

# The Next Challenge in Healthcare Preparedness— Catastrophic Health Events

EMForum  
May 26, 2010  
**Eric Toner, MD**

*HHS Contract # O100200700038C*

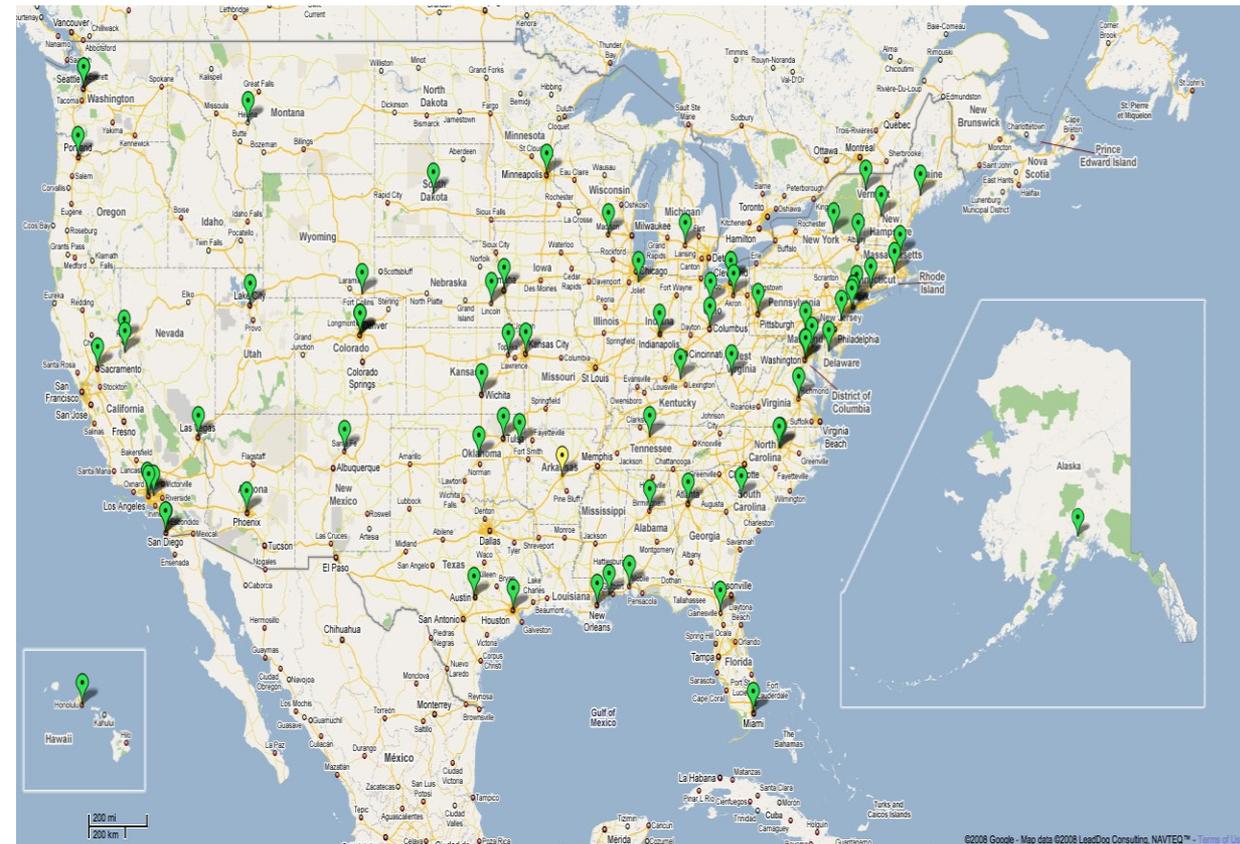
## Contracted by HHS to Assess the Hospital Preparedness Program (HPP), Past and Future

1. Define key elements of healthcare preparedness for mass casualty events (***Descriptive Framework: delivered 12/07***)
2. Use the Descriptive Framework to review the first 5 years of the HPP and assess the current state of healthcare preparedness and the impact of the HPP (***Evaluation Report: delivered 1/09***)
3. Evaluate the Healthcare Facilities Partnership Program (HFPP) and Emergency Care Partnership Program (ECP) grants (***HFPP/ECP Report: delivered 11/09***)
4. Build on the Descriptive Framework, informed by the Evaluation Report and HFPP/ECP evaluation, to propose a definition and strategy for healthcare preparedness for the future (***Preparedness Report and Provisional Criteria for the Assessment of Progress toward Preparedness: delivered 12/09***)

# Hospitals Rising to the Challenge: The First Five Years of the U.S. Hospital Preparedness Program and Priorities Going Forward Evaluation Report March 2009

- **Purpose**
  - Assessment of the progress in healthcare preparedness for mass casualty disasters achieved as a result of the first 5 years (2002-2007) of the HPP
- **Methodology**
  - Comprehensive literature review
  - Interviews with 133 individuals involved in public health and hospital preparedness in 91 locations (all states and major cities)
    - Assessment criteria based on the **Descriptive Framework** designed to evaluate progress toward achieving key capabilities and performance measures
    - Issue Analysis Meeting (6/24/08) review of findings

# Evaluation Report: Interview Distribution

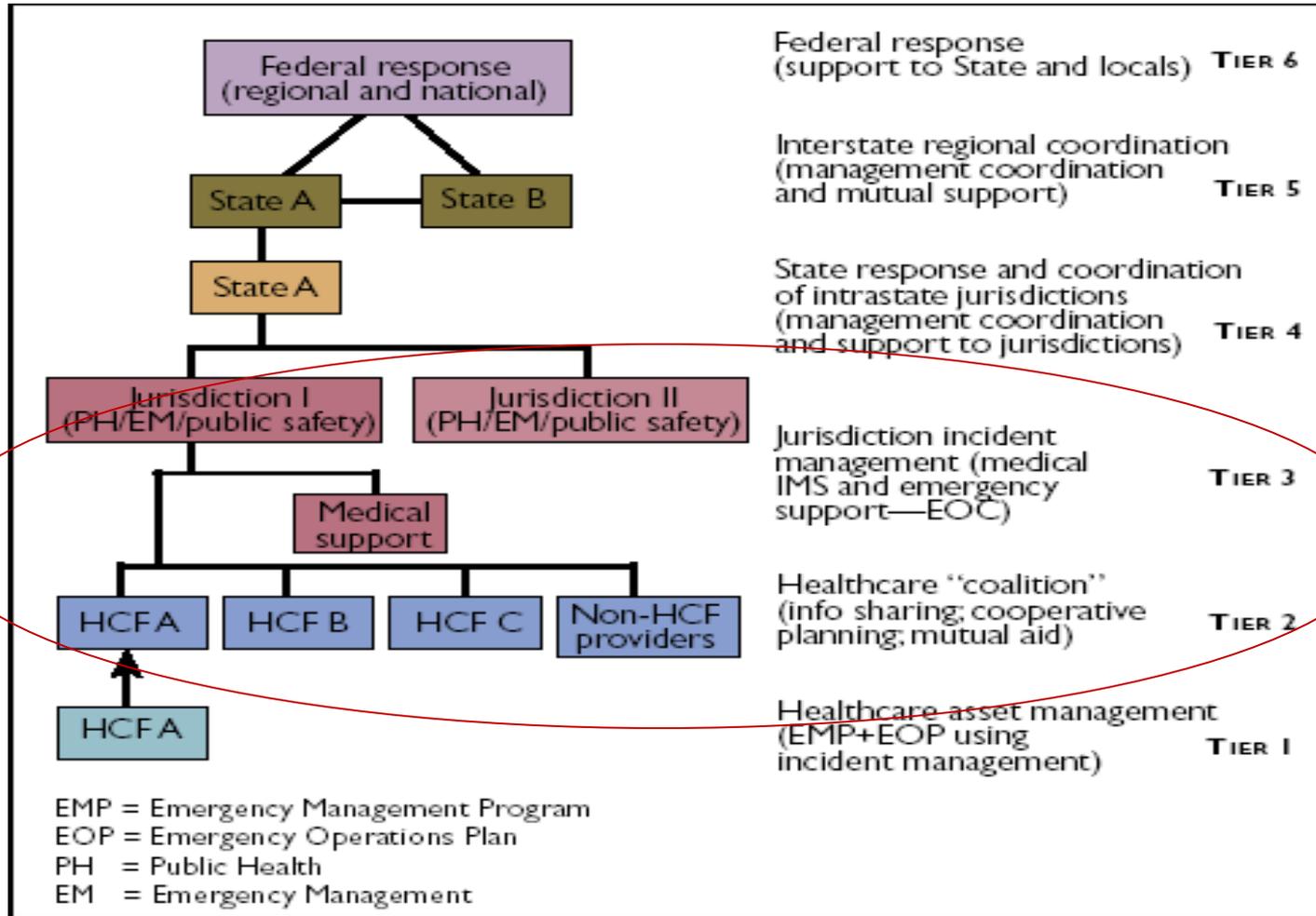


| Sector                            | Number of Interviews |
|-----------------------------------|----------------------|
| Department of Health—Municipality | 6                    |
| Department of Health—State        | 31                   |
| Department of Health—Territory    | 2                    |
| EMS                               | 3                    |
| Hospital                          | 28                   |
| Hospital Association              | 4                    |
| Hospital Region                   | 4                    |
| Hospital System                   | 6                    |
| National Preparedness Leaders     | 7                    |
| <b>Total</b>                      | <b>91</b>            |

# Evaluation Report: Findings

- The state of preparedness of individual hospitals has significantly improved over the last 6 years
- Nascent coalitions, consisting of healthcare institutions and local and state agencies, are emerging across the country
  - Healthcare Coalitions are essential to effective regional responses to commonly occurring mass casualty events that overwhelm an individual hospital
  - Healthcare Coalitions are creating a foundation for local and national healthcare preparedness
- Planning for catastrophic health events, including crisis standards of care, is in its early stages

# Healthcare Coalitions (MSCC Tiers 2-3)



# Important Characteristics of Healthcare Coalitions

- Include at least all hospitals, public health and emergency management agencies, and EMS; formally linked (e.g., by MOUs)
- Conduct joint threat assessment, planning, purchasing, training, and drills
- Serve as information clearinghouse with systems for tracking patient load and assets
- Have a formal role in local/state incident command system
- Coordinate volunteers in healthcare settings
- Provide forum for decisions regarding allocation of resources
- Coordinate alternate care facilities

# Events Where Coalitions Improved Response to Common Disasters

- **Virginia Tech shooting (2007):** Southwest Virginia Healthcare Coalition
- **Minnesota bridge collapse (2007):** Regional Hospital Resource Center
- **Tulsa tornados & ice storm:** Medical Emergency Response Center
- **Seattle snow storm (2008):** Seattle-King County Healthcare Coalition
- **Hurricanes Gustav & Ike (2008):** Galveston, Texas
- **Alaska RSV outbreak (2008):** All Alaska Pediatric Partnership
- **Southern California wildfires (2005):** Disaster Resource Centers
- **Florida hurricanes, wild fires, & race horse poisoning:** Palm Beach, FL, Healthcare Emergency Response Coalition

# Preliminary Evidence of Coalition Value: H1N1 (2009)

- **Seattle, Northern Virginia, NYC, Los Angeles, and Connecticut** activated medical coordination centers
  - Collected healthcare situational awareness data
  - Coordinated plans to distribute/use stockpiled antivirals
  - Translated, coordinated, and distributed clinical guidance
  - Coordinated messages to media
- **UC Davis Emergency Care Coalition**
  - Initiated rural telemedicine connection to coalition hospitals to support care of critically ill H1N1 patients

# Preparedness Report

## (Direction for the Future)

- **Purpose:** To build on the previous work to propose a definition and strategy for healthcare preparedness for the future
- A key finding of the *Evaluation Report* was that, while much progress has been made in healthcare preparedness for common medical disasters, the U.S. healthcare system is ill prepared for **catastrophic health events** (CHE), and there is as yet no clear strategy that will enable an effective response to such an event.
- The definition of “**catastrophic health event**” used: an event that could result in tens or hundreds of thousands of sick or injured individuals who would require access to healthcare resources.(HSPD-21)



## The Next Challenge in Healthcare Preparedness: Catastrophic Health Events

Preparedness Report | January 2010



- Our proposal for a national strategy for healthcare preparedness for *catastrophic health events*, including:
  - Description of capabilities of a prepared healthcare system
  - Analysis of current response strategy and structure
  - Recommendations built on current successes and existing structures to make all-hazards healthcare preparedness and response scalable to include catastrophic health events
  - Provisional assessment criteria for ongoing assessment of progress towards these national preparedness and response capability goals

# Preparedness Report: Methods

- Literature review on disaster preparedness and response and the current disaster health system 1995-2009
- Review of previous Center for Biosecurity working groups: mass critical care, pandemic influenza, Katrina, mega-disasters, regional hospital coalitions, alternate care facilities, disaster standards of care, NDMS
- Complex systems theory literature
- Consideration of catastrophic health event scenarios derived from National Planning Scenarios
- Input and peer review: Second Issue Analysis Meeting 2.24.09 (20 experts from around the country)

# Vision of Success: A Healthcare System Prepared for Catastrophic Events is Able to...

- Provide care for disaster victims, protect the well, and maintain essential healthcare services for the general population
- Respond quickly and agilely to mass casualty events of all sizes and causes, including those that cross jurisdictional boundaries
- Function under a variety of adverse circumstances, including:
  - a prolonged surge of patients
  - patients needing prolonged care
  - a contaminated or contagious environment
  - loss of infrastructure
  - imperfect situational awareness and disruption of incident management
- Harness all useful national resources, public and private
- Recover quickly after a disaster, still providing essential healthcare to the population

# Example of a CHE

- Anthrax National Planning Scenario
  - 330,000 individuals “exposed” in covert aerosol release in large city (let’s say DC)
  - Scenario projects 13,000 cases of inhalational anthrax, most requiring critical care

# Hospital Surge Capacity Is Limited

- Expected need
  - ~13,000 critical care beds
- ~40 hospitals within 20 miles of Capital
  - If assume 30% surge capacity
    - 3000 beds, 400 critical care beds
- To get to 13,000 would need the surge capacity of all hospitals from Philadelphia to Norfolk

# Massive Screening Challenge

- In addition, to the thousands of obviously sick people there would be many more who have some symptoms but may or may not be infected—early symptoms may be very nonspecific
  - To limit the crushing demand on hospitals it is essential to screen out those not infected
  - No rapid diagnostic test for any bioagent and no system for screening on this scale
- Need more R&D into rapid diagnostics
- Need to develop clinical triage protocols for use when resources are overwhelmed

# Response Options for a Catastrophic Health Event

- There are 3 basic options:
  - **Bring stuff in** (concentrate deployable resources near the affected site)
    - How many resources are available and how quickly can they be deployed?
  - **Move patients out**
    - By what means? How far? How to track? Families?
  - **Limit the medical care provided** (crisis standards of care)
    - Process for triggering, coordination, implementation?

***All are needed– a multilayered response***

# Bring Stuff In: Limited State and Federal Healthcare Resources

- Personnel
  - 50 DMATs, 6,000 Public Health Service Commissioned Corps, DoD, and VA)
  - State MRC and medical volunteers
- Mobile facilities:
  - Federal Medical Stations, a few mobile hospitals

All take days/weeks to deploy and have limited capacity

***All are useful, but collectively insufficient for a catastrophic health event***

# Move Patients Out: Limited Medical Transport

- While surge capacity in any one hospital or city may be very limited, across multistate regions or the country as a whole medical surge capacity is substantial
- The problem is getting the patients to the beds
- Transportation:
  - NDMS/USTRANSCOM (3,300 patients in 54 hours, many fewer if critically ill)
  - National Ambulance Contract (100s)
  - Both take days/weeks to deploy
  - **Useful, but insufficient for a very large event**
- Massive transportation resources exist in the private sector, but these are not traditional medical vehicles—require a different approach to standard of care

# Limit the Medical Care Provided: Requires Different Approach to Standards of Care

## “Crisis Standards of Care”

- Doing what is best both for the population and the individual patient
- In a catastrophic event, very resource-intensive care detracts from the care of others and may harm the individual if needed follow-on care is not available
- Applies to triage, transportation, and treatment
- Must be coordinated, and applied fairly and uniformly

# Optimal Response Requires Effective Coordination—the *Healthcare Coalition*

- All three response options require multi-tiered coordination
- At the local level hospitals and other healthcare entities (mostly privately owned and fiercely competitive) must share and coordinate:
  - Real time information, resources (supplies, equipment, and personnel) and distribution of patients
- Requires joint planning, joint exercises, and a mechanism for coordinated healthcare response—closely integrated with public health, EMS and emergency management (*the Healthcare Coalition*)
- Coalitions are evolving across the country prompted by the HPP and Joint Commission
- In very large events, coordination must extend beyond local jurisdictional borders, both vertically and horizontally

# Major Challenges to Catastrophic Health Response

- Many hospitals and other healthcare organizations do not yet participate in fully functional healthcare
- Most existing coalitions do not yet have the ability to share information, resources, and decision-making directly with neighboring coalitions
- There are inadequate systems to perform the necessary triage, immediate treatment, and transport of patients outside of the immediate area stricken by a CHE
- Existing plans and resources for patient transport are inadequate for moving the expected numbers of patients
- There is not enough guidance on the crisis standards of care that will be necessary throughout all stages of a CHE
- There is no plan that sufficiently outlines healthcare roles, responsibilities, and actions during the response to a CHE

# Recommendations for Improving U.S. Healthcare Response to Mass Casualty Events of All Sizes

- Every U.S. hospital should participate in a healthcare coalition that prepares and responds collaboratively to common medical disasters and CHEs
- Links should be established between neighboring healthcare coalitions to enable regional exchange of healthcare information and assets during a CHE
- Out-of-hospital triage sites should be established and healthcare responders should be trained in CHE triage
- A patient transportation system that harnesses alternative, private sector resources should be created
- Development of crisis standards of care should be expanded, and their consistent implementation within and across states should be promoted
- A national framework for healthcare response to CHEs should be developed to guide states, jurisdictions, and local entities in developing ConOps for medical and public health activities

# Acknowledgments

## **Center for Biosecurity Team:**

- Eric Toner, MD, PI
- Richard Waldhorn, MD, Co-PI
- Crystal Franco, MPH, Project Manager
- Thomas Inglesby, MD, Director
- D.A. Henderson, MD, MPH
- Ann Norwood, MD
- Brooke Courtney, JD, MPH
- Kunal Rambhia
- Matthew Watson, EMT-P
- Tara O'Toole, MD, MPH

## **ASPR:**

- RADM Ann Knebel
- Monica Lathan-Dye
- Dr. Deborah Patrick

# Thank you!

## Contact Information:

*Eric Toner, MD*

Center for Biosecurity of UPMC

621 E. Pratt Street, Suite 210

Baltimore, MD 21202

443-573-3304

[etoner@upmc-biosecurity.org](mailto:etoner@upmc-biosecurity.org)