Ebola
Case and Contact
Investigation
in
West Virginia

Maria del Rosario, MD, MPH
Danae Bixler, MD, MPH
Division of Infectious Disease Epidemiology
Charleston, WV

June 25, 2015
Objectives

1. Know the surveillance, prevention and disease control objectives for Ebola case investigation
2. Know how to appropriately recognize an Ebola PUI
3. Know disease control methods for Ebola PUIs
4. Know the definition of an Ebola contact
5. Know the process of contact tracing and contact surveillance
6. Know how to report an Ebola PUI
How could an Ebola Virus Disease (EVD) case occur in the United States?
How could an Ebola Virus Disease (EVD) case occur in the United States?

Returned traveler
How could an Ebola Virus Disease (EVD) case occur in the United States?
How do we PREVENT Ebola transmission in the U.S.?

Returned traveler

Contact
How do we prevent Ebola transmission in the U.S.?

- Returned traveler
- Exit screening
- Entry screening
- Contact
How do we prevent Ebola transmission in the U.S.?

Returned traveler

Contact

Exit screening
Entry screening
Monitoring
Early recognition
Prompt isolation
How do we prevent Ebola transmission in the U.S.?

 Returned traveler

 Contact

 Exit screening
 Entry screening
 Monitoring
 Early recognition
 Prompt isolation
 Movement restrictions
How do we prevent Ebola transmission in the U.S.?

- Returned traveler
  - Contact
  - Exit screening
  - Entry screening
  - Monitoring
  - Early recognition
  - Prompt isolation
  - Movement restrictions
  - Contact tracing
  - Surveillance
How do we prevent Ebola transmission in the U.S.?

- Exit screening
- Entry screening
- Monitoring
- Early recognition
- Prompt isolation
- Movement restrictions
- Contact tracing
- Surveillance

Returned traveler

Contact
Early Recognition
Ebola Case Definitions

Person Under Investigation (PUI)

- Elevated body temperature or subjective fever or symptoms, including severe headache, fatigue, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage;

  AND

- An **epidemiologic risk factor** within the 21 days before the onset of symptoms.

Confirmed Case

- Laboratory-confirmed diagnostic evidence of Ebola virus infection.

What are examples of Ebola risk factors?

• Low but not zero risk

• Some risk

• High Risk
What are examples of Ebola risk factors?

- Low but not zero risk
- **Travel to Liberia, Sierra Leone, Guinea within 21 days**
- **Healthcare worker in the US using PPE for care of Ebola patients**
  - Some risk
- High Risk
What are examples of Ebola risk factors?

- Low but not zero risk
  - Travel to Liberia, Sierra Leone, Guinea within 21 days
  - Healthcare worker in the US using PPE for care of Ebola patients
- Some risk
- **Healthcare worker who worked with Ebola patients in West Africa using full PPE**
- High Risk
What are examples of Ebola risk factors?

• Low but not zero risk
  • Travel to Liberia, Sierra Leone, Guinea within 21 days
  • Healthcare worker in the US using PPE for care of Ebola patients

• Some risk
  • Healthcare worker who worked with Ebola patients in West Africa using full PPE

• High Risk
  • **Recognized exposure to blood or body fluids without proper PPE**
Evaluating an Ebola PUI

Symptomatic patient

Epi risk factors

Test 1

3 days later

Test 2
Disease Prevention Measures

PUI in a health facility:

• Isolate the patient and close the door
• Wear appropriate personal protective equipment (PPE)
• Limit the healthcare personnel who enter the room
• Keep a log of everyone who enters and leaves the patient’s room
• Consider alternative diagnoses and evaluate appropriately
• Only perform necessary tests and procedures
• Avoid aerosol-generating procedures
• Follow CDC guidelines for cleaning, disinfecting, and managing waste

INFORM

• Notify your facility’s infection control professional and other appropriate staff.

• Contact local / state public health authorities.
  DIDE @ (800) 423-1271 ext. 1 (toll free)
  (304) 558-5358 ext. 1

• Consult with local / state public health authorities about testing for Ebola.

Evaluating an Ebola PUI

Symptomatic patient + Epi risk factors → Test 1 (3 days later) → Test 2

NOTIFY! ISOLATE!
Commercial Airline Travel, October 10 and October 13, 2015; N=268 passengers, flight and cleaning crew
32 (12%) had symptom(s) during 21 days after flight

<table>
<thead>
<tr>
<th>Symptom*</th>
<th>Symptoms reported by 32 contacts</th>
<th>Symptoms reported by 21 contacts in 3-foot zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever (≥100.4°F [≥38°C])</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Unusual bleeding</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Body aches</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Headache</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>Hiccups</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rash</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sore throat</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Vomiting</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weakness</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

* Contacts could report more than one type of symptom.

MMWR, 2015; 64:63-66
Number of Persons Traveling/Monitored, and Reported to CDC/DCI
Since Airport Screening Initiated, United States, 2014-15

All travelers from affected countries (n=15,000) → Travelers with symptoms (n=1,067) → PUIs (n=325) → Tested PUIs (n=129) → Confirmed (n=1)
## Top Five Diagnoses Among PUIs Reported to CDC/DCI
### July 7, 2014 – May 5, 2015

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>N=325</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 URI</td>
<td>38</td>
<td>16</td>
</tr>
<tr>
<td>2 Malaria</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>3 Gastroenteritis</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>4 Influenza</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>5 Unknown/Other</td>
<td>143</td>
<td>59</td>
</tr>
</tbody>
</table>
Evaluating the Ebola PUI

Symptomatic patient

+ Epi risk factors

Test 1

Patient improving +/- alternative diagnosis

Test 2
Low, but not Zero Risk

Diagnosis and management of mild illness

- Complete history of illness
- Prior or intercurrent illness in household contacts?
- Diagnostic workup e.g., respiratory virus testing, stool testing, etc.
  - Family members
  - Returned traveler (using full PPE)
- Careful home monitoring
  - ‘clinical rule-out’
2014 Ebola Outbreak in West Africa

Case Study (CDC)

- A 44 y/o female who had visited Liberia presented at an emergency department complaining of anorexia and fever. On examination she was tachycardic and had a temperature of 101°F. She was admitted into an isolation room.
- Lab required Ebola rule out.
- A CBC was not done for 24 hours. The traveler’s hemoglobin was 5, requiring transfusion; and she was moved to the ICU.
- Malaria treatment was delayed for more than 36 hours.
- State Lab did malaria smear; positive for P falciparum.
- 4 day delay in obtaining a proper diagnosis; associated with need for blood transfusions and ICU stay.
# Causes of Fever in Returned Travelers

Sierra Leone, Liberia, Guinea, Sept 2009 – August 2014; N=770

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Patients, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria</td>
<td>310 (40.3)</td>
</tr>
<tr>
<td>Acute diarrhea</td>
<td>95 (12.3)</td>
</tr>
<tr>
<td>URTI / ILI</td>
<td>32 (4.2)</td>
</tr>
<tr>
<td>Viral syndrome</td>
<td>29 (3.8)</td>
</tr>
<tr>
<td>Unspecified febrile illness &lt; 3 wks</td>
<td>24 (3.1)</td>
</tr>
</tbody>
</table>

Evaluating an Ebola PUI

Symptomatic patient + Epi risk factors

Test 1

3 days later

Test 2

NOTIFY!

ISOLATE!

Consider alternative diagnoses
Contact Tracing and Surveillance
Facts about Ebola Transmission

Ebola is spread through direct contact with blood and body fluids

- Ebola is spread only from 1 person to another once symptoms begin

Exposure: 2-21 days (average= 8-10 days) ➔ Ebola signs or symptoms

- Blood and body fluids of a person who is sick with Ebola
- Objects contaminated with the blood or body fluids of a person sick with Ebola
- Infected fruit bats or primates (apes and monkeys)

Ebola is **NOT** spread through/by:

- Air, water, or food
- Mosquitoes or other insects
- Dogs and cats
Who might be a contact of an Ebola case?
Question

Who might be a contact of an Ebola case?

- Household contacts
- Healthcare contacts
- Community contacts
Contact tracing is finding everyone who comes in direct contact with a sick Ebola patient. Contacts are watched for signs of illness for 21 days from the last day they came in contact with the Ebola patient. If the contact develops a fever or other Ebola symptoms, they are immediately isolated, tested, provided care, and the cycle starts again—all of the new patient’s contacts are found and watched for 21 days. Even one missed contact can keep the outbreak going.

Contact tracing finds new cases quickly so they can be isolated to stop further spread.
Contact Investigation

- Person/s living with the case (alive/dead) in the same households since illness onset
- Person/s who visited patient (alive/dead) at home or in the health facility since illness onset
- Where patient went and who did they visit since onset
- Health facilities the patient visited since illness onset
- Health workers who attended to the patient (alive/dead) since illness onset
- Contact with the dead body

Visit the home, health facilities, any place the patient went while symptomatic and ask about other contacts.

Adapted from: WHO Contact Tracing Guidelines
### VI. Activity Log from Date of Onset

*Use the following guiding questions to describe the patient's whereabouts and activities for each day between date of onset and hospitalization:* What did you do on the day that you first felt any symptoms? Did you go to work/school? How did you get there? Who did you interact with? Did you engage in any physical activity or group sports? Did you attend any community or organizational meetings? Did you eat out at any restaurants? Did you partake in any social activities?

<table>
<thead>
<tr>
<th>Date of Onset:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MM / DD / YYYY:**

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Ebola Contact Definition

Close Contact – a person exposed to a symptomatic Ebola patient for a prolonged period of time within 3 feet (1 meter) while not wearing appropriate PPE

Direct Contact – a person having physical contact with a symptomatic Ebola patient:

- Slept in the same household as a case
- Direct physical contact with case during the illness
- Direct physical contact with case at funeral
- Touched the blood or body fluids of a case during their illness
- Touched the clothes or linens of a case
- Baby breastfed by infected mother

http://www.cdc.gov/vhf/ebola
Contact Line List


<table>
<thead>
<tr>
<th>No</th>
<th>First name</th>
<th>Last name</th>
<th>Sex</th>
<th>Relation to case</th>
<th>Last contact date</th>
<th>Street address</th>
<th>City</th>
<th>State</th>
<th>Phone</th>
<th>Description of interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See page 8 for Guidance for Interviewer on Defining Contacts.
# Ebola Virus Disease Contact Tracing Form

<table>
<thead>
<tr>
<th>State/Local ID:</th>
<th>CDC ID:</th>
</tr>
</thead>
</table>

## VI. Activities During Period Of Exposure

Did you participate in any of the following activities with the patient while he/she was ill?

### Caregiving
- Did you take care of the patient when he/she was sick (e.g. bathe, feed, help to bathroom)?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure
- Did you do house cleaning or provide indirect care for the patient (e.g. wash clothes or bedding, wash dishes)?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure

### Sharing Meals
- Did you eat meals with the patient?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure
- Did you share utensils or a cup with the patient?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure

### Other close contact
- Did you use the same bathroom as the patient?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure
- Did you sleep in the same room as the patient?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure
- Did you sleep in the same bed as the patient?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure
- Did you hug the patient?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure
- Did you kiss the patient?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure

### Transportation
- Did you share any transport with the patient (car, bus, plane, taxi, etc.)?
  - [ ] Yes
  - [ ] No
  - [ ] Unsure

If yes, give for all shared transport:
Conveyance ___________________
Dates of travel: __________

Name of airline and flight number: ________________________________
Origin: ____________________ Destination: ________________________
Any transit points: ____________________________

---

Guidance for Monitoring and Movement (CDC)

<table>
<thead>
<tr>
<th>Exposure Category</th>
<th>Clinical Criteria</th>
<th>Public Health Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk</td>
<td>Fever (subjective fever or measured temperature ≥100.4°F/38°C) OR any of the following:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• severe headache</td>
<td>• Implement rapid isolation with immediate contact of public health authorities to arrange for safe transport to an appropriate healthcare facility for Ebola evaluation</td>
</tr>
<tr>
<td></td>
<td>• muscle pain</td>
<td>• Medical evaluation is required.</td>
</tr>
<tr>
<td></td>
<td>• vomiting</td>
<td>• Isolation orders may be used to ensure compliance</td>
</tr>
<tr>
<td></td>
<td>• diarrhea</td>
<td>• Air travel is permitted only by air medical transport</td>
</tr>
<tr>
<td></td>
<td>• stomach pain</td>
<td>• If medically evaluated and discharged with a diagnosis other than Ebola, conditions as outlined for asymptomatic individuals in this exposure category will apply</td>
</tr>
<tr>
<td></td>
<td>• unexplained bruising or bleeding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asymptomatic (no fever or other symptoms consistent with Ebola)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Direct active monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public health authority will ensure, through orders as necessary, the following minimum restrictions:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Controlled movement: exclusion from all long-distance and local public conveyances (aircraft, ship, train, bus and subway)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Exclusion from public places (e.g., shopping centers, movie theaters), and congregate gatherings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Exclusion from workplaces for the duration of the public health order, unless approved by the state or local health department (telework is</td>
</tr>
</tbody>
</table>

Contact 1: Healthcare worker who held emesis basin for the patient while he was vomiting without face mask or eye protection. The next day, the patient tested positive for Ebola.

- Exposure:

- Risk category:

- Action:
Contact 1:
Healthcare worker who held emesis basin for the patient while he was vomiting without face mask or eye protection. The next day, the patient tested positive for Ebola.

• Exposure:
  Exposure to the blood or body fluids of a person with Ebola while the person was symptomatic without appropriate PPE

• Risk category:

• Action:
Example 1

Contact 1:
Healthcare worker who held emesis basin for the patient while he was vomiting without face mask or eye protection. The next day, the patient tested positive for Ebola.

- **Exposure:**
  Exposure to the blood or body fluids of a person with Ebola while the person was symptomatic without appropriate PPE

- **Risk category:**
  High Risk

- **Action:**
Example 1

Contact 1:
Healthcare worker who held emesis basin for the patient while he was vomiting without face mask or eye protection. The next day, the patient tested positive for Ebola.

• Exposure:
  Exposure to the blood or body fluids of a person with Ebola while the person was symptomatic without appropriate PPE

• Risk category:
  High Risk

• Action:
  1. Direct Active Monitoring
  2. Controlled Movement (home isolation, no work or school, no mass transportation ...)

45
Contact 2:
Hospital nurse (in U.S) taking care of an Ebola patient while wearing appropriate PPE. No infection control breach.

• Exposure:

• Risk category:

• Action:
Contact 2:
Hospital nurse (in U.S) taking care of an Ebola patient while wearing appropriate PPE. No infection control breach.

- Exposure:
  
  No recognized infection control breach

- Risk category:

- Action:
Contact 2:
Hospital nurse (in U.S) taking care of an Ebola patient while wearing appropriate PPE. No infection control breach.

- Exposure:
  No recognized infection control breach
- Risk category:
  Low Risk
- Action:
Contact 2:

Hospital nurse (in U.S) taking care of an Ebola patient while wearing appropriate PPE. No infection control breach.

• Exposure:
  No recognized infection control breach

• Risk category:
  Low Risk

• Action:
  1. Direct Active Monitoring
  2. No restrictions on travel, work, public conveyances, or congregate gatherings
Contact 3:
Next door neighbor who collected newspapers from the patient’s box and put them on the doorstep for 3 days before learning that the patient was in the hospital with Ebola.

• Exposure:

• Risk category:

• Action:
Contact 3:
Next door neighbor who collected newspapers from the patient’s box and put them on the doorstep for 3 days before learning that the patient was in the hospital with Ebola.

- Exposure:
  No exposure to the patient (or body fluids, linens, etc.) diagnosed with Ebola

- Risk category:

- Action:
Contact 3:
Next door neighbor who collected newspapers from the patient’s box and put them on the doorstep for 3 days before learning that the patient was in the hospital with Ebola.

- Exposure:
  No exposure to the patient (or body fluids, linens, etc.) diagnosed with Ebola

- Risk category:
  No identifiable risk

- Action:
Contact 3:
Next door neighbor who collected newspapers from the patient’s box and put them on the doorstep for 3 days before learning that the patient was in the hospital with Ebola.

- **Exposure:**
  
  No exposure to the patient (or body fluids, linens, etc.) diagnosed with Ebola

- **Risk category:**
  
  No identifiable risk

- **Action:**
  
  Reassure that there is no risk
Contact 4:
Patient’s girlfriend who has slept on the couch ever since he got back from Sierra Leone and gave him a hug every night, with patient not feeling well.

• Exposure:

• Risk category:

• Action:
Example 4

Contact 4:
Patient’s girlfriend who has slept on the couch ever since he got back from Sierra Leone and gave him a hug every night, with patient not feeling well.

• Exposure:
  Close contact in households, healthcare facilities, or community settings with a person with Ebola while the person was symptomatic

• Risk category:

• Action:
Contact 4:
Patient’s girlfriend who has slept on the couch ever since he got back from Sierra Leone and gave him a hug every night, with patient not feeling well.

• Exposure:
  Close contact in households, healthcare facilities, or community settings with a person with Ebola while the person was symptomatic

• Risk category:
  Some risk

• Action:
Example 4

Contact 4:
Patient’s girlfriend who has slept on the couch ever since he got back from Sierra Leone and gave him a hug every night, with patient not feeling well.

• Exposure:
  Close contact in households, healthcare facilities, or community settings with a person with Ebola while the person was symptomatic

• Risk category:
  Some risk

• Action:
  1. Direct Active Monitoring
  2. Controlled Movement
  3. Coordinate travel with public health
Best Practices for Contact Tracers

- Qualities of contact tracer: caring and competent
- Follow safety precautions (same as returned travelers)
- Educate contact about the monitoring process
- Discuss restrictions
- Recognize the needs of contacts
- Unable to locate contact – notify supervisor
Contact Investigation Staffing (proposed)

- **Data Lead**
- **Epi Lead**
- **Team Lead – Healthcare associated Contact Surveillance**
- **Team Lead – Community Contact Surveillance**
- **Logistics**
- **Health and Safety**

- 2-person contact surveillance team
- 2-person contact surveillance team
- 2-person contact surveillance team
# Ebola Virus Disease Contact Tracing Form

## XII. Contact Symptom Follow-Up Diary

<table>
<thead>
<tr>
<th>1 day after last exposure</th>
<th>2 days after last exposure</th>
<th>3 days after last exposure</th>
<th>4 days after last exposure</th>
<th>5 days after last exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
</tr>
</tbody>
</table>

- **No symptoms**
- **Fever ________ °F**
- **Chills**
- **Weakness**
- **Headache**
- **Muscle Aches**
- **Abdominal Pain**
- **Diarrhea ____ times/day**
- **Vomiting**
- **Unexplained hemorrhage**
- **Other ____________**

<table>
<thead>
<tr>
<th>6 days after last exposure</th>
<th>7 days after last exposure</th>
<th>8 days after last exposure</th>
<th>9 days after last exposure</th>
<th>10 days after last exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
<td>MM/DD/YYYY</td>
</tr>
</tbody>
</table>

- **No symptoms**
- **Fever ________ °F**
- **Chills**
- **Weakness**
- **Headache**
- **Muscle Aches**
- **Abdominal Pain**
- **Diarrhea ____ times/day**
- **Vomiting**
- **Unexplained hemorrhage**
- **Other ____________**

## Ebola Contact Tracing Form

Page 10 of 14

---

How do we prevent Ebola transmission in the U.S.?

- Returned traveler
- Contact

- Exit screening
- Entry screening
- Monitoring
- Early recognition
- Prompt isolation
- Restrictions
- Contact tracing surveillance
Resources

Centers for Disease Control and Prevention
http://www.cdc.gov/vhf/ebola/index.html

Division of Infectious Disease Epidemiology

World Health Organization
http://www.who.int/csr/disease/ebola/en/
PLEASE FILL OUT THE
“CASE AND CONTACT INVESTIGATION” PRESENTATION EVALUATION.

THANK YOU!
Maria del Rosario, MD, MPH and Danae Bixler, MD, MPH
Division of Infectious Disease Epidemiology
WVDHHR/BPH/OEPS
350 Capitol Street, Room 125
Charleston, WV 25301
Tel. No. (800) 423-1271 ext. 1
www.dide.wv.gov
### Is it Flu or Ebola?

<table>
<thead>
<tr>
<th>Flu (influenza)</th>
<th>Ebola</th>
</tr>
</thead>
<tbody>
<tr>
<td>The flu is common a contagious respiratory illness caused by flu viruses. The flu is different from a cold. Flu can cause mild to severe illness, and complications can lead to death.</td>
<td>Ebola is a rare and deadly disease caused by infection with an Ebola virus.</td>
</tr>
</tbody>
</table>

#### How Flu Germs Are Spread

- The flu is spread mainly by droplets made when people who have flu cough, sneeze, or talk. Viruses can also spread on surfaces, but this is less common.
- People with flu can spread the virus before, during, and after they are sick.

#### How Ebola Germs are Spread

- Ebola can only be spread by direct contact with blood or body fluids from:
  - A person who is sick or who has died of Ebola.
  - Objects like needles that have been in contact with the blood or body fluids of a person sick with Ebola.
- Ebola cannot spread in the air or by water or food.

#### Who Gets The Flu?

- Anyone can get the flu.
- Some people—like very young children, older adults, and people with some health conditions—are at high risk of serious complications.

#### Who Gets Ebola?

- People most at risk of getting Ebola are:
  - Healthcare providers taking care of Ebola patients.
  - Friends and family who have had unprotected direct contact with blood or body fluids of a person sick with Ebola.

#### Signs and Symptoms of Flu

- The signs and symptoms of flu usually develop within 2 days after exposure. Symptoms come on quickly and all at once.
- **Fever or feeling feverish**
- **Headache**
- **Muscle or body aches**
- **Feeling very tired (fatigue)**
- **Cough**
- **Sore throat**
- **Runny or stuffy nose**

#### Signs and Symptoms of Ebola

- The signs and symptoms of Ebola can appear 2 to 21 days after exposure. The average time is 8 to 10 days. Symptoms of Ebola develop over several days and become progressively more severe.
- **Fever**
- **Severe headache**
- **Muscle pain**
- **Feeling very tired (fatigue)**
- **Vomiting and diarrhea develop after 3–6 days**
- **Weakness (can be severe)**
- **Stomach pain**
- **Unexplained bleeding or bruising**

For more information about the flu and Ebola, visit [www.cdc.gov/flu](http://www.cdc.gov/flu) and [www.cdc.gov/ebola](http://www.cdc.gov/ebola).
Recognizing a Suspect Case of EVD

IDENTIFY

Assess your patient for:

• **Travel to an area** with Ebola within the last 21 days, **OR**
• **Contact** with someone with Ebola, **AND**
• **Had a fever** at home, or have a current temperature ≥100.4°F (≥38°C)

• Other **symptoms**:
  - ☹️ Severe headache
  - ☹️ Muscle pain
  - ☹️ Weakness
  - ☹️ Fatigue
  - ☹️ Diarrhea
  - ☹️ Vomiting
  - ☹️ Abdominal pain
  - ☹️ Unexplained hemorrhage

• If the patient has both **exposure and symptoms**, IMMEDIATELY separate the patient and inform others

Recognizing a Suspected EVD Patient

1. Symptomatic patient
2. Epi Risk factors
   +
3. Test 1 (-)
4. 3 days later
5. Test 2
6. Consider alternative diagnoses
Contact Tracing and Monitoring

Contact Tracing Form

Part 1

• Demographic information – interviewer, contact
• Exposure information
• Activities during exposure period
• Healthcare worker – facility, exposure, PPE use
• Actions

Part 2

• Follow-up diary – date and symptom
Early Symptoms

Ebola can only be spread to others after symptoms begin. Symptoms can appear from 2 to 21 days after exposure.

- Fever
- Headache
- Fatigue
- Diarrhea
- Vomiting
- Stomach pain
- Unexplained bleeding or bruising
- Muscle pain