Shifts in Global Health Security: Lessons from Ebola

Accessible version: https://youtu.be/vbmhi8hviJ0
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*

* 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.

fts.unocha.org/pageloader.aspx?page=home
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.

- Improving access to clean water: 57%
- Children’s health, including vaccinations: 53%
- Reducing hunger and malnutrition: 52%
- Fighting the Ebola outbreak in West Africa: 44%
- Preventing and treating HIV/AIDS: 39%
- Combating global pandemic diseases like swine flu: 36%
- Building and improving hospitals and other health care facilities: 36%
- Efforts to reduce the number of women who die during childbirth: 34%
- Preventing and treating tuberculosis: 32%
- Preventing and treating malaria: 27%
- Eradicating polio: 26%
- Preventing and treating heart disease, other chronic diseases: 26%
- Improving access to family planning, reproductive health: 25%

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

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
<th>REPUBLICIANS</th>
<th>INDEPENDENTS</th>
<th>DEMOCRATS</th>
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<tr>
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<tr>
<td>Oct. 8–14, 2014</td>
<td>73%</td>
<td>70%</td>
<td>72%</td>
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<td>Oct. 17–19, 2014</td>
<td>62%</td>
<td>50%</td>
<td>65%</td>
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<tr>
<td>Change (percentage points)</td>
<td>-11*</td>
<td>-20*</td>
<td>-7</td>
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<td><strong>Your local hospitals</strong></td>
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<tr>
<td>Oct. 8–14, 2014</td>
<td>64%</td>
<td>64%</td>
<td>60%</td>
<td>69%</td>
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<tr>
<td>Oct. 17–19, 2014</td>
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<td><strong>Your state or local health departments</strong></td>
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<tr>
<td>Oct. 8–14, 2014</td>
<td>62%</td>
<td>61%</td>
<td>61%</td>
<td>67%</td>
</tr>
<tr>
<td>Oct. 17–19, 2014</td>
<td>58%</td>
<td>53%</td>
<td>56%</td>
<td>63%</td>
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<tr>
<td>Change (percentage points)</td>
<td>-4</td>
<td>-8</td>
<td>-5</td>
<td>-4</td>
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</tbody>
</table>

* 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
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.

www.fda.gov/EmergencyPreparedness/Counterterrorism/MedicalCountermeasures/MCMLegalRegulatoryandPolicyFramework/ucm182568.htm#current

Nightingale SL, Prasher JM, Simonson S. http://wwwnc.cdc.gov/eid/article/13/7/06-1188_article
Challenges of Ebola Response

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

The recent emergence of Zaire ebolavirus in West Africa 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 \textit{Zaire ebolavirus}

Adapted from Olival, K. and Hayman DTS
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.

World Health Organization
apps.who.int/iris/bitstream/10665/171823/1/WHO_EVD_SDS_REPORT_2015.1_eng.pdf?ua=1
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.
Dark Winter Exercise (2001):

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

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

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

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

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

Pushed to the Limit and Beyond

A year into the largest ever Ebola outbreak

www.msf.org/article/ebola.pushed-limit-and-beyond
“Where’s the MERS hospital?”
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.

<table>
<thead>
<tr>
<th>Monitoring element</th>
<th>Risk category</th>
<th>Low (but not zero) risk</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High risk and some risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travelers</td>
<td>U.S. HCWs</td>
<td></td>
</tr>
<tr>
<td>Type of daily monitoring</td>
<td>DAM</td>
<td>AM</td>
<td>DAM</td>
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<tr>
<td>Reporting frequency to CDC</td>
<td>Daily</td>
<td>Weekly</td>
<td>Weekly</td>
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<tr>
<td>No. of persons monitored</td>
<td>315</td>
<td>9,512</td>
<td>527</td>
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<tr>
<td>No. of jurisdictions conducting monitoring</td>
<td>47</td>
<td>54</td>
<td>10</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Prevent</th>
<th>Detect</th>
<th>Respond</th>
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<tbody>
<tr>
<td>Prevent 1: Antimicrobial Resistance</td>
<td>Detect 1: National Laboratory</td>
<td>Respond 1: Emergency Operations Centers</td>
</tr>
<tr>
<td>Prevent 3: Biosafety and Biosecurity</td>
<td>Detect 4: GHSA Reporting</td>
<td>Respond 3: Medical Countermeasures and Personnel Deployment Action Package</td>
</tr>
<tr>
<td>Prevent 4: Immunization</td>
<td>Detect 5: Workforce Development</td>
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[www.cdc.gov/globalhealth/security/actionpackages/default.htm](http://www.cdc.gov/globalhealth/security/actionpackages/default.htm)
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.
Ebola: lessons learned from HIV and tuberculosis epidemics

Paul K Drain

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

Mariam Davtyan¹, Brandon Brown¹* and Morenike Oluwatoyin Folayan²

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. Rambha, 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

[www.cdc.gov/globalhealth/security/actionpackages/default.htm](http://www.cdc.gov/globalhealth/security/actionpackages/default.htm)
Thank You

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
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

Identification of Pathogens and Problems
Characterization of Pathogen and Threat
Development Candidate Countermeasures
Testing of Promising Countermeasures
Licensure and Deployment of Countermeasures

Case Reports
Basic Science Studies
Surveillance
Laboratory Investigations
Epidemiological studies

Laboratory Research
Phase I, II, III trials

Threat Assessment
Focused Product Oriented Research

Advanced Development/Licensure
“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

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.

Military Health System Quadruple Aim =>
Readiness; Population Health

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

GEIS PROGRAM

Global Health Security
Force Health Protection

Prevent
Detect
Respond
Build Capacity
Studies

NSFC-7: “the mission of the DoD will be expanded to include support of global surveillance, training, research, and response to emerging infectious disease threats…”

Coordination and Collaboration
Science and Innovation
Responsive Information Sharing
Responsible Administration and Management

Respiratory Infections
Enteric Infections
Febrile/Vector-borne Infections
Sexually Transmitted Infections
Anti-Microbial Resistance
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)

PDD: Presidential Decision Directive
AFHSC: Armed Forces Health Surveillance Center
DHA: Defense Health Agency
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
- USAMRU-K
  Nairobi
  1969
- NAMRU-6
  Lima
  1983
- NAMRU-3
  Cairo
  1946

NAMRU: Naval Medical Research Unit
USAMRU: US Army Medical Research Unit
Surveillance is a Continuous Process
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

**Product: FVBI Risk/Threat Characterization** through a multi-disciplinary collaborative approach toward FVBI surveillance

- **Human Infection**
  - Clinical cases
  - Community morbidity and mortality

- **Pathogen Presence**
  - Pathogen discovery, Arthropod vector and Animal host harborage

- **Transmission Facilitation**
  - Environmental and ecologic conditions, trends and events
Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System

- Detection: Detecting cases of disease in a population and reporting the information.
- Prevention: Providing information to assist in longer-term management of health care policies and programs.
- Interpretation: Analyzing and confirming reported information to detect outbreaks.
- Response: Providing timely and appropriate response to disease outbreaks.

Source: GAO analysis.
Phase 1: Ebola diagnostics at 2 locations
- Island Clinic, Monrovia
  - Ebola Treatment Unit (ETU) managed by WHO
- Cuttinton 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
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
Surveillance is a Continuous Process

Figure 1: Elements of a Disease Surveillance System

1. Detection
   - Detecting cases of disease in a population and reporting the information
2. Interpretation
   - Analyzing and confirming reported information to detect outbreaks
3. Response
   - Providing timely and appropriate response to disease outbreaks
4. Prevention
   - Providing information to assist in longer-term management of health care policies and programs

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)
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

Jordan W. Tappero, MD, MPH

Director, Division of Global Health Protection
Centers for Disease Control and Prevention
A Health Threat Anywhere Is a Health Threat Everywhere
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.
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

International Health Regulations, 2005
Public Health Threats

Emergence & Spread of New Pathogens

Globalization of Travel, Food and Medicines

Rise of Drug Resistance

Intentional Engineering/Accidental Release

Declared Public Health Emergencies of International Concern (PHEIC)

H1N1, 2009

Reemergence of wild poliovirus, 2014

West Africa Ebola epidemic, 2014-present
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

IHR: International Health Regulations

Report to the Director-General of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation, November 2014
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

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
A unifying framework to improve our global response to disease outbreaks

Global Health Security Agenda (GHSA)

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 WHC priority AMR pathogens 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. Biosafety 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 populations.
- 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 conduct at least five of the 10 core tests (including point-of-care and laboratory-based diagnostics) on appropriately identified and collected outbreak specimens transported safely and securely to accredited laboratories 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.

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
Dr. Tom Frieden @DrFriedenCDC - 13h

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

Surveillance
Laboratory
Preparedness
Response
Zoonotic disease
Human resources
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

GHSA: Global Health Security Agenda
Monrovia Under Siege
More Patients than Beds in Ebola Treatment Units

1000+ Beds in demand
280 Beds currently available

CDC unpublished data
Community Deaths
Fear Spreads
Rioting in Monrovia
Ebola Transmission in Nigeria, July–August, 2014

Patient B
Patient A
Doctor
Patient A’s Wife
Sister
Wife
Patient

Date of Symptom Onset

Shuaib F, Gunnala R, Musa EO et al; CDC. MMWR Oct 3;63(39):867-72.
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
Nigeria Succeeds

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

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

Obama Meets with CDC
Treatment for Healthcare Workers
GET 2 zero
Emergency Funding, 2015–2019

CDC received $1.77B of $6B

- International Ebola Response: $603M
- Global Health Security: $597M
- U.S. Domestic Preparedness: $571M

CDC, stacks.cdc.gov/view/cdc/27784
U.S. Global Health Security Agenda Commitments, 2015

17 Phase 1 Countries

GHS
Bangladesh
Cameroon
Ethiopia
India
Indonesia
Kenya
Pakistan
Tanzania
Uganda
Vietnam

Ebola-affected countries
Guinea
Liberia
Sierra Leone

High Risk Non-Affected Ebola Funded Countries
Burkina Faso
Cote d'Ivoire
Mali
Senegal

GHS: Global Health Security
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

GHSA: Global Health Security Agenda
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

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

Risks
- Emerging organisms
- Drug resistance
- Intentional creation

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

Priorities
- Prevent wherever possible
- Detect rapidly
- Respond effectively