Community and Regional Resilience

One Health: Addressing the Challenges of Global Health and Food Security

Brian Dabson

Emerging Threats to One Health: Implications for U.S. National Security

Colloquium, April 12, 2011
University of Missouri
One Health Considerations

• Rural America is an important arena for potentially disastrous or even catastrophic events.

• Some obvious sources for infectious diseases:
  – Intensive animal feeding operations
  – Food processing facilities
  – Infected wildlife
  – Infected visitors, contaminated transport modes
  – Contaminated water sources
Food Poisoning Outbreaks
# Severity

<table>
<thead>
<tr>
<th></th>
<th>Emergencies</th>
<th>Disasters</th>
<th>Catastrophes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts</td>
<td>Localized</td>
<td>Widespread, severe</td>
<td>Extreme, physical and social</td>
</tr>
<tr>
<td>Response</td>
<td>Mainly local</td>
<td>Multi-jurisdictional, intergovernmental but bottom-up</td>
<td>Federal initiative and proactive mobilization</td>
</tr>
<tr>
<td>Procedures</td>
<td>Standard operating procedures</td>
<td>Disaster plans into effect, but likely challenges</td>
<td>Massive challenges beyond pre-existing plans</td>
</tr>
<tr>
<td>Resources</td>
<td>Within response resources</td>
<td>Extensive damage to emergency services</td>
<td>Emergency response system paralyzed</td>
</tr>
<tr>
<td>Recovery</td>
<td>No significant challenges</td>
<td>Major recovery challenges</td>
<td>Cascading long-term effects, massive recovery challenges</td>
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</tbody>
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April 12, 2011
Foot & Mouth 2001 UK
Foot & Mouth 2001 UK

- Outbreak lasted 7 months >2,000 cases
- 6 million animals culled
- Est. $11 billion impact on UK economy
- Major impact on Lake District - 40% cases,
  5 million tourists stayed away
- Spread to mainland Europe
Foot & Mouth 2001 UK

• Led to major changes in:
  – Contingency planning, exercises
  – Integrated strategies at national and local levels
  – Controls over animal movements
  – Farmer education
  – Communications improvements
Community & Regional Resilience Institute

- Program of the Oak Ridge National Laboratory
  - Develop processes and tools with which communities and regions can better prepare to withstand effects of natural and human-made disasters
  - Establish better understanding of community resilience that is accurate, defensible, welcomed, and applicable to communities nationwide
  - RUPRI part of effort to develop a “community resilience system” facilitated by Meridian Institute
Community & Regional Resilience Institute

• CARRI commissioned a series of research syntheses to capture the current state of knowledge about resilience – what it is, how to get there, how to measure it.

• This presentation is a very brief summary of certain elements of those research syntheses
CARRI’s Four Dimensions of a Resilient Community

ANTICIPATE

RECOVER

REDUCE

RESPOND

Brian Dabson
April 12, 2011
CARRI’s Four Dimensions of a Resilient Community

- **Anticipates** problems, opportunities, and potential for surprises
- **Reduces vulnerabilities** related to development, socio-economic conditions, and sensitivities to possible threats
- **Responds** effectively, fairly, and legitimately
- **Recoveres** rapidly, better, safer, and fairer
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- An unanticipated event
- Anticipated events but failed response
- Anticipated events that were proven wrong by experience
Vulnerability

• “...the pre-event, inherent characteristics or qualities of systems that create the potential for harm, or a differential ability to recover following an event” (Cutter et al, 2008)

• Extent of vulnerability depends on exposure (who or what is at risk) and sensitivity of the system (the degree to which people and places can be harmed)
Vulnerability

- **Location/proximity to hazard-prone areas** – coasts, floodplains, seismic zones...a function of magnitude, duration, frequency, impact, rapidity...

- **Built environment** – quality of construction and repair of buildings and infrastructure

- **Economic assets** – degree of dependency for employment

- **Social and demographic characteristics** – function of inequalities
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Social vulnerability – the unequal exposure to risk coupled with unequal access to resources (Morrow, 2008)
Resilience

• “…the ability of a human system to respond and recover. It includes those inherent conditions that allow the system to absorb impacts and cope with the event” and

• “…post-event adaptive processes that facilitate the ability of the system to reorganize, change, and learn in response to the event.” (Cutter et al 2008)
Economic Resilience

• Speed at which a business/sector can recover from a severe shock (Rose 2009)
• Distinguish between stocks (buildings) and flows (inputs and markets)
• Distinguish between inherent resilience – everyday ability to cope with crises, and adaptive resilience – extra ingenuity, effort to deal with major disruptions
• Distinguish between levels of response: firm-specific, sector or community-specific, and macro responses
Resilient Communities

• **Key to local success** – balancing environmental and development issues, while promoting safe and livable places

• Underscores the **importance of planning** in building resilience and reducing losses from disruptive events
Collaboration

• Across jurisdictions – vertical and horizontal
• Across sectors – public, private, voluntary
• Balance between formal and informal
• Combination of maximizing resources and innovation requires:
  – Trust
  – Expert communications
  – Information systems
  – Leadership
The enduring and complex nature of events taking place in often scattered communities may have prevented statutory agencies from ‘seeing’ the FMD epidemic as a human disaster.

A ‘disaster’ in the more conventional sense...tends to prompt pro-active and innovative approaches on the part of service providers, who feel able to dispense with ‘peacetime’ rules.

There were some examples of innovative responses during the FMD crisis, especially in primary care, but these were scattered, informal, and not formally recorded; thus knowledge about them was hard to share.
