized or quarantined.

2. Mortuary and Burial Services. Contact with bodies of deceased Ebola patients poses a high risk for transmission. For recommendations regarding the handling of bodies of deceased Ebola patients, see www.cdc.gov/vhf/ebola/healthcare-us/hospitals/handling-human-remains.html.

7. RESOURCES

Additional resources regarding Ebola recognition, diagnosis, and management can be found at: www.cdc.gov/vhf/ebola.

8. REFERENCES


UPDATE LOG

2015: Updated to reflect current CDC guidance and Oregon Public Health Division planning regarding evaluation, transport, and assessment of suspect Ebola patients. (Leman, Fisher)

2014: Created; adapted from Viral Hemorrhagic Fever (Fisher, Cieslak, Buser)
Contact Interview Checklist

Name: ____________________________________________________________

Last                                                         First                                       MI

Orpheus # of Epi-linked Case _________________

Sex    ☐ Female    ☐ Male                                          Ethnicity: Latino?    ☐ yes    ☐ no    ☐ unknown

Race    ☐ AI/AN    ☐ Asian    ☐ Black    ☐ Pacific Islander    ☐ white
        ☐ Refused    ☐ unknown                                      ☐ Other _____________________

Date of Birth   ___/___/___

m    d     y

Most recent exposure date   ___/___/___

m    d     y

Nature of Exposure:
☐ Body fluid contact    ☐ W/in 3 ft. while case was ill    ☐ Neither of these
☐ Healthcare worker    ☐ Laboratorian                      ☐ Family member
☐ Other

Any of these signs and symptoms?
☐ Fever                                                             ☐ Fatigue
☐ Weakness                                                          ☐ Headache
☐ Irritability                                                      ☐ Muscle aches
☐ Dizziness                                                         ☐ Nausea / vomiting
☐ Rash                                                              ☐ Diarrhea
☐ Swelling around eyes                                              ☐ Redness of eyes
☐ Flushing                                                          ☐ Low blood pressure (shock)
☐ Sweats                                                            ☐ Sore throat
☐ Any bleeding/bruising in absence of injury?

On-going exposure likely?    ☐ yes    ☐ no

☐ Education on standard, contact, and droplet precautions given, if on-going exposure predicted.