

CDC PUBLIC HEALTH GRAND ROUNDS

Shifts in Global Health Security: Lessons from Ebola



September 29, 2015



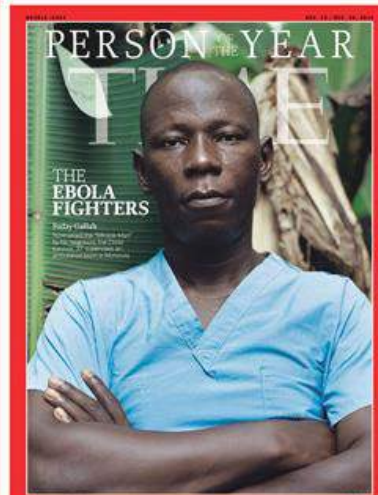
**U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention**

Ebola Successes and Challenges and What They Mean for Future Health Security Threats



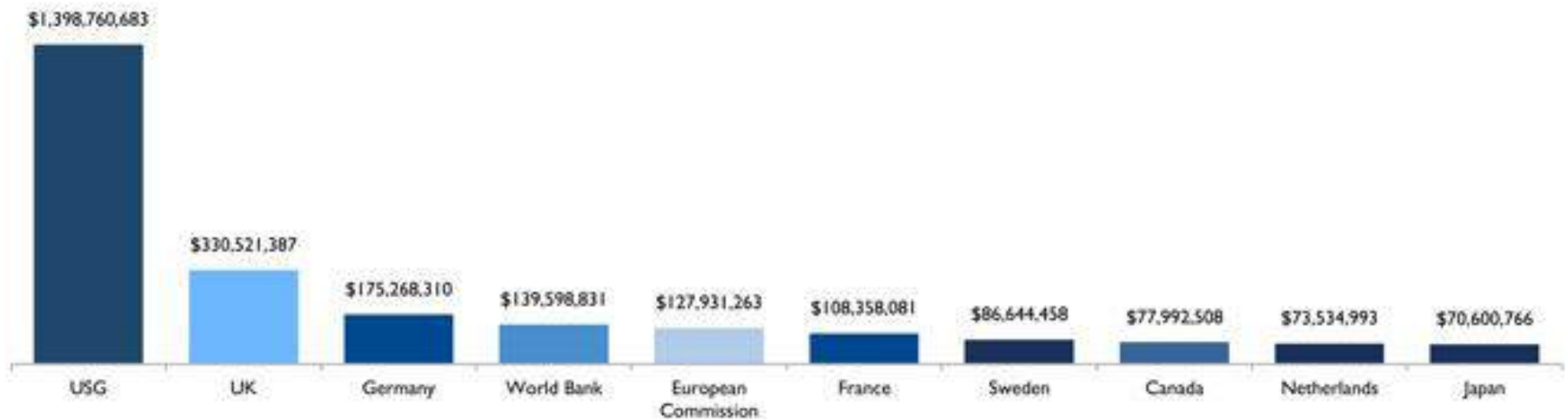
Jennifer B. Nuzzo, DrPH, SM
Senior Associate
UPMC Center for Health Security

Successes of Ebola Response



U.S. Leadership in Global Response Total Funding Commitments for Ebola

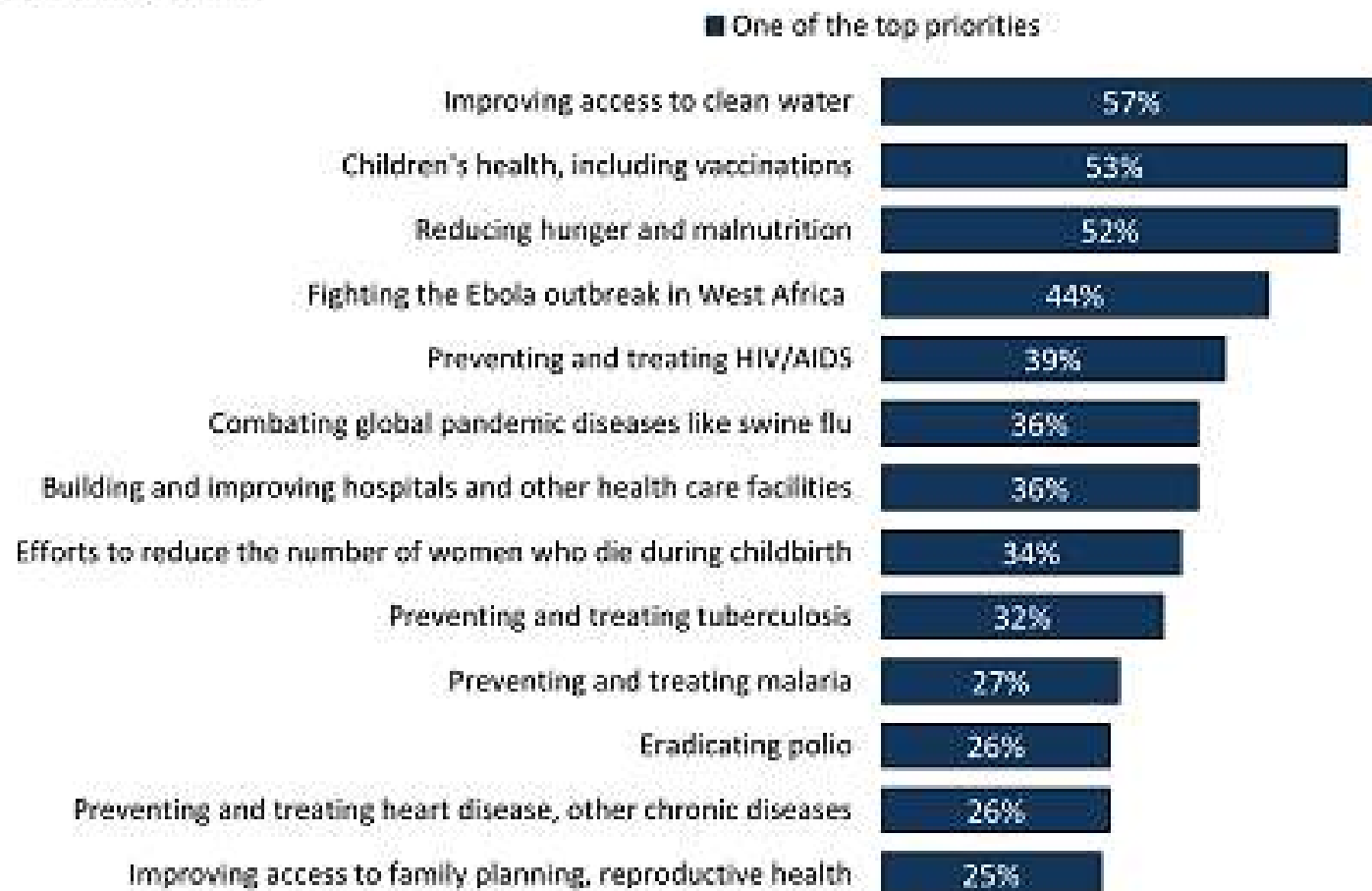
2014 & 2015 TOTAL FUNDING FOR THE EBOLA RESPONSE* PER DONOR



* Funding figures are as of April 14, 2015. All international figures are according to the UN Office for the Coordination of Humanitarian Affairs (OCHA) Financial Tracking Service and based on international commitments during 2014 and to date in 2015, while USG figures are according to the USG and reflect USG commitments from FY 2014 and FY 2015, which began on October 1, 2013, and October 1, 2014, respectively.

Clean Water, Children's Health, Nutrition Rise To Top Of Public's Global Health Priorities

I'm going to read you some different areas in which the U.S. might contribute to efforts to improve health in developing countries, and for each, I'd like you to tell me if this should be one of the top priorities, important but not a top priority, or not that important.



NOTE: Items asked of half sample. Not at all important (vol.) and Don't know/Refused answers not shown.

SOURCE: Kaiser Family Foundation Health Tracking Poll (conducted December 2-9, 2014)

American's Confidence in Healthcare Authorities To Prevent the Spread of Ebola

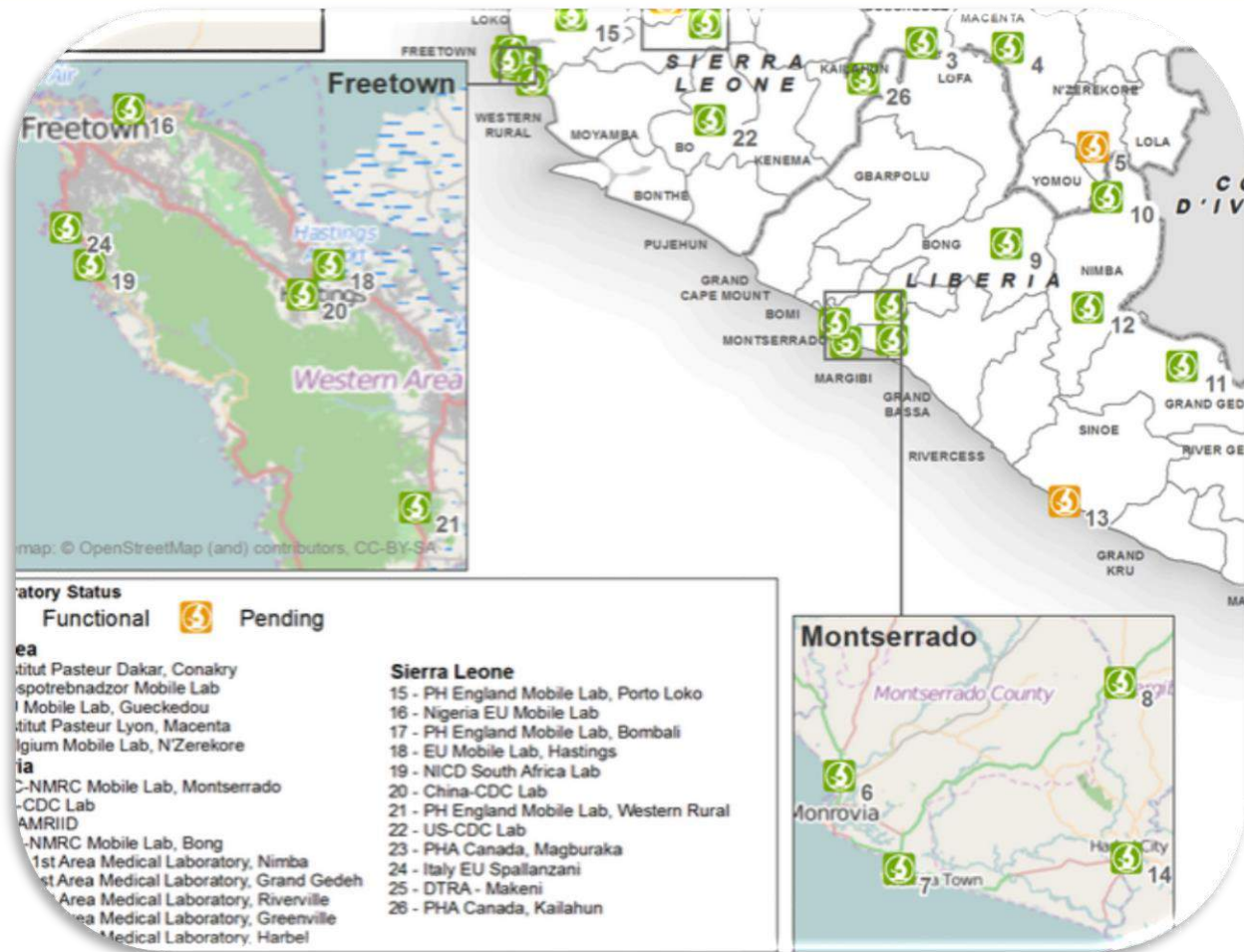
	TOTAL	REPUBLICIANS	INDEPENDENTS	DEMOCRATS
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If a case of Ebola were diagnosed in your area, how much confidence would you have in each of the following to contain the disease and prevent it from spreading? (Percent who say they would have "a great deal" or "a fair amount" of confidence in each)

The U.S. Centers for Disease Control and Prevention (CDC)				
Oct. 8–14, 2014	73%	70%	72%	79%
Oct. 17–19, 2014	62%	50%	65%	70%
Change (percentage points)	-11*	-20*	-7	-9*
Your local hospitals				
Oct. 8–14, 2014	64%	64%	60%	69%
Oct. 17–19, 2014	62%	52%	63%	71%
Change (percentage points)	-2	-12*	+3	+2
Your state or local health departments				
Oct. 8–14, 2014	62%	61%	61%	67%
Oct. 17–19, 2014	58%	53%	56%	63%
Change (percentage points)	-4	-8	-5	-4

* indicates a statistically significant difference between Oct. 8-14, 2014 poll and Oct. 17-19, 2014 poll

Expansion of Diagnostic Capabilities Status of Laboratories, December 2014



Expansion of Diagnostic Capabilities Emergency Use Authorizations (EUA)

- ❑ **In an emergency, the FDA may issue EUAs to allow the use of drugs, devices, and medical products not previously approved, cleared, or licensed**
- ❑ **The 2014 Ebola outbreak warranted the use of EUAs**
 - Since August 5, 2014, ten diagnostic tools have received EUA clearance authorizing their use among patients with signs and symptoms of the Ebola virus
- ❑ **The EUA approved diagnostic tools resulted in increased Ebola testing capacity**

Challenges of Ebola Response



www.washingtontimes.com/cartoons/dana-summers/are-you-sure-we-shouldnt-be-worried-about-ebola-vi/

Insufficient Surveillance



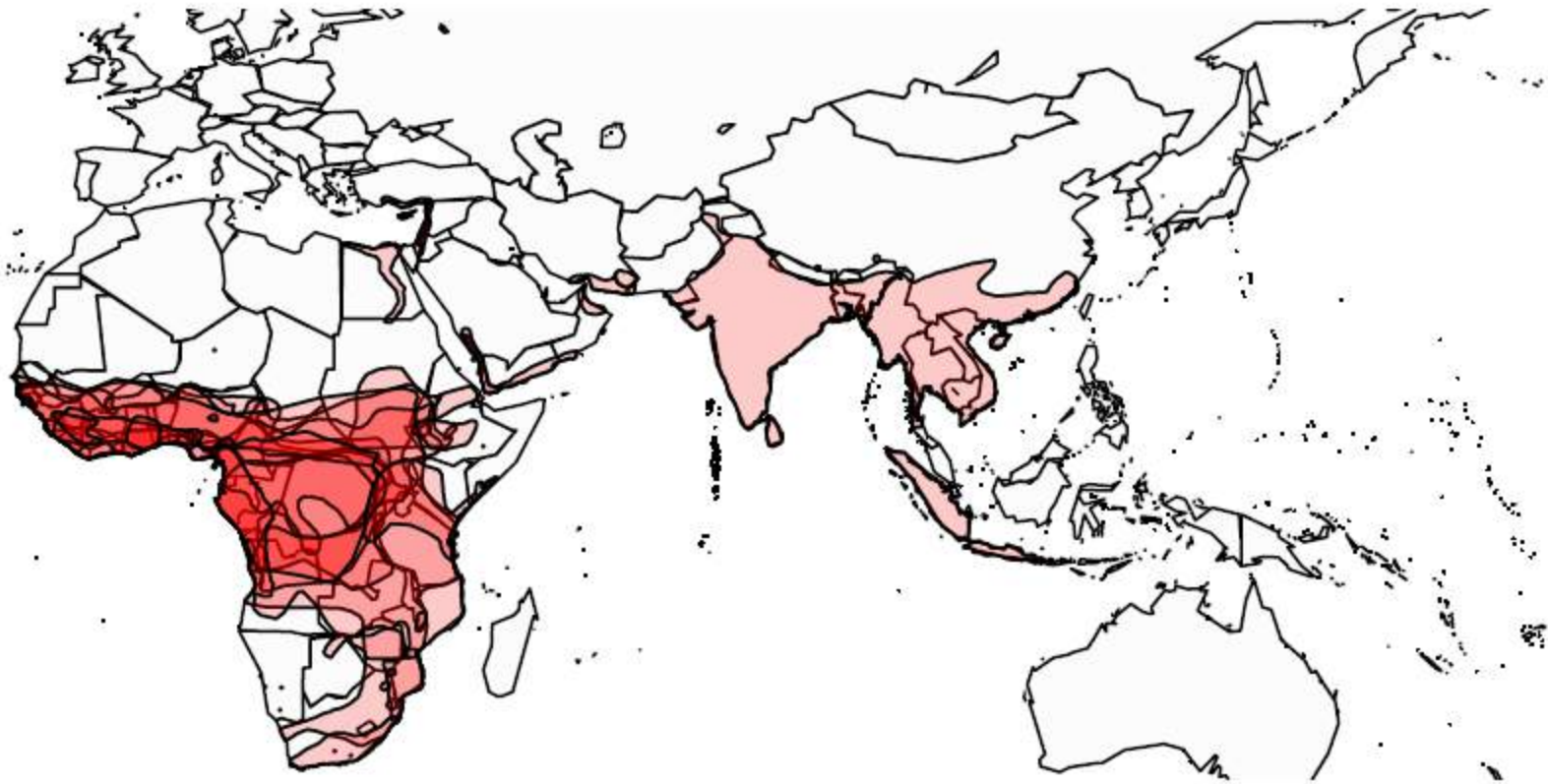
The NEW ENGLAND
JOURNAL of MEDICINE

Ebola — A Growing Threat?

Heinz Feldmann, M.D.

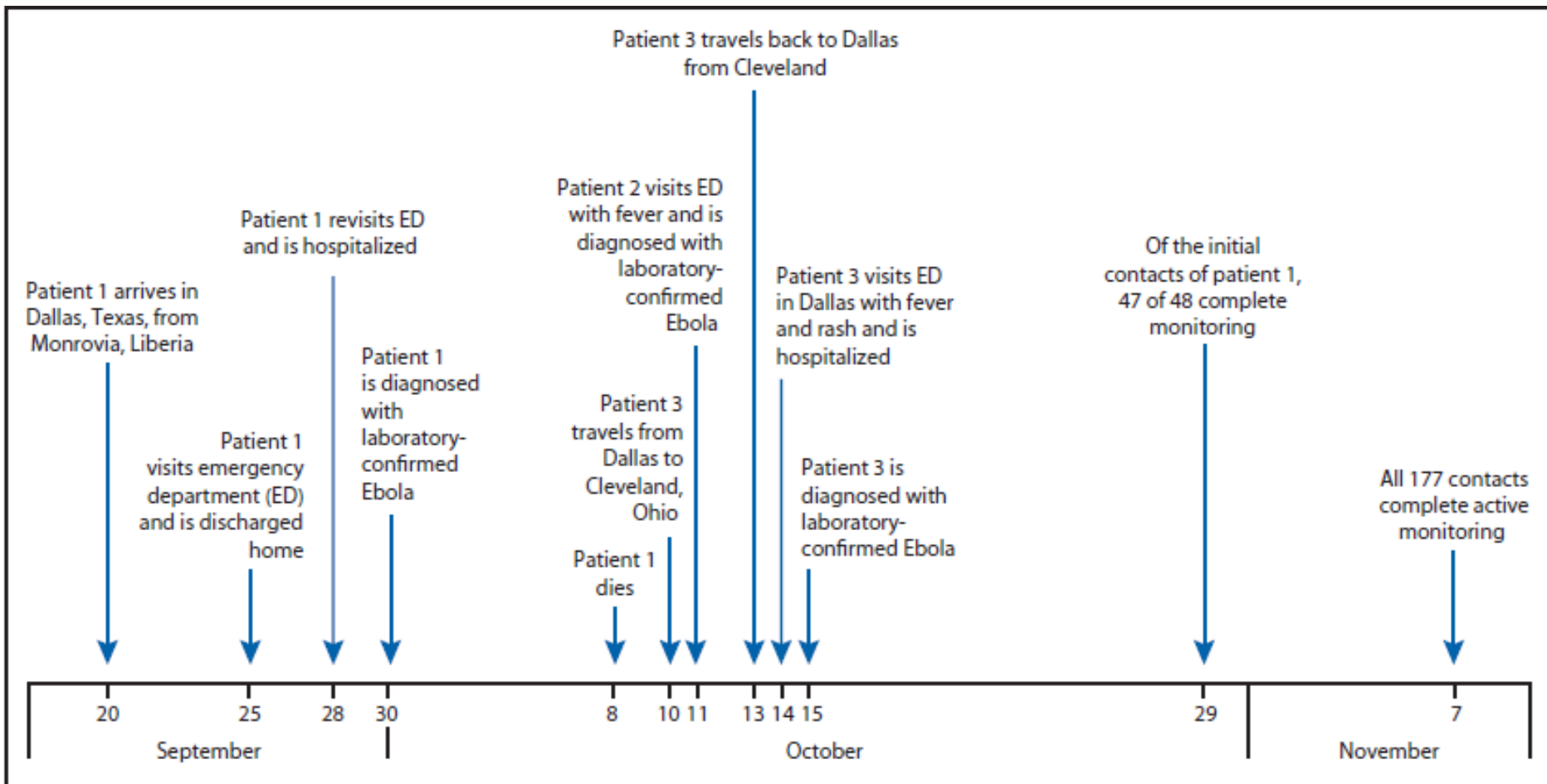
The recent emergence of *Zaire ebolavirus* in West Africa¹ has come as a surprise in a region more commonly known for its endemic Lassa fever, another viral hemorrhagic fever caused by an Old World arenavirus. Yet the

Geographic Range for Potential Bat Host Species for *Zaire ebolavirus*



Adapted from Olival, K. and Hayman DTS
www.mdpi.com/1999-4915/6/4/1759

Timeline of Ebola Patients within the U.S., 2014



Inadequate Global Governance



Ebola Outbreak in West Africa: Timeline of Events

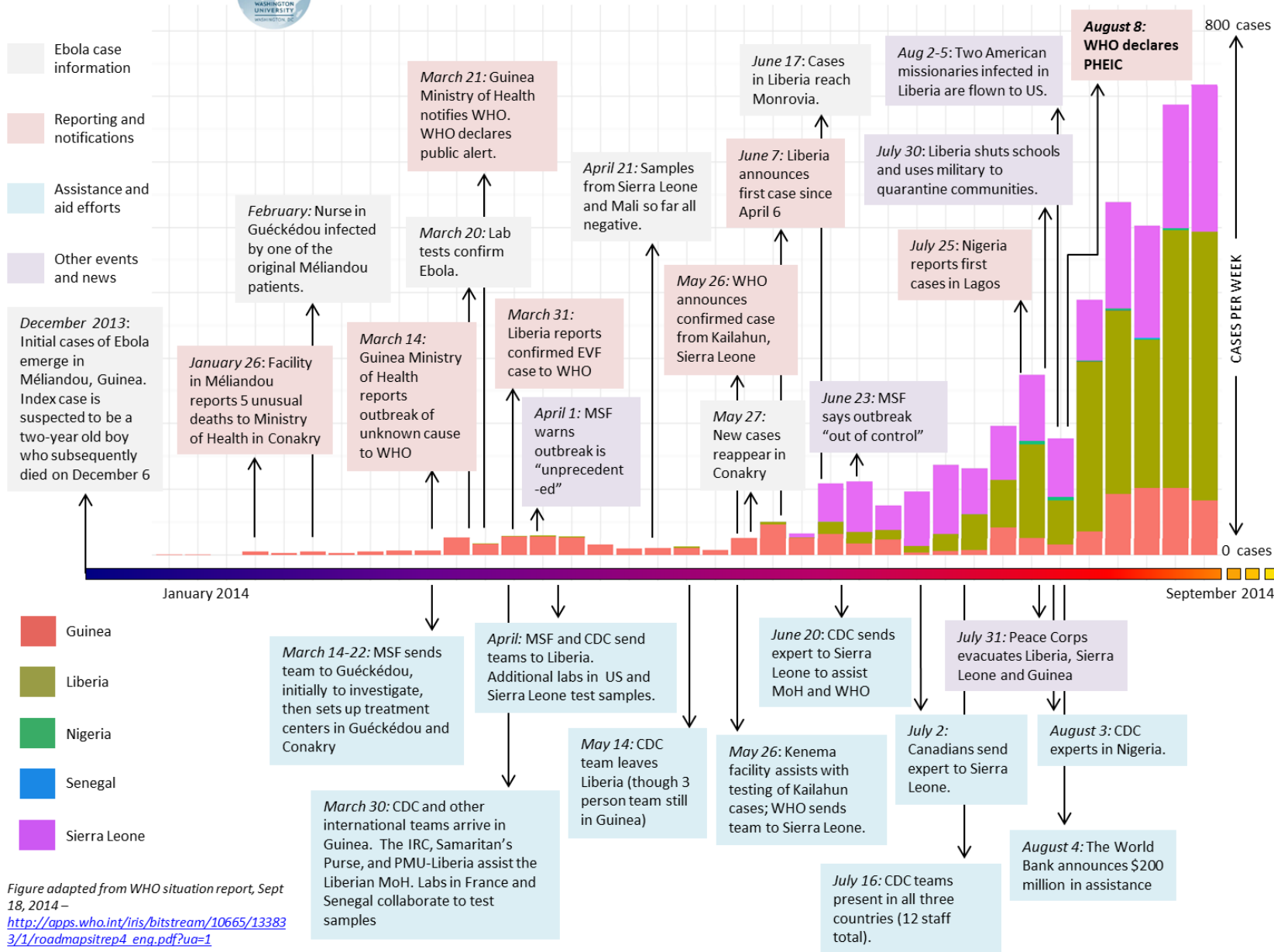
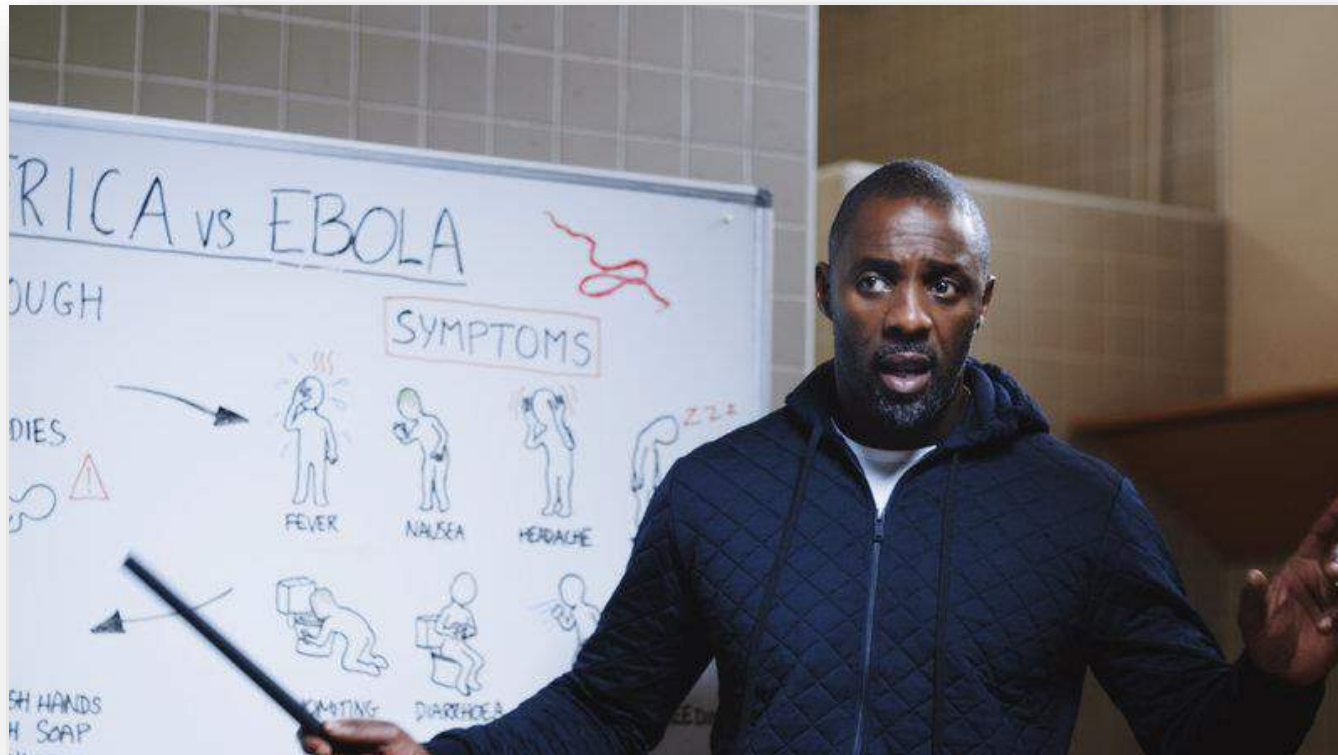


Figure adapted from WHO situation report, Sept 18, 2014 – http://apps.who.int/iris/bitstream/10665/133833/1/roadmapstrep4_eng.pdf?ua=1

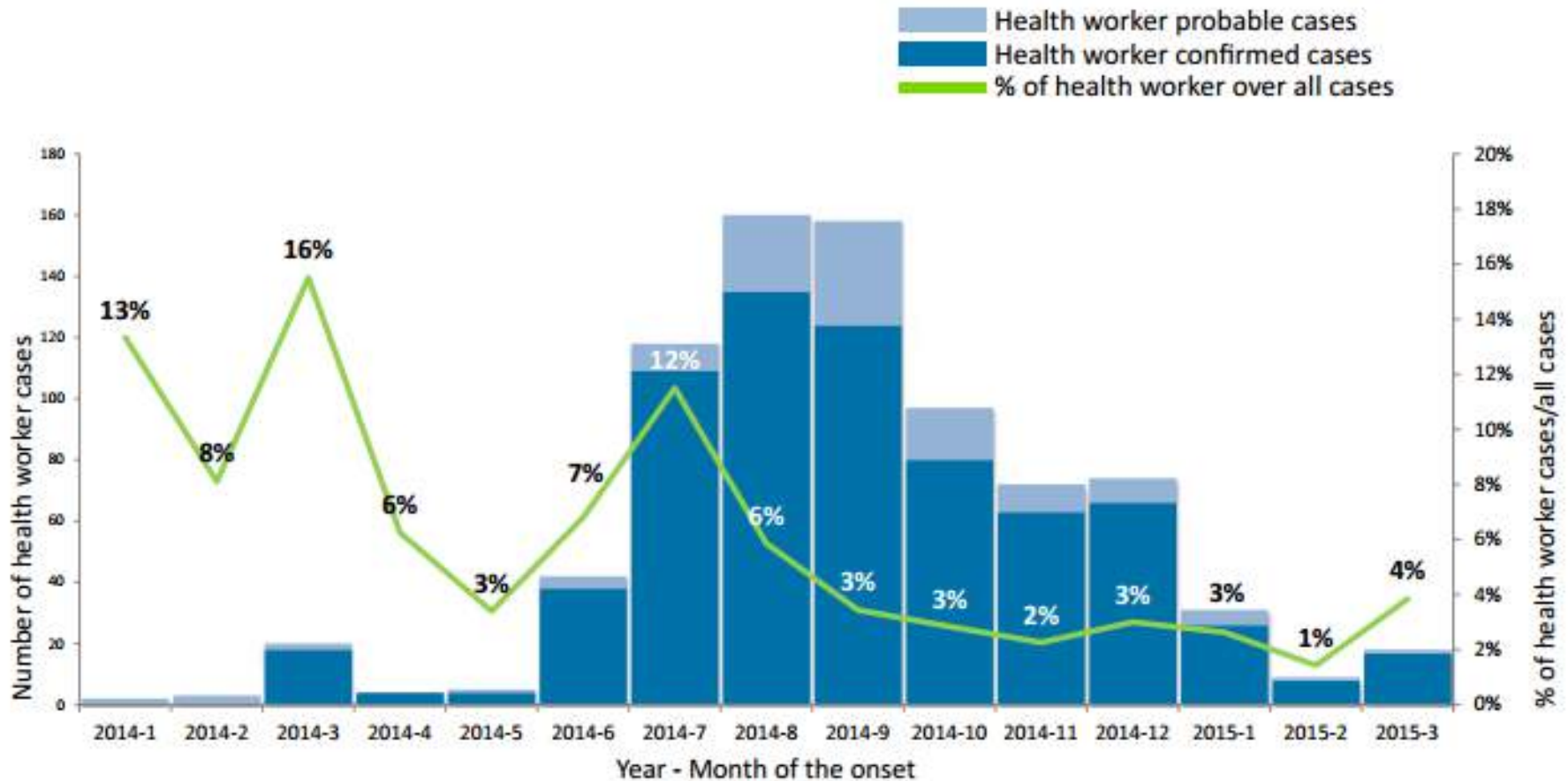
Insufficient Ability to Provide Care for the Sick



"Do not lose hope."

"Trust your health care workers. They're there to help you."

Health Worker Ebola Cases in Guinea, Liberia, and Sierra Leone, January 2014 – March 2015



*All cases include health worker and non-health worker confirmed and probable cases.

Political Actions Undermined Response

Excerpt from an after-action report:

Federal and state priorities may be unclear, differ, or conflict; authorities may be uncertain; and constitutional issues may arise.

...tensions rapidly developed between state and federal authorities in several contexts. State leaders wanted control of decisions regarding the imposition of disease-containment measures (e.g., mandatory vs. voluntary isolation ...), the closure of state borders to all traffic and transportation, and when or whether to close airports. Federal officials argued that such issues were best decided on a national basis to ensure consistency and to give the President maximum control of military and public-safety assets.

Political Actions Undermined Response

Dark Winter Exercise (2001):

Federal and state priorities may be unclear, differ, or conflict; authorities may be uncertain; and constitutional issues may arise.

...tensions rapidly developed between state and federal authorities in several contexts. State leaders wanted control of decisions regarding the imposition of disease-containment measures (e.g., mandatory vs. voluntary isolation ...), the closure of state borders to all traffic and transportation, and when or whether to close airports. Federal officials argued that such issues were best decided on a national basis to ensure consistency and to give the President maximum control of military and public-safety assets.

Major Media Coverage

THE WALL STREET JOURNAL.

Travel Restrictions Hamper African Medical Staff in Ebola Fight

By **HEIDI VOGT**

Updated Oct. 24, 2014 12:44 a.m. ET

HUFF POST POLITICS

Doctors Worry Ebola Quarantines Could Keep Them From Fighting Disease

Posted: 10/27/2014 6:49 pm EDT | Updated: 10/27/2014 7:59 pm EDT

Excerpt from State Ebola Response Plan

There is a large body of scientific literature confirming that asymptomatic individuals are not infectious (cannot transmit the infection to another person). Therefore there is no scientific rationale for putting an asymptomatic individual under quarantine. However this practice is done under the guise of “abundance of caution”. The unfortunate consequence is that this approach undermines the message that Ebola can only be transmitted by persons with symptoms and seriously encroaches on the credibility of health officials.

New York City, October 2014

Tuesday Oct. 21 4:30pm
Dr. Spencer stops by
Blue Bottle Coffee on
the High Line



Tuesday Oct. 21, 5:30pm
He got off the High Line
at 34th Street and took
the 1 train to the 145th
Street station.



Wednesday Oct. 22, 1 pm
Dr. Spencer goes on a
three-mile run near
his Harlem home



10-11am of Oct. 23:
Dr. Spencer contacts the
health department to
report that he has a fever
and is admitted to
Bellevue Hospital



Wednesday Oct. 22, 5:30pm
He took the A train from
his home to 14th St- 8 Ave
subway station and
transferred to the L train to
Bedford Avenue



Tuesday Oct. 21, 3pm
Dr. Spencer visited The
Meatball Shop, 64
Greenwich Ave



Wednesday Oct. 22, 8:30pm
The doctor and his
girlfriend went to The
Gutter bowling alley then
takes an Uber cab home



Moving Forward



Strengthen Surveillance Systems: Texas Health Presbyterian Hospital, Dallas

Issue: Asking about patient's travel history

Procedure then: A triage nurse who first interviewed a new ER patient “intentionally did not ask key questions, as travel history was included in the social history.” That was gathered after a patient was “placed in a room.”

Duncan's case: Duncan waited about 1 1/2 hours before he was taken to a room. He then waited another 30 minutes before a different ER nurse asked about travel.

Procedure now: A triage nurse asks about travel within “5 minutes of patient entry into the ED in 90% of cases, or within a maximum of 10 minutes.”

Issue: Documenting travel in the electronic health record system (EHR)

Procedure then: A “yes/no box” in the EHR opened a dialogue screen to document travel history.

Duncan's case: An ER nurse documented in Duncan's records: “Yes, came from Africa on 9/20/2014.” She “attached no further significance to this travel history,” hospital officials later said. They wouldn't elaborate on whether Duncan, his companion and the nurse referred in their ER conversation only to “Africa” or more specifically to Liberia.

Procedure now: An EHR screening tool was added to “identify patients at risk for serious infectious diseases based on symptoms, travel, and exposure.” Nurses are trained to “be specific about countries the patient has recently traveled to or from.”

Create Global Clinical Response Corps



World Health Organization

EXECUTIVE BOARD
Special session on Ebola
Agenda item 3

EBSS/3/CONF./1 REV.1
25 January 2015

Ebola: Ending the current outbreak, strengthening global preparedness and ensuring WHO capacity to prepare for and respond to future large-scale outbreaks and emergencies with health consequences

Draft resolution proposed by Algeria, Australia, Bangladesh, Benin, Brazil, Canada, Chile, China, Cuba, Egypt, Georgia, Guinea, India, Indonesia, Israel, Jamaica, Japan, Liberia, Mauritius, Mexico, Monaco, Morocco, Nigeria, Norway, Panama, Peru, Senegal, Sierra Leone, South Africa, Switzerland, Thailand, Togo, United States of America, Uruguay, Zambia, Zimbabwe, and European Union Member States

Perspective

The Next Epidemic — Lessons from Ebola

Bill Gates

N Engl J Med 2015; 372:1381-1384 | April 9, 2015 | DOI: 10.1056/NEJMp1502918



The NEW ENGLAND
JOURNAL of MEDICINE



Pushed to the Limit and Beyond

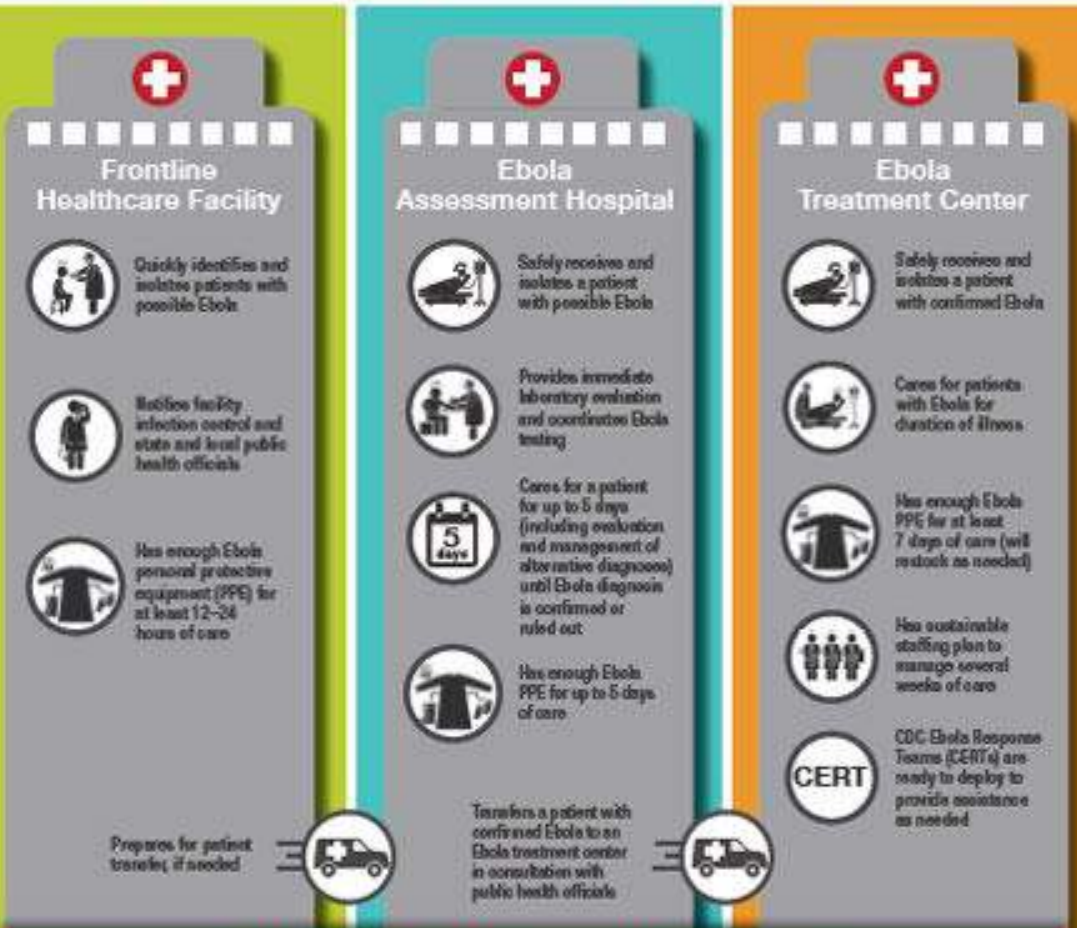
A year into the largest ever Ebola outbreak

apps.who.int/gb/ebwha/pdf_files/EBSS3/EBSS3_CONF1Rev1-en.pdf
www.msf.org/article/ebola-pushed-limit-and-beyond
www.nejm.org/doi/full/10.1056/NEJMp1502918

Preparing U.S. Hospitals for Ebola



CDC has developed a strategy to help healthcare facilities and state health officials prepare for patients with possible or confirmed Ebola. This strategy identifies which hospitals will provide different levels of care for patients being assessed and treated for Ebola.



All of the hospitals will be prepared to do the following:

Ensure staff are appropriately trained and have documented competency in safe PPE practices



Have systems in place to safely manage waste disposal, cleaning, and disinfection



Adhere to infection control protocols

“Where’s the MERS hospital?”

MERS: Middle Eastern Respiratory Syndrome
www.cdc.gov/vhf/ebola/healthcare-us/preparing/hospitals.html

Promote Evidence-based Policies

ISSUE BRIEF

TRAVEL BANS WILL INCREASE THE DAMAGE WROUGHT BY EBOLA

Jennifer B. Nuzzo, Anita J. Cicero, Richard Waldhorn, and Thomas V. Inglesby

CASES OF EBOLA THAT HAVE TURNED UP IN Dallas and New York City have prompted calls for a travel ban to prohibit travelers from Sierra Leone, Liberia, and Guinea from entering the US during the ongoing Ebola outbreak.¹

Prevention (CDC)—have opposed imposing travel bans is that there is no scientific or even good anecdotal evidence that bans have ever been effective at limiting the spread of contagious diseases.^{2,3} A recent modeling analysis showed

New York City Leaders Meet

Mayor Bill de Blasio, wife Chirlane McCray, and New York City Health Commissioner Dr. Mary Bassett at The Meatball Shop in New York, Saturday, Oct. 25, 2014, where an Ebola patient ate just before he became ill.



Persons with Potential Ebola Exposure within the U.S., November 3, 2014 – March 8, 2015

TABLE. Summary of active and direct active monitoring of persons with potential Ebola exposure, by risk category – United States, November 3, 2014–March 8, 2015

Monitoring element	Risk category			Total
	High risk and some risk	Low (but not zero) risk		
		Travelers	U.S. HCWs	
Type of daily monitoring	DAM	AM	DAM	—
Reporting frequency to CDC	Daily	Weekly	Weekly	—
No. of persons monitored	315	9,512	527	10,344*
No. of jurisdictions conducting monitoring	47	54	10	54

Abbreviations: AM = active monitoring; DAM = direct active monitoring; HCWs: Health care workers, including laboratory personnel.

* Adjusted for persons whose risk category changed from some risk to low risk.

Motivate Health Security Investments

Global Health Security Agenda (GHSA)

Prevent

- ❑ Prevent 1: Antimicrobial Resistance
- ❑ Prevent 2: Zoonotic Disease
- ❑ Prevent 3: Biosafety and Biosecurity
- ❑ Prevent 4: Immunization

Detect

- ❑ Detect 1: National Laboratory
- ❑ Detect 2 & 3: Real-Time Surveillance
- ❑ Detect 4: GHSA Reporting
- ❑ Detect 5: Workforce Development

Respond

- ❑ Respond 1: Emergency Operations Centers
- ❑ Respond 2: Linking Public Health with Law and Multisectoral Rapid Response
- ❑ Respond 3: Medical Countermeasures and Personnel Deployment Action Package

Strengthen Core Capacities

The New York Times

U.S.

Contact Tracing Is Called Pivotal in Fighting Ebola

By HEATHER MURPHY OCT. 2, 2014

Although Ebola is new to the United States, the goal of contact tracing is the same in any disease: Track down those who could have been exposed, interview them and monitor them — in this case, for 21 days, the incubation period of the Ebola virus.

In the United States, it is far more common for contact tracers employed by local and state health departments to investigate measles, sexually transmitted diseases like H.I.V. and gonorrhea, and illnesses that originate with animals, such as rabies.

www.nytimes.com/2014/10/03/us/tracing-ebola-contacts-can-stop-virus-in-its-tracks-experts-say.html?_r=0

THE LANCET Infectious Diseases

Volume 15, No. 2, p146–147, February 2015

Ebola: lessons learned from HIV and tuberculosis epidemics

Paul K Drain 

Global Health Action 

COACTION

CURRENT DEBATE

Addressing Ebola-related Stigma: Lessons Learned from HIV/AIDS

Mariam Davtyan¹, Brandon Brown^{1*} and Morenike Oluwatoyin Folayan²

Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science
Volume 8, Number 3, 2010 © Mary Ann Liebert, Inc.
DOI: 10.1089/bsp.2010.0021

STIGMA, HEALTH DISPARITIES, AND THE 2009 H1N1 INFLUENZA PANDEMIC: HOW TO PROTECT LATINO FARMWORKERS IN FUTURE HEALTH EMERGENCIES

Monica Schoch-Spana, Nidhi Bouri, Kunal J. Rambhia, and Ann Norwood

Broader Benefits of the GHSA

Prevent

- ❑ Prevent 1: Antimicrobial Resistance
- ❑ Prevent 2: Zoonotic Disease
- ❑ Prevent 3: Biosafety and Biosecurity
- ❑ Prevent 4: Immunization

Detect

- ❑ Detect 1: National Laboratory
- ❑ Detect 2 & 3: Real time Surveillance
- ❑ Detect 4: GHSA Reporting
- ❑ Detect 5: Workforce Development

Respond

- ❑ Respond 1: Emergency Operations Centers
- ❑ Respond 2: Linking Public Health with Law and Multisectoral Rapid Response
- ❑ Respond 3: Medical Countermeasures and Personnel Deployment Action Package

Areas of potential overlap of GHSA with TB control efforts

Thank You



Learn more about this journal

CALL FOR PAPERS

Surveillance and Health Security: Building the New Systems We Need to Detect and Manage Health Threats

A Special Feature in *Health Security* (formerly *Biosecurity and Bioterrorism*)

TOPIC EDITORS

Jennifer Nuzzo, DrPH, and Sanjana Ravi, MPH
UPMC Center for Health Security, Baltimore, Maryland

Deadline for article submission: **December 31, 2015**



**SUBMIT YOUR
MANUSCRIPT**

Global Health Security: Disease Surveillance and Diagnostic Capacity



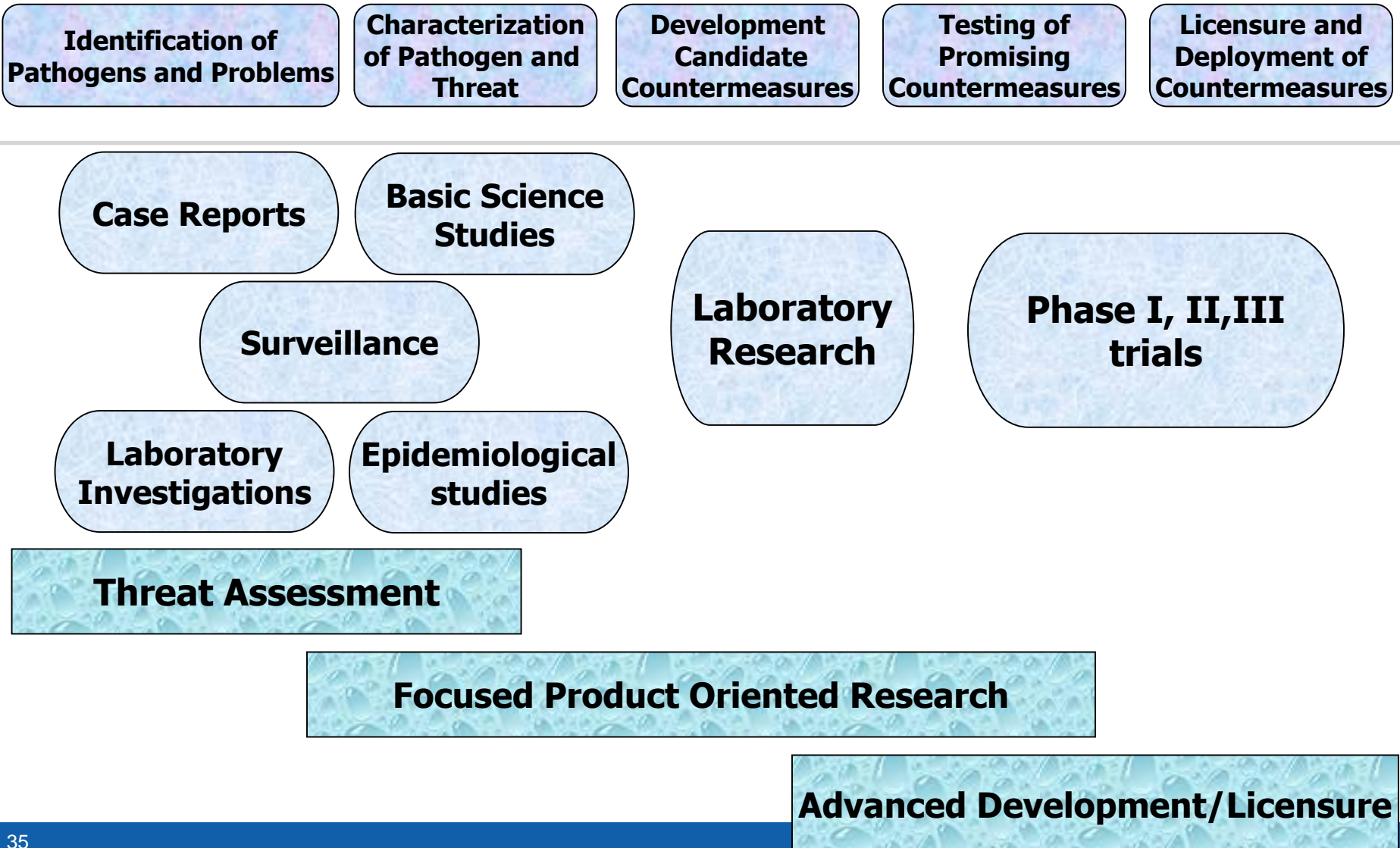
CAPT David L. Blazes, MC, USN
Director, Military Tropical Medicine
Navy Medicine Professional Development Center



Disclaimers and Disclosure

- ❑ The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the US Navy, US Department of Defense (DoD), nor of the US Government**
- ❑ Discussion of non-FDA approved products identified where appropriate**
- ❑ No conflicts of interest**
- ❑ Content UNCLASSIFIED**

Continuum of Infectious Diseases Research



Presidential Decision Directive NSTC-7, June 1996

- ❑ “The mission of the DoD will be expanded to include support of **global surveillance, training, research, and response to emerging disease threats**”
- ❑ “... **DoD will strengthen it’s global disease reduction efforts through:** centralized coordination; improved preventive health programs and epidemiological capabilities; and enhanced involvement with military treatment facilities and overseas laboratories.”



Global Emerging Infections Surveillance and Response System Priorities: Strategic Goals and Priority Pillars

NSTC-7: "the mission of the DoD will be expanded to include support of global surveillance, training, research, and response to emerging infectious disease threats..."

Military Health System
Quadruple Aim =>
Readiness; Population Health

GEIS PROGRAM

Global Health Security
Agenda:
Prevent, Detect, Respond to
Global Health Threats

GEIS MISSION

To enhance force health protection and global health security by focused coordination and support of global civil and military health networks to prevent, detect, and respond to emerging and priority microbial threats through infectious diseases surveillance, laboratory harmonization, capacity building, and scientific studies.

GEIS VISION

Enhanced national security and force health protection through a global network poised to prevent, detect, and respond to emerging microbial threats.

Global Health Security

Force Health Protection

Prevent

Detect

Respond

Build Capacity

Studies

Respiratory Infections

Enteric Infections

Febrile/Vector-borne Infections

Sexually Transmitted Infections

Anti-Microbial Resistance

Coordination and Collaboration

Science and Innovation

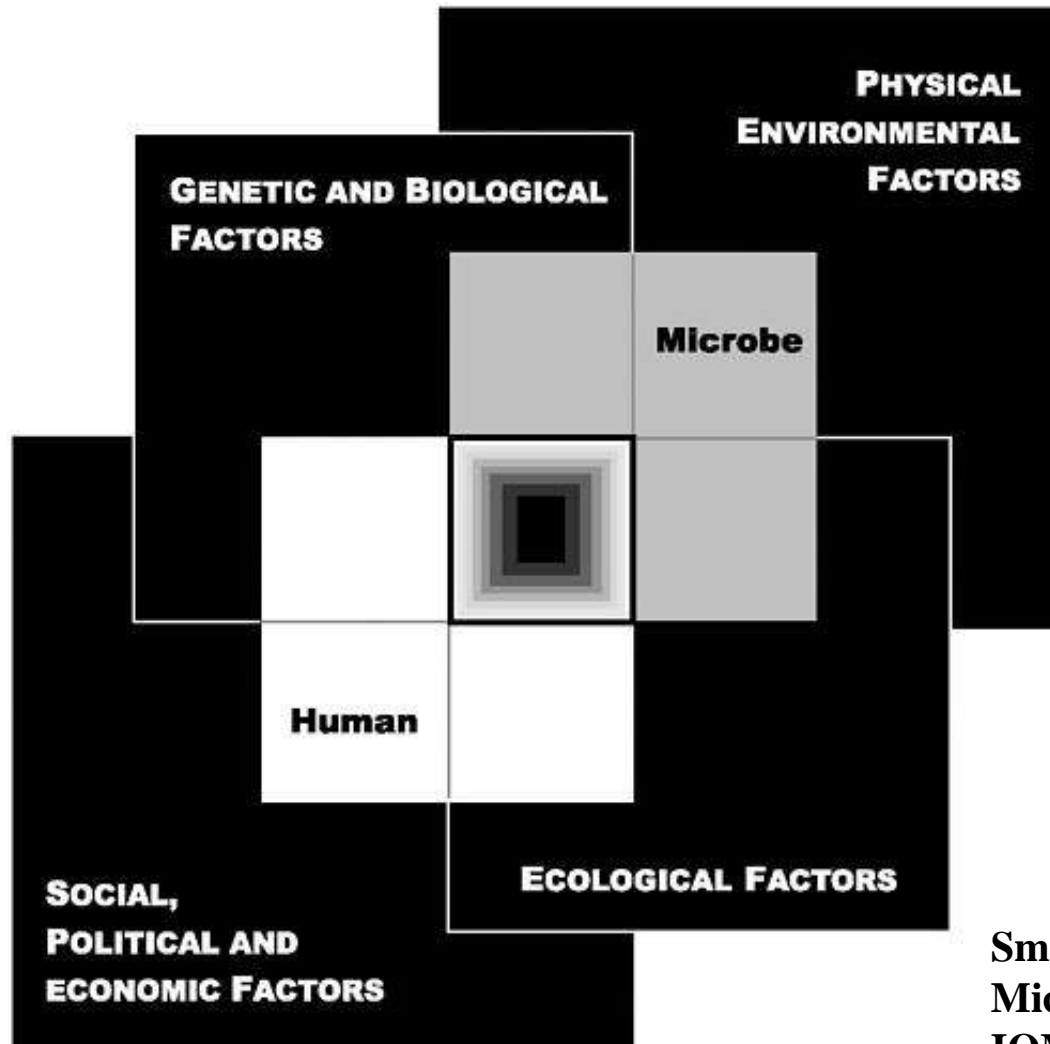
Responsive Information Sharing

Responsible Administration and Management

Foundation For Global Emerging Infections Surveillance and Response System Key Tasks

- ❑ **PDD NSTC-7, Emerging Infectious Diseases (1997)**
- ❑ **Defense Strategic Guidance (Jan 2012)**
- ❑ **AFHSC Strategic Plan 2013–2015**
- ❑ **DHA Strategic Plan (Pending Release)**
- ❑ **Guidance for Employment of the Force (GEF)**
- ❑ **Joint Operational Access Concept (Oct 2014)**
- ❑ **National Strategy for Combating Antibiotic-Resistant Bacteria (CARB) (Oct 2014)**
- ❑ **National Strategy for Countering Biological Threats (Nov 2009)**
- ❑ **National Strategy for Biosurveillance (Jul 2012)**

Convergence Model



Smolinski et al,
Microbial Threats to Health,
IOM Report 2003

DoD Tropical Disease Research Labs



NMRC / WRAIR
Silver Spring,
MD



AFRIMS
Bangkok
1959



NMRC-Asia/NAMRU-2
Singapore / Cambodia
1945



NAMRU-6
Lima
1983



NAMRU-3
Cairo
1946

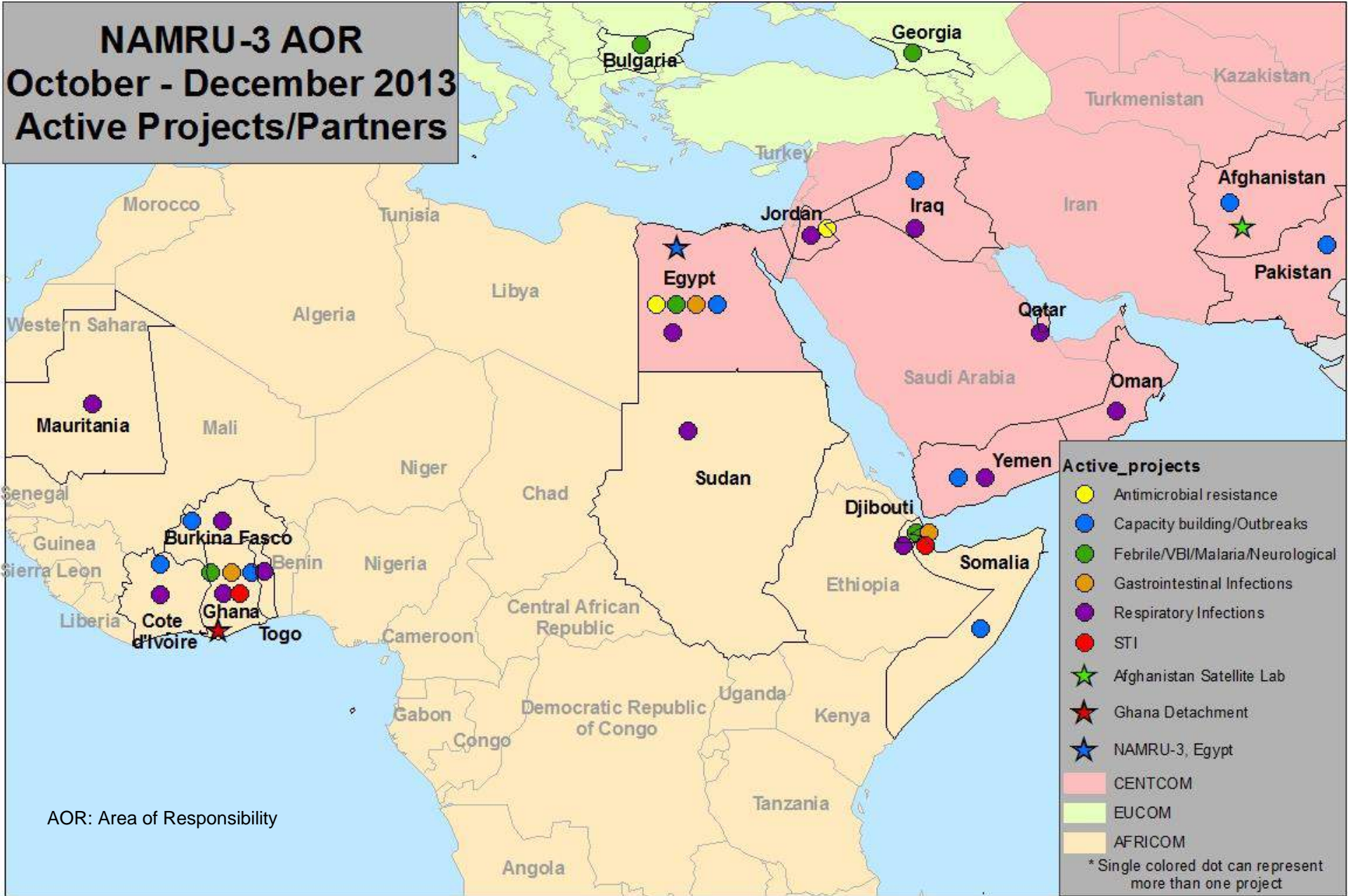


USAMRU-K
Nairobi
1969

NAMRU-3 AOR

October - December 2013

Active Projects/Partners



Active_projects

- Antimicrobial resistance
- Capacity building/Outbreaks
- Febrile/VBI/Malaria/Neurological
- Gastrointestinal Infections
- Respiratory Infections
- STI
- ★ Afghanistan Satellite Lab
- ★ Ghana Detachment
- ★ NAMRU-3, Egypt

CENTCOM

EUCOM

AFRICOM

* Single colored dot can represent more than one project

Chain of Command, Sponsors and Collaborators

US Agencies

US Embassy
Cairo

BUMED

DoD

EUCOM

AFRICOM

CENTCOM

NMRC

Other organizations

U.S. Naval Medical Research Unit No. 3

DOS

- USAID
- OMC/ODC
- US EMB

DHHS

- HHS
- CDC/IEIP
- NIH

DHS

- NBFAC
- USDA, DOE, etc.

DOD

- OSD-HA
- OSD-policy
- DTRA/CTRA
- AFMIC

EUCOM

- NAVEUR
6th fleet
- MTFs

CENTCOM

- HOA
- CSTCA
- CTF 82
- NAVCENT
5th fleet
- ARCENT

Other

- EPMUs
- MFO-Sinai

Research

- GEIS
- MIDRP
- NMRC
- WRAIR
- USAMRIID
- NHRC
- DHAPP
- USUHS
- MTFs
- OCONUS
labs

UN orgs

- WHO
- EMRO
- EURO
- AFRO
- FAO

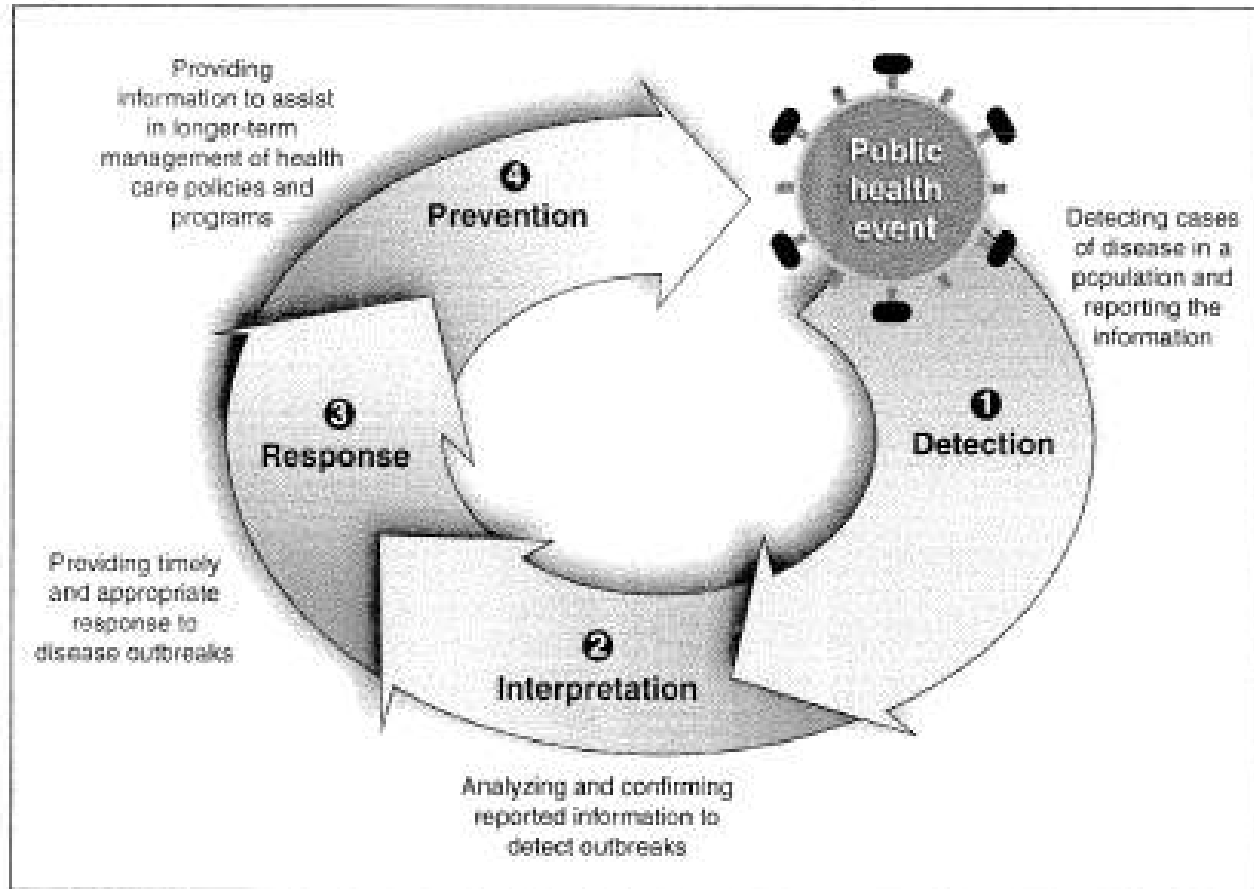
•Host Nations

- GOE
- MOH(P)
- Other Ministries:
MOA/MOD/MOE
- Universities
- NGOs
- Donors
- Industry

For official use only

Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System



Source: GAO analysis.

Febrile and Vector-Borne Infections (FVBI)

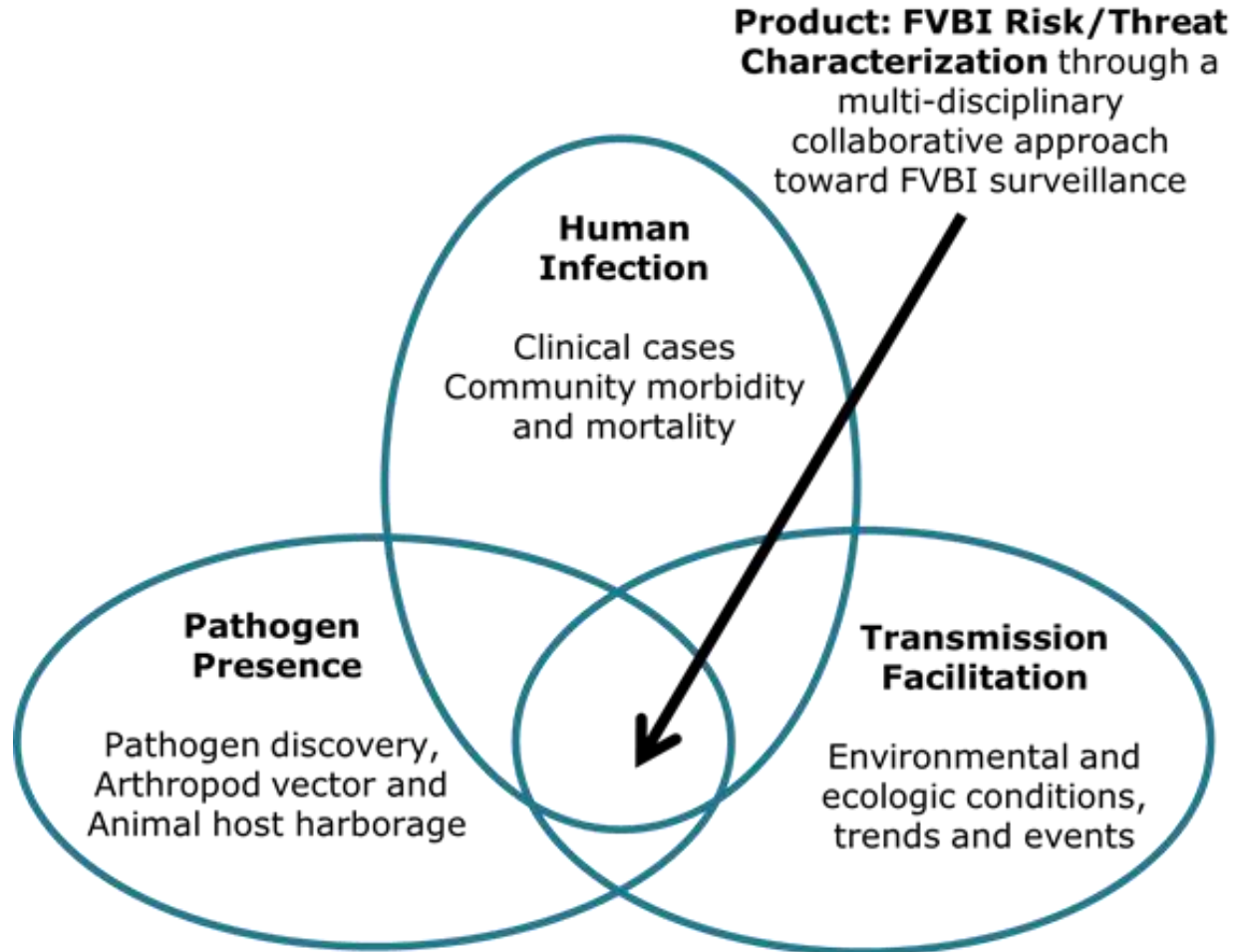
FVBI Program Goal

- ❑ Prevention and control of human FVBI within the context of global health security and US DoD force health protection priorities

FVBI Program Objectives

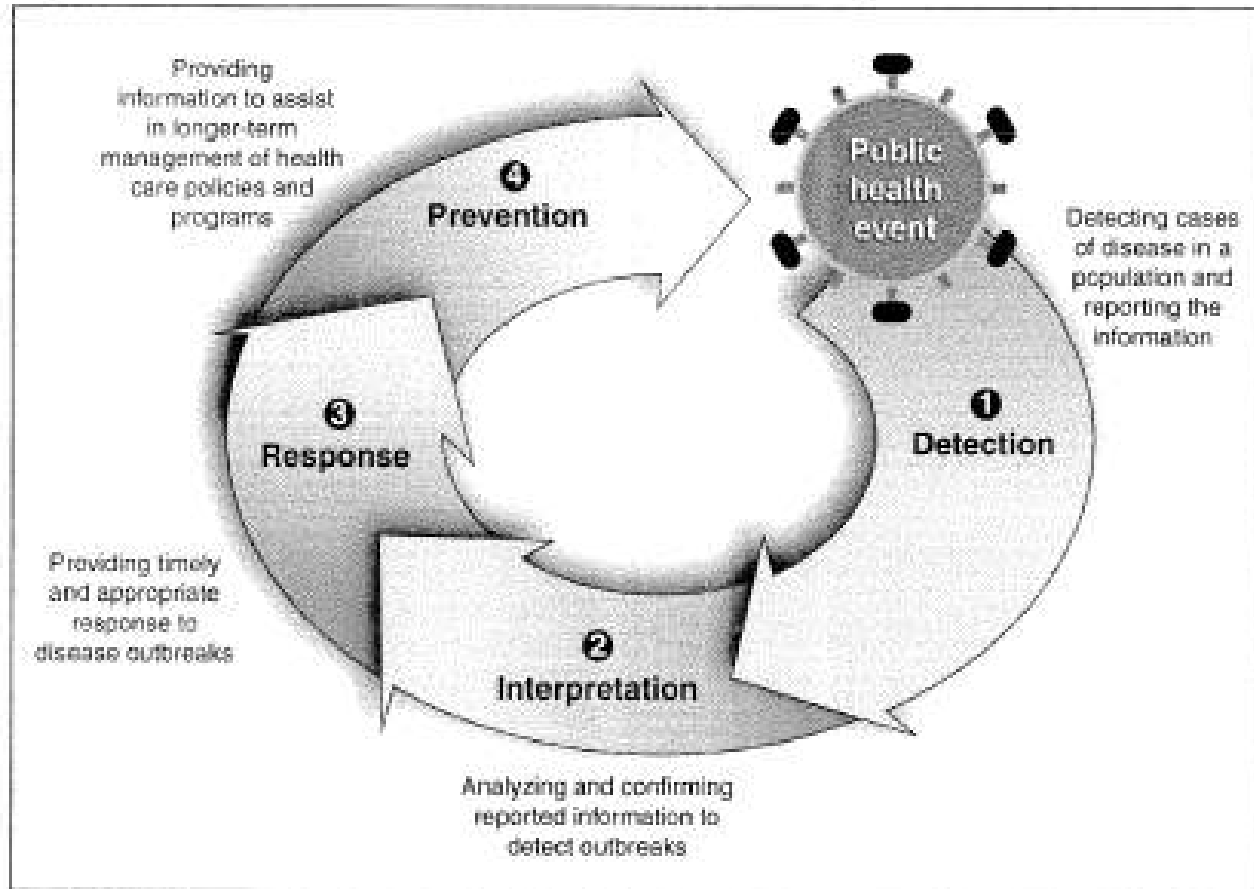
- ❑ FVBI surveillance efforts contribute to the characterization of DoD-relevant FVBI risks and threats while providing timely, relevant, and actionable surveillance data in support of the pillar's two strategic objectives:
 - Development of accurate disease characterizations and risk assessments for priority and/or novel human FVBI
 - Generation of accurate disease risk maps for militarily relevant geographic areas

Febrile and Vector-Borne Infections (FVBI) Surveillance



Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System



Source: GAO analysis.

Operation United Assistance Diagnostic Support

□ Phase 1: Ebola diagnostics at 2 locations

- Island Clinic, Monrovia
 - Ebola Treatment Unit (ETU) managed by WHO
- Cuttington University, Bong County
 - ETU managed by International Medical Corps
- 19 September 2014 – 3 March 2015

□ Phase 2: Molecular diagnosis training and continue Ebola diagnosis at 1 location

- Bong County
- 20 February 2015 – 25 May 2015

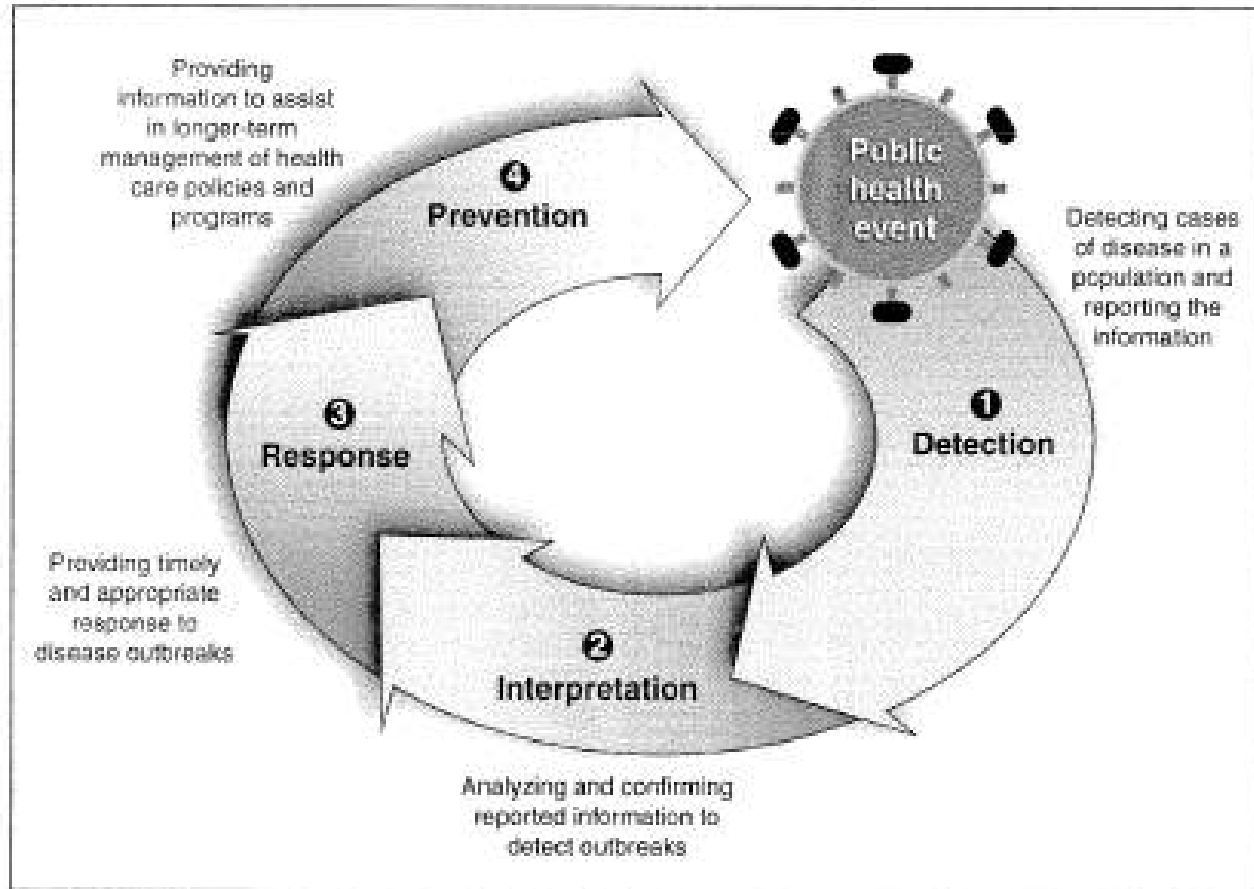
Ebola Diagnostics

- ❑ **NMRC ISO production lab at Ft. Detrick produced over 300,000 PCR Ebola diagnostic assays**
 - Emergency Use Authorization kits
 - Surveillance kits
 - Deployed to all DoD labs
 - Used by state-based Laboratory Response Network labs
 - All cases in USA were diagnosed initially with NMRC reagents
- ❑ **Developed lateral flow immunoassay**
 - Sensitivity 92%, Specificity 98%
 - OraSure® platform

NMRC: Naval Medical Research Center
ISO: International Organization for Standardization
PCR: Polymerase chain reaction

Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System



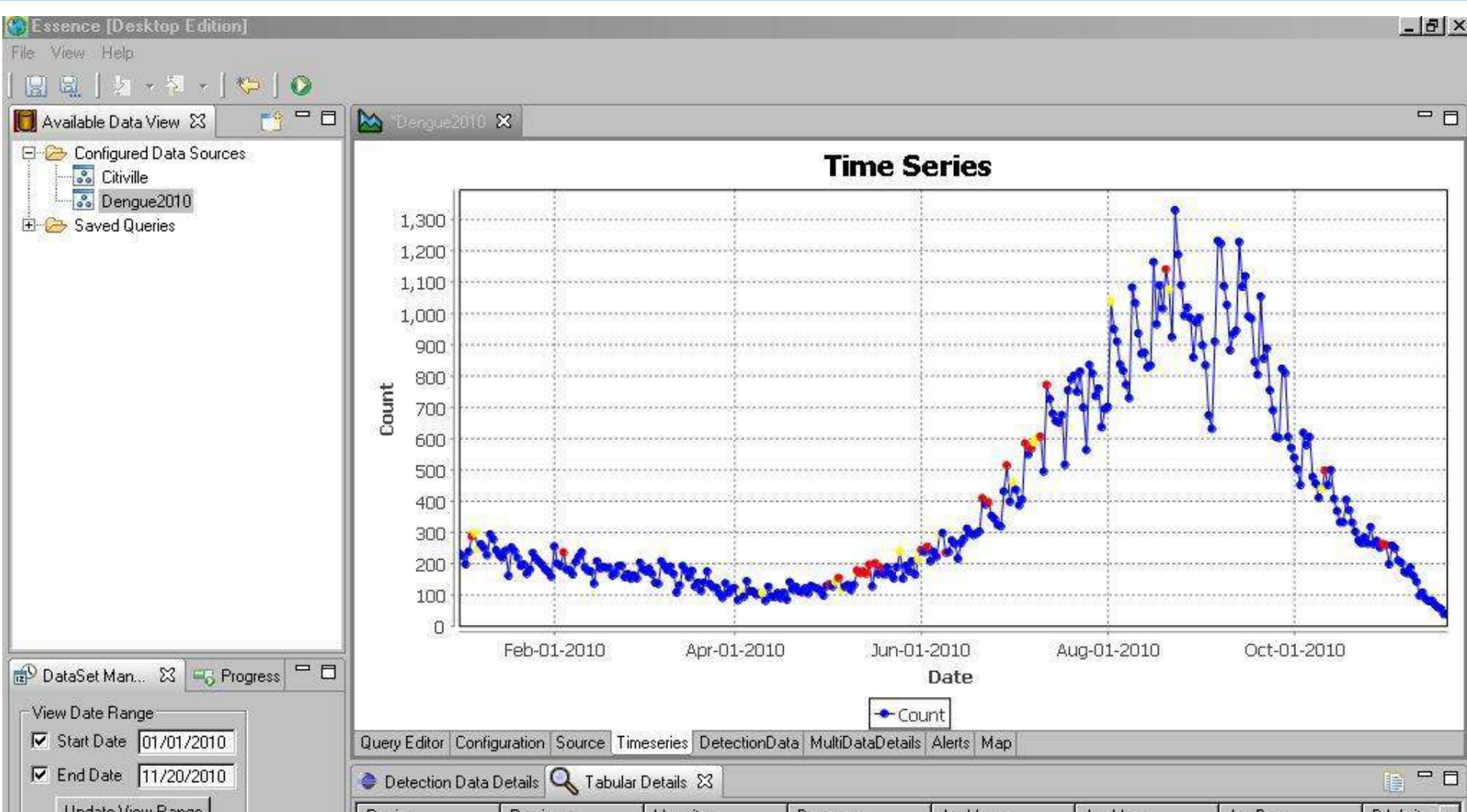
Source: GAO analysis.

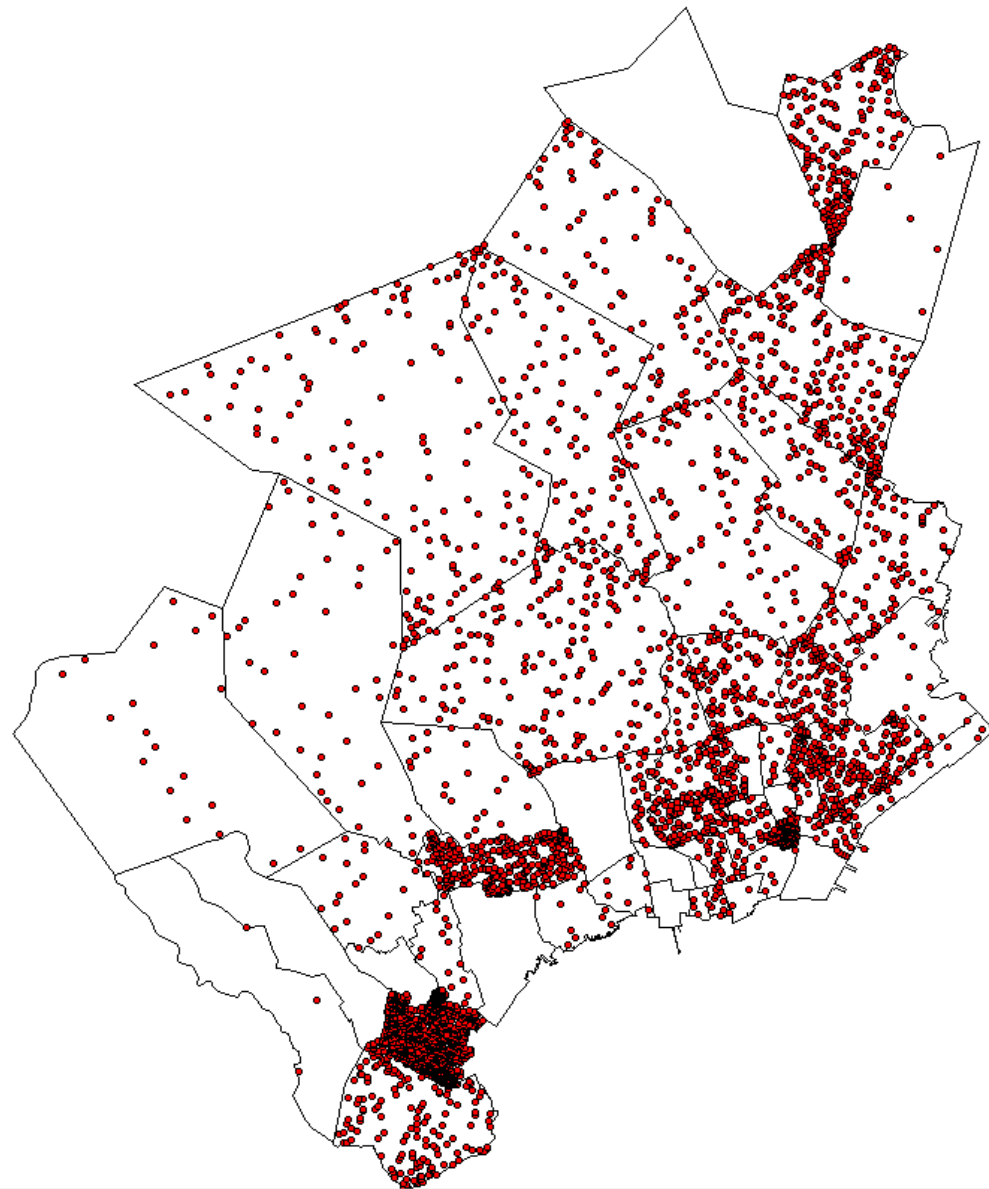
WRAIR Ebola Prevention Research and Development

- ❑ **Completed Phase 1 clinical testing of VSV-EBOV vaccine candidate at WRAIR (USAMRID and DoD Chemical Biological Defense Program); published in NEJM, April 2015**
- ❑ **Developed lab tests to support VSV-EBOV Ebola vaccine clinical studies; 2014**
- ❑ **HIV vaccine research infrastructure in Uganda leveraged for Ebola studies**
 - First Ebola vaccine clinical trial in Africa in 2009 (VRC/NIAID); published in The Lancet, December 2014
 - Phase 1b clinical trial testing Chimpanzee Adenovirus type 3 vector (ChAd3) vaccines (co-developed by the VRC/NIAID and GlaxoSmithKine®), ongoing
 - Largest, long-term follow up study on Ebola survivors from 2007-08 Bundibugyo ebolavirus outbreak; published in Lancet ID, April 2015
- ❑ **In August, 2015 began Phase 2 vaccine study in Nigeria using ChAd3 vaccine (GSK)**

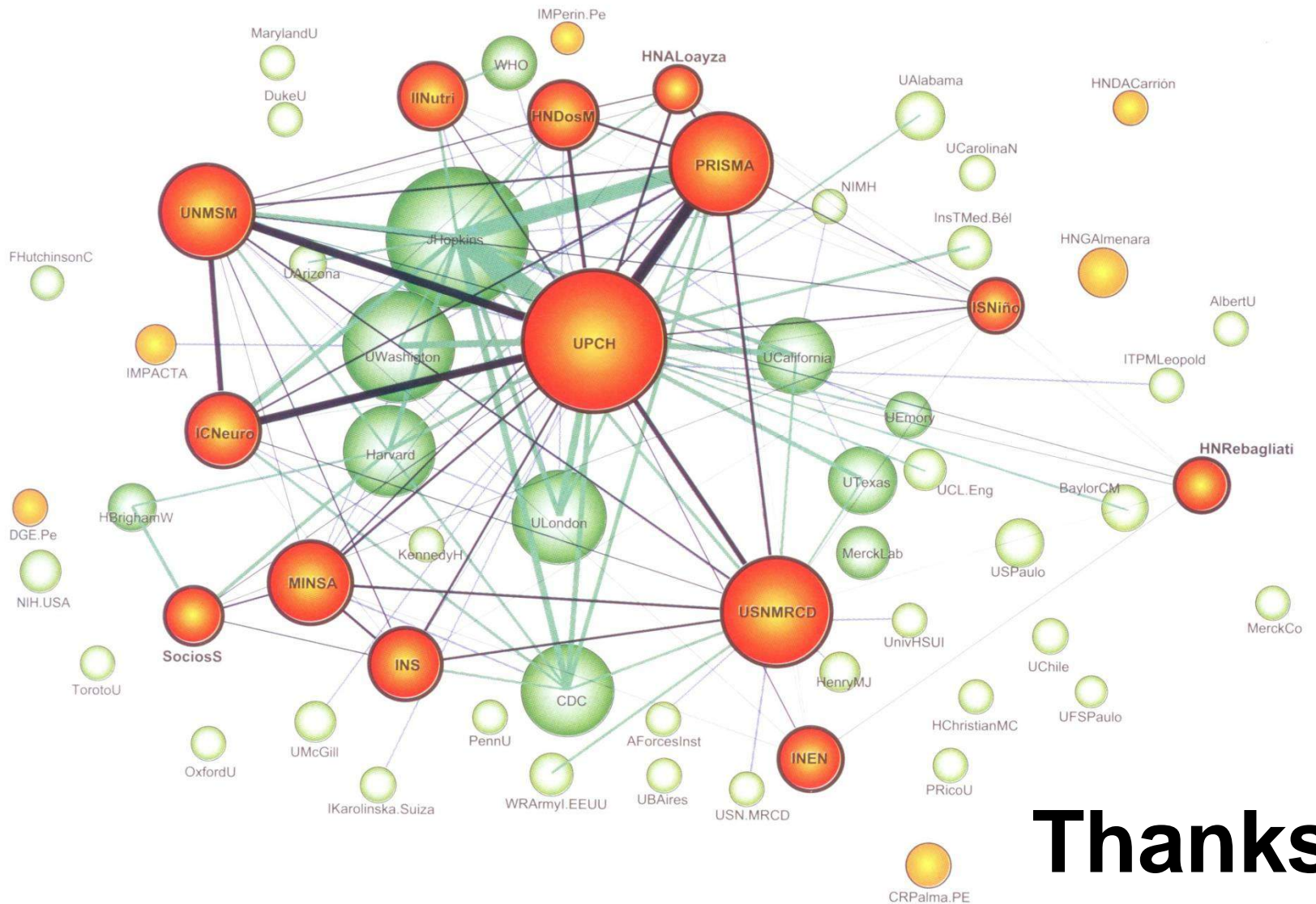
Dengue Surveillance in Asia

Cell-Phone Based – SAGES (JHU-APL)





Legend - EDECOUNT
1 Dot = 1



Thanks!

Figura 5. Colaboración institucional en publicaciones con participación peruana en revistas ISI [CLINICAL MEDICINE] 2000-2009
 Nota: se muestra las instituciones con más de diez publicaciones, en rojo-naranja las peruanas y en verde las extranjeras. Las líneas muestran el nivel de colaboración entre los nodos. Las líneas grises muestran las relaciones de más de diez publicaciones, en verde las de más de 15, y en azul de más de 20 publicaciones entre instituciones peruanas. El tamaño de los nodos es equivalente al número de publicaciones de la institución.

The Global Health Security Agenda and the West Africa Ebola Epidemic



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*Director, Division of Global Health Protection
Centers for Disease Control and Prevention*



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

A Health Threat Anywhere Is a Health Threat Everywhere



The Lancet 380:9857, 1-7 Dec 2012, pp. 1946-55.
www.sciencedirect.com/science/article/pii/S0140673612611519

International Health Regulations, 2005



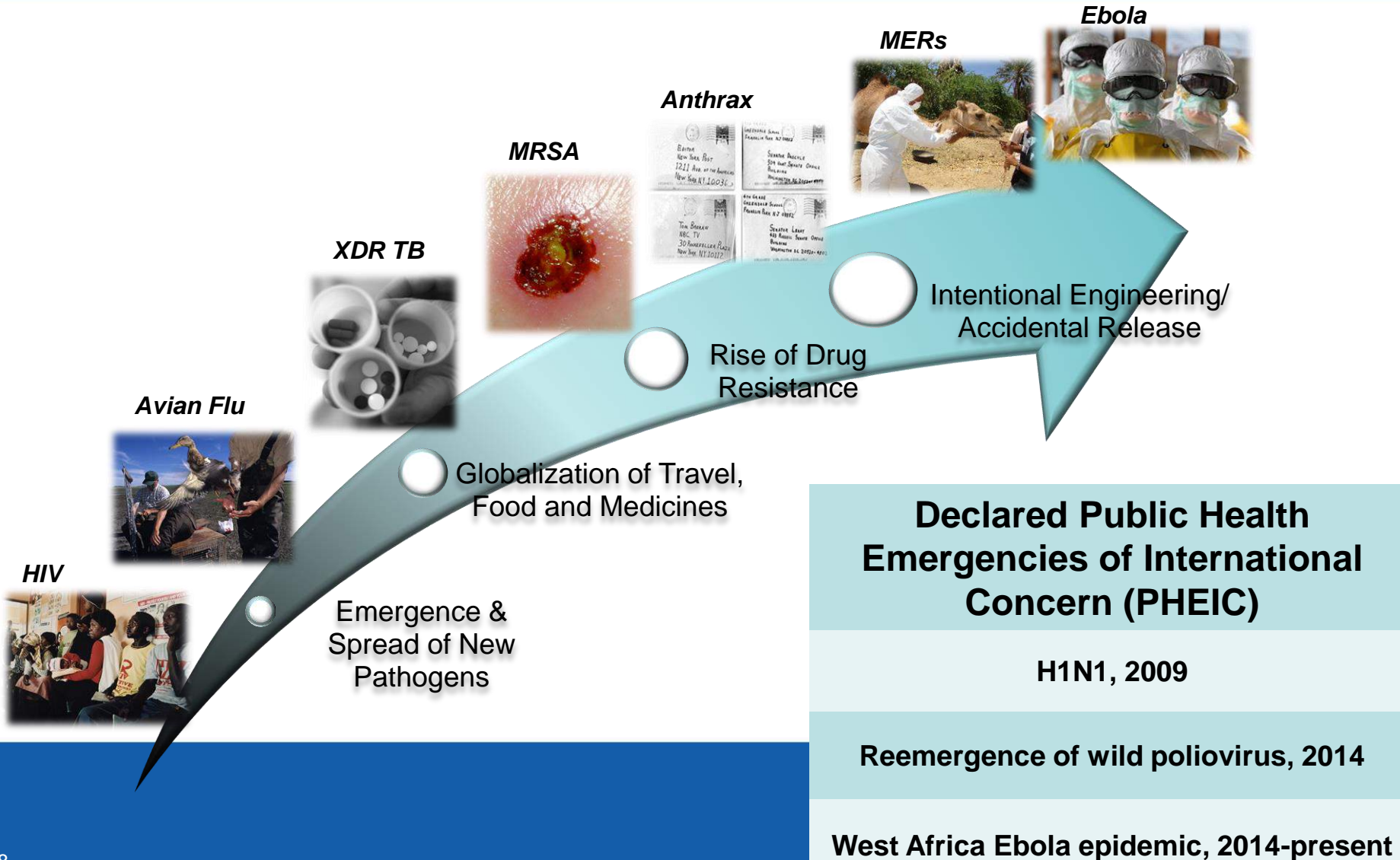
- ❑ **The International Health Regulations (IHR) were revised in 2005 and are used by countries to prevent and control public health threats while avoiding unnecessary interference with international travel and trade**
- ❑ **All countries are committed to achieving the goals of IHR**

International Health Regulations, 2005

- ❑ **Detect:** Ensure surveillance systems and laboratories detect potential threats
- ❑ **Assess:** Work together to make decisions about public health emergencies
- ❑ **Report:** Report through a global network of National Focal Points
- ❑ **Respond:** Respond to public health events



Public Health Threats



Less Than 1/3 of the World is Prepared to Respond

- ❑ **By 2012, about 20% of countries (n=42) had met IHR goals**
- ❑ **By 2014, about 30% of countries (n=64) were fully prepared to detect and respond to an outbreak**



Why Care About Global Health Security?

PROBLEM

NOT PREPARED



Most countries are not prepared

DISEASES SPREAD



Faster and farther

ECONOMIC IMPACT



SARS: \$40 Billion
Ebola: Billions

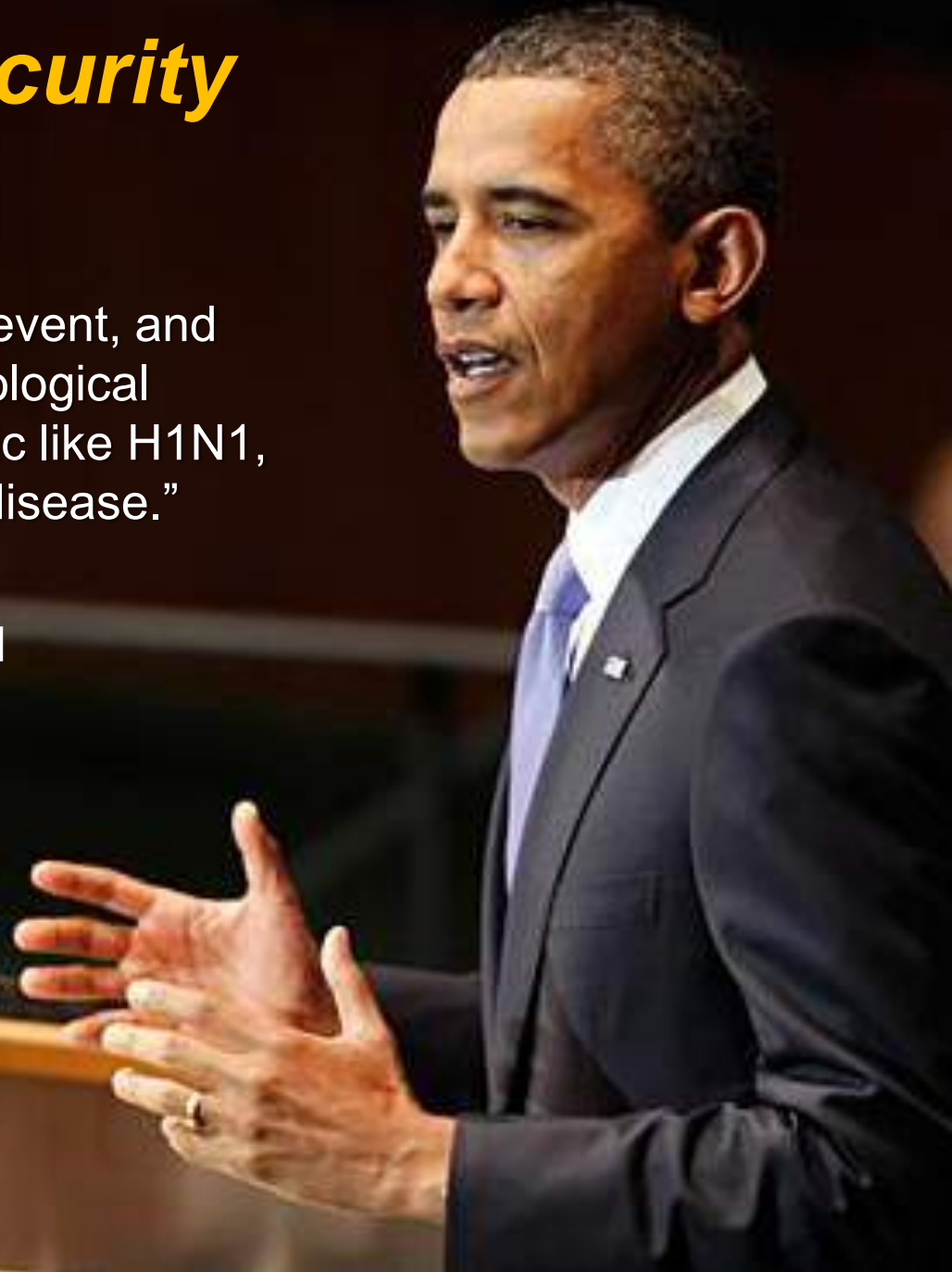
SARS: Severe acute respiratory syndrome

World Bank, www.worldbank.org/en/news/feature/2013/03/05/flu-outbreaks-reminder-of-pandemic-threat


Global Health Security

“...We must come together to prevent, and detect and fight every kind of biological danger – whether it’s a pandemic like H1N1, a terrorist threat, or a treatable disease.”

President Barack Obama, 2011



Global Health Security Agenda (GHSA)



**GLOBAL HEALTH SECURITY—
VISION AND OVERARCHING TARGET**

VISION: *Our vision is a world safe and secure from global health threats posed by infectious diseases—where we can prevent or mitigate the impact of naturally occurring outbreaks and intentional or accidental releases of dangerous pathogens, rapidly detect and transparently report outbreaks when they occur, and employ an interconnected global network that can respond effectively to limit the spread of infectious disease outbreaks in humans and animals, mitigate human suffering and the loss of human life, and reduce economic impact.*

U.S. OVERARCHING TARGET: Over the next five years the United States commits to working with at least 30 partner countries (containing at least 4 billion people) to prevent, detect and effectively respond to infectious disease threats, whether naturally-occurring or caused by accidental or intentional releases of dangerous pathogens. We call on other countries to join in this effort to realize the vision of a world where all 7 billion people are effectively protected against infectious disease threats.

We will work with partner countries on specific objectives to prevent, detect and effectively respond to infectious disease threats, and will measure our own progress through the following metrics and milestones. We invite partner countries to use metrics appropriate to their own situations, including these and others:

Prevent: Countries will have systems, policies and procedures in place to prevent or mitigate avoidable outbreaks. Considering their own vulnerabilities, countries should prioritize and implement the following:

- ▶ Surveillance to monitor and slow antimicrobial resistance, with at least one reference laboratory capable of identifying at least three of the seven WHO priority AMR pathogens¹ using standardized, reliable detection assays, and reporting these results when appropriate to international or IHR focal points.
- ▶ A whole-of-government national biosecurity system is in place that ensures collections of especially dangerous pathogens are identified, held, secured and monitored in a minimal number of facilities with biosafety and biosecurity best practices in place; biorisk management training and educational outreach is conducted to promote a shared culture of responsibility, reduce dual use biological risks, and ensure safe transfer of biological agents; and country-specific biosecurity legislation, laboratory certification, and pathogen control measures are in place as appropriate.
- ▶ Adopted behaviors, policies and/or practices that minimize the spillover of zoonotic diseases into human populations²
- ▶ Immunization of at least 90% of the country's one-year-old population with at least one dose of measles-containing vaccine as measured by coverage surveys or administrative data.

Detect: Countries will have real-time biosurveillance and effective modern diagnostics in place that are able to reliably conduct³ at least five of the 10 core tests⁴ (including point-of-care and laboratory-based diagnostics) on appropriately identified and collected outbreak specimens transported safely and securely to accredited laboratories⁵ from at least 80% of districts in the country). The United States will also support countries in substantially accomplishing:

- ▶ Surveillance for 3 core syndromes indicative of potential public health emergencies conducted according to international standards.

- A unifying framework to improve our global response to disease outbreaks

GHSA Launch, 13 February 2014

Vision: *A world safe and secure from global health threats posed by infectious diseases...*

- ❑ Focused leadership and political will
- ❑ 28 countries, WHO, OIE, and FAO
- ❑ By September 26, 2014: 44 countries joined the GSHA
- ❑ By June 2015, G7 committed to assist at least 60 countries



Seoul Meeting, 7–9 September 2015



Dr. Tom Frieden @DrFriedenCDC · 13h

Joining other public health leaders this week in Seoul to discuss ways to prioritize [#GlobalHealthSecurity](#) Agenda



RETWEETS
16

FAVORITES
19



4:52 PM - 7 Sep 2015 - Details



GHSA: Prevent, Detect, Respond

**Prevent avoidable
catastrophes**



Detect threats early



**Respond rapidly
and effectively**



Action Packages to Achieve Targets



Antimicrobial Resistance



Zoonotic Diseases



Biosafety/Biosecurity



Immunization



National Laboratory Systems



Surveillance



Reporting



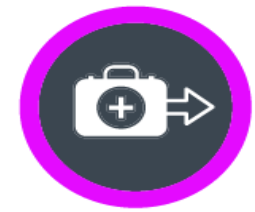
Workforce Development



Emergency Operations Centers

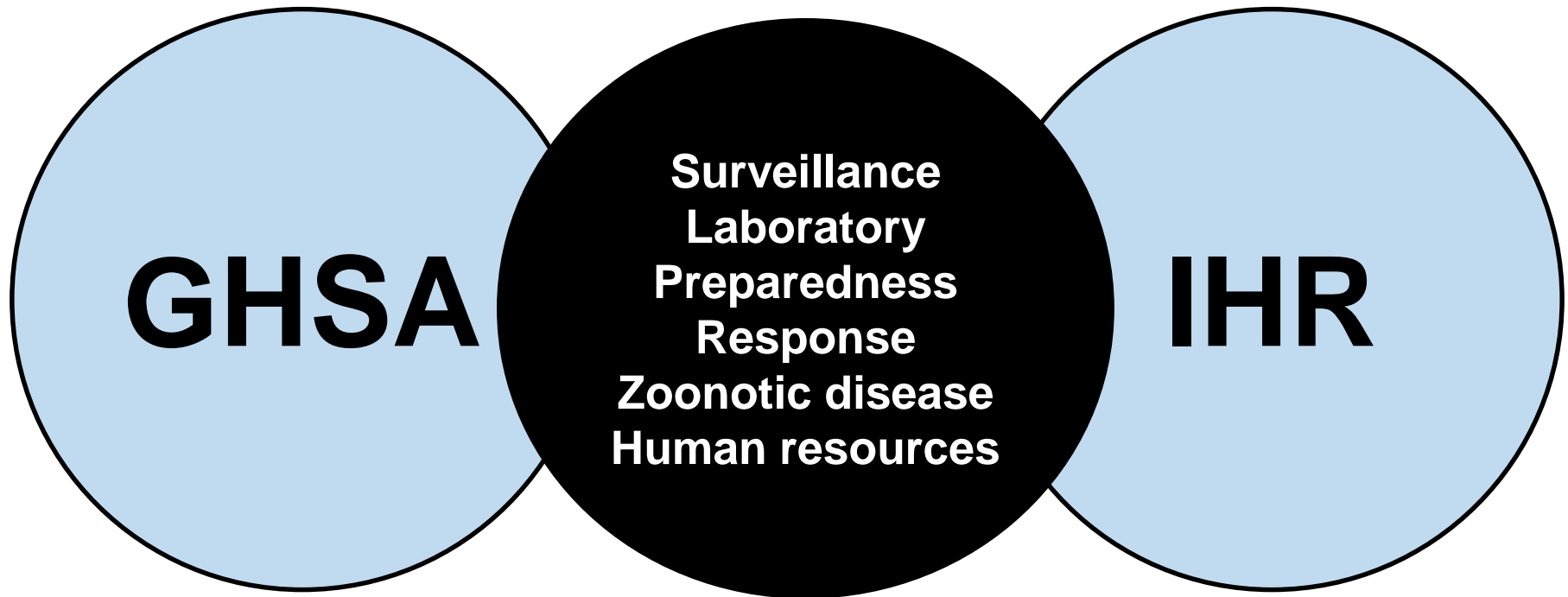


Public Health and Law Enforcement



Medical Countermeasures

Shared Priorities: GHSA and IHR



GHSA: Global Health Security Agenda

IHR: International Health Regulations

Ebola: A Perfect Example of Why GHSA is Needed

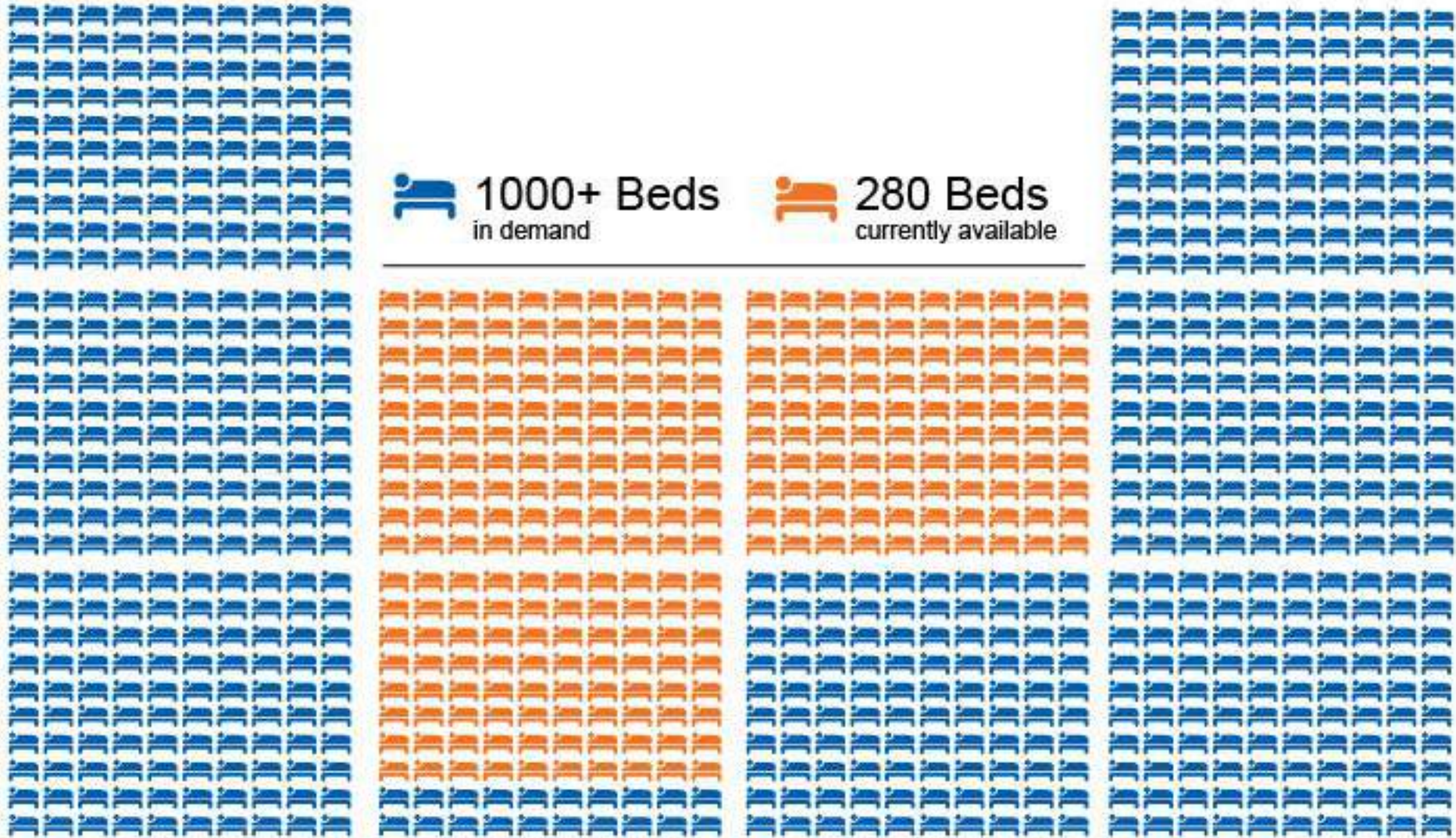


- ❑ **First time in West Africa (first cases notified in March 2014)**
- ❑ **Weak public health infrastructure and spotty border control**
- ❑ **Lack of infection control in health care facilities: absence of protective gloves, soap, and running water**
- ❑ **Unrecognized cases of Ebola reached poor, crowded cities with global air transportation links**



Monrovia Under Siege

More Patients than Beds in Ebola Treatment Units



CDC unpublished data



Community Deaths

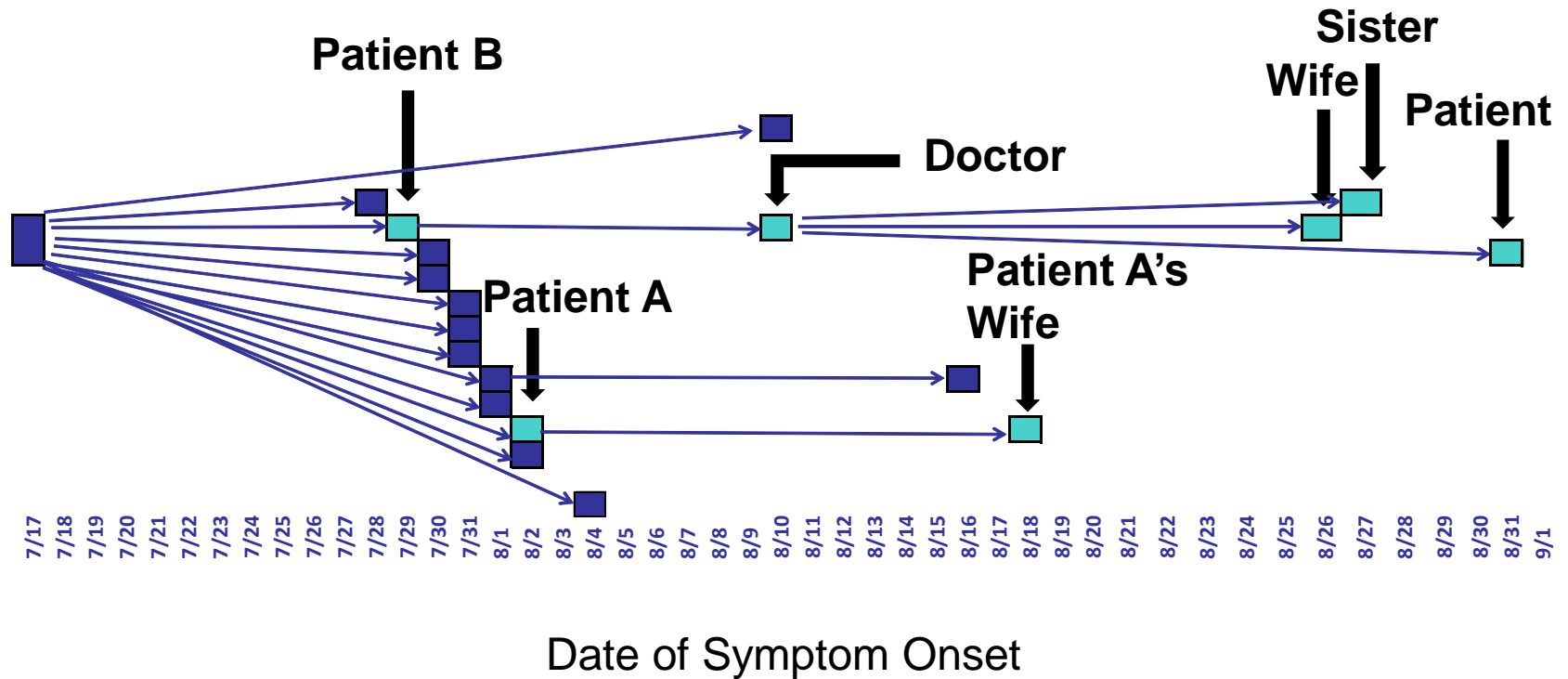


Fear Spreads



Rioting in Monrovia

Ebola Transmission in Nigeria, July–August, 2014



Nigeria Responds



- ❑ Nigerian FETP and EOC identified 894 contacts
- ❑ Completed nearly 19,000 contact tracing visits
- ❑ Implemented a social mobilization strategy that reached 26,000 households
- ❑ Established an ETU in just two weeks

FETP: Field Epidemiology Training Program
EOC: Emergency Operations Center
ETU: Ebola Treatment Unit

Nigeria Succeeds

Ebola-free Nigeria hailed as 'success story' in battling outbreak



Children in Lagos, Nigeria, wash their hands with soap after being tested for signs of the Ebola virus on Oct. 8. (Sunday Alamba / Associated Press)

- ❑ **With only two GHSA features in place (contact tracing and surveillance, Emergency Operations Center), Nigeria was able to contain a potentially disastrous epidemic**



President Barack Obama
President of the United States of America

Dr. Tom Frieden
Director, CDC

Ms. S
National

Obama Meets with CDC

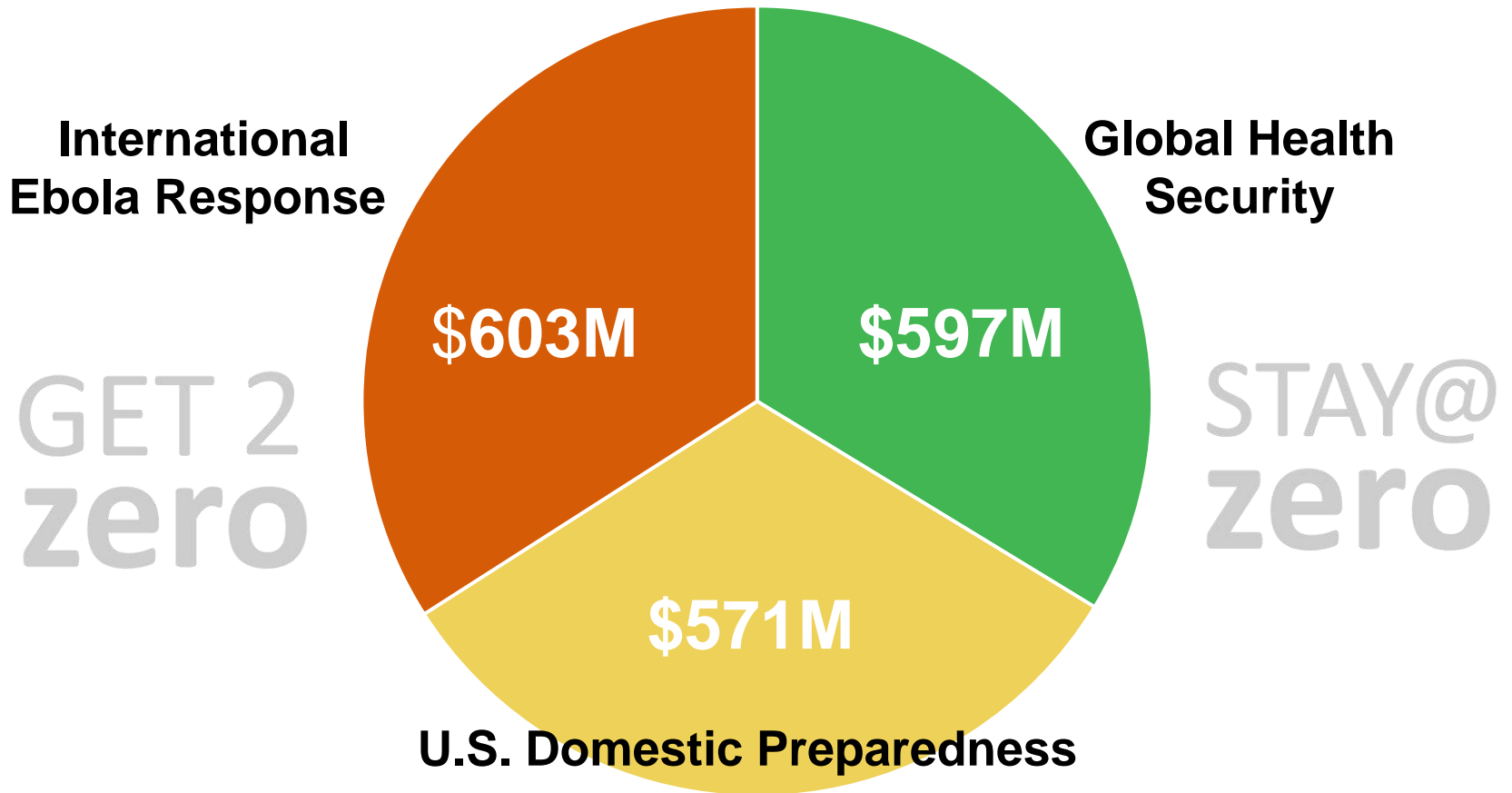


Treatment for Healthcare Workers



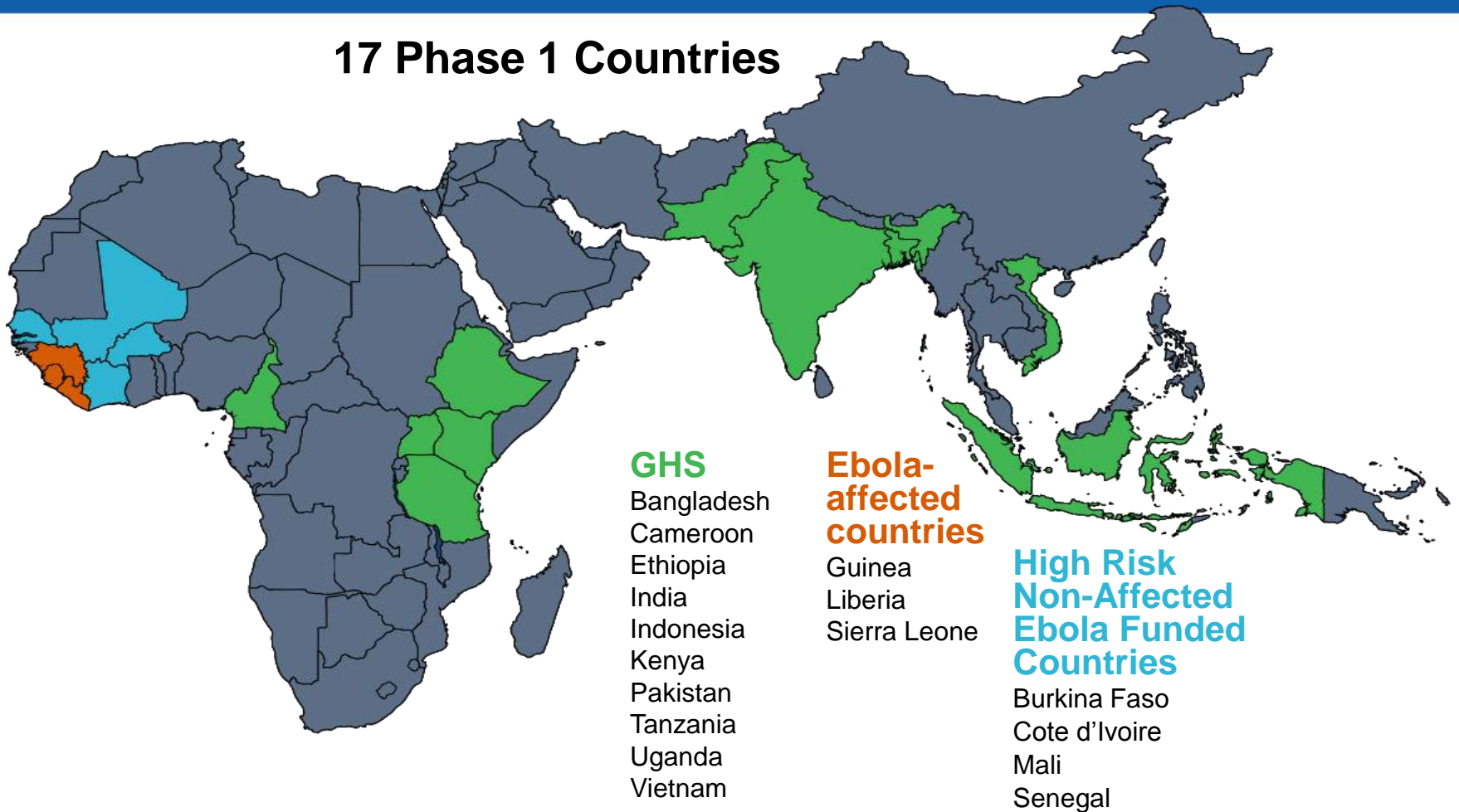
Emergency Funding, 2015–2019

CDC received \$1.77B of \$6B



U.S. Global Health Security Agenda Commitments, 2015

17 Phase 1 Countries



Next Steps

❑ 2015

- ❑ Get to Zero, Stay at Zero, Build Back Better

❑ Next 3–5 years

- ❑ Expand GHSA footprint to other at risk countries

❑ By 2020

- ❑ United States to implement GHSA in 30 countries

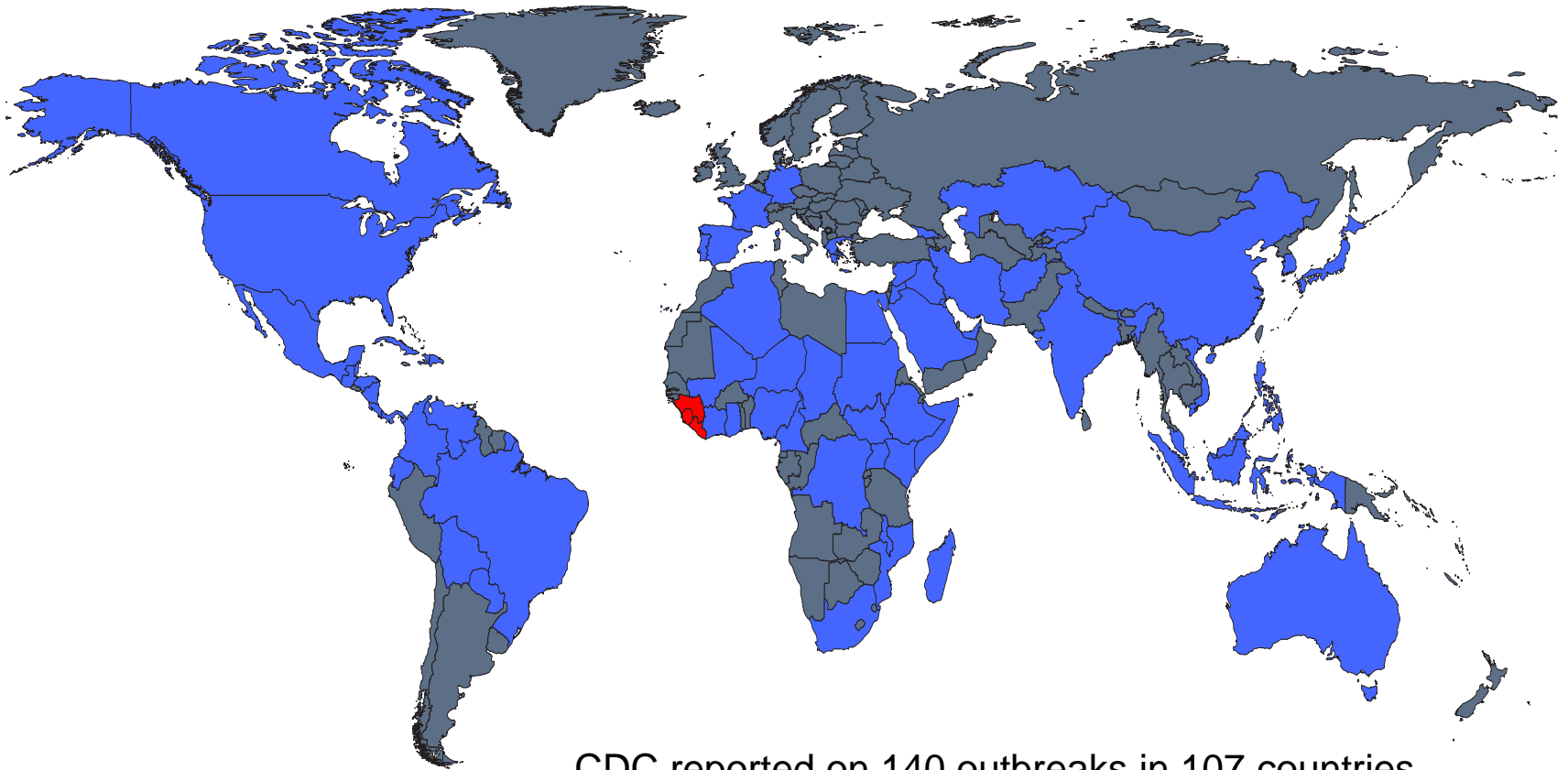
A photograph of President Barack Obama in a dark suit and red tie, shaking hands with a man in a dark suit and a patterned tie. The man has a pink name tag that reads "APPOINTMENT A ESCORT". They are surrounded by other people in suits, some of whom are clapping. The background is a plain, light-colored wall.

Global Health Security Agenda

“Together, our countries have made over 100 commitments... And now, we’ve got to turn those commitments into concrete action – starting in West Africa. We’ve got to make sure we never see a tragedy on this scale again...”

**President Barack Obama
September 26, 2014**

Global Outbreaks Monitored by CDC's Global Disease Detection Operations Center, March 2014 – July 2015



CDC reported on 140 outbreaks in 107 countries
March 2014–July 2015

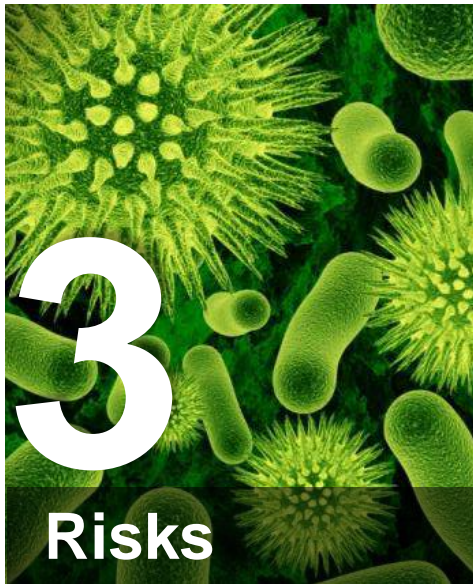


Countries with infections disease outbreaks from March 2014 to July 2015 as reported by CDC Global Disease Detection (GDD) Operations Center



Ebola-affected countries

Global Health Security Agenda



- Emerging organisms
- Drug resistance
- Intentional creation



- Public health framework
- New lab and surveillance tools
- Successful outbreak control



- Prevent wherever possible
- Detect rapidly
- Respond effectively