

# Announcements

- Register for the Epi-Tech Trainings:
  1. Log-on or Request log-on ID/password:  
<https://tiny.army.mil/r/zB8A/CME>
  2. Register for Epi-Tech Surveillance Training:  
<https://tiny.army.mil/r/LEAid/EpiTechFY15>
  - Please enter your name/service and e-mail into the chat box to the left or email the disease epidemiology program at:  
[USAPHC.Disease.Epidemiology@us.army.mil](mailto:USAPHC.Disease.Epidemiology@us.army.mil)
  - You will receive a confirmation email within the next 48 hours with your attendance record
- Please mute your phones and DO NOT place us on hold. Press \*6 to mute/unmute your phone.



# West Africa Ebola: Tracking the Outbreak

James Writer

Senior Analyst

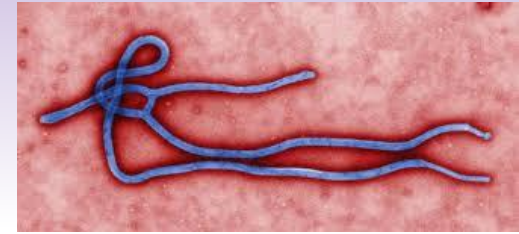
Division of Integrated Biosurveillance, AFHSC

28 October 2014



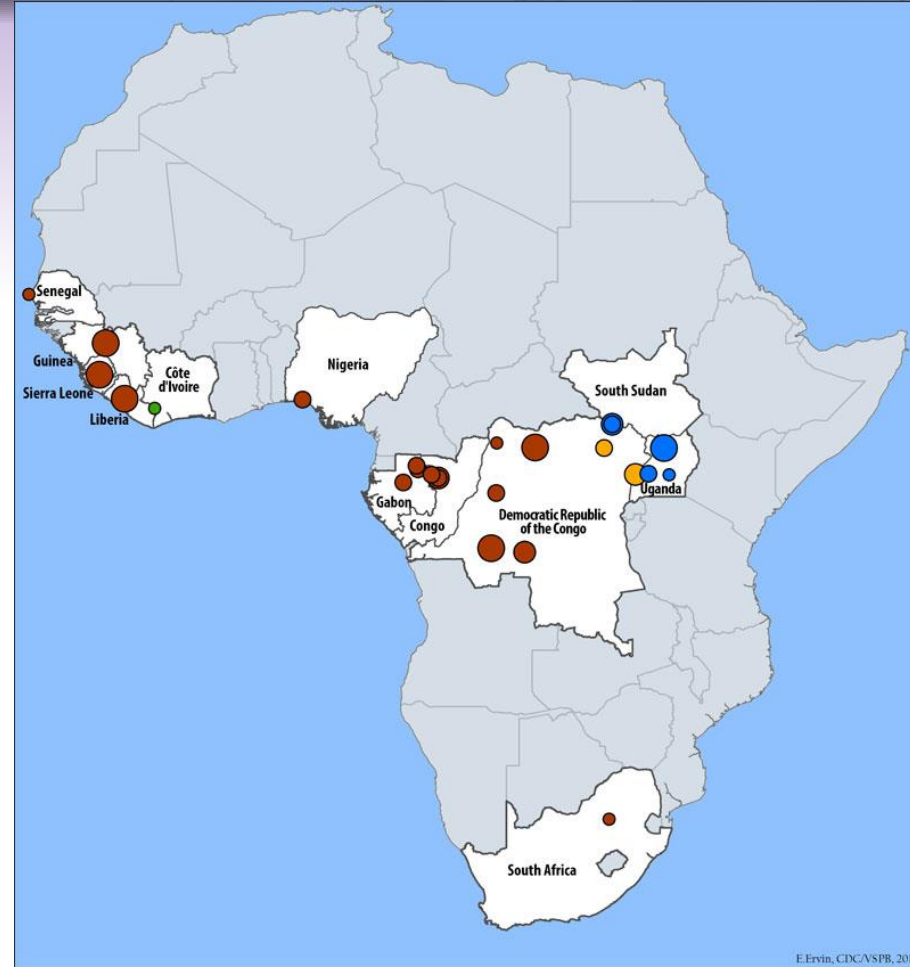
# The Virus

- Family *Filoviridae*, genus *Ebolavirus*
- Five identified Ebola virus species
  - *Sudan* / *Tai Forest* / *Bundibugyo* / *Reston* / **Zaire**
- Natural reservoir host of Ebola Zaire remains unknown, but likely bats
- Causes a hemorrhagic fever in humans and nonhuman primates
- Spread by direct contact with infected body fluids

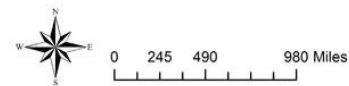
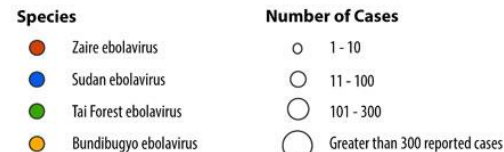


# Ebola Virus Disease (EVD): 1976-2012

- Discovered in 1976 near Ebola River in DRC
- Outbreaks appear sporadically in Africa
  - 23 outbreaks
  - 2345 confirmed cases
  - 1546 deaths
- Uganda 2000
  - 425 cases
  - 224 deaths



EBOLAVIRUS OUTBREAKS BY SPECIES AND SIZE, 1976 - 2014



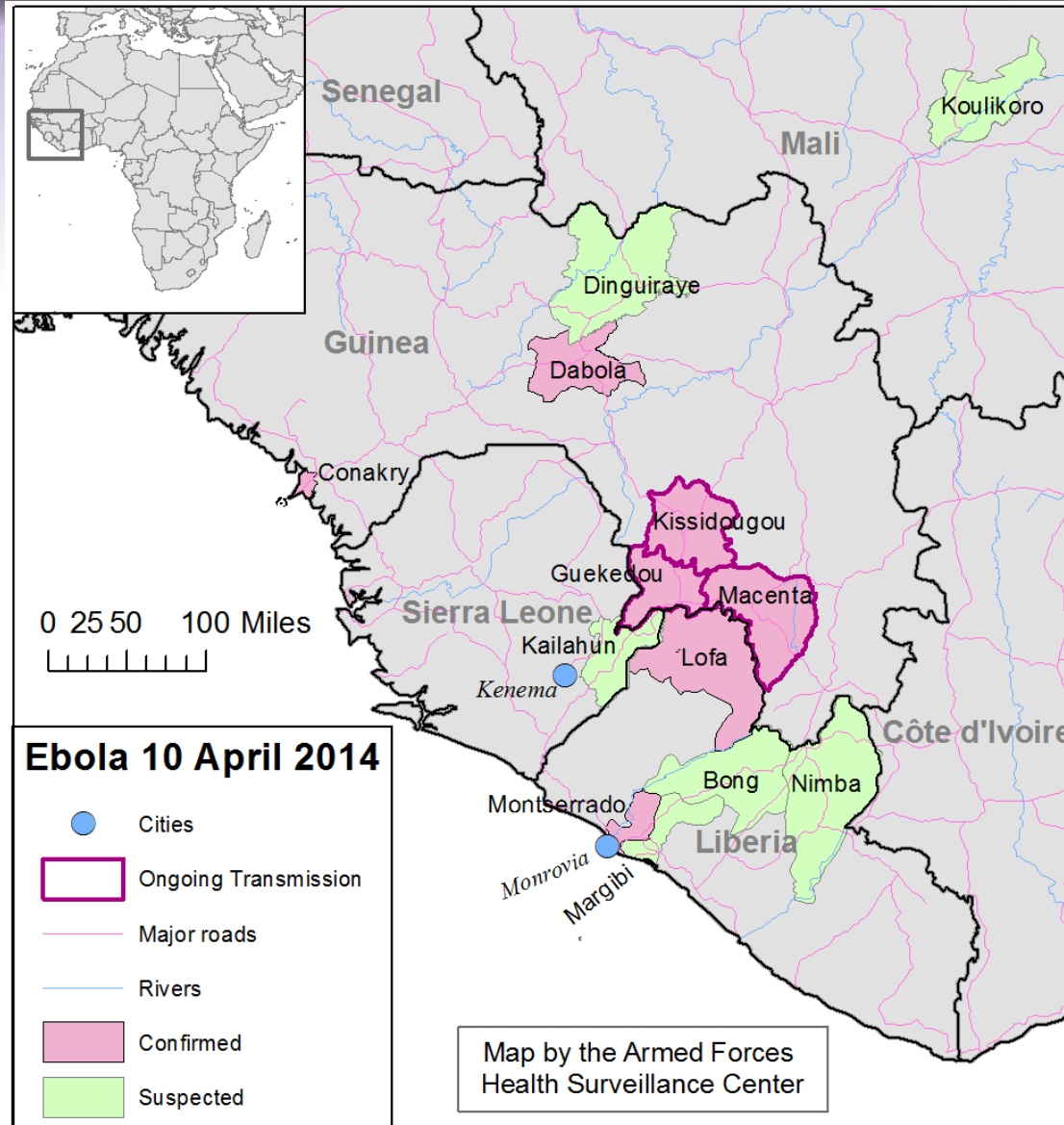
E. Ervin, CDC/NSP, 2014

# EVD In West Africa

- 23 MAR 14: WHO declared EVD outbreak in Guinea
  - Guekedou
  - Reported cases of fever, diarrhea and vomiting
  - 49 suspect / 6 confirmed / 29 deaths
  - MSF in area
- Index case(?): 2 y/o child in early DEC 13
- By end of MAR, Ebola had spread to 3 bordering prefectures and Liberia



# Outbreak on 10 APR 14



# EVD In West Africa

- 30 MAR 14: WHO announced 2 Ebola positive cases in Lofa County, Liberia
- Early APR: Sierra Leone reported cases imported from Guinea
- 20 MAY: 1<sup>st</sup> locally-acquired case in Sierra Leone
- 6 APR to 25 May: no cases in Liberia
  - Outbreak appeared to be slowing in region



# EVD Outbreak: Phase II

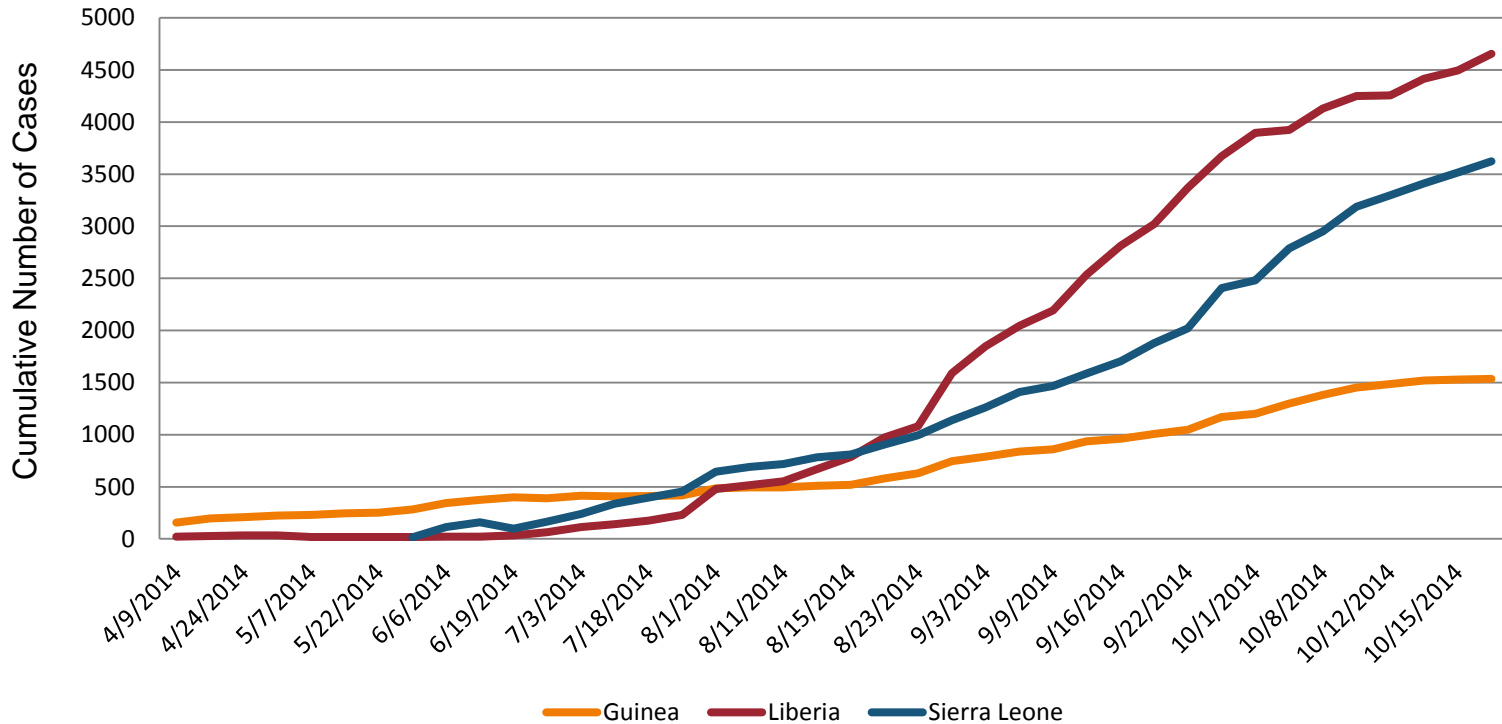
- Explosive growth in cases after end of JUN
- 8 AUG: WHO declared epidemic to be a “public health emergency of international concern”
- Exported to
  - Nigeria with secondary and tertiary spread
  - Senegal with no spread
  - US with secondary spread
  - Mali, no secondary spread, yet
- Spain – secondary spread from patient transported for treatment





# Cumulative Number of EVD Cases

Cumulative Number of Confirmed, Probable, or Suspected Cases of Ebola Virus Disease in West Africa  
9 APR 2014 – 18 OCT 2014

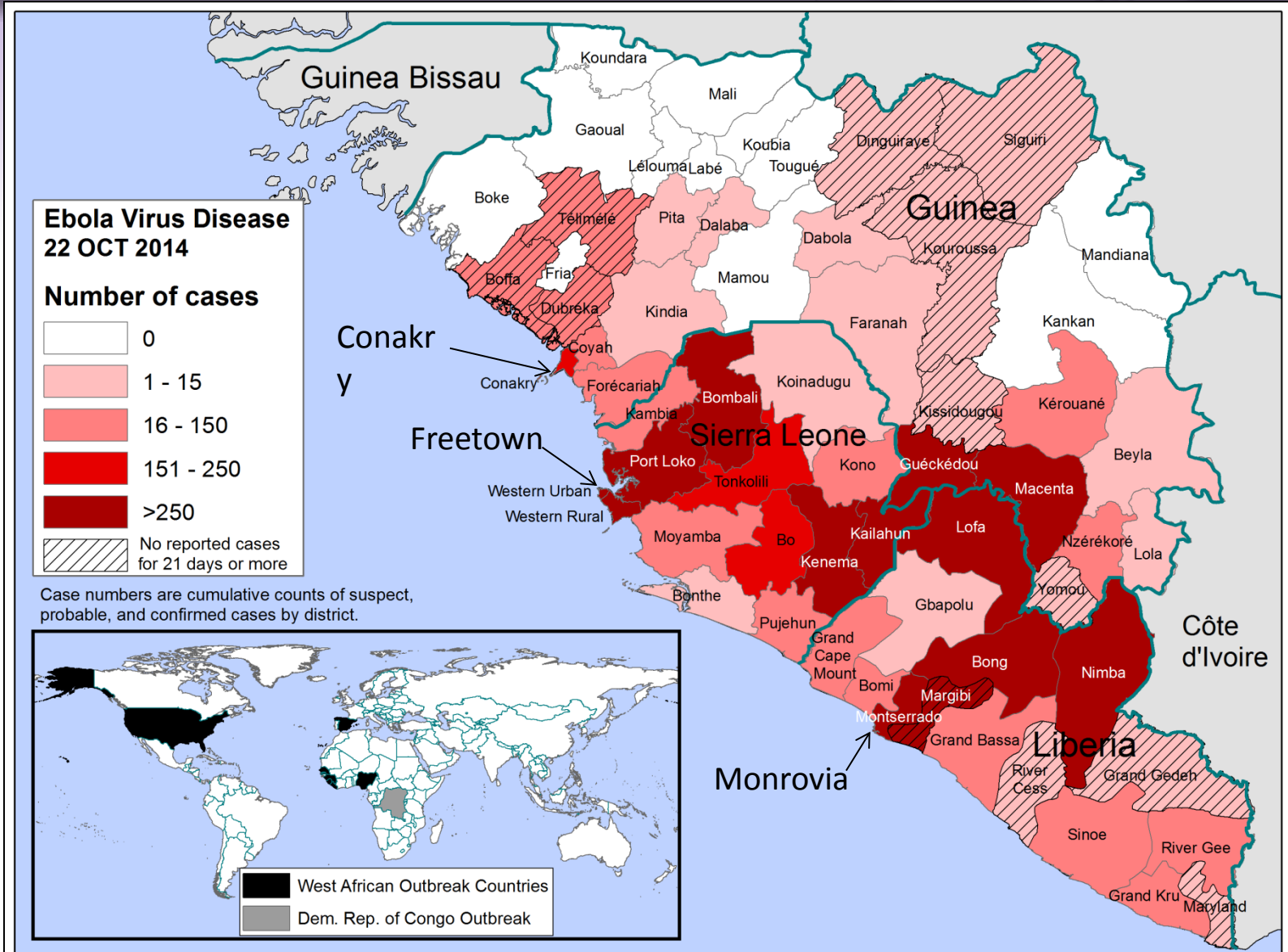


# Why Did it Get Out of Hand?

- New to region
- Delayed recognition
- Movement within and across borders
- Introduced into urban areas
- Poor medical infrastructure
- Cultural practices
- Lack of understanding of threat
- Pockets of resistance to control efforts



# EVD Outbreak on 22 OCT 14



# EVD Case Counts

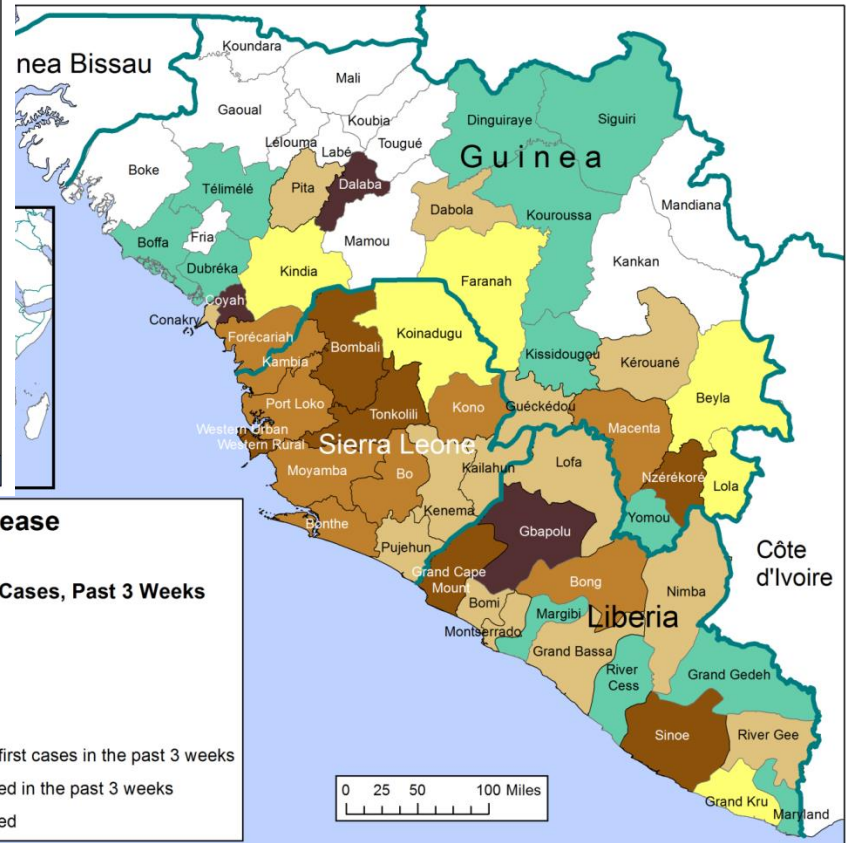
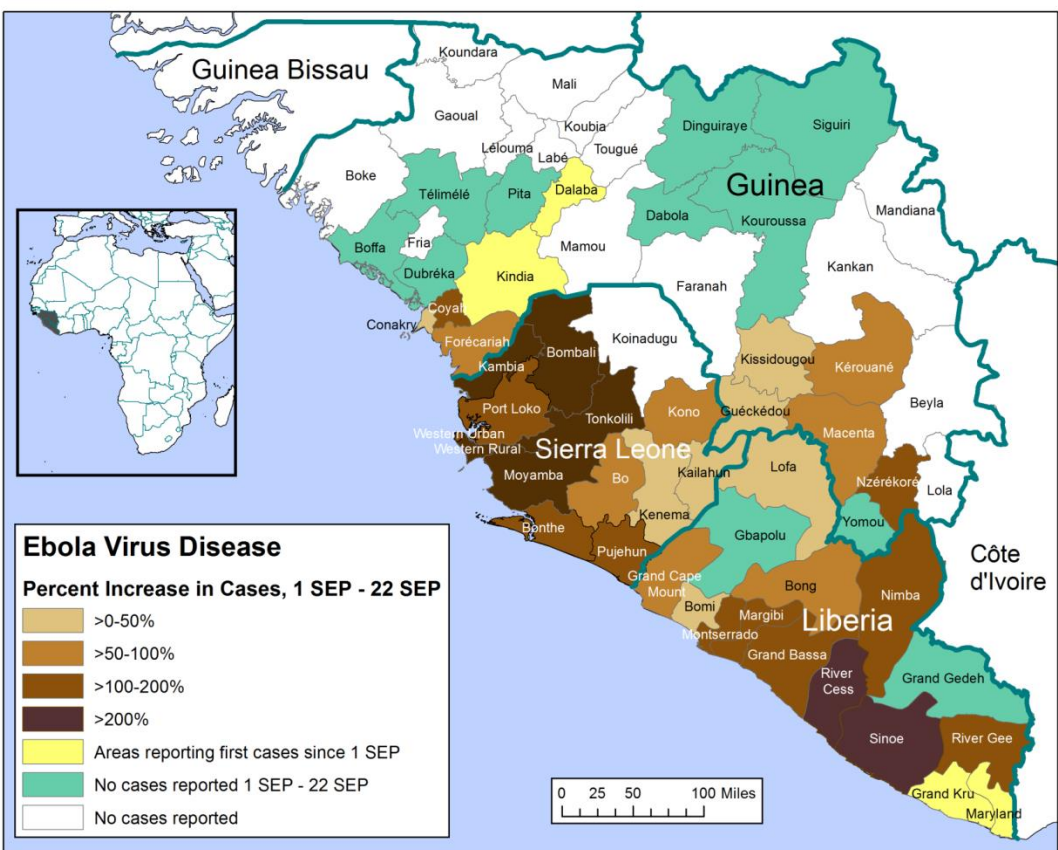


<b>Country (as of date)</b>	<b>EVD Cases*</b>	<b>Deaths</b>	<b>Case Fatality Proportion</b>	<b>Contacts Followed</b>
Guinea (21 OCT)	1,553	926	60%	3,273
Liberia (20 OCT)	4,774	2,737	57%	8,093
Sierra Leone (22 OCT)	3,896	1,259	34%	12,674
Nigeria (17 SEP)	20	8	40%	0
Senegal (20 SEP)	1	0	0%	0
U.S. (23 OCT)	4	1	25%	109
Spain (6 OCT)	1	0	0%	NA
Mali (26 OCT)	1	1	100%	43
<b>Total</b>	<b>10,220</b>	<b>4,953</b>	<b>48%</b>	<b>24,192</b>

\*Confirmed, suspect and probable



# EVD Percent Increase



# Global Response

- UN Mission for Ebola Emergency Response (UNMEER) provides operational leadership and coordination
- Scores of nations, international organizations and non-governmental organizations responding
- Current focus of aid: infrastructure development
  - It was medical consumables



# USG Response

- Coordinated by USAID/DART
- Multiagency
  - USAID / State / DoD / HHS / CDC
- 750 USG personnel on ground (~550 DoD)
- \$343 million invested (\$121 million from DoD)
- Very close coordination with Liberia



# DoD Response: Pre-OUA

- DoD supported lab at Kenema, SL
- Helped established Ebola lab at LIBR in Monrovia
- Providing lab supplies and reagents
- Providing PPE
- Providing training and logistical support





# DoD Response OUA

- About 550 of 4,000 DoD personnel deployed
- Plans to build at least 12 ETUs
- Liberia: 2 labs manned NMRC are fully operational
- 25-bed ETU built by the DoD for HCWs to be staffed by PHS, operational in early NOV
- PPE procurement
- Establishing DoD MTF Ebola beds at four CONUS facilities



# Risk to US Personnel

- The risk of Ebola transmission to U.S. personnel in the affected geographic area is currently **LOW**, even during an extensive outbreak in the local population.
  - Low risk exposures include persons who spent time in a healthcare facility where EVD patients are being treated.
  - Contact of the extent required for transmission is typically limited to health care professionals who care for Ebola patients without using appropriate PPE.
- However, U.S. military medical personnel who do NOT use appropriate PPE while caring for Ebola patients or samples are at significant risk of infection.
- Those at highest risk include:
  - Healthcare workers
  - Family and friends of patients with Ebola.
- Malaria and diarrheal disease are major threats in region



# Deployment Surveillance

- Routine pre- and post-deployment surveillance
- Routine in-theater surveillance
- EVD-specific surveillance
  - Post exposure
  - Re-deployment



# DoD EVD Surveillance

- 10 OCT: USD for Personnel and Readiness issued a memorandum providing guidance for training, screening, and monitoring for DoD personnel deployed to Ebola outbreak areas
- 17 OCT, the Armed Forces Health Surveillance Center published updated guidelines for the detection and reporting of DoD cases of EVD.



# USD Memo for Deployed DoD Personnel

- Pre-deployment training and force health protection guidance
- Deployment monitoring
- Post-deployment monitoring
- Specifies pre-deployment training requirements
- Risk evaluation forms attached



# AFHSC Guidelines

- Information for HCWs
- Clinical case definitions
- Lab resources
- Case reporting
- Population surveillance
- Risk Communications



# Testing Capability In DoD

- DoD Ebola Zaire RT-PCR assay developed by USAMRIID
- Under an Emergency Use Authorization (EUA)
  - USAMRIID, Landstuhl RMC, NIDDL at NMRC, NHRC, NAMRU-3, and the Navy's two mobile labs in Liberia
  - USAMRIID-supported Liberian Institute for Biological Research in Monrovia,
- 24 LRN labs in selected states also authorized to test for Ebola.



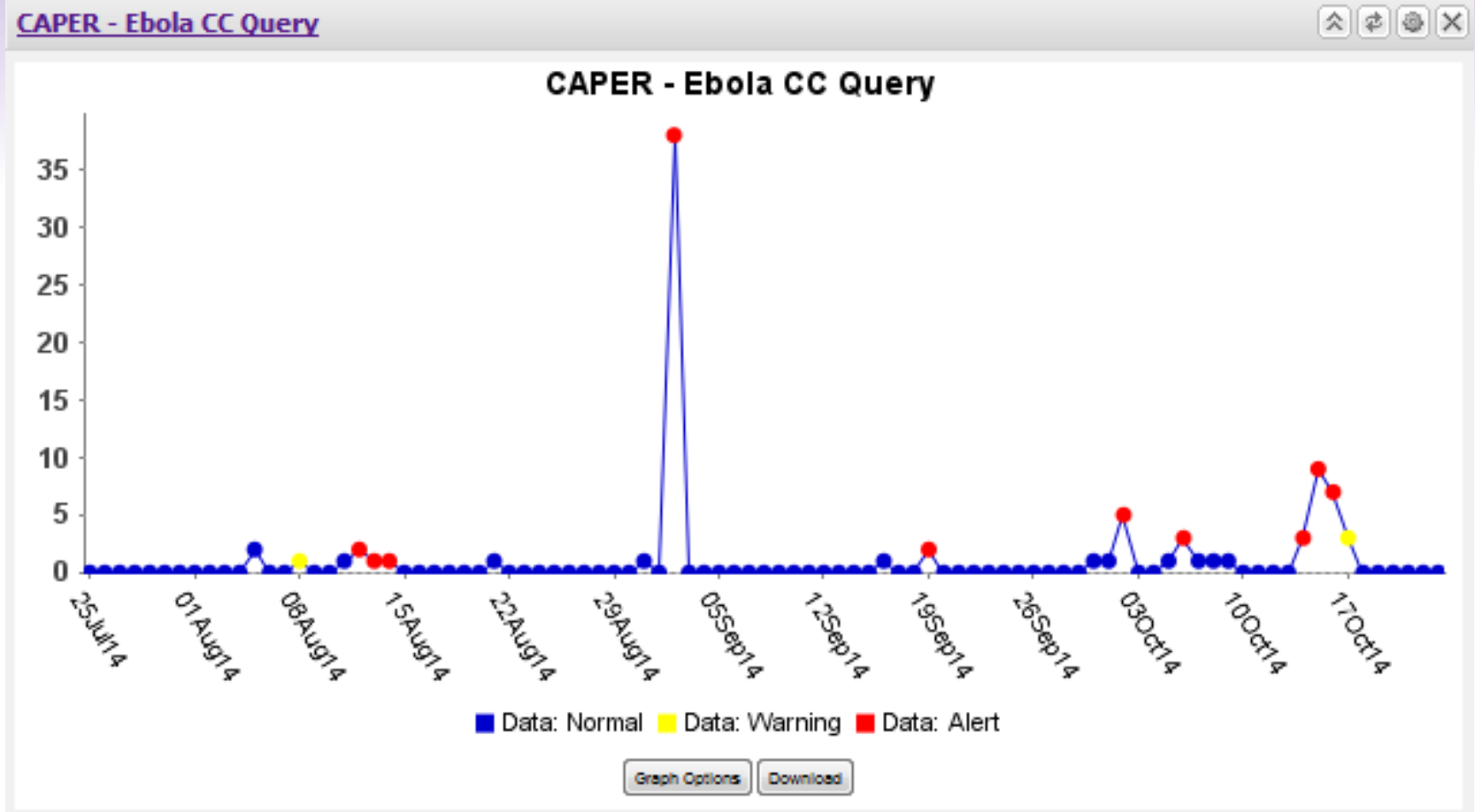
# Reporting EVD Cases

- Use the notification procedures prescribed in DODI 6200.03 to immediately notify the chain-of-command and stakeholders.
- Report immediately by phone any individuals suspected of being infected with Ebola.
- File a report in the Disease Reporting System Internet (DRSi) as a “Hemorrhagic Fever” per the Armed Forces Reportable Medical Events Guidelines, 2012.
- Include clinical presentation, travel history, exposures to known Ebola cases, hospital admission status and dates.
- Remain aware of local civilian reporting requirements in order to ensure timely communication across sectors and facilitate accurate diagnosis and reporting through official military and civilian channels.





# Population Based Surveillance





# DEPARTMENT OF DEFENSE (AFHSC)

## West Africa Ebola Surveillance Summary #42

### 24 OCT 2014 (next report 27 OCT 2014)



**CASE REPORT:** Since the previous summary (22 OCT), there has been an increase of 284 confirmed, suspected, and probable Ebola virus disease (EVD) cases (+76 deaths), bringing the total to 10,220 cases (4,953 deaths) in Guinea, Liberia, Sierra Leone, Senegal, Nigeria, United States, Spain, and Mali. On 23 OCT, [Mali](#) and [New York City](#) reported confirmed EVD cases; both are associated with travel from Guinea. The Mali case is a 2 year old girl. The NY case is a physician who was working with MSF in Guinea. Over the most recent three-week periods with available data, cases have increased 24% in Liberia (ending 20 OCT), 57% in Sierra Leone (ending 22 OCT), and 30% in Guinea (ending 21 OCT). In the 25 SEP surveillance summary we reported that the three-week increase in reported cases was 91% for Liberia, 62% for Sierra Leone and 33% for Guinea. However, the accuracy and completeness of case reporting is unknown. On 20 OCT, [WHO declared Nigeria free of Ebola transmission](#); Senegal was [declared Ebola-free](#) on 17 OCT.

The Texas nurse who was cared for at NIH in Maryland was released on 24 OCT; the second Texas nurse remains under care at Emory University in Atlanta.

**DoD SURVEILLANCE GUIDELINES:** On 10 OCT the [USD for Personnel and Readiness issued a memorandum](#) providing guidance for training, screening, and monitoring for DoD personnel deployed to Ebola outbreak areas. On 17 OCT, the Armed Forces Health Surveillance Center published updated [guidelines for the detection and reporting of DoD cases of EVD](#).

**RISK TO DoD PERSONNEL:** On 21 OCT NCMI published [\(U//FOUO\) Worldwide: Airborne Ebola Transmission Extremely Unlikely](#) (CAC required). [NCMI assesses](#) there is significant risk to U.S. military medical personnel who care for critically ill Ebola patients or handle patients or samples without essential barrier precautions; risk to non-medical DoD personnel is low provided there is no contact with sick people or infected animals.

On 17 OCT, the Military Health System published two new documents for DoD beneficiaries: [Fact sheet for families of Service members deploying to West Africa](#) and [Frequently Asked Questions about Ebola](#).

**MEDICAL COUNTERMEASURES:** There are no approved vaccines or treatments for EVD. The WHO said on 21 OCT that two vaccines will likely begin large scale field testing in West Africa in JAN, following completion of small safety and immunogenicity trials in DEC. One of the vaccines was developed by GlaxoSmithKline with the National Institutes of Health and the other by Public Health Canada and licensed to NewLink Genetics. Three additional vaccines start trials later in 2015. The WHO, with Guinea, Sierra Leone and Liberia, also is developing the capacity to collect and use convalescent sera from recovered Ebola patients to experimentally treat ill patients in West Africa. [Four drug candidates](#), ZMAPP (Mapp Biopharmaceutical), TKM-Ebola (Tekmira), brincidofovir (Chimerix), and favipiravir (Fujifilm) have been used in Ebola patients in the U.S. and Europe. A fifth drug, BCX4430 (Biocryst Pharmaceuticals) shows promise against filoviruses, including Ebola in nonhuman primate testing at USAMRIID.

#### Links to Additional Sections of this Report

DoD, USG and Global Response, and Travel Advisories	Latest Available Case Counts	Cases by Admin Area (map)
Percent Change In Cases (map)	Cumulative Case Graph	Additional Resources

Text updated from the previous report will be printed in red; items in (+xx) represent the change in number from the previous AFHSC summary. (22 OCT 2014)  
All information has been verified unless noted otherwise. Sources include WHO, CDC, NCMI, and the Guinea, Liberia, Nigeria, Senegal, Sierra Leone, and Spain Ministries of Health.

For questions or comments, please contact: [usarmy.ncr.medcom-afhsc.list.dib.alert-response@mail.mil](mailto:usarmy.ncr.medcom-afhsc.list.dib.alert-response@mail.mil)

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[usarmy.ncr.medcom-afhsc.list.dib.alert-response@mail.mil](mailto:usarmy.ncr.medcom-afhsc.list.dib.alert-response@mail.mil)

# EBOLA IS REAL. TOGETHER WE CAN STOP THE SPREAD! YOU CAN SURVIVE EBOLA!



TELL YOUR COMMUNITY LEADER



## KNOW THE SIGNS AND SYMPTOMS



DO NOT RUN AWAY OR HIDE  
SICK PEOPLE

IF YOU GET A FEVER THAT STARTS QUICK-QUICK  
AND ANY OF THESE OTHER SIGNS, CALL 4455

### Other signs:



WEAKNESS, PAIN IN  
THE BODY, HEADACHE,  
OR SORE THROAT



RUNNING STOMACH



VOMITING



RASH OR BUMPS ON THE SKIN



RED EYES OR BLEEDING  
FROM THE NOSE OR MOUTH

# Service Contact Information

- **Army: USAPHC – Disease Epidemiology Program**  
Aberdeen Proving Ground – MD  
Comm: (410) 436-7605 DSN: 584-7605  
[usaphc.disease.epidemiology@us.army.mil](mailto:usaphc.disease.epidemiology@us.army.mil)
- **Navy: Contact your cognizant NEPMU**  
**NEPMU2:** COMM: (757) 950-6600; DSN: (312) 377-6600  
Email: [NEPMU2Norfolk-Threat-MedEpi@med.navy.mil](mailto:NEPMU2Norfolk-Threat-MedEpi@med.navy.mil)  
**NEPMU5:** COMM: (619) 556-7070; DSN (312) 526-7070  
Email: [healthsurveillance@med.navy.mil](mailto:healthsurveillance@med.navy.mil)  
**NEPMU6:** COMM: (808) 471-0237; DSN: (315) 471-0237  
Email: [NEPMU6@med.navy.mil](mailto:NEPMU6@med.navy.mil)  
**NEPMU7:** COMM: 011-34-956-82-2230  
(local: 727-2230); DSN: 94-314-727-2230  
Email: [NEPMU7@eu.navy.mil](mailto:NEPMU7@eu.navy.mil)
- **Air Force: Contact your MAJCOM PH or USAFSAM/PHR**  
  
USAFSAM / PHR / Epidemiology Consult Service  
Wright-Patterson AFB, Ohio  
Comm: (937) 938-3207 DSN: 798-3207  
[episervices@wpafb.af.mil](mailto:episervices@wpafb.af.mil)



# BACK UP SLIDES



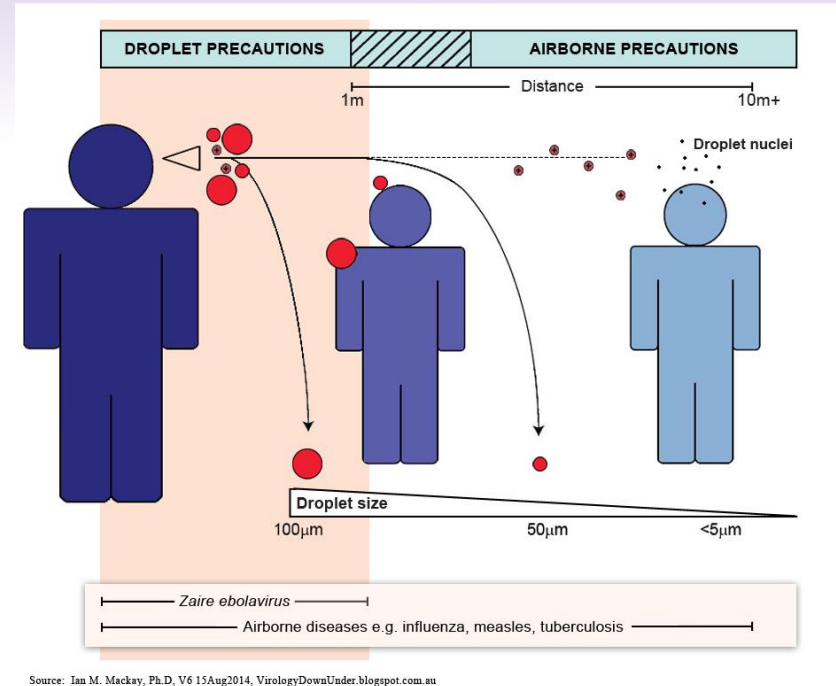
# Medical Countermeasure

- No approved vaccines or drug treatments for EVD.
- Two vaccines will likely begin large scale field testing in West Africa in JAN, following completion of small safety and immunogenicity trials in DEC.
- Three additional vaccines start trials later in 2015. The
- WHO, with Guinea, Sierra Leone and Liberia, also is developing the capacity to collect and use convalescent sera from recovered Ebola patients to experimentally treat ill patients in West Africa.
- Four drug candidates, have been used in Ebola patients in the U.S. and Europe.
- A fifth drug, BCX4430 shows promise against filoviruses, including Ebola in nonhuman primate testing at USAMRIID.



# Airborne Transmission

- Viruses and bacteria that cause airborne diseases are extremely small and can remain suspended in the air in dried droplets for extended periods of time.
- Small dried droplets can be carried by air currents and effectively infect people a longer distance from the patient.
- Large wet droplets (*Ebolavirus*) released by coughing, sneezing, and spitting rapidly fall out of the air, minimizing the possibility of transmission.



# UK Takes Lead in Sierra Leone

- 450 troops on ground (up to 750 to deploy)
- Will establish 92-bed ETU and at least 4 more ETUs planned, up to 750 beds total
- Also:
  - 4 minibuses, 2 ambulances, 3 incinerators for disposing of clothing and other materials,
  - 12 generators, lighting sets, latrine slabs, temporary warehouse tents, a fuel bowser,
  - air conditioning units, 6 water tanks, and 3 4-by-4 vehicles to support ETUs)





# Travel Warnings & Requirements

- All travelers on flights originating in Guinea, Sierra Leone, or Liberia must enter the U.S. through one of the five designated airports that are conducting enhanced screening for EVD.
- Begin active post-arrival monitoring for 21 days.
- CDC: Warning - Level 3, Avoid Nonessential Travel advisory for Guinea, Sierra Leone, and Liberia On 28 AUG,
- Department of State issued an alert warning U.S. citizens of screening procedures, travel restrictions, and reduced aviation transportation options in response to the outbreak.
- WHO does not recommend travel or trade restrictions.
- Many major and regional airlines have discontinued or curtailed flights to and from Guinea, Liberia, and Sierra Leone.

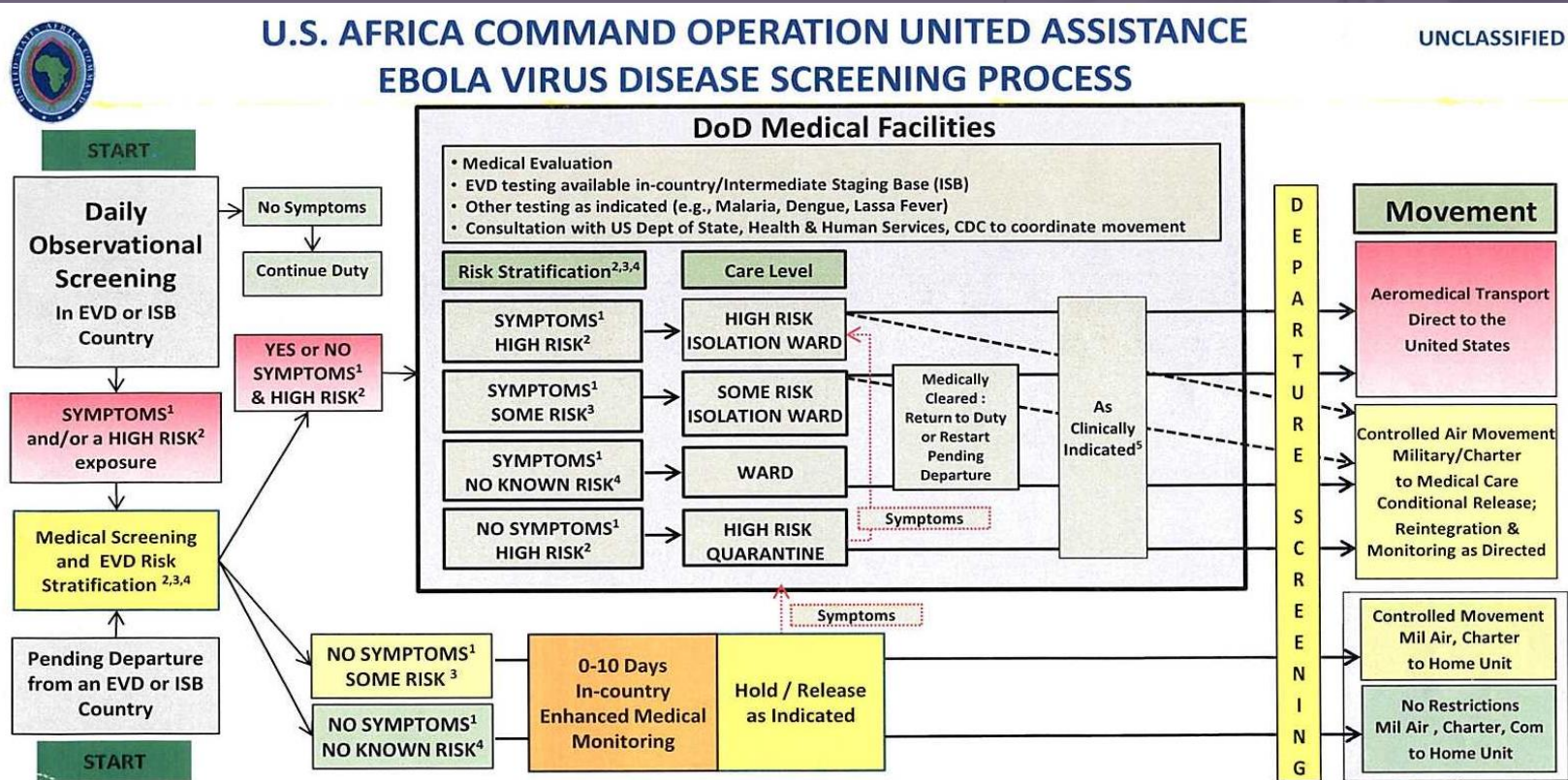


# AFRICOM Screening Process



## U.S. AFRICA COMMAND OPERATION UNITED ASSISTANCE EBOLA VIRUS DISEASE SCREENING PROCESS

UNCLASSIFIED



<sup>1</sup> **SYMPTOMS:** Fever 101.5F/38.6C, severe headache, muscle pain, weakness, diarrhea, vomiting, abdominal (stomach) pain, unexplained hemorrhage (bleeding or bruising). Symptoms may appear anywhere from 2-21 days after exposure to Ebola, with an average of 8-10 days.

<sup>2</sup> **HIGH RISK:** Percutaneous or mucous membrane exposure to blood or body fluids of an EVD patient, direct skin contact with or exposure to blood or bodily fluids of an EVD patient without appropriate PPE; processing blood or bodily fluids of a confirmed EVD patient without appropriate PPE; direct contact with a dead body without appropriate PPE.

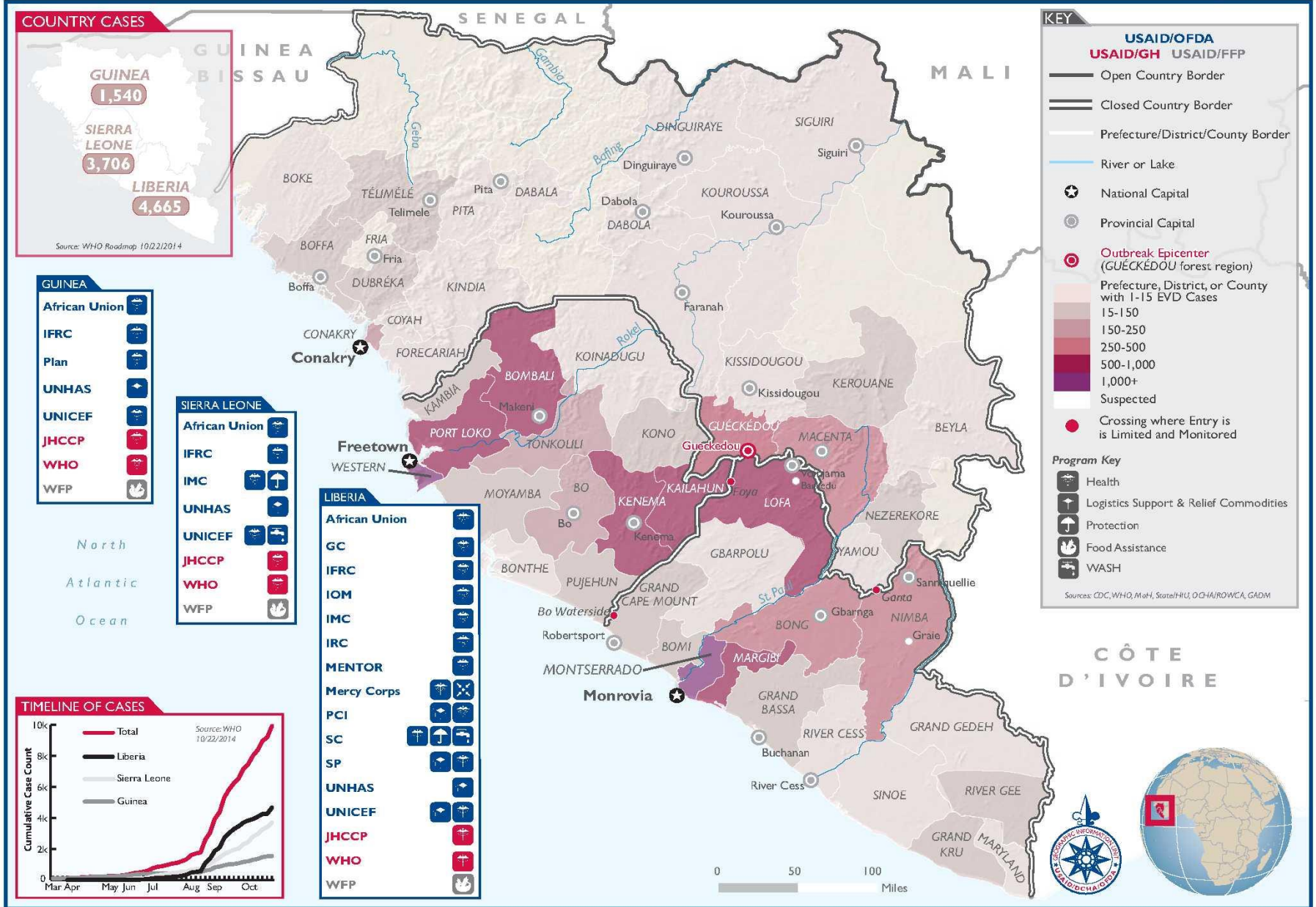
<sup>3</sup> **SOME RISK:** Household contact with an EVD patient, other close contact with an EVD patient in a healthcare facility or community setting. Close contact is defined as being within 3 feet of an EVD patient or within the patient's room for a prolonged period of time while not wearing recommended PPE; or direct contact (e.g., shaking hands) with an EVD patient while not wearing recommended PPE. Brief interactions, such as walking by a person or moving through a hospital, do not constitute close contact.

<sup>4</sup> **NO KNOWN RISK:** Having been in a country where an EVD outbreak occurred within the past 21 days and having had no known exposures.

<sup>5</sup> **CLINICALLY INDICATED:** Any positive EVD PCR test result or if infection control precautions are indicated (e.g., probable EVD) and movement is clinically appropriate, move via aeromedical transport only. If infection control precautions are not/not indicated, transport via controlled movement.

**\*\* EQUIPMENT:** DoD equipment suspected of EVD contamination will be decontaminated on-site in accordance with established DoD procedures.





# DoD Response OUA

- Working with CDC on infection control training
- Policy for DoD aircraft movement of EVD patients
- AFRICOM is working with TRANSCOM on the operational evacuation plan
- JFC is synchronizing efforts in Liberia for ETU staff training/needs, patient transport issues, and lab specimen collection for ETUs
- Establishing a 30-person expeditionary medical support team to provide short-notice assistance to civilian medical providers in the US

