Civil Agency BioDefense Panel:

A Look at Community Health Resilience

Federal, State and Private Sector Perspectives

NDIA BioDefense Health Summit
October 21st, 2016
Civil Agency BioDefense Panel:

Private Sector Perspective

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NDIA BioDefense Health Summit
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Health and Resilience

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HHS ASPR was created under the Pandemic and All Hazards Preparedness Act (PAHPA) in the wake of Katrina to lead the nation in preventing, preparing for, and responding to the adverse health effects of public health emergencies and disasters. Reauthorized in 2013 as PAHPRA. Web site: www.phe.gov
ASPR brings together Science, Policy, and Operations
Our current preparedness, response, and recovery approach will have difficulty addressing the complexity, scope, and potential increase in new global threats over the longer-term.
Global Threats

- Urbanization
- Climate Change
- Population
- Globalization

- Certain types of extreme weather more frequent and/or intense
- New challenges because changes in climate interact with other environmental, economic, and societal factors
- Threats to food production
- Recurrent exposure to disaster
- By 2050, 75% of global population will live in increasingly large urban centers (UN)
- Increased demands on urban infrastructure, social structure, and ability of municipalities to meet the residents' needs
- Failures in urban systems will affect more people
- Population growth coupled with overconsumption may lead to severe existential problems
- Habitat loss/species extinction
- Possible food security issues
- Population may increase to 9 billion (from 7.2 billion) by 2050. (UN)
- Greater movement of people, animals, and goods across international borders
- Increased illness/disease risks
- Increased interconnection in global economy.

“Traditional” Preparedness:
- Critical Infrastructure
- Response & Recovery Capabilities
- Individual Preparedness
- Hospital Preparedness
- Surge Capacity
- Continuity of Operations

Resilience Adds Focus On:
- Strengthening Everyday Systems
- Social Connectivity
- Behavioral Health
- At-Risk People as Assets
- Broader Community Partnerships
- Resilient Leadership
- Volunteerism/Empowered, Trained Citizens

*Adapted from Recovery Federal Interagency Operational Plan; FEMA 2014
What’s “Health Resilience”?

Resilience is a whole-community, multi-sector effort, so what’s “Health Resilience”?

Human Health and Wellbeing is Foundational to Resilience

...almost everything we do in preparedness, response, and recovery aims to ultimately safeguard or promote human health and wellbeing.

(Adapted from NPRSB Community Health Resilience recommendations, 2013)

Health Resilience Focuses on People and the systems that safeguard their health and well-being.
Definitions

Finding a “common vocabulary” is of far more practical importance than finding a common definition.

…that said, we do have a definition…

**Community health resilience** is the ability of a community to use its assets to strengthen public health and healthcare systems and to improve the community’s physical, behavioral, and social health to withstand, adapt to, and recover from adversity.

*National Health Security Strategy, 2015*
Community Health Resilience

*Involves human resilience (people) and healthcare infrastructure resilience*

**Robust everyday systems** (the pre-event status of health and social services in a community can predict resilience)

**Health, behavioral health, and wellness promotion** (physically and psychologically healthy people)

**Social connectedness/social capital** (has the potential to significantly reinforce resilience; public health, healthcare, behavioral health, and social services are important nodes of social capital in many communities)

**Culture of resilience** (informed, empowered people; neighbors trained to help neighbors during emergencies)
“...cost to global economy $2.5T a year. “

“By 2030 the amount will increase to about $6T..”

-Darkness Invisible; The Hidden Global Cost of Mental Illness, Insel, et al., Foreign Affairs Magazine, 2015
Zika May Increase Risk of Mental Illness, Researchers Say

Global Health

Ebola Anxiety: A Bigger Threat Now Than the Virus Itself

HealthDay

How to Help Women Worried About Zika

Psychology Today

Americans were more worried about Ebola than they are about Zika

The Washington Post

Zika, and Zika anxiety, spreads to Miami Beach

CBS News

An epidemic of fear and anxiety hits Americans amid Ebola outbreak

Washington Post
Social capital is a major predictor of recovery and may trump the degree of infrastructure damage, the underlying socioeconomic status of a community, and the amount of aid received by an area. - Aldrich DH 2010, 2012

Building social capital should be viewed as a legitimate, and perhaps essential, component of emergency preparedness.
Resilience is Objective #1 in the U.S. National Health Security Strategy

Build and Sustain Healthy, Resilient Communities

1.1 • Encourage social connectedness through multiple mechanisms to promote community health resilience and emergency response, and recovery.

1.2 • Enhance coordination of health and human services through partnerships and other sustained relationships.

1.3 • Build a culture of resilience by promoting physical, behavioral health, and social health… neighbors trained and empowered to help neighbors.

www.phe.gov/nhss
At-Risk, Behavioral Health & Community Resilience (ABC)

The Division for At-Risk, Behavioral Health & Community Resilience (ABC) provides subject matter expertise, education, and coordination to internal and external partners to ensure that the functional needs of at-risk individuals and behavioral health issues are integrated in the public health and medical emergency preparedness, response, and recovery activities of the nation to facilitate and promote community resilience and national health security. Learn More >>

At Risk Individuals

Some individuals may have greater difficulty accessing the public health and medical services they require following a disaster or emergency. At-risk individuals have needs in one or more of the following functional areas: communication, medical care, maintaining independence, supervision, and transportation. Learn More >>

Behavioral Health

Disaster behavioral health is the provision of mental health, substance abuse, and stress management services to disaster survivors and responders. Following an emergency event it is common for individuals and families, as well as disaster responders, to experience distress and anxiety about safety, health, and recovery. Learn More >>

Community Resilience

Resilient communities include healthy individuals, families, and communities with access to health care, both physical and psychological, and with the knowledge and resources to know what to do to care for themselves and others in both routine and emergency situations. Learn More >>
Key Resilience Resources

**U.S. HHS-ASPR Division of At-Risk Individuals, Behavioral Health, and Community Resilience**

http://www.phe.gov/abc

- Community Resilience Factsheet: [http://www.phe.gov/Preparedness/planning/abc/Pages/community-resilience.aspx](http://www.phe.gov/Preparedness/planning/abc/Pages/community-resilience.aspx)
- Individual Resilience Factsheet: [http://www.phe.gov/Preparedness/planning/abc/Pages/individual-resilience.aspx](http://www.phe.gov/Preparedness/planning/abc/Pages/individual-resilience.aspx)
- Responder Resilience Factsheet: [http://www.phe.gov/Preparedness/planning/abc/Pages/resilience-factsheet-responders.aspx](http://www.phe.gov/Preparedness/planning/abc/Pages/resilience-factsheet-responders.aspx)

**RAND Corporation**

- Community Resilience Web-page
  Compiled information on resilience with a health focus, including a free, on-line course to assist communities to build resilience. [http://www.rand.org/topics/community-resilience.html](http://www.rand.org/topics/community-resilience.html)
- Building Community Resilience to Disaster: A Way Forward to Enhance National Health Security

**Community Health Resilience Initiative**

Civil Agency BioDefense Panel:

DHS and Community Health Resilience

NDIA BioDefense Health Summit
October 21st, 2016

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BIOTERRORISM: Mother Nature or Man
Which One Should We Be Most Concerned About

Let's Compare Confirmed Bio Events since 1980 to Present

• Manmade BioTerrorism Events (unclass)
  • 1984 – Salmonella salad bar attack by the Bhagwan Shree Rajneesh Cult
  • 1990 to 1995 – Botulinum toxin and B. anthracis attacks by Aum Shinrikyo in Toyoko
  • 2001 – B. anthracis mail attacks in the US
BIOTERRORISM: Mother Nature or Man
Which One Should We Be Most Concerned About

• Naturally Occurring Disease Outbreaks (not all inclusive)
  • <1980> - HIV/AIDS
  • 1990’s – Cholera in South America
  • 1994 – Plague in Surat
  • 2000 – Dengue Fever in Central America
  • 2001 – Cholera in Nigeria and South America
  • 2002 to 2003 – SARS in Asia
  • 2003 – Plague in Algeria
BIOTERRORISM: Mother Nature or Man
Which One Should We Be Most Concerned About

- Naturally Occurring Disease Outbreaks
  - 2004 – Leishmaniasis In Afghanistan
  - 2004 – Ebola in Sudan
  - 2005 - Yellow Fever in Mali
  - 2005 - Dengue Fever in Singapore
  - 2006 - Malaria in India
  - 2012 - to present - Worldwide MERS
  - 2013 - to present – Ebola
Health Resilience Issues

• Three major gaps
  – Organizational roles and responsibilities not fully understood
  – The critical information requirements of most organizations are not understood by others (e.g., intelligence sharing)
  – Guidance needed to assist public health officials in translating information to protective actions

• State and local communities are not built alike
• Community survival depends on building resiliency through partnerships between government and private sector

Emergency Support Function-8 (ESF-8) will not be fully realized until these gaps are addressed
Mobilizing the “Whole Community”

Figure 5, Taxonomy for Health Security: Memphis
Vulnerable Populations

- Chronic medical conditions including mentally ill, clients with special needs
- Socially isolated
- Costal Communities
- Poor & vulnerable communities
- Subsistence Farmers
- Required medical treatments (Dialysis)
- Outdoor workers
- Very young children
- Elderly suffer the greatest effects of heat-waves (impact on mortality greater in women)
FACTORS CONTRIBUTING TO EMERGENCE OR RE-EMERGENCE OF INFECTIOUS DISEASES

Evolution of pathogenic infectious agents by which they may infect new hosts, produce toxins, or adapt by responding to changes in the host immunity. (e.g. influenza, HIV)

Increased Antibiotic Resistant Bacteria such as *Mycobacterium tuberculosis* and *Neisseria gonorrhoeae* to chemoprophylactic or chemotherapeutic medicines.
Mobilizing the “Whole Community”

HEALTH (Public Health, Mental Health, Physical Health)
The New Status Quo?

THEN

Atchoo!

Bless you

NOW

Atchoo!

Hello CDC?
Resilience Focus Areas

Fundamental Intersections with Health
STRATEGIES

DEVELOPMENT OF PREDICTIVE MODELS BASED ON:
- Epidemiologic data
- Climate change surveillance
- Human behavior

ESTABLISH PRIORITIES
- The risk of disease
- The magnitude of disease burden
  - Morbidity/disability
  - Mortality
  - Economic
  - Cost

REDUCE POTENTIAL FOR RAPID SPREAD

DEVELOP CONTROL STRATEGIES
POTENTIAL SOLUTIONS

• Public health surveillance & response systems
  • Surveillance at national, regional, global level
    • Epidemiological
    • Laboratory
    • Ecological
    • Anthropological

• Rapidly detect unusual, unexpected, unexplained disease patterns
  • Investigation and early control measures

• Track & exchange information in real time

• Contain transmission swiftly & decisively

Homeland Security

Dr. KANUPRIYA CHATURVEDI
It’s a Hard Problem Even When You Know What You’re Looking For...
Issue: Looking for Everything Means It’s Harder to Find Any One Thing
Where’s Waldo? Emerging Infectious Disease
ST JOHNS: DAMAGE TO EMERGENCY MEDICAL VEHICLES

Walter Hays, Global Alliance for Disaster Reduction, University of North Carolina, US
Make Biosurveillance Systems “Tunable”

• Can’t watch for everything, everywhere, all the time and still maintain a tolerable false positive error rate
  • Instead, design systems to be “tunable”

• One approach: set detection thresholds to make most likely events most detectable
  • As threats change, can change thresholds
ESSENTIAL FACTORS FOR DISEASE ERADICATION IN COMMUNITIES

• Knowledge of its epidemiology and transmission patterns/mode

• Availability of effective tools for diagnosis, treatment and prevention

• Knowledge of local cultural and political characteristics

• Community acceptance and mobilization

• Political will and leadership

• Adequate and sustained funding
Community Health Resilience Toolset: Guide and Toolkit

The CHRI Guide and Toolkit provide users with a comprehensive overview of the many elements and characteristics of holistic community health resilience.

So what does it help with??

- As a planning template to develop or enhance public health and organizational preparedness, response, mitigation, and recovery/continuity plans.
- As a means to engage the broad stakeholder base toward community health resilience; to provide a high-level checklist of community health resilience capabilities.
- To learn about community health resilience best practices that public/private-sector and non-profit organizations have or are developing.
- To access policy and educational resources to provide information in specialty areas such as Geriatric/Elder and Pediatric/Children’s disaster resilience issues.
- To help identify and point toward actions to improve community health resilience under steady-state conditions and during emergencies.
- To train and enhance strategic and operational needs and actions necessary for building health-resilient communities and organizations.
Ebola, Enterovirus and Emerging Infectious Disease Resources

US Climate Resilience Toolkit
Health Resilience Guidance
Draft Review
Web Version
Functional Capabilities
Mission Areas
Add a Resource

About the Initiative and this Toolset

The goal of the CHR Toolkit is to provide practitioners and experts from all sectors, disciplines, and functional areas who have roles, responsibilities, or interests in CHR access to guidance and resources to make their community (or organization) more resilient. The CHR Toolkit:

- Provides users a comprehensive overview of what CHR is—its many elements and characteristics—and what CHR requires.
- Provides guidance, information, resources, and best practices needed to enable and empower communities, organizations, and individuals to be health resilient through the Toolkit's website.
- Provides a source of information on capabilities and solutions that public/private-sector and non-profit organizations have, or are developing, as well as other policy and educational resources to improve CHR understanding and readiness.

Community Health Resilience: A Description

Regardless of the event, a community’s ability to successfully return to a “new normal” is based on its resilience, or its capacity to withstand, respond positively to, adapt, and recover expeditiously from a crisis or adversity.

To date, there is no single definition accepted for community resilience or CHR. In addition, the term resilience has different meanings depending on the professional function or discipline (e.g., sociologists, engineers, or emergency managers). Although there is no agreed definition, there are useful descriptions of both community resilience and CHR.

Useful descriptions include:

- The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions, including deliberate attacks, accidents, or natural occurring threats and incidents.
Doomed to Failure

Unresolved Issues and Difficulties:

Wealth Resilience: A Conceptual Framework

Why are we even discussing this?
Defining Resiliency
Community and Healthcare System Resiliency

An *emergent property* of a system:
- Things that create it
- Situations that call for it
- Outcome of an environment (how ever defined)

It *can not* be isolated or measured before an adverse event / incident

“I will know it when I see or experience it”
Community and Healthcare System Resiliency

“The development of resistance (mitigation?) to any disruption within a “community” where there is the ability to bounce back (recover) to its pre-disaster state and to build on learning lessons of a crisis/disaster to gain improved level of functioning and increased levels of adaptability (resilience).”

Al Romanosky
Community and Health Resiliency: Doomed to Failure
Community and Health Resiliency: Doomed to Failure

- Overcoming resistance to change
  - Repeating the same old stuff
  - It worked before it should work now
  - Why change a good thing?
- Failure to recognize evolving trends, threats and risks
- Failure to look to the future
Community and Health Resiliency: Doomed to Failure

- Working within complex maladaptive systems
- Lack of consistent dependable resources including funding and leadership
  - Reduced sustainability
- Strict directives and confining guidelines and deliverables
Functioning Within Complex Maladaptive Systems With Self-Organized Criticality High Potential For Catastrophic Failures
Societal Interdependency of Critical Infrastructure and Key Resources Essential for Community Resiliency

- Commercial Facilities
- Public Heath/ and Medical
- Government Facilities
- Nuclear
- Water/ Sanitation
- Financial Banking
- Energy (Nuclear)
- Health and Medical
- IT / Comm
- Food Agriculture
- Transportation
- National Icons
- Dam
- Manufacturing
- Shipping / Postal
- Chemical
- DOD Industry
- Emergency Services

DOD NDIA Health Affairs Biodefense Summit
<table>
<thead>
<tr>
<th>Level</th>
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<th>Response</th>
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<td>Simple / Focused</td>
<td>Life Safety, Water, Shelter And Food</td>
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<tr>
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<td>Simple / Focused / Complicated</td>
<td>Life Safety, Water, Shelter And Food</td>
</tr>
<tr>
<td>Facility</td>
<td>Complicated / Difficult / Limited Focus</td>
<td>Life Safety, Water, Shelter And Food / <em>Continuity Of Operations</em></td>
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<td>Regional</td>
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<td>Life Safety, Water, Shelter And Food / <em>Broad But Confined/ Interdependent Critical Systems</em></td>
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<tr>
<td>State</td>
<td>Complex Adaptive System</td>
<td>Life Safety, Water, Shelter And Food / <em>Broad / Multiple Partners And Interests/ Interdependent Critical Systems</em></td>
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<td>Federal</td>
<td>Complex Adaptive (?) System</td>
<td>Life Safety, Water, Shelter And Food / <em>Broad / Multiple Partners And Interests/ Interdependent Critical Systems</em></td>
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</tbody>
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Lack of consistent dependable resources including funding and leadership:

Reduced sustainability

The State of Public Health
Ebola in the U.S.—Politics and Public Health Don't Mix; By Judy Stone Scientific American
October 6, 2014
The Red Queen Theorem of Public Health Emergency Preparedness

"Well, in our country," said Alice, still panting a little, "you'd generally get to somewhere else -- if you run very fast for a long time, as we've been doing."

"A slow sort of country!" said the Queen. "Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"
Changing Systems / Dynamics
Short Term Narrow Perspective
Arrogance of Success

Failure to Look to the Future
The Conceptual Answer to Build Community and Health Resiliency
Take advantage of current events and relationships to build coalitions and bring about change

Foster Innovation and Creativity as a Means to Upset and Change Existing Paradigms
Building New Solutions

- Teach creativity
  - Accept failure
- Simplify, assess and re-align priorities
- Streamline national, state and local priorities
- Build new partnerships and nurture existing partnerships
- Motivate change
- Develop new concepts and paradigms to foster resiliency
Building New Solutions

- Change from a categorical budget lines to a more “relaxed” general funding model
- Provide *consistent* funding for disaster and emergency preparedness mitigation and planning activities
  - Federal level Emergency Reserve Funds
Changes in Health Care Delivery
Re-align Priorities
Enhance and Build New Partnerships
Cybersecurity

Recognize Changing and Evolving Threats
Pandemic Influenza

Re-Align Priorities
Enhance Existing Partnerships
Build New Partnerships
Enterprise Green Communities
Building a Culture of Preparedness
Application of Services in New Paradigms

Changing Directions and Adopting New Paradigms
Summary