EBOLA AND PREPAREDNESS FOR THE OUTPATIENT SETTING

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BACKGROUND

Ebola patient left to die outside Liberian hospital because there is no more room
How Many People Have Been Infected?
Between March 2014 and October 2014
- More than 13,000 people in Guinea, Liberia, Nigeria, Senegal and Sierra Leone have contracted Ebola
- More than 4,900 people have died
- Liberia: cases doubling ~ every 15-20 days; Sierra Leone and Guinea: cases doubling ~ every 30-40 days

Sources:

Where is the Outbreak?
Montserrado County in Liberia, which includes the capital, Monrovia, recorded over 300 new cases in the week ended Oct 21

Cumulative Cases in Liberia
- Best-case scenario: 11,000-27,000 cases through Jan 20
- Worst-case Scenario: 537,000-1.4 M cases through Jan 20

Sources:

Why Is this Outbreak So Hard to Contain?
- Lack of knowledge amongst the population about Ebola
- High mobility of people in this area of the world
- Wide geographic spread of cases
- Distrust of medical personnel
- Fear
- Incomplete contact tracing
- Burial rituals—deceased people are usually washed and then clothed
- Culinary practices—bats, bushmeat
- Lack of adequate public sanitation
- Access to healthcare
- Emergence in several highly populated areas in West Africa
US to Ramp Up Ebola Response
Initiatives Planned by President Obama

- 3,000 U.S. forces assigned to the affected region to provide medical and logistical support
- 17 New health care facilities built in the affected areas with 100 beds each
- 65 U.S. officials deployed to manage and staff a hospital to care for health care workers who become ill
- 500 Health care workers per week that could receive training in Ebola patient care
- 50,000 Home health care kits delivered to the region for use in remote areas

SOURCE: The White House


There Are No Regularly Scheduled Direct Flights To The U.S. From Liberia, Guinea Or Sierra Leone


The two nurses who contracted Ebola at a Dallas hospital were transferred to biocontainment units in Atlanta and Bethesda.

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A Spanish nurse contracted Ebola while treating a missionary who died in a Madrid Hospital.

Sources: New York Times


Timeline: Ebola Arrival and Spread in a Dallas Hospital

- 9/19: Active case in Dallas
- 9/20: Active case in Dallas
- 9/24: Active case in Dallas
- 9/25: Active case in Dallas
- 9/28*: Active case in Dallas
- 9/30*: Active case in Dallas
- 10/8: Active case in Dallas
- 10/11: Active case in Dallas
- 10/15: Active case in Dallas

* Nurse 1 and 2 were treating the patient during this time.


Ebola in West Africa

- 416 cases
- 233 deaths


US Hospitals Designated To Accept Ebola Patients

- Denver/Aurora
- Omaha
- Chicago
- Atlanta
- New York/Long Island

* A full list is forthcoming

The Ebola Virus

- Ebola hemorrhagic fever or EVD
- Viral Hemorrhagic Fever
- Rare and deadly disease
- Caused by infection with one of the Ebola virus strains.
- Named after the Ebola River in the Democratic Republic of the Congo (formerly Zaire)
- First outbreak (Zaire 1976)
  - 318 human cases
  - 88% mortality
  - Spread has been due to healthcare sites, burial rituals and close family contact with ill patient's
- Five types
  - Zaire, Sudan, Tai Forrest, Bundibugyo and Reston

Ebola Ranks Relatively Low On The Contagiousness Scale

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EBOLA RANKS RELATIVELY LOW ON THE CONTAGIOUSNESS SCALE

Because people with Ebola aren’t contagious until they show symptoms, $R_0$ is certain to be way less than two in this country.

Transmission

- Highly infectious but not highly transmissible
- Index case likely becomes infected through contact with an infected animal
- Once an infection occurs in humans, the virus spreads through direct contact (through broken skin or mucous membranes) with
  - A sick person’s blood or body fluids (urine, saliva, feces, vomit, and semen)
  - Objects (such as gloves, needles) that have been contaminated with infected body fluids (virus can survive in environment many days)

Where Does Ebola Come From?

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Virus Survival

- Can survive for several hours on surfaces
- Environmental testing of high touch surfaces in an Emory patient room negative
- May survive up to 6 days in moist environment
- Enveloped virus: standard disinfectants (detergent, 70%ethanol, bleach) are effective

Symptoms in Confirmed and Probable Ebola Patients in West Africa, 2014

- Specific hemorrhagic symptoms were rarely reported (in <1% to 5.7% of patients)

(n=467-1151)
Time between Exposure and Disease Onset, West Africa, 2014

The mean incubation period was 11.4 days. Approximately 95% of the case patients had symptom onset within 21 days after exposure.


Diagnosis

- Laboratory findings may include low white blood cell and platelet counts and elevated liver enzymes.
- Virus detectable by real-time RT-PCR from 3-10 days after symptoms appear (may be detectable earlier)
- Collect a minimum volume of 4mL whole blood (preserved with EDTA) in plastic collection tubes
- All suspect cases should be immediately reported to the CDPHE Communicable Disease Branch for approval for diagnostic testing
- Testing should encompass evaluation for other sources of febrile illness in the returned traveler

Treatment

- Severely ill patients require intensive supportive care.
- Patients are frequently dehydrated and require oral rehydration with solutions containing electrolytes or intravenous fluids.
- New drug therapies are being evaluated. Emergency investigational new drug application and IRB needed
  - Mapp Biopharmaceutical and contact information at
    - http://www.mappbio.com/
  - ZMapp information at
  - Chimerix brincidofovir information at
    - http://ir.chimerix.com/releasedetail.cfm?releaseid=874647

washingtonpost.com
British volunteer receives Ebola vaccine in second human trial

By Abby Phillip September 17

Felicity Hartnell, a clinical research fellow at Oxford University, injects Ruth Atkins with an experimental Ebola vaccine in Oxford, England. (Steve Parsons/Associated Press/Pool)

Assumptions for Planning

- Cases will be rare
- Cases will not involve multiple persons, likely just individuals
- Cases will likely present through Denver International Airport (DIA), Emergency Departments (ED), Urgent Care, less likely on a routine clinic visit
- Based on the epidemiology to date in the US, these assumptions are functional for planning at this time, adjustments will be made if warranted.
- STAFF SAFETY IS #1 PRIORITY
“Ask. Isolate. Call.”

Screening
- Screening of patients at all points of first access
  - Clinics, Urgent Care Centers, ED, Paramedics, Call Centers
- Patient waiting areas shall have signs posted instructing patients to notify provider if they have traveled to West Africa in past 3 weeks
- Providers shall have screening tools in provider work areas and exam areas with screening questions

Please alert your provider if you have traveled to West Africa in the past 3 weeks
- Por favor, informe a su médico si usted ha viajado a África occidental en las últimas 3 semanas
- S'il vous plaît alerter votre fournisseur si vous avez voyagé en Afrique de l'Ouest au cours des 3 dernières semaines

When to Suspect Ebola
Suspect Ebola in patients who have TRAVELED TO GUINEA, SIERRA LEON, or LIBERIA WITHIN 21 DAYS of symptoms or contact with blood or body fluids of another person known to have or suspected to have Ebola

AND
- One or more of the following SYMPTOMS:
  - Fever (subjective or measured greater than 38.0°C or 100.4°F)
  - Severe headache
  - Muscle Pain
  - Weakness
  - Abdominal (stomach) pain
  - Vomiting
  - Lack of Appetite
  - Diarrhea
  - Unexplained bleeding or bruising

Call 911
Call CDPHE 303-692-2700 or 303-370-9395 (after hours)

Modified from Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients Who Present with Possible Ebola Virus Disease
Oct 31, 2014
Personal Protective Equipment

- **Initial Evaluation for Clinically Stable and “Dry” Patient**
  - Face shield
  - Mask or respirator
  - Gown - Impermeable or fluid resistant
  - Gloves (double)
  - Limit patient and environmental contact

- **Hospital Management for Clinically Unstable or “Wet” Patient**
  - Impermeable gown, 2 layers of gloves, N95 or PAPR hood, Face shield, Surgical hood, Boot covers
  - Strict donning/doffing protocol with trained staff
  - Always work in pairs
  - Must document competency
  - Essential staff only

*Rhttp://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html*

Requires evaluation and care in a specialized (usually ED) setting with facilities and trained staff

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**Good Doffing for Everyday Infection Prevention**

These are general recommendations for safe donning and doffing of PPE

*Specific recommendations for Ebola are described for the hospital setting in the CDC’s Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Virus Disease in U.S. Hospitals*

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**“CALL”**

**What to report to CDPHE**

(303-692-2700, evenings and weekends: 303-370-9395)

- All suspect cases should be immediately reported to CDPHE.
- Persons who have NO symptoms of Ebola but have exposure to Ebola (either “high-risk” or “some risk”).
- State health will notify local public health agencies of a suspect case in their jurisdiction immediately.
- State public health will assist all hospitals and local health departments with a suspect case. This includes coordinating with CDC, figuring out logistics, transport of patient (if needed), getting appropriate testing, case-finding, etc.

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**Environmental Contamination**

- CDPHE will provide guidance
- Do not attempt to disinfect area on your own
- Block off contamination, move patients and healthcare workers away from contamination

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**Handling Waste in Clinics**

- All waste will be handled as category A waste
- Do not attempt to clean up or dispose of waste
OUTPATIENT TABLETOP

42-year-old Liberian male presents with low-grade fever and abdominal pain +/- vomiting. What is the next step?
A. Prescribe ciprofloxacin for his abdominal pain and send him home
B. Obtain the intake nurse’s notes
C. Ask him when he was last in Liberia
D. Draw a CBC and basic chemistries
E. Have the patient’s family member call the CDC

You are concerned for Ebola. What is the next step? Choose as many as apply
A. Put the patient in a negative airflow room
B. Find a PAPR and quickly learn how to use it
C. Notify public health
D. Put the patient in an exam room (ideally with a bathroom)
E. Wash your hands and put on gloves, gown (fluid resistant or impermeable), eye protection (goggles or face shield), facemask before continuing further evaluation

You learn he was in Monrovia 11 days ago. Before he can answer your questions about sick contacts, he vomits at the registration desk. What do you do next?
A. Immediately clean it up
B. Block off the area and relocate patients and staff away from the contaminated space
C. Pour bleach on it (you planned to replace the carpet anyway)
D. Ask the patient to clean it up
E. Evacuate the building

The patient is escorted to a private room. He was accompanied by family members. What do you do next? Choose as many as apply.
A. Escort the family members to a separate exam room
B. Ask if any of the family members feel ill
C. Ask them to leave the clinic immediately
D. Give them a mask
E. Collect their contact information
F. Call CDPHE

The patient’s temperature is measured at 103 degrees. CDPHE has sent paramedics and the patient is removed from your clinic. What do you do next?
A. Cancel your clinics for the next 21 days
B. Make sure you take out all the trash from the patient’s exam room
C. Book a cruise, leave ASAP
D. Perform fever and symptom monitoring for 21 days
E. Quarantine yourself in an outdoor tent
F. Await further guidance from CDPHE
Where do you find more information?

A. [www.colorado.gov/ebola](http://www.colorado.gov/ebola)
B. [www.cdc.gov/ebola](http://www.cdc.gov/ebola)
C. COHELP (303-389-1687 or 1-877-462-2911)
D. [www.cms.org](http://www.cms.org)
E. All of the above