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Kathleen M. Samsey, MD

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Capstone Committee for Kathleen Michelle Samsey Certifies that this is the approved version of the following capstone:

Medical and Public Health Considerations in U.S. National Disaster Planning—The "All-Hazards" Approach

Committee:

John J. Fraser, MD, JD, MPH, Chair

Christine M. Arcari, PhD

C. Joan Richardson, MD

_____

Dean, Graduate School

Medical and Public Health Considerations in U.S. National Disaster Planning—The "All-Hazards" Approach

by

Kathleen M. Samsey, MD

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Medical and Public Health Considerations in U.S. National Disaster Planning—The "All-Hazards" Approach

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Kathleen M. Samsey, MPH

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Supervisor: John J. Fraser

Our nation faces many threats in this modern era, from natural disasters such as hurricanes to man-made disasters such as bioterrorism. Over the past 10 years, our disaster preparedness and response have evolved, though many shortcomings are still evident. Public health and medical considerations pose a particularly complex challenge. This Capstone explores how we have come to our current level of readiness, and where we can improve, by reviewing relevant legislation, roles and authorities of key governmental agencies, the National Incident Management System, and the National Health Security Strategy.

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SPECIFIC AIMS AND SIGNIFICANCE OF STUDY

Over the past decade, our nation has found itself in the crosshairs of multiple terrorist attacks and threatened by significant natural disasters and disease outbreaks. In this post-9/11 era, planning for disaster preparedness and response is more necessary than ever. From the domestic anthrax attacks of 2001 to Hurricane Katrina in 2005, and the H1N1 influenza outbreak of 2009, our nation's leaders have sought to develop a comprehensive, flexible response framework.

Numerous acts of legislation and presidential directives have sought to outline a response plan, of which the primary results are the National Incident Management System (NIMS), and the National Response Framework (NRF). Unfortunately, these systems are often difficult to understand, inefficient at coordinating efforts among different agencies, and have poor compliance among state and local health departments and health care facilities.

Due to the difficulties encountered in emergency response during Hurricane Katrina in 2005, several new acts have been proposed. One of the purposes of these acts is, to clarify roles and authorities, particularly among the Department of Homeland Security (DHS), the Federal Emergency Management Agency (FEMA), and the Department of Health and Human Services (DHHS). I witnessed first-hand the confusion and inefficient use of FEMA and DHHS resources as a surgical ICU resident during the Hurricane Katrina evacuation, which has motivated me to elucidate the agencies' roles and legal authorities during emergency planning and response, and to explore areas of improvement.

In particular, the public health considerations during emergency response are very complex, and they require a dynamic process of development and high level of cooperation. In an attempt to more clearly understand our nation's disaster response planning, particularly with respect to public health, this Capstone intends to achieve the following specific aims:

1. Establish a historical timeline of legislation and framework development for disaster response planning with a focus on changes post-9/11, and post-Katrina, and to clarify the different roles and authorities of DHS, DHHS, FEMA.

2. Define a public health emergency (PHE).

3. Review the principle components of the NIMS, particularly with respect to public health/medical considerations.

4. Review the newly published National Health Security Strategy and compare it to the 2007 Homeland Security Presidential Directive (HSPD) #21: Public Health and Medical Preparedness.

The intended audience for this review includes medical providers, public health officials, legislators, and students.

BACKGROUND

The origins of our nation's disaster response planning date back to the 1950's, with the Federal Disaster Relief Act (Public Law, or PL, 81-875), which transferred the authority to declare federal disasters from the Congress to the President. This act outlined the national government's role as supportive to the functions of state and local governments in disaster relief.[1] However, over time the need for federal-level coordination for significant incidents became evident, and the Federal Emergency

Management Agency (FEMA) was established in 1979 by the Carter administration. The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (PL 100-707) required FEMA to draft a 'federal response plan', which had up to that point, never been formally compiled.

The terrorist attacks of 9/11/01 served as a game-changing impetus to enhance national readiness and response planning, particularly focusing on man-made disasters and acts of terrorism, as opposed to natural disasters, which had previously been the focus of federal plans. Subsequent to the attacks, The Homeland Security Act of 2002 (PL 107-296)[2] established the Department of Homeland Security (DHS) as an independent agency of the executive branch, aimed at leading the "unified national effort to secure the country and preserve our freedoms".[3] Homeland Security Presidential Directive #5 (HSPD#5, February 2003) required DHS to develop the National Response Program (NRP), which was later renamed the National Response Framework (NRF). The NRF is a comprehensive, national, all-hazards approach to domestic incident response,[4] for when federal *coordination* is required or requested. Its adoption by all federal agencies was required by September of 2003.

The NRF is subdivided into 15 separate emergency support functions (ESF), with ESF#8 falling under the authority of the Department of Health and Human Services (DHHS)—'Public Health and Medical Services' (see Figure 1 below).

Figure 1. List of NRF Emergency Support Functions (Reference: FEMA NRF Resource Center online)[5]

#1 – Transportation
#2 – Communication
#3 – Public Works and Engineering
#4 – Firefighting
#5 – Emergency Management
#6 – Mass Care, Emergency Assistance, Housing, and Human Services
#7 – Logistics Management and Resource Support
#8 – Public Health and Medical Services
#9 – Search and Rescue
#10 – Oil and Hazardous Materials Response
#11 – Agriculture and Natural Resources
#12 – Energy
#13 – Public Safety and Security
#14 – Long-term Community Recovery
#15 – External Affairs

According to ESF#8, the Secretary of Health and Human Services shall assume operational control of Federal emergency public health and medical response assets, as necessary, in the event of a public health emergency, except for members of the Armed Forces, who remain under the authority and control of the Secretary of Defense.[6]

The HSPD#5 also required of the DHS to develop the National Incident Management System (NIMS), a comprehensive national approach to incident management that is applicable at all jurisdictional levels and across functional disciplines.[7] It is to serve as a template for preparedness and response for any size incident, and for when federal *assistance* is requested (not coordination). NIMS implementation is required of all health care facilities receiving federal preparedness funding.

In the wake of Hurricane Katrina in 2005, and the inadequate federal response, new legislation has aimed at clarifying roles within the various agencies, and broadening the scope of national preparation. In 2006, the Post-Katrina Emergency Management Reform Act and the Pandemic and All-Hazards Preparedness Act were passed by

Congress. However, the actual impact of these acts on preparedness is unclear. Of note, the term "all-hazards" is used on a regular basis in the field of emergency management and refers to preparation for any type or size of disaster, whether it be natural (ie. flooding, tsunamis), technological (ie. radiation leak, structural malfunction), or human (ie. bioterrorist attack, hostage situation). It implies a system is in place which can be scaled up to respond to a larger disaster, and has a flexible network of agencies with various skills and resources.

The DHHS has also issued guidelines (most recently the National Health Security Strategy, or NHSS) to help prepare the public health response to any level of disaster or incident.[8] This NHSS reiterates what is already put forth in other directives and legislation, particularly emphasizing the need for community resilience and stronger medical response systems.

Currently, the key concern is that all of these legislative acts and response planning guidelines have not led to adequate emergency readiness in the event of a major disaster. NIMS implementation is historically poor, and the guidelines are often confusing. Adequate training and policy benchmarks have not been established. Additionally, overlap between various agencies continues to be a concern, and can lead to significant miscommunication or mismanagement of incidents.

By exploring in detail how we as a nation have come to where we are with our disaster preparedness, particularly with concern to public health, this Capstone hopes to clarify the federal disaster response plan and its guidelines to local governments and

agencies. Through this review, potential areas for improvement can be identified and developed.

To understand the legal foundation of our nation's disaster preparedness and response plan, one must first have a basic understanding of our laws and regulations. Legislative law refers to laws enacted by the US Congress, and they are codified the United States Code ('USC') under 50 broad subject headings.[9] They are written in plain text as "Public Law" __-___, with the first digits referring to the session of Congress, and the second being the number sequentially assigned to each act; their reference in the USC is written as 'Title [USC] Section number' (ex. 22 USC 1501 = Title 22, Section 1501).[10] Relevant titles of the *USC* include Titles 42 (Public Welfare) and 50 (War and National Defense).[11]

Administrative Law, on the other hand, is composed of regulations developed by federal agencies to enforce the laws published by Congress, as well as presidential directives and executive orders. These regulations are codified in the Code of Federal Regulations, or CFR, under 50 subject headings that are similar to, but not exactly the same as those headings used in the USC.[12] A regulation is cited by title, part, and section (ex. 14 CFR 121.313 = Title 14, Part 121, Section 313).[13] Relevant *CFR* Titles are 42 (Public Health), 44 (Emergency Management and Assistance), and 45 (Public Welfare).[14]

Executive Orders are legally binding orders given by the President of the United States as head of the Executive Branch, to federal administrative agencies. His authority to do so stems from Article II, Section I of the US Constitution, and they are enforceable without input from Congress. "Homeland Security Presidential Directives (HSPD)", are a

special subset of presidential executive orders, developed with the advice of the Homeland Security Council, and have been key in the development of our nation's emergency planning.[15] With this basic knowledge, one can now more accurately track the various laws and regulations that have led us to where we are today.

METHODS

A systematic review of the literature was used to address the specific aims as outlined below.

SPECIFIC AIM #1: Establish a historical timeline of legislation and framework development; clarify the different roles and authorities of pertinent agencies.

The vast majority of information on the development and implementation of the above legislation is found in legal and governmental literature/websites. Online resources accessed included: 1) Centers for Disease Control and Prevention (CDC) Public Health Law Program website; 2) Federal Emergency Management Agency (FEMA) website; 3) Search engine results for the various public laws, to obtain the content of the laws (ex. frwebgate.access.gpo.gov, www.govtrack.us); and 4) Other online-references as needed. A literature search using OVID/Medline, via UTMB Library was conducted, which included the names of the various legislative acts:

- Public Readiness and Emergency Preparedness Act of 2005
- Pandemic and All Hazards Preparedness Act of 2006
- Post-Katrina Emergency Management Reform Act of 2006

- Homeland Security Presidential Directives (HSPD) numbers 1, 5, 8, 10, 21, and others as needed

The Emergency Support Function #8 Annex was downloaded from the FEMA website to help clarify the role and responsibilities of DHHS. Information obtained was assimilated to determine roles and authorities.

SPECIFIC AIM #2: Define a public health emergency (PHE).

Online resources accessed included: 1) Centers for Disease Control and Prevention (CDC) Public Health Law Program website; and 2) Department of Health and Human Services (DHHS) website. A literature search of 'Public Health Emergency' was conducted using OVID/Medline by searching the database for Public Health Emergency (+/- Declaration) as Keyword or Title (2001-present).

SPECIFIC AIM #3: Review the principle components of the NIMS, particularly with regard to public health/medical preparedness.

The relevant FEMA Emergency Management Institute online NIMS courses (http://training.fema.gov/IS/NIMS.asp) were completed:

- IS-100.HC Introduction to the Incident Command System (ICS) for Healthcare/Hospitals, 2.5hours.
- IS-200.a (ICS 200) ICS for Single Resources and Initial Action Incidents, 3hours.
- IS-700.a National Incident Management (NIMS), An Introduction, 3hours.
- IS-800.b National Response Framework, An Introduction, 3hours.

To assess the implementation and utility of NIMS, a search of medical literature using OVID/Medline was performed using the following terms (2006-present): NIMS.mp (as Keword); NIMS.ti (as Title); National Incident Management System.mp; National Incident Management System.ti; NIMS Implementation.mp; NIMS Implementation.ti; NIMS Compliance.mp; NIMS Compliance.ti; NIMS Effectiveness.mp; NIMS Effectiveness.ti; National Incident Management System Implementation.mp; National Incident Management System Implementation.ti; National Incident Management System Compliance.mp; National Incident Management System Compliance.ti; National Incident Management System Effectiveness.mp; National Incident Management System Effectiveness.ti.

The FEMA NIMS Resource Center was contacted to inquire about current compliance levels among health care facilities, and about frequency of practice exercises. All information gathered was assimilated to assess NIMS.

SPECIFIC AIM #4: Review the newly published National Health Security Strategy and compare it to the 2007 Homeland Security Presidential Directive #21: Public Health and Medical Preparedness.

The National Health Security Strategy (http://www.hhs.gov/aspr/opsp/nhss/nhss0912.pdf) and the HSPD#21 (http://www.dhs.gov/xabout/laws/gc_1219263961449.shtm) were accessed online. A literature search using OVID/Medline pertaining to the new National Health Security Strategy (NHSS) and the Homeland Security Presidential Directive (HSPD) #21 was

conducted using the following terms (2006-present): National Health Security Strategy.mp (as Keyword); National Health Security Strategy.ti (as Title); Homeland Security Presidential Directive #21.mp; Homeland Security Presidential Directive #21.ti; and Homeland Security Presidential Directive.ti.

RESULTS

TIMELINE OF LEGISLATION AND POLICY DEVELOPMENT

The following timeline is a compilation of legislation relevant to our national emergency preparedness and response, with emphasis on public health; it is meant to be comprehensive, but not necessarily all-inclusive.

1944: Public Health Service Act (Public Law (PL) 78-410)

- Substantially consolidated and revised all legislation relating to the Public Health Service, which had been formally established in July of 1798. It has been amended many times since 1944.[16]

1950: Federal Disaster Relief Act of 1950 (PL 81-875)

- Created the Federal Disaster Relief Program, giving the President authority to provide supplemental funds to state and local governments dealing with a major disaster.

1979: Executive Order 12127 (President Carter)

- Established FEMA from over 200 separate agencies, merging many of the disaster-related responsibilities.[17]

1988: Stafford Disaster Relief and Emergency Assistance Act (PL 100-707)

- Also referred to as simply "The Stafford Act"
- The centerpiece of federal disaster policy, it defined how federal disasters are declared, determined the types of assistance to be provided by the federal government, and establishes cost sharing arrangements.[18] It authorizes the President to provide "Major Disaster" or "Emergency" declarations, which trigger certain statutory authorities and access by FEMA to the Disaster Relief Fund, who then carries out the provisions of the Stafford Act, and distributes much of the assistance provided by the Act. A state governor may initiate a request for Presidential declaration, but in certain circumstances the President may unilaterally make the declaration. The President may also do this if the emergency involves "federal primary responsibility", such as an event that occurs primarily on federal property (eg. 2001 Pentagon attack, 2003 Shuttle Columbia disaster).[19]

1996: Emergency Management Assistance Act (PL 104-321)

- Resulted in the formation of the Emergency Management Assistance Compact (EMAC), a congressionally ratified organization that provides form and structure to mutual aid, and resolves in advance the issues of liability and reimbursement. At this point, 48 states, the District of Columbia, Puerto Rico, and the US Virgin Islands have all signed into the EMAC. [20]

2000: Disaster Mitigation Act (PL 106-390)

- Amended the Stafford Act by repealing the previous requirements of state, local, and Indian Tribal governments, and replacing them with a new set emphasizing

the need for state, local, and Tribal entities to closely coordinate mitigation planning and implementation efforts.[21] Essentially, it requires a certain level of work to be done locally first, before federal grant money will be given.

2002: Public Health Security & Bioterrorism Preparedness & Response Act (PL 107-188)

- One of the more widely overlooked pieces of important legislation, this Act amended the Public Health Service Act by establishing within the DHHS an Assistant Secretary (AS) for Public Health and Emergency Preparedness (which later became the AS for Preparedness and Response); it also established the National Disaster Medical System (NDMS), and gave its control to the new assistant Secretary.[22]

2002: Homeland Security Act (PL 107-296)

- In the wake of the 9/11 attacks, this Act established a new federal agency, the Department of Homeland Security (DHS). It also established the Strategic National Stockpile (formerly the National Pharmaceutical Stockpile), initially managed jointly by the DHS and Department of Health and Human Services (DHHS).[23] It also placed the Federal Emergency Management Agency (FEMA) under the control of DHS.

2003: HSPD #5-"Management of Domestic Incidents"

- Required the Secretary of the DHS to develop the National Response Plan and the National Incident Management System, and required implementation of NRP and NIMS by federal agencies no later than August of 2003.[24] The NIMS system "will

provide a consistent nationwide approach for Federal, State, and local governments to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, and local capabilities, the NIMS will include a core set of concepts, principles, terminology, and technologies covering the incident command system."[24]

2003: HSPD #8-"National Preparedness"

- Required a national domestic all-hazards Preparedness Goal and required of the DHS Secretary a comprehensive training program to meet the Goal. Also required of the DHS Secretary an annual report on the status of the Nation's preparedness level.[25]

2004: Bioshield Act (PL 108-276)

- Granted DHHS with authorities to expedite research, development, acquisition, and availability of priority medical countermeasures for public health emergencies caused by terrorist attacks. It identified funds that had been appropriated a year earlier as the BioShield Special Reserve Fund ($5.6 billion), and delineated procedures for using these funds to procure and stockpile emergency medical countermeasures.[26] Thus, it returned the Strategic National Stockpile (SNS) to DHHS alone for oversight and guidance,[23] though the Secretary of Homeland Security also has the authority to deploy the SNS.

2005: Public Readiness and Emergency Preparedness (PREP) Act (PL 109-148)

- Allowed for the Secretary of DHHS to provide tort liability immunity relating to the development and administration of new medical countermeasures. It also authorized an emergency fund to provide compensation for injuries that result from administration of a medical countermeasure covered by a PREP Act declaration.[27]

2006: Post-Katrina Emergency Management Reform Act (PL 109-295)

- This sweeping piece of legislation reorganized FEMA and added positions of leadership within FEMA and DHS. Aimed at correcting the shortcomings identified by the preparation for and response to Hurricane Katrina, it also provided for legislative reforms in other emergency management areas.[28]

2006: Pandemic and All-Hazards Preparedness (PAHPA) Act (PL 109-417)

- A comprehensive piece of legislation that continued the paradigm shift from purely disaster response to an emphasis on preparedness, this Act particularly clarified roles of the DHHS. Specifically, it appointed a new position in the DHHS of the Assistant Secretary for Preparedness and Response (ASPR), and also required of the HHS to develop a National Health Security Strategy starting in 2009, to be updated every four years. This Act also moved the National Disaster Medical System (NDMS) back under the control of HHS, rather than DHS.

2007: Homeland Security Presidential Directive (HSPD) #21-"Public Health and Medical Preparedness"

- The purpose of this Directive was to establish a National Strategy for Public Health and Medical Preparedness, emphasizing the following critical components as being of the highest priority: biosurveillance, countermeasure distribution, mass casualty care, and community resilience. [29]

OVERVIEW OF AGENCY ROLES / AUTHORITIES

Department of Homeland Security (DHS)

A vast federal agency with over 230,000 employees, DHS defines its mission simply: "To secure the nation from the many threats we face". Its five primary areas of responsibility include: [30]

1. Guarding against terrorism
2. Securing borders
3. Enforcing immigration laws
4. Improving readiness for, response to, and recovery from disasters
5. Maturing and unifying the Department

A variety of legislation that is beyond the scope of this Capstone, provide the DHS with its legal authorities; primarily they include the Homeland Security Act of 2002, the Patriot Act of 2001, and the Post Katrina Emergency Management Reform Act of 2006. DHS is the lead agency in the development of the National Response Framework, the National Incident Management System, and all subsequent implementation requirements.

Federal Emergency Management Agency (FEMA)

A key component of the Department of Homeland Security, FEMA is the federal agency responsible for coordinating and disseminating relief under the Stafford Act. They claim as their mission: "To support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards". Statutory authority for FEMA's operations stem mainly from the Stafford Act , the Homeland Security Act, and the Post Katrina Emergency Management Reform Act.[31] Additional authorities are based on a long series of presidential executive orders. As far as disaster relief is concerned, FEMA administers those funds through guidelines set forth in the Stafford Act as amended by the Disaster Mitigation Act of 2000.[18]

Department of Health and Human Services (DHHS, or HHS)

The Secretary of HHS is authorized via the Public Health Service (PHS) Act (and its amendments) to "lead all Federal public health and medical response to public health emergencies and incidents covered by the National Response [Framework]."[32] In addition, HHS authorities are also granted in the Federal Food, Drug, and Cosmetic Act (21 USC 201 et seq.), the Social Security Act (42 USC 301 et seq.), the Stafford Act (42 USC 5121 et seq.), and the National Emergencies Act (50 USC 1631). [33]

HHS serves as the lead for Emergency Support Function #8 of the National Response Framework, and is authorized to recruit, maintain, and deploy a force of public

healthcare and emergency medical workers. These medical assets are categorized as follows:

- National Disaster Medical System (NDMS)
- Commissioned Corps of the Public Health Service (Regular and Reserve)
- Medical Reserve Corps (MRC)
- Emergency System for Advance Registration of Volunteer Health Professionals

When serving under authorization by the HHS, these personnel are covered under the Federal Tort Claims Act and the Federal Employee Compensation Act.[33]

Additional *key* responsibilities include developing and implementing plans to assist state and local governments/communities with public health issues, isolation and quarantine, and maintaining the Strategic National Stockpile (SNS). [34] Some confusion and overlap of authority could still occur during a disaster, as HHS is the 'lead response agency' with regard to NDMS and the SNS, but DHS is the overall 'coordinating agency' and can distribute the SNS.[35]

Additional authorities and responsibilities go into effect for the Secretary of HHS when a Public Health Emergency has been declared and/or if the President has made a declaration of emergency or major disaster. These generally include access to the Public Health Emergency Fund (if available), and waivers for special use of equipment and countermeasures.

The office of the Assistant Secretary for Preparedness and Response (ASPR) focuses on preparedness planning and response, building federal emergency medical

operational capabilities, countermeasure research, development, and procurement, "as well as grants to strengthen the capabilities of hospitals and health care systems in public health emergencies and medical disasters."[36]

Originally designed to provide overflow medical care to the Departments of Defense (DoD) and Veterans Affairs (VA), NDMS personnel typically augment state and local capabilities during a stateside disaster or emergency. The principle components of the NDMS are on-site emergency care, patient movement to an unaffected area of the country, and definitive care at participating hospitals in those unaffected areas.[37] They provide on-site care through the use of 55 disaster medical assistance teams (DMATs), located around the country, which together can care for an estimated 1,400-5,000 patients per day, and an additional 35 specialty care teams.[35] Aeromedical evacuation to unaffected areas is coordinated through Federal Coordinating Centers located at over 70 DoD bases and VA hospitals, utilizing primarily DoD aircraft. Additionally, over 2,000 hospitals across the country have offered over 100,000 beds to be pre-designated for use by the NDMS, though those facilities can change their numbers at any time. Unfortunately, in a survey of training needs at NDMS participating hospitals, 25% were unaware of their designation as an NDMS hospital.[35]

PUBLIC HEALTH EMERGENCY

A public health emergency (PHE) can be declared by the Secretary of the Department of Health and Human Services under Section 319 of the PHS Act (42 USC 247d), when "he or she determines, after consultation with such public health officials as

may be necessary that (1) a disease or disorder presents a public health emergency or (2) a public health emergency, including significant outbreaks of infectious diseases or bioterrorist attacks, otherwise exists."[33] The declaration is in effect for 90 days or until the Secretary determines the emergency no longer exists, whichever comes first, or it may be renewed as needed.

During this time, many special authorities are granted to the Secretary, consistent with and in addition to other authorities, and they include the following:[38]

- Access the Public Health Emergency Fund
- Declare an emergency under Section 564 of the Federal Food, Drug, and Cosmetic Act justifying emergency use of an unapproved product or the unapproved use of an approved product such as a drug, biological product, or medical device
- Make grants, provide awards for expenses, enter into contracts, and conduct/support investigations
- Waive certain Medicare and Medicaid requirements (including temporary waiver of Emergency Medical Treatment and Active Labor Act (EMTALA))
- Waive certain Health Insurance Portability and Accountability Act (HIPAA) sanctions for 72 hours
- Declare an emergency justifying the emergency use of an investigation product
- Appoint temporary personnel
- Extend deadlines and waive sanctions for submission of data or reports

The most recent examples of a public health emergency declaration leading to waivers in the development of countermeasures include the H1N1 influenza, smallpox, and anthrax. If both a PHE declaration *and* a Presidential declaration exist (through either the Stafford Act or National Emergencies Act of 1976), additional authorities to waive typical insurance and privacy requirements under Section 1135 of the Social Security Act are granted, known as '1135 waivers'. These waivers only apply in the affected area during the emergency period, and there is no statutory requirement for a state governor to formally request the PHE declaration and 1135 waivers.[33] This simultaneous declaration of a public health and national emergency most recently occurred in 2009 with the H1N1 Pandemic Influenza outbreak.

NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS)

Unlike the National Response Framework, which provides the mechanisms and structure for national-level policy for incident management and is well beyond the scope of this Capstone, the National Incident Management System is designed for response to *any* size emergency, able to be used by any level of agency or government. NIMS is not an *operational* incident management or resource allocation plan,[39] rather it is a set of core concepts and principles. The fundamental principles of *standardization* and *flexibility* allow for a standard approach to organizational structure and use of common terminology, while allowing for the development of plans and procedures unique to each type/level of incident. These principles are vital because, as one expert explains, "All disasters, natural and manmade, disrupt the normal functioning of the involved

community…such disasters are unique in terms of their effects on healthcare, community resources, and infrastructure [and] clearly mandate a unique and individual approach to dealing with each disaster. Nevertheless, certain similarities are common to all…disaster scenarios, making it possible to plan ahead."[40]

The basic courses of the FEMA Emergency Management Institute are necessary to understand and implement NIMS. These courses cover the fundamental components of NIMS, especially emphasizing the Incident Command System (ICS) and resource management. Additional resources are available online through NIMSonline.com , as well as FEMA's NIMS Resource Center which includes the NIMS brochure, the NIMS "Core Document" (which is revised every two years), and NIMS Implementation Guidance.

The FEMA Emergency Management Institute's courses entitled IS-700.a, "NIMS, and Introduction", and IS-200.a, "ICS for Single Sources and Initial Action Incidents" present the fundamentals of NIMS nicely, and can be summarized as follows:

NIMS Purpose: Prepare for, prevent, respond to, recover from, and mitigate the effects of any incident

NIMS Principle Components:

#1 Preparedness: Describes specific measures and capabilities that emergency management/response personnel and their affiliated organizations should develop and incorporate into their overall preparedness programs.[41] It also provides for a continuous cycle of preparation and improvement (see Figure 2 below) and emphasizes working with the private sector, non-government organizations

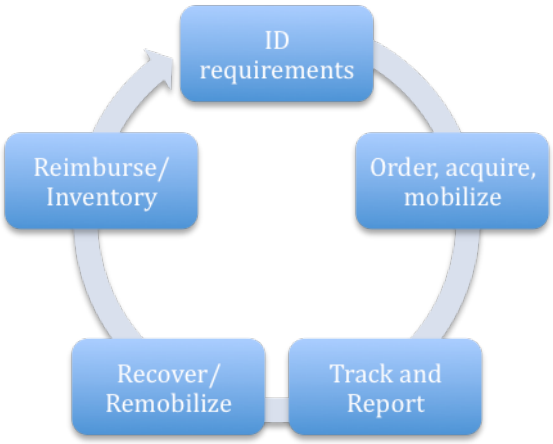
(NGO's), and academia. Mutual Aid Agreements among the states and various organizations are also emphasized, especially the Emergency Management Assistance Compact (EMAC).

Figure 2. NIMS Preparedness Cycle

#2 Communications and Information Management: Establishes a common operating picture based on the principles of accessibility, interoperability, and durability. Links are provided in the courses to the Department of Homeland Security's SAFECOM communications program, which "is working with existing Federal communications initiatives and key emergency response stakeholders to address the need to develop better technologies and processes for the use of multi-jurisdictional and cross-disciplinary coordination of existing systems and future networks."[42]

#3 Resource Management: Provides for a flexible and scalable resource management program that is based on efficiency and proactivity. The preparedness phase is continuous, and includes resource typing, credentialing, and inventorying. The resource management during an actual incident is a finite process, and is based on the needs of that particular incident. This process is represented below (Figure 3).

Figure 3. Resource Management During an Incident

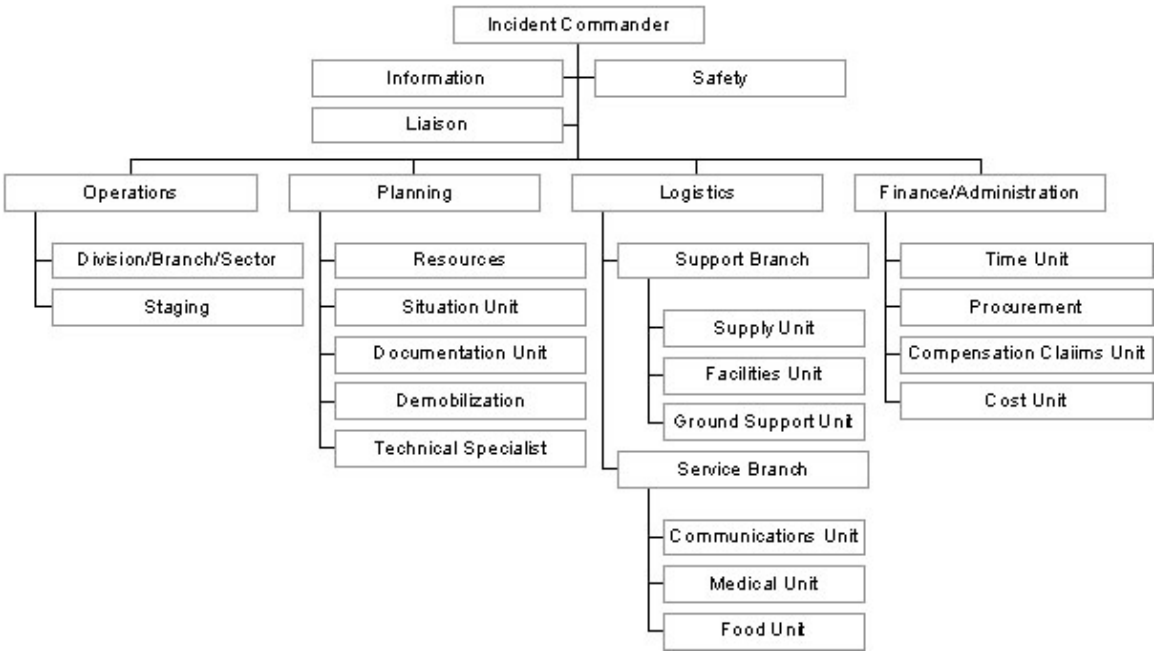


#4 Command and Management

- Incident Command System (ICS): One of the most fundamental components of NIMS, it is based on a compilation of best business practices, emergency planning disciplines, and organizational leadership techniques. It is designed to allow the integration of personnel, equipment, and facilities as needed, and to enable coordination among various jurisdictions and agencies (public and private). A

depiction of the basic ICS structure is represented below, in Figure 4. The ICS also utilizes the principles of Unity of Command (each individual reports to only one supervisor), and Unified Command (heads of various agencies work together, and coordinate with a single Incident Commander). From 2005-2007, the National Integration Center brought several emergency management organizations together to collaborate on NIMS implementation, and they published a set of ICS Core Competencies for all the positions within ICS. A link to these competencies can be found at: http://www.fema.gov/emergency/nims/IncidentCommandSystem.shtm#item3.

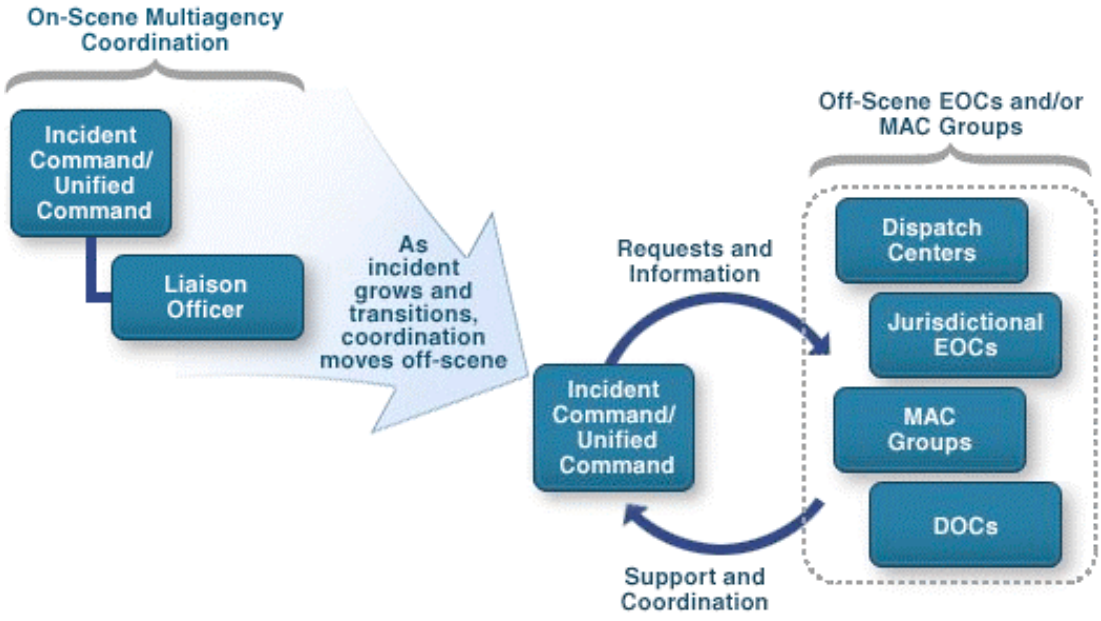
Figure 4. ICS, Basic Structure (Source: http://www.ci.lewes.de.us/images/plansprojects/ICSstructure.jpg)



- Multiagency Coordination Systems (MACS): Describes the process to coordinate among various agencies and levels of government during larger incidents. Key elements include dispatch protocols, and the coordination and support activities taking place within an activated Emergency Operations Center (EOC) and District Operations Center (DOC). This process is depicted below in Figure 5 below.

Figure 5. Multiagency Coordination

(Source: http://www.fema.gov/emergency/nims/MultiagencyCoordinationSystems.shtm#item1)



- Public Information: Describes the processes of establishing timely and accurate communication of information among responders and to the public. Emphasizes the use of a single source to provide information to the public, and frequent briefings among responders.

#5 Ongoing Management and Maintenance: Describes the requirements of the National Integration Center to establish standards consistent with NIMS doctrine for implementation of NIMS by various agencies, and to measure compliance.

The Emergency Management Institute's course titled IS-100 (HC), "Introduction to the ICS for Healthcare/Hospitals" provides a full breakdown of the ICS, emphasizing its need to help minimize the loss of life from an incident. According to the course, the Healthcare Incident Command System (HICS) is an example of a widely recognized version of ICS used throughout the country, and its use can lead to greater efficiency, better coordination, and more effective communication among healthcare workers during an emergency. The course also points out that less successful disaster responses in the past have often *not* been due to a lack of resources or failure of tactics, *but rather* a lack of accountability, poor communication, lack of systemic planning, overloaded incident commanders, and lack of interagency coordination. The ICS aims to resolve these issues. Interestingly, use of the ICS in emergency planning for healthcare facilities is becoming a requirement for accreditation by the Joint Commission.

According to HSPD #5, implementation of NIMS by federal agencies was required by September of 2003 (to "submit a plan to adopt and implement the NIMS to the Secretary [of Homeland Security] and Assistant to the President for Homeland Security").[24] It also required that the implementation of NIMS should begin in fiscal year 2005 for groups seeking federal preparedness assistance in the form of grants, contracts, or other activities.[24] However, compliance with these requirements has been widely

reported as lacking. In the most recent memorandum regarding NIMS from the Secretary of DHS, a final self-assessment via the NIMS Compliance Assistance Tool is due by September 30, 2010 from all federal agencies, departments, and stakeholders.[43] Implementation among hospitals has also been reported as low, with one unconfirmed online source saying that fewer than 9% of hospitals had implemented NIMS by late 2007.

In an attempt to clarify these issues, a call was placed to the FEMA NIMS Resource Center in June 2010. A specialist there confirmed that compliance among federal entities has been lagging, and the requirements are just now being well met. He also stated that implementation rates among hospitals are currently unknown, though FEMA's emphasis is shifting to examining these numbers, now that federal agencies are catching up. Given the newer Joint Commission requirements to implement ICS in emergency planning, he expects implementation to dramatically improve over the next two to three years.

OVERVIEW OF THE NATIONAL HEALTH SECURITY STRATEGY

This new document, released online by the Department of Health and Human Services attempts to help "secure our Nation's health" and to "galvanize efforts to minimize the health consequences associated with significant health incidents (which in this case refers to a wide range of natural and man-made phenomenal that may have health consequences, including, but not limited to, infectious disease outbreaks, hurricanes, earthquakes, storms, tornadoes, tsunamis, hazardous material spills, nuclear

accidents, biological and other attacks, and fires)."[44] It claims as its foundation, "community resilience", defined as healthy individuals, families, and communities "with access to health care and knowledge and resources to care for themselves during routine and emergency situations". It also prioritizes the healthcare infrastructure, and questions whether our "surge" capacity is ready for catastrophe. The NHSS is meant to on one hand provide a framework for defending our nation's health, but also claims to merely reflect "current approaches and priorities" in emergency planning.

The NHSS, as required by the Pandemic and All Hazards Approach Act of 2006, does represent a comprehensive Strategy focusing primarily in the protecting the Nation's health during an emergency, and it emphasizes the need for "national—not just federal"—involvement of all key stakeholders, from government down to individuals and families. An Implementation Plan for the NHSS is due to be published in September 2010. The following reflects the framework provided by the NHSS:[44]

> Definition of National Health Security: A state in which the Nation and its people are prepared for, protected from, and resilient in the face of health threats or incidents with potentially negative health consequences.
>
> Goals:
>
> - Build community resilience
> - Strengthen and sustain health and emergency response systems.
>
> Strategic Objectives (each supported by a set of operational capabilities):
>
> - Informed and empowered individuals, communities
> - National health security workforce

- Integrated, scalable healthcare delivery systems
- Situational Awareness
- Timely and Effective Communications
- Effective countermeasures enterprise
- Prevention/mitigation of environmental, other health threats
- Post-Incident health recovery in planning and response
- Cross-border and global partnerships
- Science, evaluation, quality improvement

The National Health Security Strategy is meant to lay the groundwork for preparedness, but is not legally enforceable. A similar document which is enforceable, however, is Homeland Security Presidential Directive #21 from 2007, titled "Public Health and Medical Preparedness". Interestingly, *this* directive was intended to establish a National Strategy for Public Health and Medical Preparedness,[25] HSPD#21 also recognizes that though progress has been made in this area, the US remains vulnerable to events that threaten the health of large populations. Similar to the NHSS, it emphasizes the need for community resilience and improved mass casualty care, as well as biosurveillance and countermeasure distribution.[27] The Directive goes on to require of various federal agencies a broad range of plans, procedures, standards, and mechanisms of coordination. At this point it is unclear if the requirements have all been met or even what their effects will be on emergency response.

DISCUSSION

EVOLUTION OF NATIONAL PREPAREDNESS AND RESPONSE

Over the past 50 years, emergency planning in our nation has evolved tremendously. Initially, the emphasis was on disaster relief, typically from a natural disaster, which was provided primarily by local governments and agencies. Gradually, the federal government has become more involved, resulting in a complex network of regulation and guidelines, implemented by agencies each with their own cultures, policies, and objectives.[18] Particularly with regard to public health emergency preparedness, the federal government has spent over $5 billion in recent years, and while awareness and preparation efforts are improving, actual progress is unclear. According to one study performed with support by the Assistant Secretary of Preparedness and Response (ASPR) of DHHS, many ambiguities and uncertainties persist, particularly with regard to preparedness goals and how they should be interpreted.[45] Also, enforceability and accountability to produce results are lacking. Another article, by the editor-in-chief of the journal *Disaster Medicine & Public Health Preparedness* noted that "it is all too obvious that lingering, significant gaps in disaster medical and public health preparedness systems persist".[46]

The shifts towards increased federal involvement and emphasis on planning for a terrorist attack has also resulted in a tremendous shift in overall spending. On one hand, after FEMA was folded into the DHS, three out of every four grant dollars provided by FEMA for local preparedness and first-responders went to *terrorist* related measures.[18] On the other hand, increased federal involvement has made it easier for state and local

governments to get financial assistance. Over the past 30 years, FEMA has distributed an average of $2 billion in disaster relief assistance per year.[18] This money is funded each year by Congress in the Disaster Relief Fund, and emergency appropriations can be added for major catastrophes. As an example, $40 billion was appropriated after the 9/11 attacks, and $110 billion after Hurricanes Katrina and Rita.[18]

This increase in federal involvement, reinforced by the Pandemic and All-Hazards Preparedness Act (which clarified and emphasized DHHS authority as lead in public health emergency response) and the Post Katrina Emergency Management Reform Act (which, ironically, increased FEMA's autonomy and responsibilities) has many critics. Firstly, the legislation can be difficult to implement. For example, different federal assets and funding are activated following declarations of a "Major Disaster" under the Stafford Act and "Catastrophic Incident" under the Post Katrina Act. These should be folded into one another to simplify coordination during an incident. Also, the Pandemic and All-Hazards Preparedness Act dictates that states or local governments/agencies which fail to meet DHHS preparedness benchmarks may be deemed non-compliant and denied funding, without describing how the benchmarks will be established and what they will require.[47]

Secondly, many criticize over involvement of the federal government when local, state, and regional agencies/assets may be better suited to respond to most emergencies. In one study, after reviewing the assessment of evacuees' needs during the 2005 hurricane season, the authors of an article in the *American Journal of Disaster Medicine* concluded that in the event of a catastrophic natural or manmade disaster, governmental

policy makers should "follow the National Incident Management System" and support local agencies with additional resources as needed.[48] They noted that local lead agencies have better knowledge of the affected area, local resources available, and relationships with other private non-government organizations and volunteers.

This is one of the strengths of NIMS, as discussed above, which is its emphasis on local coalitions and mutual aid agreements, so that quick and unencumbered aid can arrive to a disaster area. This concept of "regionalization" has many supporters, and was perceived as "absolutely necessary" by participants in one study of local health departments.[49] Regionalization has been shown to enhance resources such as personnel, knowledge, technical expertise, and fiscal resources and also to increase efficiency of operations.[49] Another argument can be made for regionalization when one examines NDMS and its limitations. As mentioned before, all DMAT teams together can only care for an estimated 1,400-5,000 patients/day, which could easily be exceeded in a major disaster. Also, the current plan calls for the teams to fly via commercial air, but their equipment to travel by truck.[35] During Katrina, the equipment for DMAT Oregon-2 arrived 5 days after the team had arrived.

A solution would be to increase the number of DMAT teams, and arrange them within geographical regions, and align them with existing mutual aid agreements between states. To simplify their federal coordination, they could be aligned with already existing FEMA "Regional Strike Teams", or perhaps they could be centered geographically around the locations of the Strategic National Stockpile's 12-hour Push-Packs. One local policy maker notes, "If the NDMS system becomes structured to support…region to

region collaboration, regions could provide a great deal of medical care assistance without requiring the federal government to direct and execute all or most of the effort."[35]

THE NATIONAL INCIDENT MANAGEMENT SYSTEM

As a whole, NIMS appears to be a giant step in the right direction toward standardizing the fundamentals of disaster response so that all involved agencies will operate on common ground. Use of common language and utilization of a standard, modular command structure will certainly alleviate some difficulties among responders. However, NIMS does fall short in many ways, and one particular example is that it fails to set a standard for frequency and size of training exercises. All that is required of a NIMS-compliant agency is that it incorporate NIMS principles into its existing training plan and exercises.[50] There are well-developed exercise programs provided by FEMA and the DHS, including the National Exercise Program (NEP) and its Homeland Security Exercise and Evaluation Program (HSEEP), but their utilization is not required of NIMS-compliant agencies.

Secondly, NIMS implementation/compliance has been slow. This is not hard to understand when one considers that the NIMS Core Document is 170 pages long, and the fiscal year 2010 implementation guideline is 41 pages long with 22 separate objectives and 40 metrics to be met. Despite being developed several years ago, according to sources at FEMA, full NIMS compliance within federal agencies is only now coming to fruition, and enforcing NIMS implementation on healthcare facilities who receive federal funding is only truly starting as of spring 2010.

For hospitals, the situation is compounded not only by NIMS' lack of hospital-specific content, but also the fact that no single, standardized, validated instrument exists to assess hospital emergency preparedness for all hazards.[51] While sparse medical literature exists regarding NIMS, what little can be found expresses concern about the *utility* of NIMS. An article in *EMS Magazine* emphasizes that NIMS *compliance* does not equate to *competence* in emergency response,[52] and other authors have noted that hospital disaster preparedness has not actually shown to improve with NIMS implementation.[51]

NATIONAL HEALTH SECURITY STRATEGY

While it is helpful that this new Strategy highlights the need for improved public health preparedness, and emphasizes individual and local responsibilities in maintaining resilient communities, it is interesting that such a document is only now coming out. It has been almost 10 years since the attacks of 9/11 ushered in this new era of readiness and response, and a National Strategy for medical preparedness was already put forth three years ago in HSPD#21. This lag is likely indicative of the complexity of such a tasking, and the fact that despite many changes, significant weaknesses still exist. Indeed the NHSS itself notes that "considerable variation remains in the degree to which individual states, territories, tribes, and local jurisdictions are prepared to address large-scale health threats..[and]..few evidence-based performance measures and standards exist to gauge the effectiveness of national health security efforts and progress toward goals.[44] Also, the HSPD#21 notes that the "assumption that conventional public health and

medical systems can function effectively in catastrophic health events has…proved to be incorrect in real-world situations."[53] These shortcomings, however, may be related to the often-criticized federal government's way of working—a great deal of talking about something, but with real actions lagging far behind. Very specific requirements, evidence-based and enforceable standards, and training exercise mandates must be developed in the very near future.

The purpose of publishing the information in the NHSS format is to be more available and understandable by individuals, and also ground-level emergency workers and public health planners. Many of these individuals are unaware of the existence of HSPD's and other high-level governmental planning. The NHSS is readily available online via the HHS website and many others, and also ties itself into the Healthy People 2020 project, which is well known to many in the public health field.

Unfortunately, no valuable systematic review is possible at this point, as almost no literature is available about the effect the NHSS is having on our national emergency planning. More information will likely be available after the Implementation Plan is published later this year, and agencies have had time to evaluate its utility.

CONCLUSION

After closely examining how we as a Nation have come to where we are today with regard to emergency planning, it is clear that a great deal of time, money, and resources have been devoted to improving our readiness. Unfortunately, those improvements are yet to be fully realized, though thankfully our new policies and

procedures have not been put to the test. It is clear that an improved balance is needed between empowering state and local agencies, while still enhancing federal readiness. Regionalization of response assets, and emphasis on local relief and mutual aid agreements would likely improve the efficiency of response.

Also, clearly understandable and enforceable benchmarks for training and preparedness must be established. To ensure readiness at all levels, regular training exercises should be performed to practice the new policies and procedures. Finally, an emphasis should be placed on more action and less talking. Nine years after the attacks of 9/11, we still are in many ways just talking about what should be done rather than setting solid deadlines for these changes. All Americans are called to action, from the Federal government, to local agencies and individuals. Only when we take the actual steps needed to ensure our preparedness will we be truly be able to "prepare for, respond to, and mitigate the effects of" any hazard we may face.

Glossary of Abbreviations Used

AS – Assistant Secretary
ASPR – Assistant Secretary for Preparedness and Response
CDC – Centers for Disease Control and Prevention
CFR – Code of Federal Regulations
DHHS – Department of Health and Human Services
DHS – Department of Homeland Security
DMAT(s) – Disaster Medical Assistance Team(s)
DOC – District Operations Center
DoD – Department of Defense
EMAC – Emergency Management Assistance Compact
EMTALA – Emergency Medical Treatment and Active Labor Act
EOC – Emergency Operations Center
ESF – Emergency Support Function(s)
FEMA – Federal Emergency Management Agency
HC – Healthcare
HICS – Healthcare Incident Command System
HIPPA – Health Insurance Portability and Accountability Act
HSEEP – Homeland Security Exercise and Evaluation Program
HSPD – Homeland Security Presidential Directive
ICS – Incident Command System
MACS – Multiagency Coordination System(s)
MRC – Medical Reserve Corps
NDMS – National Disaster Medical System
NEP – National Exercise Program
NGO(s) – Non-governmental Agency(s)
NHSS – National Health Security Strategy
NIMS – National Incident Management System
NRF – National Response Framework
NRP – National Response Program
PAHPA – Pandemic and All-Hazards Preparedness
PHE – Public Health Emergency
PL – Public Law
PREP – Public Readiness and Emergency Preparedness
SNS – Strategic National Stockpile
USC – United States Code
UTMB – University of Texas Medical Branch
VA –Veterans Affairs

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Vita

Kathleen Samsey, M.D., was born in Toledo, Ohio, in 1976 to Pauline and Philip Samsey. She graduated as a top scholar athlete from Notre Dame Academy in Toledo, and then graduated Summa Cum Laude from Marquette University with a B.S. in Biomedical Engineering. Having completed the US Army ROTC program at Marquette, she was commissioned upon graduation in 1998 as a second lieutenant in the Army's Medical Service Corps. She served for two years as a project officer/engineer with the US Army Center for Health Promotion and Preventive Medicine-South in Atlanta Georgia, before attending Medical School at Emory University in Atlanta. Upon graduating in 2004, she was re-commissioned as a Captain in the Army's Medical Corps, and then completed residency training in Emergency Medicine at Brooke Army Medical Center in San Antonio, Texas. While assigned then to Fort Bliss, Texas, as a flight surgeon and staff emergency physician, she deployed in support of Operation Iraqi Freedom with the 115th Combat Support Hospital for six months in 2008. Upon successful completion of that combat tour, she obtained her board certification in Emergency Medicine and was promoted to the rank of Major. She was then selected to the Army's residency in Aerospace Medicine, the first year of which was spent at UTMB obtaining her Master's degree in Public Health.

Permanent address: 6709 Garden Road, Maumee, Ohio 43537.

This Capstone was typed by the author.