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TAKING A REGIONAL HEALTHCARE COALITION APPROACH TO MITIGATING SURGE CAPACITY NEEDS OF MASS CASUALTY OR PANDEMIC EVENTS

by

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June 2012

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Hospitals and healthcare facilities are not able to singularly mitigate the patient surge from a mass-casualty incident or pandemic health event. The potential volume of patients demands that regional healthcare communities be able to respond as a unified body to maintain the resiliency of their healthcare systems. The National Healthcare Preparedness Program advocates the establishment of fully functional, response-ready regional healthcare coalitions to meet this need.

Establishing a regional healthcare coalition requires that an appropriate governance structure be established, a proper level of participation be solicited, and adequate funding mechanisms be put in place. This thesis offers a case study of how these factors influence the ability of three existing and distinctively different healthcare coalitions to prepare for a patient surge from a mass-casualty or pandemic health event. The thesis also shows the influence of each of the factors on a coalition's sustainability.

The coalitions researched were Palm Beach County, Florida's Healthcare Emergency Response Coalition, King County, Washington's Healthcare Coalition, and Jacksonville, Florida's First Coast Disaster Council. These three coalitions highlight differences and similarities in the governance structure, participation needs, and funding mechanisms of existing regional healthcare coalitions and show how each influences catastrophic patient surge mitigation in their region.

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TAKING A REGIONAL HEALTHCARE COALITION APPROACH TO MITIGATING SURGE CAPACITY NEEDS OF MASS CASUALTY OR PANDEMIC EVENTS

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requirements for the degree of

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TABLE OF CONTENTS

I. INTRODUCTION 1
- A. PROBLEM STATEMENT 1
- B. RESEARCH QUESTION 2
- C. SIGNIFICANCE OF RESEARCH 3

II. LITERATURE REVIEW 5
- A. EXISTING RESEARCH INTO HEALTHCARE COALITIONS AND SURGE CAPACITY 5
  - 1. History and Background 5
  - 2. Local, State, and Federal Literature 7
- B. SURGE CAPACITY AND CAPABILITY NEEDS 9
- C. SUSTAINABILITY NEEDS OF A HEALTHCARE COALITION 12
- D. CONCLUSION 14

III. METHODOLOGY 17
- A. METHODOLOGY 17
- B. SAMPLE 17
- C. DATA ANALYSIS 18

IV. COMPARATIVE ANALYSIS AND FINDINGS 21
- A. BACKGROUND OF EACH CASE 21
- B. GOVERNANCE STRUCTURE 22
  - 1. Palm Beach County—Healthcare Emergency Response Coalition 25
  - 2. Jacksonville, Florida—First Coast Disaster Council 29
  - 3. King County, Washington—King County Healthcare Coalition 32
  - 4. Conclusion 35
- C. PARTICIPATION FACTORS 36
  - 1. Palm Beach County—HERC 39
  - 2. Jacksonville, Florida 42
  - 3. King County Healthcare Coalition 45
  - 4. Conclusion 47
- D. FUNDING MECHANISMS 48
  - 1. Palm Beach County HERC 51
  - 2. Jacksonville, Florida 55
  - 3. King County, Washington KCHC 57
  - 4. Conclusion 58

V. FINDINGS 61

VI. RECOMMENDATIONS AND CONCLUSIONS 65
- A. RECOMMENDATIONS 65
- B. CONCLUSION 66

APPENDIX A. COMPARISON OF GOVERNANCE STRUCTURES 69

APPENDIX B. COMPARISON OF PARTICIPATION LEVELS 71
APPENDIX C. COMPARISON OF FUNDING SOURCES.....73
LIST OF REFERENCES 75
INITIAL DISTRIBUTION LIST 81

LIST OF FIGURES

Figure 1. MSCC Tiered Response (From:) 11
Figure 2. Relationship of MSCC Tiers 2, 3, and 4 (from:) 12
Figure 3. Healthcare Integration (From:) 24
Figure 4. MAC Coalition Structure (From:) 34
Figure 5. Coalition Supportive Action Plan (From:).....62
Figure 6. Surge Capacity: The Case for Integrated Interventions (From:) 65

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LIST OF TABLES

Table 1. NHPP Funding (From:).....51
Table 2. Annual PHF Contributions to HERC (From:) 53

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LIST OF ACRONYMS AND ABBREVIATIONS

AHRQ	Agency for Healthcare Research and Quality
ASPR	Assistant Secretary for Preparedness and Response
CA	Cooperative Agreement
CEO	Chief Executive Officer
DCEMD	Duval County Emergency Management Division
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DMAT	Disaster Medical Assistance Team
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ESF	Emergency Support Function
FCDC	First Coast Disaster Council
FY	Fiscal Year
HCERR	Healthcare Coalition in Emergency Response and Recovery
HERC	Healthcare Emergency Response Coalition
HPP	Hospital Preparedness Program
HSEEP	Homeland Security Exercise and Evaluation Program
HSPD	Homeland Security Presidential Directive
ICS	Incident Command System
JFRD	Jacksonville Fire and Rescue Department
KCHC	King County Healthcare Coalition
LOA	Letter of Agreement

MAC	Multi-Agency Coordination
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSCC	Mass Surge Capacity and Capability
NAICS	North American Industry Classification System
NBHPP	National Bioterrorism Hospital Preparedness Program
NHPP	National Healthcare Preparedness Program
NIMS	National Incident Management System
NPG	National Preparedness Guidelines
PHF	Palm Healthcare Foundation
RHC	Regional Healthcare Coalition
SMRT	State Medical Response Team
TCL	Target Capabilities List
WAtrac	Washington State's Patient Tracking Software Program

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I. INTRODUCTION

A. PROBLEM STATEMENT

Preventing another terrorist attack on the United States of America has taken a front stage seat to preparedness since the horrific events of September 11, 2001, that took the lives of just under 3,000 victims. Post-911, legislative and funding priorities were initially focused on law enforcement and intelligence agencies rightfully tasked with preventing another attack on the United States. But the reality is that man-made terrorist events are not the only cause of mass-casualty incidents. Natural disasters, pandemic health events, or critical infrastructure failures could also lead to a large number of human casualties. Whether the events are man-made or natural, preparing for mass casualty incidents requires integration of the nation's healthcare community to establish and plan for the patient surge capacity required to support such events.

The general public assumes that hospitals in the United States are adequately prepared for a disaster of any magnitude and ready at a moment's notice to accept every victim in need of emergency medical care. Currently most hospitals operate over capacity with little to no room for a patient surge of any magnitude, let alone the numbers seen in a mass-casualty or catastrophic health event. A 2005 study by the Center for State Health Policy at Rutgers University found the number of hospitals in the United States that consistently operate at or above capacity increased from 19 percent in 2000 to 30 percent in 2005.[1] Shortage in medical surge capacity is further exemplified through the decline in community hospitals from 5,455 in 1989 to 5,008 in 2009, an eight percent drop with no additional reserve added to state or government facilities during that same time.[2]

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[1] *Dwindling Supply of ER Beds: Implications For Hospital Surge Capacity*; DeLia, Derek and Wood, Elizabeth; The People to People Health Foundation, Inc Project Hope; Nov/Dec 2008

[2] Trendwatch Chartbook 2010: Trends Affecting Hospitals and Health Systems: Chapter 2 Table2.1. American Hospital Association http://www.aha.org/aha/researchreports/tw/chartbook/ch2.shtml

In 2004, the Agency for Healthcare Research and Quality (AHRQ) made an effort to address the patient surge crisis by releasing a benchmark for surge capacity. AHRQ recommended surge capacity in every region to be "*500 staffed beds*[3] *per 1,000,000 residents made rapidly available in the event of a disaster*."[4] Meeting this benchmark cannot feasibly be the responsibility of a single hospital or healthcare provider in any given region. A unified approach must be taken to meet the potential demands of a catastrophic healthcare event. The unified approach advocated by the Department of Health and Human Services is through the establishment of regional healthcare coalitions involving every member of a region's healthcare community.

Creating a unified coalition of independent, often competing healthcare agencies and disciplines will undoubtedly bring numerous challenges in the formation of the coalition's governance structure and in garnering the participation needed for the sustainability of the coalition. Additionally, questions concerning funding mechanisms for the coalition could prove to be either a hurdle or an asset to individual participation and group sustainability.

Regional healthcare coalitions can offer a long-term solution to the issue of mass-casualty and pandemic surge capacity by offering a unified approach involving the "whole-of-the healthcare community." Research into appropriate governance structures, participation needs, and funding mechanisms is needed to enhance the establishment and sustainability of regional healthcare coalitions across the nation.

B. RESEARCH QUESTION

Primary question:

How can we implement regional healthcare coalitions to better enhance medical surge capacity and capability for mass-casualty or pandemic health events?

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[3]Note: "Staffed beds" refers to total emergency department, intensive care, general, mental health, and pediatric availability with assigned staff responsible for patient care.

[4]Agency for Healthcare Research and Quality, *Bioterrorism and Health System Preparedness*, Issue Brief no. 4, Pub. no. 04-P009 (Rockville, Md.: AHRQ, 2004)

Secondary questions:

How does the governance structure of a regional healthcare coalition influence medical surge capacity and the sustainability of a regional healthcare coalition?

How does participation in a regional healthcare coalition influence medical surge capacity and the sustainability of a regional healthcare coalition?

How does the funding mechanism of a regional healthcare coalition influence medical surge capacity and the sustainability of a regional healthcare coalition?

C. SIGNIFICANCE OF RESEARCH

Disasters can strike at a moment's notice, with little to no warning for the community affected. Practical plans for allocating resources, interoperable communications, and continuity of services must be in place at all times in anticipation of a patient surge from a mass-casualty or pandemic event. This is most true for the healthcare system, where a majority of hospitals routinely operate above capacity, each unable to absorb any additional patient surge that could result from a disaster.[5] Regional collaboration among members of the entire healthcare community is needed to ensure that continued medical care is available in the event of a catastrophic health event. The coalition model is an appropriate format with which to organize the healthcare community. Coalitions are defined by the *Reference for Business Encyclopedia* as "a group formed to pursue a strategy that will be to the advantage of those most directly affected."[6]

This research focuses on *how* regional healthcare coalitions have been implemented to provide a viable solution to the patient surge seen in many catastrophic health events. While the federal government is promoting and financially supporting the establishment and extension of regional healthcare coalitions, it is not mandating that a specific structure be used across every region. It is the intent of this research to evaluate

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[5] Jane Akre; "U.S. Hospitals Unprepared for Attack"; May 8, 2008; InjuryBoard.com http://news.injuryboard.com/disaster-plans-lacking.aspx?googleid=238632

[6] Reference for Business Encyclopedia; Coalitions Defined; http://www.referenceforbusiness.com/management/Bun-Comp/Coalition-Building.html

three existing and distinctively different regional healthcare coalitions and to examine the influence of their governance structures, participation needs, and funding mechanisms.

It is understood that healthcare coalition needs will vary depending on the demographic and geographic makeup of each region in the United States. The research provides support for the idea that the foundation for sustainment and success for a healthcare coalition includes governance, participation and membership in the coalition, and long-term funding mechanisms that support the equipment and training needed to maintain the healthcare community's readiness to respond to a catastrophic patient surge.

Ultimately, this research seeks to examine how three structurally different existing coalitions have implemented various strategies that center on governance, increasing participation and membership, and long-term funding support. Benefit should be realized by regions that have not yet established a healthcare coalition through providing insight into the need for a coalition and examples of existing models that may reflect their particular healthcare community. The research should also provide benefit to regions with existing coalitions that are in need of strengthening their governance structure, participation and membership, or funding mechanisms.

II. LITERATURE REVIEW

The purpose of this literature review was to identify the impact of a regional healthcare coalition in preparing a community for medical-surge capacity related to mass-casualty or pandemic events. The review identified relevant sources that affect a healthcare community's readiness and the manner in which each component of the healthcare community independently affects the structure, participation, and funding of a healthcare coalition. The literature review covered local, state, and federal requirements to determine which regulations aid in the preparedness effort and which hinder it. Academic literature from subject matter experts in the healthcare industry was reviewed to assess the recognition of the need for healthcare coalitions. Literature on organizational behavior was reviewed as it relates to interagency and interdisciplinary partnerships through the structure of a coalition.

A. EXISTING RESEARCH INTO HEALTHCARE COALITIONS AND SURGE CAPACITY

1. History and Background

In response to the anthrax scare of October 2001—which highlighted the need for the nation's hospitals to be able to assess and treat a catastrophically large number of patients who could fall victim to a bioterrorism attack—the Department of Health and Human Services established the National Bioterrorism Hospital Preparedness Program (NBHPP) in 2002. The NBHPP provided funding for hospitals to enhance their ability to appropriately respond to a biological attack. This included providing decontamination equipment, stockpiling antidotes and antibiotics, and basic training for bioterrorist attacks—a decidedly top-down approach to implementing preparedness.

In 2006, President Bush signed into law the Pandemic and All-Hazards Preparedness Act, which among other things established the Assistant Secretary for Preparedness and Response (ASPR). The NBHPP was immediately moved under the ASPR. It shifted its focus to an all-hazards approach and officially removed "National

Bioterrorism" from its name. As the newly reorganized Hospital Preparedness Program (HPP), it was better positioned to work with the nation's hospitals and other healthcare providers to build resiliency and capability into the system, regardless of whether the health crisis was a pandemic, bioterrorism, a natural disaster, or a man-made attack.

In 2007, ASPR contracted with the University of Pittsburgh Medical Center to review the first five years of the Hospital Preparedness Program and determine its impact on hospital preparedness and resiliency.[7] The study revealed that the HPP had in fact made response to "common medical disasters" more resilient. It revealed a weakness, however, in the healthcare community's capacity to handle a catastrophic health event.[8] The report by the University of Pittsburgh recommended that the healthcare community focus on creating "regional healthcare coalitions" and supporting existing healthcare coalitions in an effort to better position the healthcare community to respond to the not-so-common, or "black swan" catastrophic health event.[9]

As a result of the study by the University of Pittsburgh, the Hospital Preparedness Program had another name change. The ASPR realized the need to include the "whole-of-the-healthcare community" in solving patient surge and to broaden its focus beyond hospitals alone. In 2010, the Hospital Preparedness Program became known as the National Healthcare Preparedness Program (NHPP); it now includes healthcare partners in both the public and private sectors. The 2011/2012 budget for the NHPP is directly related to the recommendations of the University of Pittsburgh study in that it is focused largely on establishing new regional healthcare coalitions and expanding those in existence through a whole-of-community approach involving a multitude of healthcare partners at the operational level.

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[7] *Hospitals Rising To The Challenge: The First Five Years of the U.S. Hospital Preparedness Program and Priorities Going Forward*, The Center for Biosecurity of the University of Pittsburgh Medical Center 2011; http://www.upmc-biosecurity.org/website/resources/publications/2009/2009-04-16-hppreport.html

[8] *Hospitals Rising To The Challenge: The First Five Years of the U.S. Hospital Preparedness Program and Priorities Going Forward*, The Center for Biosecurity of the University of Pittsburgh Medical Center 2011; http://www.upmc-biosecurity.org/website/resources/publications/2009/2009-04-16-hppreport.html Printed Copy; Pp. 2

[9] Nassim Nicolas Taleb; *The Black Swan: The Impact of the Highly Improbable*; Random House Books; Kindle E-Reader Location 427

2. Local, State, and Federal Literature

Local recommendations come by way of city ordinances and generally do not carry the punitive weight of a federal regulation, which attaches medical payments to compliance. Local regulations are, however, the most pertinent pieces of legislation related to the actual healthcare capabilities of a community. Ensuring that a coordinated effort exists between pre-hospital, hospital, and ancillary healthcare providers demands that local standards be established and maintained. The literature review of local city ordinances in this study focused on Jacksonville, Florida; Palm Beach County, Florida; and King County, Washington. Each of these locations reveals a theme of collaboration through various outlets, such as the use of an electronic hospital reporting system that is tied to local emergency-dispatch centers and is open to all participating healthcare entities; the elimination of hospital diversion capabilities; and the inclusion of nontraditional healthcare and public-safety partners in preparing for disasters.

States have input into the healthcare system through regulatory and licensing powers. A review of state statutes offered insight into some of the challenges that regional healthcare coalitions face, particularly with regard to funding. States are the primary recipients and managers of federal grant funding and as such are able to mandate active participation in a regional coalition. A review of state responsibilities concerning grant distribution highlights how funding mechanisms influence regional healthcare coalition establishment, sustainability, and production. States also have the ability to determine regional designations and mandate that all supporting agencies align with the state-determined regions.[10]

The federal government has recognized the importance of a coalition framework in the many directives and mandates it has issued since the creation of the Office of Homeland Security in October of 2001.[11] Use of the terms "collaboration" and

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[10] Florida Department of Law Enforcement and the Department of Emergency Management Report: *Assessing Florida's Anti-Terrorism Capabilities September 2001*; Project Guiding Principles Item #4 Implement recommendations for improvement using existing regional model. Pp3.

[11] Creation of DHS; http://www.dhs.gov/xabout/history/gc_1297963906741.shtm Office of Homeland Security officially became the Department of Homeland Security with the passage of the Homeland Security Act in November of 2002

"coordination" can be found in nearly every piece of legislation regarding homeland security. Title V of the Homeland Security Act of 2002 mandated that the newly created Department of Homeland Security (DHS) build a comprehensive national incident management system with federal, state, and local government personnel. It also mandated that DHS develop programs for interoperable communications among all emergency responders in the nation.[12] Since that time, the federal government has expanded the scope of interoperability and collaboration to include the healthcare community through mandated National Incident Management System training, grant funding for interoperable communications systems, and a focus on a national strategy for public health and medical preparedness as seen in Homeland Security Presidential Directive (HSPD) #21.

Presidential Directive #21 supports the establishment of a national strategy for public health and medical preparedness.[13] The directive can be used as a guideline to regions developing healthcare coalitions, as well as an evaluative tool for existing coalitions. The directive lists the following key principles for healthcare preparedness:[14]

- Preparedness for ALL potential catastrophic health events;
- Vertical and horizontal coordination across levels of government, jurisdictions, and disciplines;
- A regional approach to health preparedness;
- Engagement of the private sector, academia, and other nongovernmental entities in preparedness and response efforts;
- Importance of individual, family, and community roles in preparedness.

These key principles are drawn from the 2007 National Strategy for Homeland Security, the 2002 National Strategy to Combat Weapons of Mass Destruction, and the 2004 Biodefense Strategy for the Twenty-first Century.

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[12] HSA 107-296, 107 Cong., Public Law 2135 (2002) (enacted). Homeland Security Act of 2002

[13] Homeland Security Presidential Directive 21: Public Health and Medical Preparedness; http://www.dhs.gov/xabout/laws/gc_1219263961449.shtm#1

[14] Homeland Security Presidential Directive 21: Public Health and Medical Preparedness; http://www.dhs.gov/xabout/laws/gc_1219263961449. Background Data #5

B. SURGE CAPACITY AND CAPABILITY NEEDS

Homeland Security Presidential Directive (HSPD)—8 required the establishment of a national policy to strengthen the preparedness of the United States to prevent, protect against, respond to, and recover from terrorist attacks and other major disasters.[15] The National Preparedness Guidelines (NPG), the National Planning Scenarios, Target Capabilities List (TCL), and the Universal Task List were the result of HSPD—8. Each document serves to either define the vision for preparedness or to establish priorities and desired capabilities. Strengthening medical surge and mass prophylaxis capabilities is one of the eight priorities listed in the National Preparedness Guidelines. Medical surge is defined by NPG as

> the rapid expansion of the capacity of the existing healthcare system in response to an event that results in increased need of personnel (clinical and non-clinical), support functions (laboratories and radiological), physical space (beds, alternate care facilities) and logistical support (clinical and non-clinical equipment and supplies).[16]

The TCL details the planning, organizing, equipment, and training needed to achieve the desired level of medical-surge capacity and capability.[17]

In addition to the 2004 recommendation by AHRQ calling for a benchmark of 500 staffed beds per million residents for pandemic medical treatment,[18] the TCL also recommends that each region be able to triage, treat, and stabilize 50 cases per million population for patients suffering traumatic injuries, burns, radiation, or other effects of

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[15] Preserve Protect Respond Recover Target Capabilities List: A companion to the National Preparedness Guidelines U.S. Department of Homeland Security 2007 Preface Pp. iii; http://www.fema.gov/pdf/government/training/tcl.pdf

[16] Preserve Protect Respond Recover Target Capabilities List: A companion to the National Preparedness Guidelines U.S. Department of Homeland Security http://www.fema.gov/pdf/government/training/tcl.pdf; Pp. 449

[17] Preserve Protect Respond Recover Target Capabilities List: A companion to the National Preparedness Guidelines U.S. Department of Homeland Security http://www.fema.gov/pdf/government/training/tcl.pdf; Pp. 7

[18] Agency for Healthcare Research and Quality; *Bioterrorism and Health System Preparedness;* Issue Brief no. 4, Pub. no. 04-P009 Rockville, Md.: AHRQ, 2004

biological warfare.[19] This number is above the current daily staffed bed capacity for each region. Determining how best to accomplish this target capability demands a comprehensive look at every healthcare asset in each region in an effort to identify resources and to engage key stakeholders in planning for any sudden patient surge. The plans should provide for continual collaboration, interoperability, and coordination of all regional assets.

In 2003, the U.S. Department of Health and Human Services Assistant Secretary for Preparedness and Response contracted the development of the *Medical Surge Capacity and Capability Handbook*. The handbook originally focused on single hospital assessment, training, and response to medical surge issues. It was revised in 2007 after the events of hurricane Katrina highlighted the need for a more regional approach to mitigating mass surge from a catastrophic health event. Medical Surge Capacity and Capability (MSCC) broadened the plan to incorporate healthcare coalitions in tier 2 (Figure 1).

ASPR contracted an additional handbook titled, *The Healthcare Coalition in Emergency Response and Recovery* (HCERR) as an addendum to the MSCC. HCERR was written, "to develop a management system or framework that promotes public health and medical system resiliency and maximizes the ability to provide adequate public health and medical services during events that exceed the normal medical capacity and capability of an affected community."[20] "Surge capacity" is defined by MSCC as the ability to respond to a markedly increased number of patients while "surge capability" is defined as the ability to address unusual or very specialized medical needs.[21] MSCC intends that surge capacity and capability should initially be handled at the local level

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[19] Preserve Protect Respond Recover Target Capabilities List: A companion to the National Preparedness Guidelines U.S. Department of Homeland Security http://www.fema.gov/pdf/government/training/tcl.pdf; Pp. 462

[20] Medical Surge Capacity and Capability Handbook; Joseph A. Barbera and Anthony G. Macintyre; 2nd edition, Prepared for the US DHHS and ASPR 2007, Introduction

[21] Joseph A. Barbera and Anthony G. Macintyre; Medical Surge Capacity and Capability Handbook; 2nd edition, Prepared for the US DHHS and ASPR 2007, Chapter 1.1.2

through active and functional healthcare coalitions that are capable of assessing all regional healthcare needs and assets and transferring the information to a higher tier if necessary.

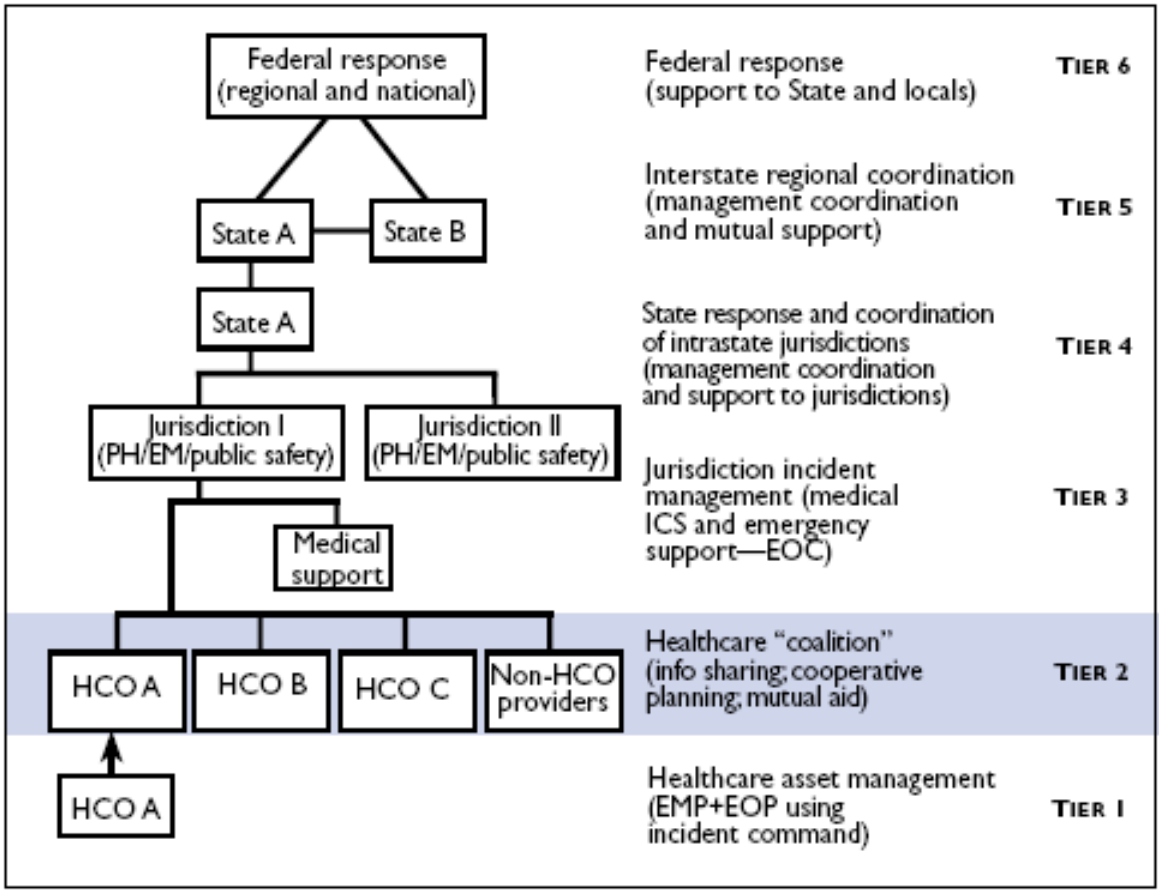

Figure 1. MSCC Tiered Response (From: [22])

[22] Medical Surge Capacity and Capability Handbook; Joseph A. Barbera and Anthony G. Macintyre; 2nd edition, Prepared for the US DHHS and ASPR 2007, Figure1.2 Page 1–8

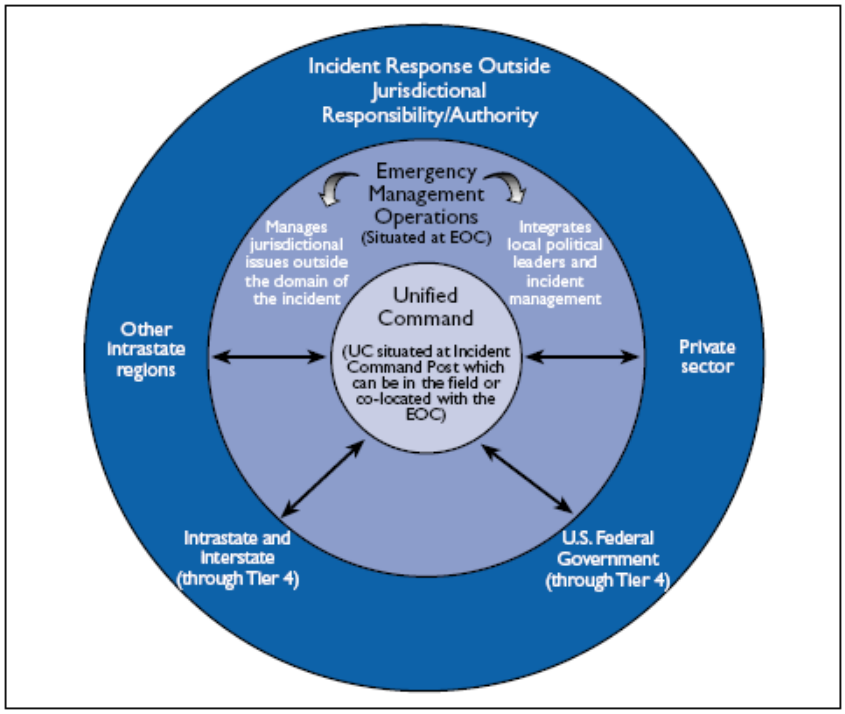

Figure 2. Relationship of MSCC Tiers 2, 3, and 4 (From: [23])

A review of the coalition framework recommendations outlined in MSCC against the actual frameworks of the three cases studied highlights differences in structural governance, funding mechanisms, and participation—and the impact, if any, that each has on coalition functionality.

C. SUSTAINABILITY NEEDS OF A HEALTHCARE COALITION

Healthcare coalitions at their core comprise a group of independent entities with singular goals and missions, brought together for a common cause. Selecting the appropriate governance structure for a coalition is aided by knowledge of complex organizational behavior. There is no one set structure that all regions should follow when establishing a coalition of healthcare providers. An understanding of the personal and working relationships among key stakeholders in the healthcare community is needed to

[23] Joseph A. Barbera and Anthony G. Macintyre; Medical Surge Capacity and Capability Handbook; 2nd edition, Prepared for the US DHHS and ASPR 2007; Chapter 1.4.3 Incident Command versus Incident Support

guide the formation of each coalition. While the *Mass Surge Capability and Capacity Handbook* provides a guideline for establishing a coalition, it does not prescribe a specific set of governance instructions. Instead, it describes common elements of an effective coalition that can be applied to any locale.[24] This knowledge, coupled with insight into complex adaptive systems, enhances the discussion of governance structure of regional healthcare coalitions.

Group formation needs related to complex systems also provide insight into those factors that influence the sustainability needed for regional healthcare coalitions. A complex system is defined as "a system with a large number of elements, building blocks, or agents, capable of interacting with each other and with their environment."[25] Using this definition, the healthcare community can be defined as a complex system. Louise Comfort, a professor of public and international affairs at the University of Pittsburgh, researched the many complex systems involved in response to the events of September 11, 2001, and hurricane Katrina. Her research revealed that all too often a discrepancy between policy and practice exists in complex systems.[26] Comfort details the basic premise of the complexity theory: "The initial conditions in any situation set the trajectory for the evolution of a complex, dynamic system such as a disaster response."[27] Her work highlights the importance of choosing an appropriate governance structure when forming a coalition of members from a complex system. She also supports the need for clearly defined goals and objectives as foundational necessities for a complex system. The governance structures of each coalition were assessed for the presence of and focus on a mission and vision statement.

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[24] Joseph A. Barbera and Anthony G. Macintyre; Medical Surge Capacity and Capability Handbook; 2nd edition, Prepared for the US DHHS and ASPR 2007, Project Scope

[25] *What is a Complex System*? *Northwestern Institute on Complex Systems;* September 3, 2009; Retrieved from http://www.northwestern.edu/nico/complexity-conference/program.html

[26]Louise K. Comfort, Kim Ko, & Anthony Zagorecki; Coordination in Rapidly Evolving Disaster Response Systems: The Role of Information; 2004, Pp. 48 - 295. *Center for Disaster Management*, Retrieved from University of Pittsburgh

[27] Louise K. Comfort, Fragility in Disaster Response: Hurricane Katrina. The Forum, 3, 2005, 1st ser., 2-2.Retrieved from Berkeley Press.

Dr. William Pelfrey, a noted scholar in Homeland Security studies and former professor at Virginia Commonwealth University, describes the integral components of collaboration and interoperability needed for disaster preparedness. He defines preparedness as a cycle with specific elements that must be addressed for complex response to be adequate. These elements include collaboration, information sharing, interoperable response procedures, and shared recovery goals.[28] He details the integral parts of collaboration to be collegiality, trust, flexibility, openness, mutual respect, social capital, and pathways of communication. The elements listed by Comfort and Pelfrey regarding collaboration and interoperability among complex and dynamic systems are present in every healthcare system and are addressed through the promotion of an action-oriented coalition that has, as Dr. Pelfrey describes, "a shared understanding of the goal to be achieved, knowledge of the capabilities and vulnerabilities of each agency, collegiality, trust, flexibility, openness, mutual respect, social capital, and pathways of communication." Coalitions must have active participation to ensure their success. Lessons on collaboration and information sharing are vital to every healthcare coalition as it solicits participants from within the healthcare community.

D. CONCLUSION

Recent events, such as the 2005 hurricane season culminating in Katrina, the 2009 H1N1 pandemic flu season, and the 2011 Joplin tornado, highlight the fact that prevention alone will not keep our nation safe. Preparedness for the patient surge that could accompany a disaster of any magnitude is necessary for all facets of the healthcare community. An overview of literature related to homeland security preparedness and response supports a shift in focus to the local level. The literature revealed a consistent theme of the need for a "whole-of-community" approach in preparing the local healthcare system. Regional healthcare coalitions embody this "whole-of-community" approach as a viable solution to the patient surge that will accompany a catastrophic health event. The role of the healthcare community during a disaster is recognized at all levels of society,

[28] William V. Pelfrey, (n.d.). "The Cycle of Preparedness: Establishing a Framework" *Berkeley Electronic Press*. Retrieved September 08, 2010, from http://www.bepress.com/jhsem/vol2/iss1/5/

from the private citizen who trusts in his local hospital's ability to treat every patient of a disaster to the federal government's commitment in making that public trust a reality through promoting the establishment of regional healthcare coalitions.

The literature on healthcare coalitions supports the idea that one of the most important aspects in creating a coalition of independent agencies from within the healthcare community is having firsthand knowledge of the region, forming a sound and regionally appropriate governance structure, soliciting specific participation from key stakeholders as well as the healthcare community as a whole, and identifying multiple funding streams to ensure sustainability.

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III. METHODOLOGY

A. METHODOLOGY

Research for this thesis will utilize case study methodology involving three existing regional healthcare coalitions. The case study methodology was selected for two reasons: first, it provides insight into how three distinctively different coalitions have each shown that a regional healthcare coalition could be implemented as a solution to catastrophic patient surge; and second, examining these three cases provides an opportunity to better understand how the different governance structures, funding mechanisms, and participation within a coalition all influence surge capacity and the sustainability needed for a regional healthcare coalition. Each case was compared against the guidelines set forth by the Assistant Secretary for Preparedness and Response in the 2007 handbooks: *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies* and the accompanying *Healthcare Coalition in Emergency Response and Recovery* handbook.

B. SAMPLE

The three coalitions chosen for this research were Palm Beach County, Florida's Healthcare Emergency Response Coalition (HERC); King County, Washington's Healthcare Coalition (KCHC); and Jacksonville, Florida's First Coast Disaster Council (FCDC).

Palm Beach County was chosen for several reasons. First, it is the only entity that has published a textbook on establishing a healthcare coalition, titled *Establishing a Healthcare Emergency Response Coalition*. The founders of the HERC have valuable insight into coalition formation and the governance structure needed to shift the focus from an existing task force model to a fully functional and inclusive coalition of healthcare providers. Palm Beach County's HERC also provided information on unique funding mechanisms in its use of a private healthcare foundation.

Jacksonville, Florida's FCDC was chosen primarily because of personal insight I have into that organization. It also represents the smallest and least funded or formally structured of the three coalitions, while also representing one of the most active coalitions with regard to participation and membership. FCDC provides lessons learned in soliciting appropriate members and the importance in creating an active role for the members. FCDC also offers options for funding that go beyond financial support to include personnel, equipment, supplies, and training opportunities.

King County, Washington's KCHC was chosen because it is the program espoused by the Department of Health and Human Service's Healthcare Preparedness Program as a model program for regional healthcare coalitions. KCHC offers the largest and most formally structured healthcare coalition of the three. It is also the most highly funded coalition that was researched; complete with a full-time dedicated staff collocated within the county's Department of Public Health.

C. DATA ANALYSIS

The three cases were analyzed using qualitative comparison analysis, concentrating on three specific factors of each case to determine how they influence medical-surge capacity in the event of a mass-casualty incident and also how each factor influences the sustainability of the coalition. Data was obtained from each specific regional healthcare coalition's distributed publications, coalition websites, firsthand knowledge from coalition membership, conference attendance at healthcare coalition workshops, and regional healthcare coalition toolkits.

The first factor analyzed was the governance structure that each coalition assumed and how it had arrived at that specific structure. Next, the level of participation and membership was analyzed for each coalition, with emphasis on how participation is solicited and sustained. The last factor analyzed was the funding mechanism that each coalition uses to sustain its organization and meet the demands of a mass-casualty patient surge.

Comparing three distinctly different regional healthcare coalitions also required a tertiary look at geographic and demographic differences in each region in an effort to highlight various options for achieving the same goal of sustaining preparedness for a mass-patient surge.

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IV. COMPARATIVE ANALYSIS AND FINDINGS

A. BACKGROUND OF EACH CASE

The Healthcare Emergency Response Coalition (HERC) in Palm Beach County was one of the first in the nation. On October 4, 2001, the office of the *National Enquirer* in Boca Raton, Florida, became the sight of the nation's first anthrax attack. The initial unknowns concerning how many people were infected and what the extent of exposure would be led the healthcare community in Palm Beach County to realize that it was not prepared to take care of the volumes of critical patients that an anthrax attack could likely produce. HERC has since grown into a model program emulated throughout the state. The original members of the coalition are credited with writing the only textbook to date dedicated to establishing a healthcare emergency response coalition.[29] HERC is unique from the other two coalitions due to the challenge that it faces with jurisdictional power struggles related to the multiple city and county governments that encompass the coalition's region.

The next coalition examined was First Coast Disaster Council in Jacksonville, Florida. FCDC was established in the early 1980s, long before Palm Beach County's HERC, with its original intent being only to address joint accreditation training for local hospitals. This early recognition of the need for collaboration in training was born of necessity more than ingenuity, given the sheer geography of Jacksonville, Florida: it is the largest city per square mile in the United States. Hospitals owned by a single parent company were often located 20 or more miles apart, while a competitor hospital might be across the street. The logistics of joint training for accreditation purposes was a win-win for all parties involved and was more easily coordinated through the use of a single body—the First Coast Disaster Council. FCDC has evolved to include pre-hospital providers, public health officials, nongovernment organizations, private partners, and nontraditional members, such as mass transportation entities, all focused on improving

[29] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; 2010

regional response to a healthcare crisis. Jacksonville's FCDC was originated as a loosely structured group of partners with a shared need. The evolution to a fully integrated coalition took time but has resulted in strong bonds among partners who share in leadership roles and responsibilities and active participation from all members.

The last coalition examined was the King County, Washington, Healthcare Coalition. KCHC was chosen because it is the program espoused by the Department of Health and Human Service's National Healthcare Preparedness Program as the national model for healthcare coalitions. KCHC is fully funded, staffed, and coordinated through the regional public health department. The King County coalition is structured with formal leadership and forced participation for all grant-funded regional healthcare training and exercises. This formal structure provides insight into organizational benefits and challenges of active versus passive participatory involvement from the coalition's members.

B. GOVERNANCE STRUCTURE

Webster defines "coalition" as "an alliance of distinct parties, persons, or states united for joint action."[30] A coalition of healthcare partners is remarkably unique, given that most of the members needed for the coalition are in competition with one another on a daily basis but would be completely dependent on each other during a catastrophic health event. By raw definition the healthcare community fits perfectly into the coalition model with "distinct parties … united for joint action."

In examining the appropriate governance structure for a specific healthcare coalition, several foundational pieces of information are relevant. Healthcare coalitions by their very nature and mission are nonprofit, noncompetitive entities with a primary focus being region-wide preparedness for and resiliency from the patient surge that a catastrophic health event would bring. Individual goals and objectives must take a back seat to this shared mission.

[30] Merriam Webster online dictionary, http://www.dictionary.reference.com.

Regardless of a coalition's structure, it should address specific functions such as the ability to create consensus and communicate a shared vision, the capacity of all partners to implement practical strategies, the legal ability to apply for and accept state, federal, and foundation funding, and the power or authority to achieve desired levels of regional preparedness for a catastrophic health event.[31] Knowing that members of a healthcare coalition represent interests from both public and private sectors, the model for governance structure in a healthcare coalition should also be organic, flexible, and open to sharing of power with nontraditional partners.[32]

The MSCC handbook suggests that a central focus in the formation of a regional healthcare coalition is the development of an emergency operations plan (EOP). The EOP should describe how the coalition is structured and how it will respond during an emergency.[33] The handbook further recommends that the following considerations be addressed when developing the EOP:

- Establish a diverse EOP writing team with members from the various disciplines represented in the coalition;
- Establish an internal and external review process to be used throughout the development of the EOP;
- Promote buy-in from executive leaders of each member organization by highlighting advantages of coalition membership;
- Incorporate the NIMS principles in the EOP consistent with public partners.

The MSCC guidelines for developing an EOP are consistent with the overall principles advocated in coalition formation—diversity in group involvement, buy-in from

[31] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; 2010 Kindle Location 988 of 2343

[32] Pat Bradshaw, Bryan Hayday, Ruth Armstrong, Johanne Levesque, and Liz Rykert; "Nonprofit Governance Models: Problems and Prospects"; 1998 ARNOVA Conference; Seattle Washington http://www.aota.org/Governance/ProceduralAdHoc/Handouts/Model.aspx

[33] Pat Bradshaw, Bryan Hayday, Ruth Armstrong, Johanne Levesque, and Liz Rykert; Nonprofit Governance Models: Problems and Prospects; 1998 ARNOVA Conference; Seattle Washington http://www.aota.org/Governance/ProceduralAdHoc/Handouts/Model.aspx

key partners, and interoperability with partners. Each of the three coalitions researched approached governance with these key principles addressed in sometimes similar and sometimes strikingly different manners.

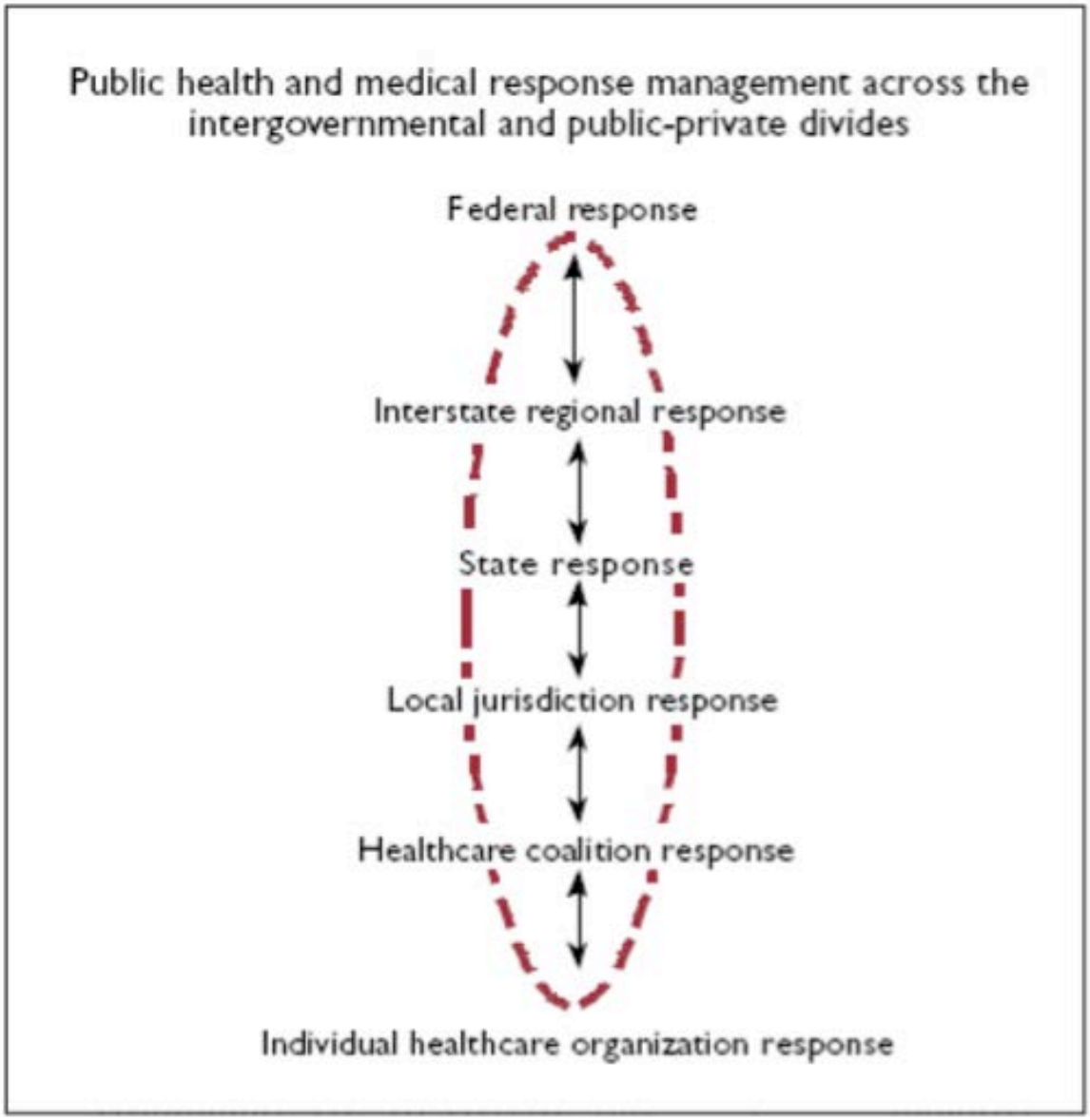

Figure 3. Healthcare Integration (From: [34])

[34] Medical Surge Capacity and Capability Handbook; Public Health Emergency Workgroup; Assistant Secretary for Preparedness and Response 2007; Introduction MSCC Project Scope

1. Palm Beach County—Healthcare Emergency Response Coalition

The Healthcare Emergency Response Coalition in Palm Beach County is a multiagency organization coordinated through the Palm Beach County Medical Society's Disaster Preparedness Committee. HERC was created as a result of two very different precipitating events—hurricane Andrew in 1992 and the anthrax attacks of 2001. Both of these events tested the region's response to an actual and a potential mass-patient surge into the local healthcare system. Individually, each event shaped the governance structure of the HERC into what it is today.

On August 24, 1992, hurricane Andrew made landfall in south Florida. Andrew was a category-five storm that resulted in 65 deaths and over $26 billion in damages.[35] Several hospitals and other healthcare providers in the region were damaged by high winds and rain; many lost generator power, and patients had to be evacuated to other facilities. Hospitals in the region that were not physically damaged or closed by the storm saw an immediate patient surge from self-transporting patients, patients transported by EMS, and interfacility transfers from hospitals and shelters damaged by the storm. Assistance was eagerly given to the affected facilities through volunteer staffing and the distribution of supplies, as well as much-needed space for patient care. The assistance provided, while eagerly given, was not optimally distributed. The storm was a true wake-up call to the region for a unified plan that would better enable the healthcare system to rapidly absorb a mass number of patients from a storm-stricken community or from a storm-damaged regional facility.

The Palm Beach County Medical Society immediately organized a Hurricane Preparedness Task Force focused on preparing the local hospitals for a similar natural disaster.[36] This task force remained active and focused on the single task of preparing hospitals for hurricanes and storm surge. The Hurricane Task Force remained active with

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[35] Note of Explanation: Saffir-Simpson Hurricane Scale: Category 5 – Sustained winds greater than 155 miles per hour. http://www.sun-sentinel.com/topic/disasters-accidents/meteorological-disasters/hurricanes/hurricane-andrew-%281992%29-EVHST000062.topic

[36] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; 2010 Kindle Location 308 of 2343

waxing and waning participation, dependent primarily on the time of the year and the storm season predictions. The focus of the task force rarely ventured beyond hurricane preparedness or the neat and orderly predetermined, pre-storm patient transfer plans among a few regional hospitals.

Their commitment to preparedness was dramatically reawakened on September 11, 2001. The events of that day caused the task force to realize the need for a broader focus on all-hazard disaster preparedness. It also prompted the healthcare community to insist that it be included in every disaster preparedness and response discussion within its region.

The hurricane task force scheduled a meeting for October 4, 2001, to discuss broadening its focus to address man-made, biological, or chemical disasters that could result in a catastrophic number of patients coming into their healthcare system. This was the exact day of the second precipitating factor in the formation of the HERC. During the morning meeting on October 4, 2001, several hurricane preparedness task forces members' pagers began to ring, alerting them of an anthrax incident at the building of the local American Media Institute, which publishes the *National Enquirer*.[37] The Palm Beach County Medical Society was instantly faced with the potential impact that an inhalation anthrax outbreak could have on its local healthcare system. Not unlike most healthcare communities across the United States, Palm Beach County did not have the capacity or capability to locally address the patient surge that an anthrax attack could present. It was paramount that the entire healthcare community join forces with local emergency response organizations, private healthcare providers, and public service agencies in preparing for a catastrophic health event that could cripple the region's healthcare capabilities through the sheer volume of patients that could potentially need medical care.

The Medical Society's Disaster Preparedness Committee and the hurricane task force merged with the county's Terrorism Task Force and broadened its scope to prepare

[37] Homeland Defense Journal, *5 Years Later: How the Anthrax Attacks Created HERC*, October 2006 Vol.4, Issue 10; Pp 26-28

for and respond to all hazards, not just hurricanes or biological or chemical warfare.[38] Moving from a group of individuals organized as either a task force or a committee to a coalition involved more than simple semantics. Coalition formation required restructuring the separate groups, broadening their outreach, and focusing all of their efforts on a common goal.

The Palm Beach Medical Society led the restructuring effort by hiring a nationally recognized consultant to develop and facilitate the initial coalition.[39] The consultant was used to create common protocols that each hospital could implement with little disruption in its daily operating procedures. Hospital emergency-response support partners were identified, including Palm Beach County's Department of Health, Palm Beach County Emergency Management, Palm Beach County Fire and Rescue, the Palm Beach County Sheriff's Office, and the Palm Beach County Healthcare Foundation.[40] Representatives from the thirteen local hospitals, along with representatives from the aforementioned emergency response partners, started to formally meet with the consultant acting as the lead in the coalition.

The consultant convinced the CEOs of all thirteen hospitals to sign a memorandum of understanding in support of the coalition. Each hospital agreed to share staff, supplies, and bed space during a time of disaster.[41] The consultant asked the CEOs to name one designated and two alternate representatives to the coalition. Members of the newly formed coalition developed a formal mission and vision statement, as well as operating guidelines for the group.

The formal governance structure evolved over time from an authoritarian model with a single leader directing and forming the initial actions of the individual agencies to a self-organizing system where leadership roles are recognized and shared among all

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[38] Homeland Defense Journal, *5 Years Later: How the Anthrax Attacks Created HERC*, October 2006 Vol.4, Issue 10; Pp 28

[39] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; 2010 Kindle Location 622 of 2343

[40] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; 2010 Kindle Location 622 of 2343

members in the coalition. Utilizing an outside consultant with no local ties to the community or stakeholders proved effective for Palm Beach County in creating its regional healthcare coalition. Power struggles were never allowed to hinder the initial formation of the coalition's structure.

HERC is headquartered at the Palm Beach County Medical Society. Administrative responsibilities for the coalition are delivered by a full-time staff member of the medical society. With 38 different jurisdictions located within the county of Palm Beach, organizing the coalition through a central nonpartisan agency like the county medical society has proven effective as a central focal point for all coalition matters. Policies and procedures for the coalition are decided by an elected board. The coalition elects from its membership a single leader known as the chair; it also elects the following positions: vice-chair, treasurer, and secretary. The chair is utilized primarily to conduct meetings and to represent the face of the coalition at formal events. HERC also has regionally specific steering and subcommittees, each led by a committee chair who reports to the coalition chair and various members based on need and input into the committee. Current committees are education/training, syndromic surveillance, and communications. Each of these positions is voluntary, with no one paid for any of his services. Everyone who accepts a position in either a leadership or committee chair role has a primary job within one of the member organizations. Leadership and committee roles are divided among different member organizations and disciplines in an effort to maintain the diversity and collegiality that is important in a complex organization. No one group or entity is allowed to commandeer any area. Formal meeting protocols following Robert's Rules of Order are used at every meeting. Voting members are able to make motions or propose votes based on a predetermined quorum present. Minutes are kept and agendas are followed in accordance with Robert's Rules of Order. All meeting minutes are a matter of public record and are kept on file at the Palm Beach County Medical Society. The governance structure of Palm Beach County's Healthcare Emergency Response Coalition continues to evolve from the original authoritative model

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[41] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; 2010 Kindle Location 628 of 2343

to the self-organizing system in place today. This structure relies on each participant's being focused on the same mission and purpose and having the ability to accomplish each. HERC's mission states: "To develop and promote the healthcare emergency preparedness, response and recovery capability of Palm Beach County, Florida."[42]

The purposes given for HERC are:

- To coordinate and improve the delivery of healthcare emergency response services.
- Foster communication between local, regional, and state entities on community-wide emergency planning, response, and recovery.
- Ensuring overall readiness through coordination of community-wide training and exercises.
- Promote preparedness in the healthcare community through standardized practices and integration with other response partners.[43]

Collectively the healthcare community is able to meet both the mission and purpose of the coalition through active involvement of all response agencies and the sharing of leadership roles among all participating members.

2. Jacksonville, Florida—First Coast Disaster Council

Jacksonville, Florida offers the least structured and least formal model in governance of any of the three. Relationships among member organizations are, however, some of the strongest seen from the three governance structures researched. This can be attributed in part to the long-standing interactions that members have had with each other through the early days of the FCDC. FCDC was originally established in 1983 as a private company made up of local pre-hospital EMS providers and a few area hospital training coordinators. It was initially categorized by the North American Industry Classification System (NAICS) as a safety and security training consultant firm. This was somewhat misleading in that FCDC has never been hired or paid as a consultant. Like the HERC in Palm Beach County, it is organized as a 501(c)(3) nonprofit organization.

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[42] Palm Beach County Medical Society; HERC Mission Statement; http://www.pbcms.org/index.cfm?fuseaction=pages.aboutherc

[43] Palm Beach County Medical Society; HERC Purpose; http://www.pbcms.org/index.cfm?fuseaction=pages.aboutherc

While maintaining the moniker of "council" in its name, FCDC has evolved to a true coalition format with a diverse membership all focused on the resiliency of the local healthcare system. FCDC exists independent of any local, state, or federal agency. It enjoys active involvement from agencies across all response disciplines through a collegial relationship fostered over many years of interaction. FCDC is led by an elected president, vice-president, secretary, and treasurer. Membership is open to all agencies and disciplines within the healthcare community. Monthly meetings are held at a predetermined location, generally a participating facility. The president leads the meeting using an informal, collegial version of Robert's Rules of Order that allows open discussion while maintaining adherence to the agenda. FCDC currently has five committees that report to the group at every meeting. The committees are Special Needs—coordinated through the local Department of Health; EMS Advisory Committee—a report given by the local EMS medical director or physician representative; Jacksonville Fire and Rescue Department (JFRD)—the primary fire and rescue 9-1-1 provider for Duval County; the State Medical Response Team (SMRT)—a report given to the membership by a local representative of the state team; and lastly, Training and Education—an appointed member of the group responsible for coordinating brief training sessions conducted during the monthly meeting.

FCDC is a prime example of a governance structure being dictated primarily by geography, as opposed to being incident-driven like Palm Beach County's HERC. Jacksonville is a single city/county encompassing all of Duval County. At 842 square miles, Jacksonville is also the largest city per square mile in the continental United States. This geographical reality makes jurisdictional authority more streamlined than regions of multiple jurisdictions with their often accompanying hierarchical power struggles. This reality also makes the central governing structure in Jacksonville/Duval County very powerful. City ordinances dictate much of the emergency response protocols. The elected mayor is the overall incident commander during any local incident that is declared a state of emergency. The mayor functions through the emergency management division with input from an executive council and the director of the Duval County Emergency Management Division (DCEMD). The executive council includes high-ranking officials

from public safety departments, public transportation and critical infrastructure departments, public health and public education officials, and adjacent city and county elected officials. FCDC is represented by proxy through the public health department at this level.

DCEMD is a progressive and powerful body that leads the preparedness and response effort for the region and acts as the emergency operations center (EOC) for all regional response activity. DCEMD is the first two-time accredited emergency management department in the state of Florida. As such, many of the functions of a regional healthcare coalition that are outlined in the MSCC and HCERR are already addressed through the full-time staff at the DCEMD. Being geographically located in a region with a single powerful emergency management department has enormous benefits—a region-wide interoperable communications system; a patient-tracking software program accessible to all local hospitals, healthcare providers, and dispatch centers; a single jurisdictional authority; and easier access to regional training opportunities and funding—but it also presents several challenges. Unlike Palm Beach County where during times of disaster decision making authority and command staff inclusion is given to the HERC, FCDC operates strictly in a supportive role through Emergency Support Function (ESF)–8.

During nonresponse times FCDC assumes responsibility for maintaining ongoing relationships among all hospitals and healthcare providers. Letters of agreement (LOA) signed between the FCDC and all participating hospitals dictate response actions among all hospitals. The agreements between the hospitals are vetted through open discussions at the monthly meetings and a clear understanding of the assets each has to offer the healthcare community as a whole. A copy of the LOAs are kept at the DCEMD and added to the regional disaster response plan.

While FCDC assumes the leadership role in establishing and sustaining relationships among key players in the regional healthcare community, its true governance structure is one of supporting and advising the decision making county emergency management division. In this model, FCDC brings in players from the diverse healthcare community and fosters relationships through the elements that Dr. Pelfrey

describes in the preparedness cycle: collaboration, collegiality, trust, openness, mutual respect, social capital, pathways of communication, and information sharing.[44]

3. King County, Washington—King County Healthcare Coalition

The King County Healthcare Coalition (KCHC) offers a different approach for governance structure than those seen in Palm Beach County and Jacksonville. KCHC uses a top-down approach with formal leadership and hierarchy. The state and federal governments are actively involved in managing KCHC's structure through the King County Department of Public Health. The coalition is administered through the Seattle and King County Public Health Department. KCHC is the youngest and largest of the three coalitions researched. It was established in 2005 through a federal grant from the Assistant Secretary of Preparedness and Research's Hospital Preparedness Program. Grant stipulations dictate that KCHC place emphasis on public relations and marketing itself throughout the region. It has the most visible and informative online database of the three coalitions studied. KCHC's website offers free resources for any region in need of establishing a healthcare coalition or enhancing an existing coalition through its online toolkit and various templates.[45]

KCHC has a full-time paid staff of eight individuals located within the county public health department. KCHC is a self-described "inclusive body," open to any organization that directly or indirectly provides health services within King County.[46] Participation in the coalition is through one of two routes: member or partner.

Members are nongovernmental organizations that provide direct health services within the county.[47] They are organized into sectors by the service they provide. Each

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[44] William V. Pelfrey; Journal of Homeland Security and Emergency Management; "The Cycle of Preparedness: Establishing a Framework to Prepare for Terrorist Threats", Volume 2 Issue 1 Article 5, 2005,

[45] *Strengthening Emergency Response Through Healthcare Coalitions;* http://www.apctoolkits.com/kingcountyhc/

[46] *King County Healthcare Coalition Toolkit:* http://www.apctoolkits.com/kingcountyhc/pages/how_to_build/governance.html

[47] *King County Healthcare Coalition Toolkit* http://www.apctoolkits.com/kingcountyhc/pages/how_to_buildmembers_ and_ partners.html

sector supports cross-organizational planning, training and decision making. Members are allowed to vote during coalition meetings and may select individuals to serve on the executive council, the governing body of the coalition. Partners are from governmental healthcare agencies and organizations.

Partners include local fire departments, law enforcement, EMS, and emergency management divisions. These agencies and organizations participate in coalition meetings and serve on committees and work groups but are nonvoting members due to the nature of their primary responsibilities and their structural obligations during a time of disaster.

The governing body of the KCHC is the executive council. The council is elected exclusively from the list of members. Partners are not able to serve on the executive council but provide professional guidance on discipline-specific matters. The executive council formally lists its duties and responsibilities:[48]

- Establishing the mission and strategic direction;
- Determining the Coalition's legal and organizational structure;
- Reviewing and approving the Coalition budget;
- Providing policy level oversight of the Coalition's committees, workgroups, and projects;
- Approving regional and health sector emergency preparedness plans;
- Representing the healthcare Coalition and advising the Local Health Officer on healthcare policy issues during a response.

In addition to these duties and responsibilities, the executive council acts as the face of the KCHC, representing it at both ceremonial events and during disaster response operating within the incident command structure. The members of the executive council meet quarterly with the full-time staff at the public health department to review the budget, plan and coordinate training exercises, and establish response procedures that will be voted on by the membership at large.

The executive council is a part of the unified command staff during a multiagency response, providing guidance on surge capacity and capability to the local health officer,

[48] *King County Healthcare Coalition Leadership*; http://www.kingcountyhealthcarecoalition.org/about-the-coalition/our-leadership

EMS medical directors, and the medical examiner (figure 4). The ability to funnel all of the healthcare community's availability statistics through the single coalition channel directly to the incident commander allows for mass-casualty response decisions to be made more accurately and effectively.

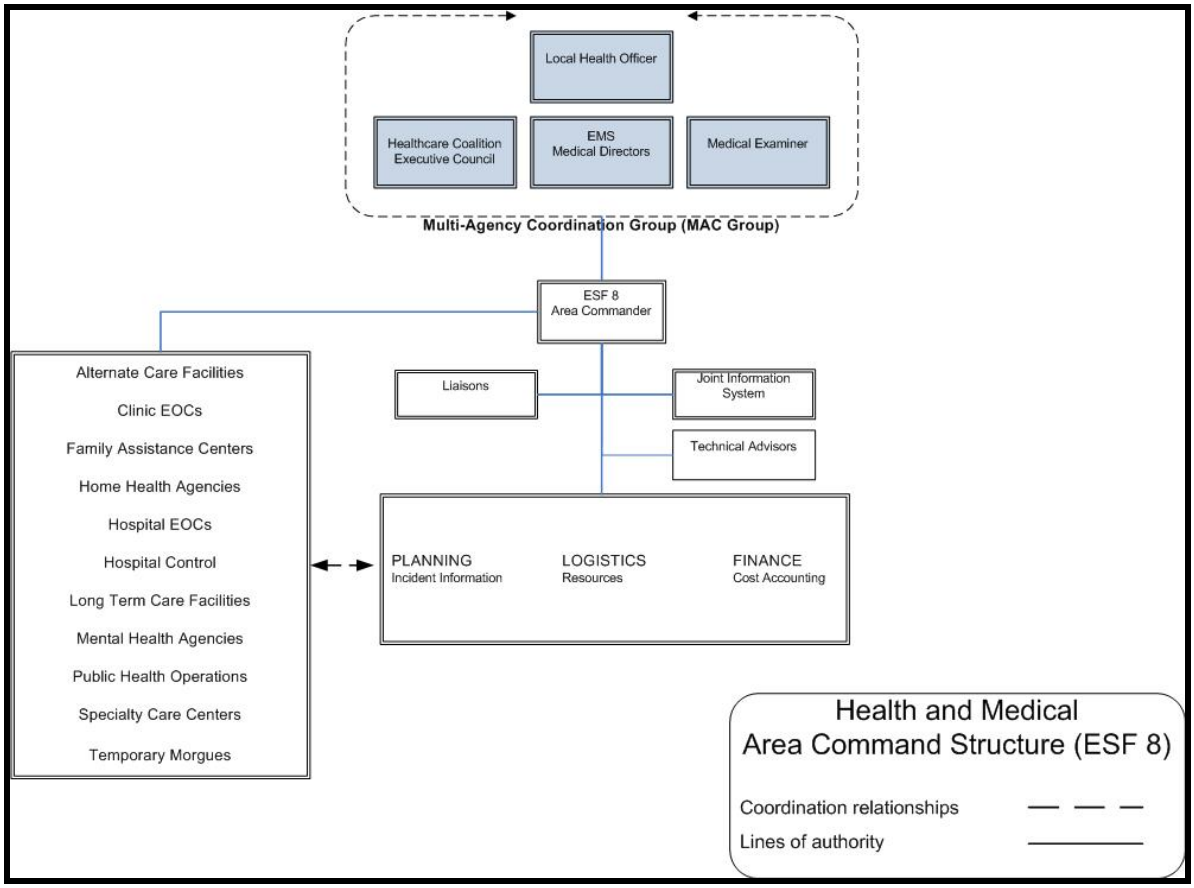

Figure 4. MAC Coalition Structure (From: [49])

The formal and powerful governance structure used by the KCHC proves beneficial in the following aspects of healthcare coalitions that this research examines: participation and funding. The emphasis placed on strengthening the region's healthcare system is evident to all members of the healthcare community through the inclusion and mutual respect it receives from emergency management officials.

[49] Advanced Practice Center Tool-kit: *Establishing a Healthcare Coalition; Responding to Emergencies; Area Command & ESF-8; Multi-Agency Coordination Group*; http://www.apctoolkits.com/kingcountyhc/pages/responding_to_emergencies/area_command.html

4. Conclusion

The three coalitions studied in this thesis answer the questions concerning governance structure in a diverse manner. Each healthcare coalition had distinctively different beginnings, and each has subtle differences in organization and form. But the differences in each governance structure prove to matter little as they relate to answering the question of sustainability and preparing for the surge capacity needed for a response to a catastrophic health event. Each of the three coalitions has plans in place, and each has exercised its plans to mitigate the effects of the medical surge that a catastrophic health event could bring.

Measuring the success of the governance structure for a given healthcare coalition is ideally based more on input and process measurements than on measuring outcomes. Outcome measurements require that a catastrophic health event occurs, which then tests the structure in real time with real-time consequences. Given that catastrophic events are rare, measurements based solely on outcomes will be too late.

Input and process measurements, on the other hand, look at the individual components that make up a coalition and ensure that each component is focused on and capable of sustaining the healthcare system through a catastrophic healthcare event. Questions that will need to be asked when determining the appropriate governance structure for a region are "Who should be included in the coalition?"; "What could their role be?"; "How will each component work together?"; "Which member is in a position to provide the most influence?"; and most importantly, "Who has the jurisdictional authority to make decisions?"

No matter which structure of governance a coalition takes, from the more informal supportive and advice-based coalition as seen with FCDC to the formal legal entity seen in KCHC, the type of governance structure chosen matters less than the fact that the structure be able to support the creation and sustainment of an active and functional healthcare coalition. The coalition must ensure that collaboration within the healthcare community extends beyond just mutual-aid agreements among members but that it fosters preparedness for any catastrophic health event that a region may face.

Geographical and demographic differences dictate that no one model of governance will fit every healthcare coalition. While governance structures may vary across regions, what is consistent for each coalition are the governance functions that must be performed. The definition of a coalition demands action as the premise to joining diverse members together. The actions that are needed by a regional healthcare coalition in addressing patient surge depends less on who performs them than they do on the fact that they be performed.

C. PARTICIPATION FACTORS

Creating a coalition of members of the healthcare community demands that the "healthcare community" first be defined. Defining the most appropriate members is a vast undertaking involving disciplines from pre-hospital providers such as primary-care physicians, pharmacists, and emergency medical technicians to inpatient providers such as hospitals, nursing homes, and rehabilitation centers. The community must also include ancillary agencies such as county emergency preparedness divisions, fire departments, law enforcement, and public health departments. Each region will define its target members based on the knowledge that every independent member of the coalition is focused on the common goal of preparedness for and resiliency from a catastrophic health event.

Small community and rural hospitals present specific challenges in getting them to participate in coalitions with larger facilities. Community hospitals are continual targets of large corporate healthcare entities, ready at any moment to merge with or acquire the smaller not-for-profit hospital. In 2010, there were 77 mergers and acquisitions involving 175 hospitals.[50] This represented a 38 percent increase from the previous year. The constant threat of takeover makes some hospitals so leery about working with outsiders that they remain insular from any assistance related to surge

[50] Irving Levine Associates, Inc: Health Care Services M&A Rebounds Strongly in 2010, According to Irving Levin Associates, Inc; http://www.levinassociates.com/pr2011/pr1103har17

capacity. The damage that an isolated approach to mass-casualty response could have on a community must be realized across every region in the nation and must be combated with collegial collaboration as seen in the coalition framework.

Structuring this coalition of diverse members also warrants a foundational understanding of the culture in which the healthcare community exists. On the surface, the healthcare community may seem to operate as a simple system: If you have a medical need, you either self-enter the system through a doctor's office or emergency room or you enter via a pre-hospital ambulance provider; your medical condition is then assessed, diagnosed, treated, and then you are discharged from the system until you need it again. Little thought is given to the complexity that a single patient brings to the system, let alone a mass influx of patients from a catastrophic health event. Hospitals and healthcare providers in fact operate in an extremely complex environment, continually balancing between chaos and order as each new patient enters the system. Staff allocation, supply expenditures, and patient distribution all factor into maintaining this important balance between a chaotic and orderly environment.

Dee Hock, the founder and CEO of VISA, describes this space between chaos and order as "Chaordic." He defines Chaordic as "any self-organizing, adaptive, non-linear, complex system whether physical, biological, or social, where the behavior exhibits characteristics of both order and chaos, or loosely translated to business terminology, cooperation and competition."[51] The healthcare system is the perfect example of a self-organizing, adaptive, non-linear complex system that in a coalition framework will exhibit both cooperative and competitive characteristics in mitigating the effects of a catastrophic health event. Understanding this "chaordic" environment better defines the players needed to maintain the balance when the number of patients needing medical care spontaneously jumps from a routine to a catastrophic number. The reality for the healthcare system is that it relies on an enormous number of players from a multitude of disciplines to maintain order in a complex system.

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[51] Dee Hock; *The Chaordic Organization: Out of Control and Into Order;* 1995; World Business Academy Perspectives – Vol. 9, No. 1 1995. http://www.ki-net.co.uk/graphics/Dee%20Hock%20-%20The%20Chaordic%20Organization.pdf

A community of independent healthcare agencies fits perfectly into the definition of a complex system given by Melanie Mitchell in her book *Complexity: A Guided Tour*. She defines a complex system as "a system in which large networks of components with no central control and simple rules of operation give rise to complex collective behavior, sophisticated information processing and adaptation via learning or evolution."[52] A complex system is further defined as "a system with a large number of elements, building blocks, or agents, capable of interacting with each other and with their environment."[53]

One strategy to get active participation from members in a complex system is to identify a smaller, critical subsystem or group that is susceptible to change and apply force to those individuals. In *The Emergency Department as a Complex System*, Dr. Mark Smith suggests a way to accomplish this by using the 85/15 rule.[54] The 85/15 rule for complex systems says that it is possible to change or influence the entire system by only changing or influencing the critical 15 percent. One mantra for changing a complex system is to "find the rudder." This saying comes from the idea that a large ship is a complex system involving many independent sub systems, but all that is needed to change the direction of the large vessel is to effect change on the small rudder. In using this theory in establishing an active and functional regional healthcare coalition, it may not be necessary to get initial buy-in from the entire healthcare community as long as you can "find the rudder" by identifying the critical 15 percent of the system.

As expected with disaster response, many of the same disciplines and participating agencies are represented in each of the three cases researched in this study. While first responders and healthcare providers across the United States may wear different uniforms or have different titles, they share in the core mission and ability to protect the health and well-being of a community. The anatomical effects of a catastrophic bomb blast in Jacksonville, Florida, are no different from those of a catastrophic bomb blast in King County, Washington, or in Palm Beach County. There is

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[52]Mitchell, Melanie; *Complexity: A Guided Tour;* Oxford University Press 2009; Pp.30

[53] *What is a complex system?* Northwestern Institute on Complex Systems, 2009 Northwestern University, Recommended reading list for Introduction to Homeland Security

[54] Mark Smith M.D.; *The Emergency Department as a Complex System;* 2002 copyright Mark Smith and Craig Feied http://ncemi.org/docs/miscellaneous/Misc/complexity%20necsi%20paper-02f.pdf

a finite amount of energy that the human body can absorb and a finite amount of blood loss that a body can tolerate. Treating these injuries involves universally accepted medical practices that span the globe. The participants needed to mitigate these injuries do not necessarily change for a mass-casualty incident; they only grow in numbers analogous to the number of patients.

1. Palm Beach County—HERC

Membership in the Palm Beach County Healthcare Emergency Response Coalition can be described in two words: benefit driven. Members are actively solicited from the entire regional healthcare community with benefits of membership being the selling point for participation. The governing arm of HERC, the Palm Beach County Medical Society, acts as the driving force behind all membership solicitation.

There are currently 27 separate agencies represented in Palm Beach County's HERC. Each agency representative is given one vote, with no one organization having authority over another. General membership is targeted to the following agencies, institutions and disciplines within Palm Beach County:

- ESF 4—Fire Fighting, Lead Agency: Palm Beach County Fire and Rescue;
- ESF 6—Mass Care, Lead Agency: American Red Cross;
- ESF 8—Health and Medical, Lead Agency: Palm Beach County Health Department;
    - Special needs shelters;
- ESF 16—Law Enforcement, Lead Agency: Palm Beach County Sheriff;
- Support Agency for ESF 8, Lead Agency: Health Care District of Palm County;
- Support Agency for ESF 8, Lead Agency: Palm Beach County Medical Society;
- Support Agency for Shelters—School district and local university representatives;

- Palm Beach County Hospitals—All 15 regional hospitals and ancillary facilities;
    - Acute-care hospitals;
    - Specialty hospitals;
    - Mental-health centers;
    - Long-term care centers;
    - Blood centers;
    - Dialysis centers;
- Palm Beach County Emergency Management Division;
- Region 7 Chair—Region designated by Regional Domestic Security Task Force;
- Veterinary agencies.

HERC determined that in order to best define which partners to include in its coalition, it should first define the specific components needed for planning, preparedness, response, and recovery from a mass-casualty patient surge event.

The first component addressed the need for a common communications system. Appropriate patient distribution in a mass-casualty situation demands that real-time data with two-way communications be readily available to all patient care and patient transportation agencies. Participating hospitals in HERC benefit from coalition membership through the region-wide implementation of an 800 MHz radio system that is interoperable with local emergency management officials and all first-responding agencies. This benefit comes at no cost to participating agencies. It was purchased with the first grant funding ever given to HERC from the Palm Healthcare Foundation.[55] A dedicated hospital channel was identified for alerting all members at the same time of an actual or potential crisis. Hospitals were also given a matrix of additional channels with training on how to contact emergency-response partners in the event of an internal disaster or need.[56] Communications are currently being bolstered through the implementation of a region-wide patient-tracking software system also purchased through

[55] Palm Healthcare Foundation; http://www.palmhealthcare.org/history

[56] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; Kindle E-book location 657 of 2343

a coalition grant. Members will be given access to the tracking software along with training and any hardware needed.[57] Complete interoperability for all members of the coalition is one of the stated goals of the HERC and one that will enhance recovery from a spontaneous patient surge in the region.

Shared training opportunities are an additional benefit to participation in HERC. When planning for a mass-casualty patient surge from a catastrophic health event, it is understood that the entire healthcare community will be engaged. Training and exercising together is a valuable way to test the interoperability and coordination among agencies within the healthcare community for this type of event. Benefits of joint training and exercises also include the sharing of resources such as volunteers or classrooms, consistent curriculum and understanding of regional response policies, completion of hospital-mandated accreditation requirements, and perhaps most importantly, the highlighting of individual policies that may be purposeful in writing but not practical in action. Mitigating a mass-casualty incident requires the transportation of a large number of patients to various healthcare facilities; each member's plan for patient distribution and care must not negate another member's plan for the same need. Membership in the HERC provides these benefits, as well as providing financial benefits through the sharing of costs for the training.

In *Establishing a Healthcare Emergency Response Coalition*, the original members of HERC outline the following benefits that a coalition should provide its members: [58]

- A continuum of planning and preparedness before an event;
- Collaborative response during an event; and
- Shared recovery after events have occurred.

[57] http://cache.trustedpartner.com/docs/library/PalmBeachMedicalSociety2009/2012BoardRetreat HERC2011update Success.pdf

[58] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; Kindle E-book location 411 of 2343

2. Jacksonville, Florida

Membership in the First Coast Disaster Council is voluntary and open to any member of the healthcare community and supporting agencies. Incentives to membership help drive the near 100 percent participation from local hospitals and the healthcare community, but the true success of FCDC's active participation rests more with the manner in which the coalition members interact than in the tangibles that membership provides.

FCDC member agencies receive many of the same benefits as those who participate in Palm Beach County's HERC: interoperable communications, joint training and exercises, cost sharing and grant funding opportunities. But these benefits are driven more from the county emergency management division than the coalition itself. FCDC does not have a full-time staff; it does not have any online presence or marketing strategies; it is not affiliated with a large healthcare-related organization, such as the local medical society, but yet it still enjoys the same levels of participation as coalitions that do have these factors.

FCDC utilizes an important aspect of group dynamics that helps it meet the participation needs of a coalition—active involvement. In the book *Work and the Nature of Man,* Frederick Hertzberg details his "two-factor theory" in gaining motivation for employees or, as exemplified in this case, coalition participants.[59] The theory posits that there are two factors that determine the amount of effort someone puts forth in anything he does. Those factors are described as "satisfiers" and "motivators."[60] Satisfiers for coalition participation tap into extrinsic factors, including interpersonal relationships, quality of group leadership, meeting room conditions, ease in attending meetings, and group policies and procedures. Motivators are more intrinsic and include the importance

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[59] Frederick Hertzberg; Work and the Nature of Man; 1973; Mentor Books, New York; Two-factor Theory Pp. 149-158

[60] Hertzberg's Motivation-Hygiene/Satisfiers Two-Factor Theory outline from the 1959 book; The Motivation to Work by Frederick Hertzberg; NetMBA web search 2/24/12; http://www.netmba.com/mgmt/ob/motivation/herzberg/

of the work of the group, individual responsibility given to members, achievements of the coalition, and recognition of one's work by both fellow coalition members and outsiders.

As stated in the governance structure of FCDC, it places great emphasis on collegiality and mutual respect for all members in the group and open membership to all healthcare providers and supporters of healthcare. This respect and collegiality is most likely the result of the long-standing relationship that FCDC has had with the healthcare community through joint training classes, exercises, and actual disaster-related events.

A few members of FCDC, however, attribute their success in participation to "good old southern hospitality and having sweet tea at every meeting!"[61] While this may in fact have more merit than some of the other factors in participation, it will respectfully and joyfully be categorized as collegiality for this study.

Each of the extrinsic or "hygiene" factors is meant to keep members from becoming dissatisfied with group participation. Additional extrinsic factors are met through conducting meetings in a semiformal fashion, following a predistributed agenda, providing lunch (including sweet tea) to all attendees, and holding the meetings in a facility with an executive boardroom feel.

The intrinsic factors that FCDC uses to keep members motivated and wanting to belong to the coalition include individual responsibilities assigned to each member, such as training or education assignments, inclusion in emergency disaster planning with high-ranking officials outside the coalition, positive feedback from various parent organizations, recognition of coalition accomplishments, and personal acknowledgment of the importance of members' work from actual mass-casualty events that other communities have faced.

As an example, during a recent FCDC monthly meeting, the education portion of the meeting assigned to one of the members involved a "lessons learned" case study of the patient surge and patient evacuation needs of Joplin, Missouri, from May 22, 2011.[62]

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[61] Direct observation from members of FCDC during many monthly meetings I attend.

[62] Dennis Manley, Steve Bollin, Dr. Robert Dodson, Ron Fovargue, Bob Denton, and Renee Denton; Medical Response to Joplin, Missouri, August 2, 2011; *After-Action Report and Lessons Learned*

An EF5 tornado struck the town just after 5:30 pm on Sunday, May 22, 2011, destroying a local hospital. Mercy St. John's Regional Medical Center took a direct hit from the storm, requiring that 189 patients be immediately triaged and evacuated to alternate facilities.[63] It was a wake-up call to every healthcare community in the nation that assumes its hospitals are impervious to the effects of a disaster. The incident demonstrated the importance for the healthcare coalition to train together and to prepare for any of its regional facilities to become the target of disaster, while at the same time preparing all regional facilities to become part of the solution. The patient surge planned for might not come just from the outpatient population but could potentially come from a neighboring hospital's inpatient population.

This single scenario exemplifies the importance of identifying and gaining participation from all members of a healthcare community before a disaster strikes and of building relationships that foster adaptive, flexible, and appropriate response. Members of FCDC include representatives from the following regional entities:

- Hospitals: all fourteen local hospitals are represented;
- Specialty/rehabilitation hospitals: two local facilities;
- Department of Public Health;
- Jacksonville Fire and Rescue Department;
- Jacksonville Sheriff's Office;
- Duval County Emergency Management Division;
- Private ambulance providers: representatives from the four local companies that provide all local interfacility transports;
- Regional support services: Salvation Army and American Red Cross;
- State Medical Response Team (SMRT): local representative;
- Federal Disaster Medical Assistance Team (DMAT): local representative.

Garnering the participation needed to address patient surge issues demands involvement from partners above and beyond the list provided. Private partners should be brought into the early discussions of preparing to mitigate catastrophic patient surge in a

[63] Dennis Manley, Steve Bollin, Dr. Robert Dodson, Ron Fovargue, Bob Denton, and Renee Denton Medical Response to Joplin, Missouri, August 2, 2011; *After-Action Report and Lessons Learned*

region. Requiring active participation from all parties can promote the emergence of the coalition framework and the sustainability needed to ensure response readiness across an entire community, not just the healthcare community. Emergence demands that the behavior of the whole (of community) is more than the sum of the parts.[64]

3. King County Healthcare Coalition

Participation in the King County Healthcare Coalition is actively sought from the staff at the KCHC. Membership is solicited from both the nongovernmental healthcare arena and the government response arena. Membership is open to all organizations and individuals that provide or support healthcare services in King County.[65] Key stakeholders are identified from regional needs analysis on patient surge, as well as through city and county charters that dictate jurisdictional responsibilities.[66]

KCHC advocates for "assessing the current landscape" of the entire healthcare community when determining the participants needed for the coalition.[67] Once identified, partners from across each region and discipline are invited to join and expected to provide valuable insight into emergency-response procedures related to patient surge from catastrophic health events. Key stakeholders in the healthcare community are encouraged to sit on the governing body of the coalition, known as the executive council. Active participation is sought across the wide realm of healthcare with a constant focus on the mission of "building a strong and coordinated framework for coordinated response within Seattle and King County."[68]

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[64] *Emergence – Complexity from Simplicity, Order from Chaos: Part 1 of 2*; PBS Nova Video; accessed from You Tube November 2011; http://www.youtube.com/watch?v=gdQgoNitl1g

[65] Cynthia Dold and Kay Koelemay; *What is the King County Healthcare Coalition?;* 2008; Power point presentation accessed on December 28, 2011; Healthcare Coalition Overview(1) pdf.

[66] King County Healthcare Coalition Toolkit: Engaging Healthcare in the Planning Process http://www.apctoolkits.com/kingcountyhc/pages/engaging_healthcare.html

[67] *Assessing the Landscape: Engaging the Right Partners;* http://www.apctoolkits.com/kingcountyhc/pages/engaging _ healthcare.html

[68] King County Healthcare Coalition; http://www.kingcountyhealthcarecoalition.org/about-the-coalition/the-coalition

KCHC is heavily branded with an easily recognized logo worn by all coalition staff and members and printed on all media products. The staff maintains an interactive Web site linking the coalition to the King County Health Department. The coalition staff has also created online toolkits on subjects ranging from creating or enhancing a healthcare coalition to establishing alternate care sites. It has developed full-color brochures and posters that are distributed across the region to potential partners. Potential members are inundated with information about the coalition and made well aware of the benefits of membership, which include:

- Access and technical support for WAtrac, the state's Web-based healthcare incident management software, linking all healthcare organizations in the state;
- Regional training exercises;
- Activities, tools, and resources that support hospital patient surge preparedness;
- Activities, tools, and resources that support accreditation;
- Regional planning, including legal agreements between all healthcare partners;
- Advocacy and visibility with emergency management officials;
- Quarterly disaster preparedness healthcare forums.

Participating agencies in the KCHC number more than 300, all of which are named on the coalition Web site. The agencies range in disciplines from A Caring Adult Family Day Home to the Washington Poison Center.[69] Every member agency has a discipline-specific role in mitigating the effects of a mass-casualty patient surge event. Working within the coalition framework enables the large number of agencies to leverage their resources in a more effective and efficient manner for response to any catastrophic health event.

KCHC provides an example of strengthening participation through recognizing the affiliation needs of an organization. As the size of the coalition grows, it creates a large "in-group" of members. Agencies that are not members of the coalition feel the

[69] King County Healthcare Coalition; http://www.kingcountyhealthcarecoalition.org/sponsor-the-coalition/our-participants

need to join and be in the "in-group" so that they can enjoy the same benefits that the other members enjoy. The "in-group" is further differentiated through branding that identifies an agency or person as a member of the coalition. The challenge is in taking the individual disciplines that make up a coalition and reframing their group identity to include the coalition as a whole. KCHC understands the importance of using logos in branding and creating a unified approach to achieving the coordination and collaboration needed in a mass-casualty response. KCHC accomplishes this through two methods: First, by developing a single overarching goal that all individual members feel they play a part in; and second, in creating a sense of belonging through visible group identifiers, such as uniforms with logos and membership status, listing participating agencies in highly visible locations, offering business cards or letterhead rights that tout affiliation.

As advanced and progressive as the King County Healthcare Coalition is, it seems to approach the needs for coalition participation in the simplest of terms. In order to adequately mitigate the patient surge that will accompany a catastrophic health event, one needs buy-in and active participation from the entire healthcare community in the region. Getting the needed buy-in requires approaching the healthcare community in the same manner that one would approach a person whose participation was desired: tap in to his basic needs.

4. Conclusion

The three coalitions researched all recognize the importance of complete and active participation from the entire healthcare community in mitigating patient surge resulting from a catastrophic health event. The MSCC handbook provides that the goal of the healthcare coalition in mitigating patient surge is to "provide a central integration mechanism for information sharing and management coordination among healthcare assets, and also to establish an effective and balanced approach to integrating medical assets into the jurisdiction's ICS [Incident Command System]."[70] Obtaining the

[70] Joseph A. Barbera and Anthony G. Macintyre; Medical Surge Capacity and Capability Handbook; 2nd edition, Prepared for the US DHHS and ASPR 2007, Executive Summary

information needed to accomplish the goal outlined in the MSCC handbook demands active participation from the many agencies that make up the complex system of healthcare.

In *Thinking in Systems*, Donella Meadows explains the importance of the use of information in establishing and sustaining participation from members of a complex system, stating that "information is what holds systems together and plays a great role in determining how they operate."[71] Meadows specifically speaks of breaking "actors" out of their bounded rationality so that everyone focuses on a common goal. Bounded rationality challenges the thinker to look beyond his own frame of reference and personal schema to see possibilities outside his own confines and intellectual structure.[72] The coalition framework allows individual members to see catastrophic patient surge from a group perspective, as opposed to an individual challenge. Bounded rationality is expanded through the information now available concerning all of the resources of each member. Full and active participation from all members of the healthcare community is vital in preparing every region for the patient surge that results from a catastrophic health event.

D. FUNDING MECHANISMS

Funding is paramount to coalition sustainability. Ensuring that a regional healthcare coalition remains operational and sustainable demands short- and long-term funding mechanisms that are identified early in the coalition's inception in order to meet immediate needs such as equipment purchases and training, as well as continual needs such as staffing and patient-tracking software maintenance.

The amount of funding that each coalition needs to mitigate patient surge within its region will vary as much as the mechanisms used to obtain the funding. They should involve a mix of both personal and financial costs to the community and should be shared by both public and private stakeholders.

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[71] Donella Meadows; Thinking in Systems, Kindle E-book location 202;

[72] Donella Meadows; Thinking in Systems, Kindle E-book location 1109

The MSCC handbook suggests that healthcare coalitions be organized as lean as possible, keeping financial costs at a minimum.[73] Costs will be realized in varying degrees by each coalition based on communications, training, technological, or response equipment already purchased and maintained by other entities in the region. In this case the cost to the coalition is simple networking with other response agencies and building on the collaboration that will be needed during a mass-casualty patient surge incident. MSCC posits that the personnel time contributed by each member organization to the coalition is often the main cost for developing and maintaining a coalition.[74]

The federal government has funded the National Healthcare Preparedness Program (NHPP) since its inception in 2002 as the National Bioterrorism Hospital Preparedness Program. Initial funding was $125 million, which was distributed to states with the intent that it be used to fill gaps in preparing hospitals for a bioterrorist attack. Program funding grew exponentially after the first year, but as shown in table 1, HPP funding has leveled off in the past few years. [75]

Federal funding is awarded to states by way of cooperative agreement (CA) grants. Early focus on the purchase of decontamination equipment for hospitals and antidotes for bioterrorism has been replaced with a broader focus on preparing the entire healthcare community to mitigate any patient surge as a unified coalition. The Consolidated Appropriations Act of 2010 provided funding to the National Healthcare Preparedness Program to "improve the surge capacity and enhance community and hospital preparedness for public health emergencies."[76] The NHPP in turn awards the money to eligible entities in the form of CA grants. The fiscal year (FY) 2011 grants have stipulations that the funding be used for activities that include exercising and improving

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[73] Joseph A. Barbera and Anthony G. Macintyre; Medical Surge Capacity and Capability Handbook; 2nd edition, Prepared for the US DHHS and ASPR 2007, Chapter 5.3.2

[74] Joseph A. Barbera and Anthony G. Macintyre; Medical Surge Capacity and Capability Handbook; 2nd edition, Prepared for the US DHHS and ASPR 2007, The Coalition Emergency Operations Plan Chapter 3.3

[75] HHS Fact Sheet: FY10 Hospital Preparedness Program http://www.phe.gov/Preparedness/planning/hpp/Pages/fy10hpp.aspx

[76] HHS Grants Boost Disaster Preparedness in Hospitals, Health Care Systems; News Release July 1, 2011 HHS Press Office http://www.calhospitalprepare.org/node/933

preparedness plans for all-hazards, increasing the ability to provide needed patient beds, engaging interoperable communications systems throughout the region, educating and training healthcare workers, and enabling healthcare partnerships and coalitions.[77] DHHS is expanding the scope of the FY12 grant cycle to emphasize the operational needs of regional healthcare coalitions across the country.[78]

Regional healthcare coalitions should not look to the federal government as their only source of funding. Nor should healthcare coalitions think of funding only in monetary terms. Financial support is available from public and private donors, corporate sponsorships, consultation services, membership fees, and vendor sponsors. The following cases exemplify funding options from robust federal support and regional sponsorship to membership dues–driven organizations.

[77] DHHS FY11 HPP Guide http://www.phe.gov/Preparedness/planning/hpp/Documents/fy2011-hpp-funding-guidance.pdf

[78] DHHS FY11 HPP Guide http://www.phe.gov/Preparedness/planning/hpp/Documents/fy2011-hpp-funding-guidance.pdf

Hospital Preparedness Program Funding FY 02–FY10:	
FY02:	$125,100,000
FY03:	$498,000,000
FY04:	$498,000,000
FY05:	$470,755,000
FY06:	$460,216,752
FY07:	$415,032,000
FY08:	$398,059,000
FY09:	$362,017,984
FY10:	$390,500,000

Table 1. NHPP Funding (From: [79])

1. Palm Beach County HERC

HERC is organized as a 501(c) (3) nonprofit public-safety entity. It uses a combination of funding mechanisms from dedicated contributions to grant application opportunities in order to sustain its work and to solicit members from the community. HERC recommends that one of the first items a coalition address is the appointment of a

[79] HHS Fact Sheet: FY10 Hospital Preparedness Program http://www.phe.gov/Preparedness/planning/hpp/Pages/fy10hpp.aspx

fiscal advisor/treasurer.[80] This position is needed since most grant funding and group purchasing requires a legal entity to receive funding or to benefit from group rates. In Palm Beach County, HERC utilizes the Palm Beach County Medical Society as its fiscal agent.[81]

HERC was initially organized through a substantial grant from the Palm Healthcare Foundation. The foundation advertises that it practices "engaged investment," which it defines as "collaborative grant making that builds strong community relationships, respects diverse opinions and seeks non-traditional approaches to difficult healthcare challenges."[82] The foundation attempts to combine regional assets and expertise when issuing grants, often pairing nontraditional partners in finding creative solutions to healthcare needs. The diverse multidiscipline membership of HERC makes it a perfect fit with the Palm Healthcare Foundation, which seeks to create a tightly woven community of healthcare providers. HERC has maintained a relationship with the foundation since the initial funding at its inception. A majority of the funding provided by the Palm Foundation is specified for planning and administrative support, but it also includes specific funding targeting equipment and training needed to mitigate patient surge from a catastrophic health event, such as the 2005 purchase of patient-tracking software used throughout the region in mass-casualty incidents.[83]

HERC has also received federal grant funding through the state's Regional Domestic Security Task Force—Region 7 for the purchase of a region-wide syndromic surveillance system, interoperable communications equipment, and a Web-based hospital

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[80] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; Kindle E-book location 982 of 2343

[81] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; Kindle E-book location 989 of 2343

[82] Palm Healthcare Foundation Website: Accessed 1/26/12 http://www.palmhealthcare.org/Grantmakingphilosophy

[83] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; Kindle E-book location 527 of 2343

incident management system that allows all healthcare partners to continually monitor hospital census information for potential patient surge crises.[84]

Local, state, and federal funding is often given to regions willing to pool their resources. This proved an attractive offer for HERC, which incorporates over 35 agencies within the 2,023 square miles of its county.

HERC Funding from Palm Healthcare Foundation	
2001	$250,000
2002	$50,000
2003	$50,000
2004	$50,000
2005	$75,000
2006	$43,000
2007	$71,000
2008	$74,000
2009	$75,000
2010	$50,000

Table 2. Annual PHF Contributions to HERC (From: [85])

While grants make up the majority of HERC's funding streams, they are not the only mechanism relied on for sustainability. Grant funding comes in cycles and is constantly shifting focus to meet the immediate needs of a community. HERC realized this early on and solicited funding from various sources. To garner support from the community, HERC invested early on in building awareness through communicating its

[84] HERC of Palm Beach County Community Report; 2008-2008; *Summary of Accomplishments and Activities Grants Received;* http://cache.trustedpartner.com/docs/library/PalmBeachMedicalSociety2009/Content/HERC/HERC%202007-08%20community%20report.pdf

[85] Information for table gathered from Annual Financial Reports from Palm Beach County Healthcare Emergency Response Coalition. Reports gathered from *Establishing a Healthcare Emergency Response Coalition*; and from Palm Healthcare Foundation annual reports: http://www.palmhealthcare.org/recentgrants

mission to the public, community leaders, and the media.[86] Through an active public relations campaign philanthropic, federal, state, and local partners emerged and provided HERC with funding and additional marketing opportunities.

HERC gets additional funding through membership fees from each participating agency. The fee is minimal, currently $450 per year, and is used toward operational expenses for the dedicated staff of HERC.[87]

Requiring a nominal membership fee of participating agencies also has the added benefit of giving the agencies a sense of ownership in decision making and group direction.

Member agencies are also encouraged to provide funding through "in-kind services," such as when the Palm Beach County Fire and Rescue Department provided personal protective equipment and decontamination training to all regional hospitals at no cost to HERC.[88] One of the most creative means of funding that HERC has realized is through the sale of the book *Establishing a Healthcare Emergency Response Coalition*. The book was written by three founding members of HERC as a guide to community stakeholders; it walks them through the process of creating a healthcare coalition.[89] To date, this is the only text available that is dedicated to establishing a healthcare coalition. Profits from the sale of the book go directly to Palm Beach County's HERC.[90]

HERC was recognized in 2007 by the Centers for Disease Control and Prevention and the American Medical Association as a model community program for emergency preparedness. The award specifically speaks to HERC's ability to create a "self-

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[86] *Guide To Establishing a Healthcare Emergency Response Coalition;* 2008 Publication of Palm Beach Healthcare Foundation West Palm Beach, Florida 33406 Section 5 – Secure and Sustain Funding Pp. 13

[87] National Association of County and City Health Officials; Program Details – Healthcare Emergency Response Coalition of Palm Beach County (HERC); http://naccho.org/topics/modelpractices/database/practice.cfm?PracticeID=61

[88] *Guide To Establishing a Healthcare Emergency Response Coalition;* 2008 Publication of Palm Beach Healthcare Foundation West Palm Beach, Florida 33406 Section 5 – Secure and Sustain Funding Pp. 13

[89] Jay Lee, Thomas W. Cleare and Mary Russell; Establishing a Healthcare Emergency Response Coalition; Government Institutes The Scarecrow Press; Kindle E-book location 162 of 2343

[90] Palm Healthcare Foundation Press Release January 3, 2011; titled: "HERC Book Hits the Market" http://www.palmhealthcare.org/index.cfm?fuseaction=news.details&ArticleId=116&returnTo=press-releases

sustaining coalition through the responsible use of seed funding and ongoing support from the Palm Healthcare Foundation resulting in a series of protocols on preparing for and responding to any mass casualty incident; and also for their ability to reach out to traditional and non-traditional partners in the healthcare community for financial and personal support involving the whole-of-community in disaster preparedness."[91] Palm Beach County's HERC is an example of variety and creativity as the key to funding coalition sustainment.

2. Jacksonville, Florida

FCDC has by far the lowest annual budget of the three chosen for this research. The only dedicated stream of funding that the coalition receives comes from annual membership dues from each participating agency. The 2010/2011 membership dues were $400.00 per agency and were received from 16 different member organizations. This amount was recently upheld for 2011/2012. The governance structure of FCDC demands that a financial report be delivered at each meeting by the elected treasurer, who acts as the fiscal agent for the coalition. All funding matters are voted on by the membership at large, with a simple majority required for approval. FCDC is organized as a 501 (c) (3) nonprofit organization, making it eligible for most federal grant funding, as well as public and private donations. There is currently no dedicated position within FCDC focused on soliciting funding outside of the membership dues.

The FCDC does not have any overhead expenses or staff members, a large portion of the expenses for which other coalitions must secure long-term funding. Expenditures over the past three years include attendance at annual disaster-preparedness conferences, liability insurance for full-scale exercises, the annual awards dinner, and miscellaneous clerical fees.[92] The FCDC does not take the leading role in purchasing large-ticket items

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[91] Palm Beach County Healthcare Emergency Response Coalition; Press Release August 13, 2007; "HERC Wins National Award"; https://www.trustedpartner.com/docs/library/000141/FINALHERC%20%20jays%20version%20cdc%20award%20with%20picture%202.pdf

[92] Personal copy of 2009/2010/2011 FCDC financial report to membership body, on file at Duval County Emergency Management Division, Office of Health and Medical Preparedness, 515 North Julia Street, Jacksonville Florida 32202, Attn: EPD Office

to prepare the community for mass-casualty patient surge events, such as interoperable communications systems or mass decontamination equipment. Grant funding for these items is generally coordinated through the county grants administrators, located within the DCEMD. Attachment to a large and progressive emergency management department has taken much of the funding load off the coalition. This is both a benefit to the FCDC and a challenge in keeping up to date on funding opportunities and visions for both organizations. The FCDC meets this challenge through active involvement within the DCEMD health and medical branch and reverse involvement within the FCDC from members of the DCEMD. Tapping into the collegiality discussed earlier in participation needs has proven effective in meeting much of the FCDC's funding needs.

A funding benefit that the FCDC experiences as a result of the collegiality it fosters is the joint use of hospital grant funding targeted for disaster preparedness. This funding is generally received through direct grants from the National Healthcare Preparedness Program through ASPR. The FCDC assumed leadership roles in two ASPR-funded exercises in 2011: a full-scale mass-casualty patient surge exercise at the Jacksonville International Airport and a tabletop exercise testing alternate-care facility plans for mitigating mass patient surge. The funding for each exercise was assumed by the hospital or hospitals receiving the ASPR grant. The FCDC provided guidance in planning, soliciting volunteers, networking key stakeholders in the community, and documenting the exercise through the Homeland Security Exercise and Evaluation Program (HSEEP).

The leadership role that the FCDC has in networking all of the healthcare community does not currently require the funding streams that the other coalitions have in place. The FCDC is an example of funding that is not necessarily financial. While the funding for the FCDC is distinctively different from that of Palm Beach County's HERC and King County's KCHC, the FCDC is still able to influence the surge capacity and capability needs of its region and sustain its coalition. Recently, the FCDC has begun looking for additional funding mechanisms to strengthen its preparedness level and bring in additional healthcare partners to broaden the membership.

3. King County, Washington KCHC

King County, Washington's Healthcare Coalition is the most highly funded of the three coalitions. KCHC was established in 2005 through a grant from DHHS and is housed within the Department of Public Health. The initial grant sustained the coalition, including a full-time staff of 12, through the first three years. Additional grant funding and an aggressive campaign for local donors have maintained the coalition since that time. KCHC is in partnership with a 501(c) (3) nonprofit organization, the Foundation for Health Care Quality, for all charitable contributions.

In 2010, KCHC began work to broaden its funding base from predominantly federal grant monies to long-term sustainable partnerships within its region. Since that time it has reached out to corporate sponsors and now has an extensive list of financial backers. KCHC lists its sponsors by level of annual donation, starting at $25,000 and moving down to $500 sponsorships. The 2011 list of corporate sponsors who gave more than $500 totaled 13, two of which are $25,000 donors. Coalition sponsors receive public acknowledgment on the coalition's Web site, in its monthly newsletter, at all conferences, in staff presentations, and in an annual newspaper advertisement thanking all sponsors.[93]

KCHC looks beyond the corporate arena to solicit membership from the healthcare community that will benefit most from the work the coalition does in preparing for catastrophic health events. The healthcare community extends from public hospitals to private hospitals and healthcare providers to private businesses needed to sustain the healthcare system during a time of disaster. Membership dues for participants are recommended based on annual corporate revenues for each participating agency. KCHC currently has over 300 participating agencies paying annual dues ranging from $500 to $1,000.[94] KCHC touts the benefits of membership, including:[95]

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[93] King County Healthcare Coalition; http://www.kingcountyhealthcarecoalition.org/sponsor-the-coalition/become-a-financial-sponsor

[94] King County Healthcare Coalition; http://www.kingcountyhealthcarecoalition.org/sponsor-the-coalition/become-a-financial-sponsor

[95] The benefits of Healthcare Participation; King County Healthcare Coalition online healthcare participant application; http://www.kingcountyhealthcarecoalition.org/sponsor-the-coalition/become-a-participant

- Regional training and exercises that test organizational and regional capabilities for a mass-casualty patient surge;
- Technical support for the use of WATrac (Washington State's patient-tracking software);
- Activities, tools, and resources that support accreditation and licensing demands;
- Regional planning and agreements that lead to improved coordination and access to resources during a catastrophic health event;
- Collaboration and peer support that lead to more transparent and effective preparedness outcomes.

Members are continually reminded of the importance of the coalition in preparing King County's healthcare system for a disaster. Funds are used to purchase advertising promoting preparedness and prevention efforts for pandemic health events, natural disasters, and terrorist attacks.[96] The funding is also used to hold more than 30 training exercises and 50 meetings and workshops per year, all focused on preparing the region for a catastrophic health event.[97] Every participant is invited to attend with active involvement from key stakeholders expected.

KCHC is in a unique position to leverage its formal governance structure within the Department of Public Health and county Emergency Management Division to solicit broad-based participation. This in turn results in unlimited participant-driven funding streams. The funding mechanisms used by KCHC serve to self-perpetuate the coalition through the constant renewal of memberships, which are easy to attract, given the benefits that KCHC is able to offer those who participate.

4. Conclusion

Funding will always be one of the biggest challenges to any organization's ability to operate and sustain its mission. Healthcare coalitions are no exception. Identifying adequate funding streams to fulfill a coalition's mission demands a constant review of

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[96] King County Healthcare Coalition Accomplishments http://www.kingcountyhealthcarecoalition.org/media/Accomplishments_06-11.pdf

[97] King County Healthcare Coalition Accomplishments http://www.kingcountyhealthcarecoalition.org/media/Accomplishments_06-11.pdf

existing funding opportunities and the creation of new and creative ones. Short- and long-term funding mechanisms should be identified across the spectrum from public grant opportunities to private donations.

Providing opportunities to strengthen coalitions is the focus of the 2012 ASPR cooperative grant cycle. In January of 2012, ASPR issued the *National Guidance for Healthcare System Preparedness—Healthcare Preparedness Capabilities List*.[98] It lists eight capabilities as the basis for healthcare coalition preparedness. The list was a combination of ASPR-outlined capabilities for healthcare preparedness and the 15 public health emergency preparedness capabilities released in March of 2011.[99]

1. Healthcare system preparedness;
2. Healthcare system recovery;
3. Emergency operations coordination;
4. Fatality management;
5. Information sharing;
6. Medical surge;
7. Responder safety and health;
8. Volunteer management.

In an effort to assist regions with meeting these capabilities, ASPR is providing approximately $350 million annually to states, localities, and territories within the United States through the HPP cooperative agreement grant program. Being focused exclusively on healthcare coalitions, ASPR recognizes the role it plays in mitigating mass-casualty patient surge events.

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[98] "Healthcare preparedness capabilities"; United States Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. http://www.phe.gov/Preparedness/planning/hpp/reports/Documents/capabilities.pdf

[99] "Healthcare preparedness capabilities"; United States Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. http://www.phe.gov/Preparedness/planning/hpp/reports/Documents/capabilities.pdf

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V. FINDINGS

Disasters involving human casualties often come with little or no warning for the healthcare community tasked with triaging and treating the sick and injured. A coordinated and collaborative approach from the entire healthcare community is needed to mitigate the patient surge seen in mass-casualty disasters. As evidenced in this research, regional healthcare coalitions are able to enhance medical surge capacity utilizing various forms of governance, differing levels of participation, and multiple means of funding.

Regional healthcare coalitions are as diverse as the communities they serve. It has been said about the differences in fusion centers that "if you've seen one fusion center, you've seen one fusion center." This could just as easily be said about healthcare coalitions and is not necessarily a negative take on either. Regional healthcare coalitions serve specific regions with specific needs. Identifying what those specific needs are for each region will guide the creation and sustainment of any regional healthcare coalition.

Palm Beach County's HERC realized the power in associating with an established leader in the local healthcare community and building its governance structure within that organization. By positioning the administrative needs of its coalition within the local medical society, it was able to concentrate its efforts on preparing the healthcare community for a mass-casualty patient surge and soliciting participation from all aspects of healthcare. The ability to align with an existing regional healthcare entity is an attractive option for many communities; as evidenced by Palm Beach County's HERC, it enhances the ability to collectively respond to a mass casualty or pandemic patient surge.

The FCDC exemplifies a self-sustaining supportive model of a regional healthcare coalition. Each of the key stakeholders within the coalition maintains primary responsibilities to the home agency. With no formal coalition notification center or designated duty-call position assigned to the role of the FCDC during a catastrophic health event, the need for a healthcare coalition in the region may appear moot. On the contrary, the FCDC fulfills the precise purpose and scope of a healthcare coalition as

outlined by the DHHS in the 2010 *Healthcare Coalition Handbook*: "using a medical Multiagency Coordination System that supports, but does not supplant, the incident response activities of individual healthcare organizations (in Tier 1) and jurisdictional authorities (in Tier 3)."[100] By acting as the clearinghouse for information from the individual healthcare organizations, the FCDC is able to support the needs of the incident commander from its position in ESF-8 at the EOC.

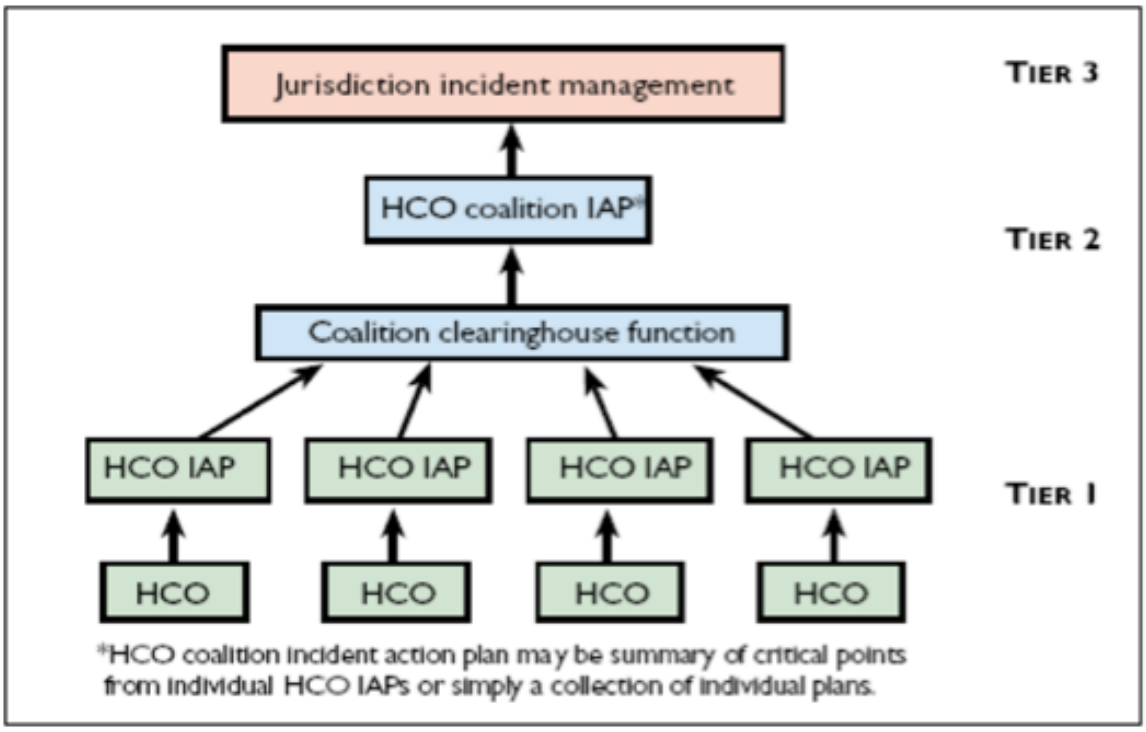

Figure 5. Coalition Supportive Action Plan (From: [101])

The FCDC demonstrates the ability to provide the support needed to mitigate a mass-casualty patient surge for a large metropolitan area without having the formal structure and funding of other healthcare coalitions. This is possible due to the existence

[100] Joseph A. Barbera and Anthony G. Macintyre; *Medical Surge Capacity and Capability Handbook*; Public Health Emergency Workgroup; Assistant Secretary for Preparedness and Response 2007; Executive Summary

[101] Joseph A. Barbera and Anthony G. Macintyre; *Medical Surge Capacity and Capability Handbook*; 2nd edition, Prepared for the US DHHS and ASPR 2007,Tier 2 Coalition Action Plan Chapter 3.3.1 Figure 3-1

of a strong emergency management division within the region that assumes command positions during disasters and incorporates mass-casualty patient surge needs in its funding plans.

King County's healthcare coalition provides a look into the extreme possibilities a healthcare coalition could provide to a region. Slated as one of the model healthcare coalition programs by the DHHS, KCHC demonstrates the utmost in a "whole-of-community" approach to healthcare.[102] As demonstrated by the number of participating agencies in the coalition (more than 300), the number of corporate sponsorships (more than 25), the publication of numerous online coalition toolkits, and the support of local jurisdictional authorities, KCHC is able to assume a leadership role in the incident command structure as well as providing the support needed for a mass-casualty event. This would not be possible were it not for the aggressive funding mechanisms that KCHC uses to sustain its work.

Each of the three coalitions examined in this research approached patient surge planning and preparedness with different forms of governance, different levels of participation, and different means of funding. All were able to demonstrate success in enhancing patient surge mitigation within their respective regions.

[102]The Center for Biosecurity of the University of Pittsburgh Medical Center; *Hospitals Rising To The Challenge: The First Five Years of the U.S. Hospital Preparedness Program and Priorities Going Forward*; Overview of Partnerships; 2011; Printed Copy available online at: http://www.upmc-biosecurity.org/website/resources/publications/2009/2009-04-16-hppreport.html

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VI. RECOMMENDATIONS AND CONCLUSIONS

A. RECOMMENDATIONS

The threat of a patient surge will never be completely eliminated. Preparedness for an event that results in a mass patient surge must be an ongoing process for hospitals and the healthcare community as a whole. Weaknesses in the level of readiness for a catastrophic health event must be identified across every region and accompanied by viable solutions for the weaknesses identified.

In a 2008 article published in the *Humanitarian Exchange Magazine*, the authors explain the need for a clear strategic vision in addressing surge capacity. The article states that "surge capacity is not just an organization's ability to mobilize an emergency response or rapidly deploy staff, but rather it is the result of a continual process from preparedness and planning through to response, and on to recovery."[103]

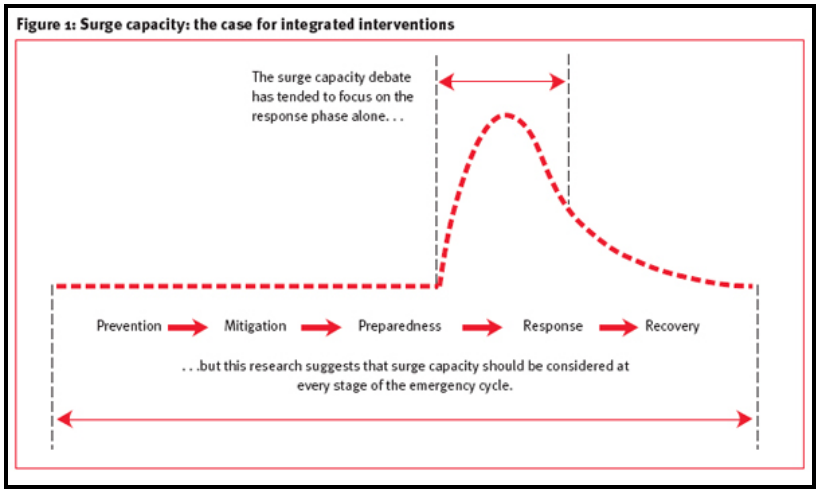

Figure 6. Surge Capacity: The Case for Integrated Interventions (From: [104])

[103] Ben Emmens and Rachel Houghton; *Understanding Surge Capacity within International Agencies*; Humanitarian Exchange Magazine, June 2008,Issue 39

[104] Ben Emmens and Rachel Houghton; *Understanding Surge Capacity within International Agencies*; Humanitarian Exchange Magazine, June 2008,Issue 39 Figure 1

Regions across the United States should continually prepare for a patient surge from a catastrophic health event through the establishment of a fully functional and active healthcare coalition. The coalition should be custom designed to the needs of the region and involve the full spectrum of the local healthcare community. The midst of the disaster is not the time to create a plan on how to best mitigate a patient surge. Mass-casualty injuries and illnesses rely on time-sensitive decisions made by healthcare providers in order to save the most lives. Continual planning and preparedness efforts through the use of regional healthcare coalitions provide the coordination and collaboration needed to mitigate any mass-casualty patient surge that may strike a community.

The research demonstrated that it mattered little the specific governance structures of a coalition, or extent of participation in the coalition, or the level of funding the coalition enjoyed. What mattered was that the structure, participation, and funding match the needs of the specific region in preparing for a patient surge.

B. CONCLUSION

The health and well-being of a society drives decisions made from the executive levels of government to the personal choices of individuals. Those decisions are often based on a perception that the healthcare community is able to handle a crisis of any magnitude. History is evidence that this may not be the case. From the devastating floods of hurricane Katrina to the destructive tornados of Joplin, Missouri, the healthcare community has witnessed the need to come together as a unified system in the face of mass casualties and patient surges. While many hospitals and healthcare organizations operate competitively on a daily basis, they must realize the need to come together during a time of disaster. How the healthcare community unifies is not a simple straightforward formula. As seen in this research, variations of collaboration and interoperability existed in how each coalition framed its structure, membership, and funding, but each met the need of enhancing its region's ability to respond to mass-casualty patient surges.

Measuring the success of a coalition's preparedness for a patient surge does not have a quantifiable figure, nor is it necessary that an actual mass casualty occur to test

preparedness. Harry P. Hatry describes how nonprofits providing healthcare services to a community can demonstrate preparedness to their funders and stakeholders.[105] He recommends that the organization, or in this case the coalition, link its outcomes to its mission. The mission of the healthcare organization in preparing for a patient surge is met by creating a unified system through a collaborative environment that fosters interoperability among all entities. For a coalition to measure success, it should structure its governance, participation, and funding to meet its mission of a unified healthcare community.

This research was limited in the number of coalitions examined and alternatives to mitigating mass-casualty patient surge. As concluded in this research, the number of variations by which a healthcare coalition can be structured, funded, and enlisted vary considerably from region to region. Understanding that there are additional options for meeting the needs of a patient surge in mass casualties or pandemic events works to further the conclusion that it matters less how a community of healthcare providers comes together than it does that they actually come together. Healthcare communities across the nation should take the information included here as examples of how these distinctively different regions created healthcare coalitions and draw from it similarities and differences they can use in their own communities to create a fully functional healthcare coalition.

Additional research into how a region begins the process of creating a coalition would be beneficial to those in need of a healthcare coalition. The three cases examined in this research emerged from either specific incidents, as was the case with Palm Beach County's HERC, or through the shared need of hospital accreditation–required training as was the case with Jacksonville's FCDC, or through an agency-driven mission, as was the case with the Department of Public Health in King County, Washington. This research would be enhanced by further discussion about who assumes the responsibility for ensuring that all regions establish a healthcare coalition.

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[105] Harry P. Hatry, Jake Cowan, Ken Weider and Linda Lampkin; *Developing Community-wide Outcome Indicators for Specific Services*; June 01, 2003; http://www.urban.org/publications/310813.html

The federal government has thus far only issued guidelines for implementation and financial incentives to creating a coalition. Is there a single coalition structure that every region could assume? If so, would the three cases above fit into that structure?

APPENDIX A. COMPARISON OF GOVERNANCE STRUCTURES

GOVERNANCE STRUCTURE	HERC	FCDC	KCHC
Development of comprehensive Emergency Operations Plan	Yes	No formal EOP – Support role within ESF-8	Yes
Mission and Vision Statement	Yes	Mission statement only	Yes
Leadership Structure	Elected Advisory Council	Elected leadership positions	Appointed Executive Council
MOU /MOA / LOA used between coalition partners	MOU with all member organizations	LOA between participating hospitals only	MOA with all participants and corporate sponsors
Interoperability plan with Tier 3 public sector agencies in place	In progress	Yes, fully interoperable with all Tier 3 partners	Yes, fully interoperable with all Tier 3 partners
Ability to rapidly disseminate healthcare information from coalition to incident commander and other authorities	In progress	Yes, fully functional region-wide patient tracking / healthcare information software system. EMResource©	Yes, fully functional region-wide patient tracking / healthcare information software system. WATrac©
Healthcare coalition notification center and duty officer assigned	Duty officer assigned on-call status from county dispatch center	No notification center or duty officer assigned. County EMS dispatch notifies individual hospitals through DCEMD and EMResource©	Yes – Stand alone facility staffed and integrated into regional communications center and patient tracking software system

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APPENDIX B. COMPARISON OF PARTICIPATION LEVELS

PARTICIPATION	HERC	FCDC	KCHC
Coalition open to all members of the healthcare community	Yes	Yes	Yes
Active solicitation for members by coalition staff	Yes	No	Yes
Public relations benefits available to members through association with coalition	Yes	No	Yes
Mutual aid agreements with surrounding regions	Yes	Yes	Yes
Active participation from all regional hospitals	Yes	Yes	Yes
Active participation from private corporations	Yes	No	Yes
Active involvement of participating members in exercises and training	Yes	Yes	Yes
Recognition and support of local authorities having jurisdiction	Yes	Yes	Yes

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APPENDIX C. COMPARISON OF FUNDING SOURCES

FUNDING	HERC	FCDC	KCHC
Full-time grant administrator dedicated to securing grant funding	Yes	No	Yes
Fiscal agent assigned	Yes	Yes	Yes
Membership dues required by all participating corporate agencies	Yes	Yes	Yes
Funds received from Private Foundations	Yes	No	Yes
Administrative positions supported by grants	Yes	No	Yes

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