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Preparing for Disaster: Response Matrices in the USA and UK

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ABSTRACT *Disasters, whether man-made or naturally occurring, require complex responses across multiple government agencies and private sector elements, including the media. These factors mandate that, for effective disaster management and because of the unpredictability of such events, response structures must be in place in advance, ready to be activated on short notice, with lines of responsibility clearly delineated and mechanisms for coordination of efforts already established. Disaster response experiences in the USA and the UK were reviewed at a conference convened by the New York Academy of Medicine and the Royal Society of Medicine in June 2007. Lessons to be drawn from these comparisons were sought. The importance of careful advance planning, clear delineation of spheres of responsibility and response roles, effective mechanisms for communication at all levels, and provision for adequate communication with the public were all identified as key elements of effective response mechanisms.*

KEYWORDS *US and UK disaster response matrices, Competent leadership, accountability and responsibility during disasters, Advance planning and preparation for disasters, Integrated hospital and ambulance services during disasters, Effective communication within the disaster response matrix and externally, with the public, Effective linkages with the media established as part of the disaster matrix*

INTRODUCTION

To better understand the components of effective disaster responses, the New York Academy of Medicine (NYAM) and the Royal Society of Medicine of London (RSM) held a joint conference in June 2007, focusing on leadership, accountability, and responsibility during disasters. The crises examined included the September 11, 2001 terrorist attacks in New York City, the anthrax letters in October 2001 along the US East Coast, the terrorist subway and bus bombings of July 7, 2005 in London, Hurricane Katrina in late August–early September 2005 along the US Gulf Coast, and the polonium-210 poisoning in the UK in November 2006. Of particular interest were issues around allocation of responsibility between elected officials and health professionals, as well as communication with the public and coordination of national, regional, and local responses.

Senior representatives of UK and US government agencies* who had been involved with responses to these disasters presented their experiences, with particular emphasis on leadership roles, degrees of centralization, and processes of inter-agency communication and collaboration. Media professionals presented their

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experiences during disasters and considered the role of the media not only in information dissemination but as an element of response mechanisms. During the case study presentations, the importance of a smoothly functioning disaster response matrix emerged as critical for quality and effectiveness, including simplicity of administrative structures, centralized command, competent leadership, and coordinated vertical and horizontal chains of command. Advance planning and preparation, integrated hospital and ambulance services, and effective communications were also found to be critical factors.

The highlights from the meeting are presented in this paper.

THE DISASTER RESPONSE MATRIX

The disasters reviewed at the conference illustrated that for effective response, multiple needs must be met in coordinated fashion in short time frames. In the acute response setting, law enforcement, fire, emergency medical services, and public health agencies must coalesce into a matrix of linked actions that function smoothly across horizontal and vertical chains of command even though each agency has its own infrastructure, culture, area of expertise, and responsibilities.* For the matrix to function smoothly, systemic preparedness must already be in place. There must be recognized leaders, defined missions, prior staff indoctrination and training, clear assignment of responsibilities, and adequate communication capabilities.

The response matrix, of necessity, must include elected as well as appointed officials and agency bureaucrats at national, regional, and local levels. In addition, responding agencies and officials must interact with relevant professionals outside formal chains of command, including especially those in the health care enterprise, as well as the communications industry, particularly journalists and other reporting personnel. Ultimately, the response matrix and all of its components must work in a coordinated manner toward mitigating the impacts of disasters on the public and on affected elements of the physical infrastructure. Since the structure of government determines to a significant degree how disaster response matrices develop and function, brief descriptions of the UK and US governmental systems are included in this report.

THE UK DISASTER RESPONSE MATRIX

In the United Kingdom, the prime minister is the head of government and appoints a cabinet of ministers who are also members of the Parliament. These ministers are the political leaders of the various government departments/agencies. Government agencies are centralized at the national level.

The UK Civil Contingencies Act of 2004 is the primary legislation underpinning disaster response. This act provides a single framework for civil protection and is divided into two parts. Part I defines the roles and responsibilities of the local responders, including development of emergency response plans and public information strategies. Local responders are expected to communicate and collaborate with each other. Part II, emergency powers, allows for special temporary

*In mathematical terms, a matrix is a rectangular array of quantities that interface via horizontal rows and vertical columns. For the purposes of our discussion, the term "disaster response matrix" is used to describe the multiple interfaces, horizontal and vertical, that must occur among the many agencies at the federal, state, and local levels in order for an effective disaster response to occur.

legislation to be enacted under exceptional circumstances, including severe emergencies. The Act defines emergencies broadly to include any event that threatens human welfare, the environment, or national security.[1]

In 1973, the London Emergency Services Liaison Panel (LESLP) was formed. It included representatives of the police, fire and ambulance services, the Coastguard, the Port of London Authority, and the Royal Air Force, among others. These individuals met regularly and developed arrangements and procedures to coordinate their joint efforts in disaster responses. "Gold," "Silver," and "Bronze" designations were developed for assigning responsibilities for key individuals relating to coordination of command and control efforts.

Gold designates the commander in charge of each service who is responsible for developing strategic goals. Tactical decision-making is delegated to Silver, the individual who attends the scene of the disaster, takes charge, and devises methods to apply the strategies set by Gold. Bronze denotes the operational leaders who control and deploy the resources of their respective services. They implement the tactics set by Silver.[2]

In addition to the LESLP's Gold, Silver, and Bronze, command and control arrangements, in response to the September 11th, 2001 terrorist attacks in the USA, the British government established the London Regional Resilience Forum (LRRF), a partnership of all of London's key disaster responders. Since May 2002, the LRRF has overseen the development of numerous multi-agency London disaster response scenarios, including exercise programs and practice plans.[3] The Minister for Local Government and Community Cohesion, a national government official, chairs the partnership, while the Mayor of London serves as deputy chair. The LRRF includes all of London's key response agencies, including police, fire, ambulance and health services as well as utilities, and others that make up the disaster response team. Parliament provides political guidance and support, while the response agency leaders hold responsibility for line effectuation. All know each other and share in the conduct of practice exercises, including responses to simulated transportation bombings.

During a crisis, in addition to the London disaster response team, senior ministers meet daily to facilitate cross-government cooperation and communication. Formally known as the Ministerial Committee on Civil Contingencies, the team is chaired by the Secretary of State for the Home Department.[4] Additional ministers and other officials with relevant expertise, skills, and competence are invited to join (Mann 2008, personal communication). These daily meetings take place in Cabinet Office Briefing Room A and are thus nicknamed "COBRA" meetings. Each meeting sets the action agenda for the subsequent 24 h and allows everyone to work from the same script. The senior ministers' roles and responsibilities are made clear; they provide political support and high-level coordination, while heads of agencies carry out the operational aspects of disaster response.

The UK Health Protection Agency (UK HPA), established on April 1, 2005, provides an integrated approach to microbiological, chemical, radiation, and other environmental health threats regionally and locally throughout England.[5] The Agency could be considered an analog of the US Centers for Disease Control and Prevention (CDC); however, unlike the CDC, the role of which is primarily supportive of state efforts, the HPA is the agency in charge of public health investigations and responses at national, regional, and local levels.[6]

The Chief Medical Officer (CMO) of the UK Department of Health is the senior physician in the UK government. This is a non-political position obtained through open competition, with broad authority extending from the national to the local

level.[7] The CMO is the principal medical advisor to the Secretary of State for Health and other ministers. In addition, he is the leader of all public health staff in the nation and is a recognized national leader for the medical profession.

In addition to the government agencies, members of the practicing medical profession are articulated with the chain of command since the nation has a nationalized health infrastructure. For example, 99% of acute care in the UK is either provided by or funded by the National Health Service and can thus be integrated into emergency planning. The London ambulance service is also a structural component of the response system. This is a municipal service with a centralized command structure. It notifies the Department of Health immediately after being made aware of an incident and is able to dispatch units rapidly to disaster scenes. There is also a Helicopter Emergency Medical Service (HEMS) that can be rapidly deployed.

THE US DISASTER RESPONSE MATRIX

In the United States, power is less centralized at the national level than in the UK and is divided among the executive, legislative, and judicial branches. Unlike the Prime Minister in the UK, the US president is elected separately and appoints cabinet members who are, by law, not members of the legislature but political heads of the various federal departments/ agencies. Leadership is decentralized; disaster response is a state and local government responsibility, and the role of the federal government is primarily supportive, the inverse of the UK arrangement.

The Federal Emergency Management Agency (FEMA) is the principal federal agency responsible for responding to disasters. The primary governing legislation is the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act) of 1988. This law amended the Disaster Relief Act of 1974, which had constituted the statutory authority of most federal disaster response activities.[8] The Stafford Act determines how crises are classified (e.g., as emergencies or major disasters) and how much financial assistance the federal government will provide to state and local governments. As presently written, the Act covers only natural disasters such as hurricanes and earthquakes; it does not include nuclear accidents, attacks, or chemical, biological, or radiation incidents.[9]

In response to the September 11th attacks in New York City, Congress passed the Homeland Security Act of 2002, which consolidated many of the US executive branch activities into a single new cabinet agency, the Department of Homeland Security (DHS). DHS includes FEMA, the US Customs Service, the Animal and Plant Health Inspection Service, the Immigration and Naturalization Service, and others with diverse missions.[10] The overall mission of DHS is to prevent terrorism and to mitigate the effects of a terrorist attack on the USA.[11] On February 28, 2003, Homeland Security Presidential Directive-5 was issued to improve disaster response, designating the Secretary of Homeland Security as the principal federal official responsible for coordinating all federal response operations in all major disasters, including nuclear accidents, and terrorist attacks.[12]

In addition to this federal disaster response matrix, states and many cities have their own matrices as well. For example, New York City largely relies on its own disaster response matrix to respond to crises. The Commissioner of Emergency Management, who is part of the mayor's office and is in charge of the Office of Emergency Management (OEM), provides the mayor with situational updates on a routine basis. During an emergency, OEM activates its Emergency Operations

Center (EOC), which includes representatives of the police and fire departments, the public health and hospital communities, and utility and transportation companies.

The New York City Commissioner of Health and Mental Hygiene, a physician who is a mayoral appointee, provides medical advice and situational updates to the mayor and oversees the city's public health response to a disaster. The Department of Health and Mental Hygiene has its own internal Emergency Operations Center, which coordinates the disaster-related activities of the health department.

At the US federal level, there is no senior physician analogous to the Chief Medical Officer of the UK Department of Health. The closest position arguably would be the Director of the Centers for CDC, who is a physician and a political appointee. During disasters, the CDC Director's role is to provide support for state and local officials. At the state level, commissioners of health, who may or may not be physicians and who are political appointees, are in charge of public health functions.[13] At the local level, states vary considerably in terms of their public health capabilities. Some have well-defined public health agencies with qualified physician leaders at the county or municipal levels, but many have minimal local public health capabilities.[13,14]

The USA does not have a nationalized health infrastructure, and as a result, the medical profession is not structurally integrated into the disaster response matrix. In essence, the interface between public health and private medicine is irregular and poorly drawn. In 2002, President George W. Bush asked in his State of the Union address for all Americans, including physicians, to volunteer to improve homeland security. Since then, some states and local communities have developed "medical reserve corps" in which physicians and other medical personnel can volunteer to help during disasters.[15]

BRIEF VIGNETTES AND COMPARATIVE DISASTER RESPONSES FROM THE NYAM/RSM CONFERENCE: LONDON SUBWAY BOMBINGS—JULY 7, 2005

It took less than 13 min for government officials to be notified of the three train blasts that occurred at 8:50 A.M. on July 7, 2005. It was quickly determined that a total of four bombings had occurred: three in the London underground and one in a bus. Within 3 min of being notified of the first bombing, the London ambulance service notified the Department of Health. Because of its centralized command structure, the entire disaster response matrix of the UK was quickly mobilized and deployed.

Five strategic health authorities, one ambulance service, an emergency helicopter service, and 33 hospitals serving the London metropolitan area were involved, and their activities centrally coordinated in the disaster response, including hospital triage arrangements. There were 700 injured, half of whom were treated at the scenes of the bombings. Three hundred and fifty injured were transported to hospitals either by ambulance or bus, paramedics having stopped and evacuated buses for use in transporting the ambulatory injured. Fifty-two people died in addition to the four suicide bombers.

POLONIUM-210 POISONING IN LONDON: NOVEMBER 2006

On November 23, 2006, Alexander Litvinenko, a former Russian spy, died after 20 days in a London hospital to which he had been admitted with severe nausea and

vomiting. Because Litvinenko accused the Kremlin of having him poisoned, his death led to extensive criminal as well as public health/environmental contamination investigations.

The causative agent was difficult to identify, but ultimately, the UK HPA, the lead agency in charge of the public health/environmental contamination investigation, found evidence of polonium-210, an esoteric isotope, in Litvinenko's body.[16] During the initial 6-week investigation, the HPA had some 400 staff members working on the case, including aspects of risk assessment, management, and risk communication. Extensive literature review was required, extending to papers from the US nuclear weapons programs, for information about the effects of human exposure to polonium-210. It was estimated that Mr. Litvinenko had received a very large dose, about 3 GBq, in a volume of only 0.6 μg. In addition to its own investigation, HPA worked closely with other members of the disaster response matrix, including the police officials who were conducting the criminal investigation. COBRA meetings at the Cabinet level took place daily, allowing everyone in the matrix to work in coordinated fashion, a major factor in the effectiveness with which the event was managed.

Public exposure to the radioactive material was a major concern, requiring 24-h urine assays on potentially exposed individuals. Risk communication was very important. The chief executive of the HPA, a public health physician with wide experience and an excellent communicator who commanded the respect of the media, had communication with the public as her primary responsibility. Her ability to provide authoritative information to the public was enhanced by close contact with the people who were doing the actual investigation. The HPA established a dedicated call center, and the National Health Service provided a telephone call center that the public could use to ask questions or report illnesses. This detailed attention to providing reliable information was seen as a key element in allaying public fears and preventing panic.

TERRORIST ATTACKS IN NEW YORK CITY: SEPTEMBER 11, 2001

At the time of the terrorist attacks of 9/11, the New York City EOC was located in a building immediately adjacent to one of the impacted towers, but effective response was severely compromised and communication markedly impaired since the cell phone towers on the World Trade Center were destroyed, as were the cables of the local telephone company, located in another adjacent structure. Although the EOC relocated to a pier on the West Side of Manhattan, because of the disruption of communications, each responding agency was forced to make its own decisions without high-level mayoral, gubernatorial, or federal input or coordination. In essence, the disaster response matrix, because of destruction of key infrastructure elements, was splintered by the attack.

As one important example, the health department headquarters, which was dependent on the impacted local telephone company, lost all telephone service and internet access, and had to work without adequate communication with the offices of the mayor and other government agencies. Eventually, health department personnel evacuated to a laboratory building some 1–1/2 miles from its headquarters and from the nearby disaster site. Despite these initial difficulties, the department managed to implement four surveillance systems by assigning staff, including CDC staff on loan, to go to hospital emergency rooms to monitor

presenting syndromes. In addition, a number of telephone lines were installed on an emergency basis at the relocated headquarters allowing conference calls to address air quality and other issues and permitting the department to make recommendations for worker safety and respiratory protection at the disaster site. Since the agency had a clear mandate and strong staffing, it was able to respond to the disaster relatively independently, although with considerable difficulty.

ANTHRAX-TAINTED LETTERS IN NEW JERSEY: OCTOBER–NOVEMBER 2001

In the wake of the September 11th terrorist attacks, letters containing *Bacillus anthracis* spores were mailed from a postbox in New Jersey and delivered to the federal postal facility in Hamilton Township, New Jersey for processing. A number of problems in communication and coordination of efforts ensued. For example, officials from the Federal Bureau of Investigation and the CDC, as well as federal postal inspectors, went to the facility as part of a federal investigation but failed to notify local officials, including the Mayor of Hamilton Township and the local police.

In addition, there was an absence of local public health capacity to make decisions concerning the possible anthrax exposure of approximately 1,000 postal workers at the postal facility. Mercer County, in which Hamilton Township is located, lacked a full-service health department, a county health commissioner, or others qualified to make such decisions. In addition, the local hospitals, as is generally the case in the USA, are not integrated with the public health system but operate as independent, private sector enterprises.

The mayor sought help from the state health department and reported at the conference that officials there recommended that the postal workers get prophylactic antibiotics from their private physicians, an impractical solution since the advice was offered on a Friday evening when many physicians' offices were closing. Those who did manage to get prescriptions found that many pharmacies had already been depleted of the relevant antibiotic stocks, part of a widespread public response to the threat of the disease. The mayor subsequently contacted the chief administrator of the local private hospital, who agreed to provide a clinic for the postal workers. He sent a police car to pick up a supply of 18,000 doses from a pharmaceutical distributor, and over the next 3 days, the local hospital dispensed antibiotics to the postal workers.[17] Six people in New Jersey developed anthrax: three of the cutaneous and two of the inhalational variety. The sixth patient was a bookkeeper with suspected cutaneous anthrax. Her method of exposure was not determined. All confirmed cases were postal workers with work-related exposures. Fortunately, no one died.[18]

HURRICANE KATRINA IN LOUISIANA: LATE AUGUST–SEPTEMBER 2005

During Hurricane Katrina in 2005, coordination of efforts was a severe challenge, given the complexity of disaster preparation arrangements in place and the large numbers of people across all levels of government who needed to work together. In Louisiana at the local level, there are 64 parishes (counties); each has an emergency preparedness manager who reports to a parish president, an elected official, and each parish has its own emergency preparedness and response policies and procedures. The multiple disaster response matrices that were in place, however,

did not interface effectively with each other during the hurricane. For example, in some cases, agencies in multiple parishes relied on the same transportation providers, which turned out to have inadequate capacity to meet the load. Regional planning and rehearsals had not been carried out, resulting in chaotic efforts in local coordination.

In addition to multiple dysfunctional matrices at the regional and local levels, the elements of the federal disaster response matrix did not interface effectively with each other or with the state and regional response structures. In an extensive review of the overall response, the US House of Representatives on February 15, 2006 issued a report,[19] which identified problems at multiple levels. For example, it was found that the Department of Homeland Security and FEMA (the Federal Emergency Management Agency) lacked adequately trained and experienced personnel and that the state agencies, the Department of Defense, and FEMA had difficulty working together in a coordinated manner, further slowing the response. In addition, the New Orleans Police Department was poorly prepared for the dimensions and severity of the disaster, leading to lawlessness and chaos, and hospitals lacked adequate advance preparation and planning; inadequate communications compounded the difficulties in coordinating their efforts. In addition, there were massive communication failures in and around the city, with inadequate alternatives to meet disaster response needs.

More than 1,000 people lost their lives in Louisiana alone, largely due to the effects of flooding from the hurricane, and 41 of the 64 Louisiana parishes suffered serious damage. The social, economic, and environmental losses were catastrophic; thousands were displaced, large numbers lost jobs, and millions of dollars in tax revenues were lost, impairing local efforts to rebuild. As of mid-June 2006, FEMA had disbursed approximately $4 billion in financial and housing assistance to Hurricane Katrina victims; it is estimated that these costs could grow to over $7billion.[19]

COMMUNICATIONS AND THE MEDIA

The two major functions of the media in a disaster are keeping the public informed in an ongoing, reliable and factual manner, and serving as a de facto element of the response mechanisms of the community by transmitting advice, instructions, and status reports from public health and government authorities. Federal efforts to communicate with the public functioned poorly during the anthrax attacks and Hurricane Katrina. After the federal emergency response plan was activated in response to the September 11th terrorist attacks, all federal communication with the media was centralized at the cabinet level. With regard to the anthrax letters, for example, this meant that the Secretary of the Department of Health and Human Services (HHS) was the responsible senior official, and his office took over health-related communications functions from the CDC. Reporters had generally turned to the CDC for public health information and continued to call that agency with information requests, seeking to speak with credible professional sources. Even before the anthrax letters were mailed, the CDC had received more than 350 bioterrorism-related media enquiries; these were forwarded to the office of the Secretary of HHS, which lacked the technical expertise to handle questions related to health or microbiologic issues in an expert manner. The end result was that reliable and coherent health information from the federal officials was not forthcoming, contributing to public confusion and anxiety. A follow-up survey of

CDC personnel found that the CDC suffered from inadequate space for the number of communication specialists needed, insufficient technologic resources, and insufficient scientific information on inhalational anthrax.[20] An additional follow-up survey found that the public wanted authoritative information about anthrax and preferred to get it from individuals with medical credentials.[21,22]

During Hurricane Katrina, 4 years later, government communication and coordination efforts failed again. Top government officials, including the director of FEMA, appeared to be unaware of the severity of the disaster and were ineffectual in communicating with the public or coordinating response efforts among government agencies.[23] To help fill the gap, the media played a key role in providing situational updates to the public, elected officials, and disaster response leaders. Some members of the Times Picayune (the major New Orleans newspaper) staff stayed behind to report on the events after the levees failed and the floodwaters rose. When conventional telephones ceased functioning, they used the internet, cell phones, text messages, and email messages to get their stories out. Even so, some media accounts during the early days of the disaster were inaccurate, contributing to public confusion and anxiety.[24]

Television news stations using satellite trucks provided critical information. The trucks were able to broadcast information from almost any location relatively quickly and thus kept people informed as the crisis evolved. In effect, they served as an important bridge between the government and the public.[25]

Communication networks continue to evolve: In addition to the mainstream print and television media, new information sources such as ethnic media and internet bloggers are playing an increasing role in disseminating information. A survey commissioned by New American Media in 2005 found that 51 million people, a sixth of the US population, get their community news primarily from ethnic media sources, although for information regarding the US government and politics, most still rely primarily on mainstream media.[26] The role of such ancillary news avenues during disasters, while undocumented, is undoubtedly important and should be factored into communications planning.

CONCLUSION

The constitutional, legal, and social frameworks of a country are key determinants of how it functions in responding to disasters. In essence, the disaster response matrix, consisting of interfacing national, regional, and local government agencies and private sector participants evolves from this foundation. There are, however, some modifiable factors that can improve disaster response capabilities and effectiveness. Participants in the NYAM/RSM conference highlighted many of these, emphasizing the importance of simplicity of design of administrative structures, centralized command, competent leadership, vertical and horizontal coordination, advance planning and preparation, integrated hospital and ambulance services, and effective communication.

While the UK experiences illustrated many of the features required for an effectively functioning disaster response matrix, it is important to note that geographically, the UK is closer in size to Oregon than it is to the USA, facilitating deployment of the resources of the national government and integration with local efforts when responding to localized disasters.

The UK disaster response matrix has other advantages. For example, the interfaces among elected officials, public health professionals, and the clinical

community are relatively clear, and the various sectors are well coordinated. At the national level, key elected officials provide political support to the professionals who direct the government agencies but do not assume line management responsibilities. The London disaster response team met daily with senior political leaders after the bombings and during the polonium event to maintain a coordinated response. All members of the team knew each other and had rehearsed response scenarios regularly.

An additional advantage in the UK is that the National Health Service, including the hospitals as well as physicians, is integrated into the public health and emergency response systems. A centralized command structure facilitates rapid mobilization and deployment of personnel, hospitals, and ambulances. During the London bombings, this management arrangement worked well and in coordinated fashion in triage and treatment of the victims.

The UK also prioritized effective communication both within the disaster response matrix and with the public. For example, during the management of the polonium-210 poisoning, which presented a public health communications challenge, the HPA utilized a medical expert who, while not directly involved in the investigation, had access to those conducting it, to present information to the media, and provided a telephone answering service to address the concerns of individual callers regarding potential exposure. Government officials were largely successful in informing the public with regard to individual risk, although inevitably, there were some who had difficulty grasping these complicated issues.[27]

In contrast to the relatively centralized disaster response matrix in the UK, in the USA, powers are diffused across the national, state, and local governments with resultant multiple vertical and horizontal chains of command that must interface with each other at multiple points. Leadership is decentralized, the interface between the political and professional spheres of responsibility is often ambiguous, and elected officials in the USA may have substantial line responsibilities in policy implementation. The blurring of roles between elected officials and those in charge of disaster response agencies may contribute to leadership confusion during a disaster,[28] as became apparent when the Secretary of Health and Human Services took the lead in communicating with the public during the anthrax crisis when many felt that this role should have been handled primarily by the director of the CDC or another public health official at the national level.[29]

There have been some efforts to fill the gaps at agency interfaces. For example, since 1961, Federal Executive Boards, which are currently based in 28 cities with a large federal presence, bring together federal agency leaders in order to facilitate cross-agency communication and cooperation. Such boards function primarily as conduits of information between Washington DC and local federal agencies and played a useful role in the Oklahoma City Murrah Federal Building bombing in April 1995, but their role is not defined in national emergency plans, they have no congressional mandate, and they are supported by voluntary contributions from their member agencies.[30]

Homeland Security Presidential Directive-5 requires the Secretary of the Department of Homeland Security to develop and administer a National Incident Management System (NIMS), a set of guidelines for use by federal, state, local, and Native American tribal governments, elements of the private sector, and non-governmental organizations to improve their ability to work together. The guidelines include the concept of an Incident Command System with either a single incident

commander or a unified team approach depending on the dimensions of the disaster.[31]

A significant problem in NIMS is that it places significant responsibility for disaster planning at the local level, decentralizing preparation and planning, and placing primary responsibility on small jurisdictions that typically do not have the resources for major disaster planning and response. The 64 Louisiana parishes that did not coordinate with each other before Hurricane Katrina present an example of why this approach is not optimal. Experiences presented at the Conference suggested that disaster planning and preparation in the USA should be carried out at levels no lower than states, using the UK COBRA meetings as a template. While local jurisdictions must have crisis capabilities, they should not be expected to develop and coordinate cross-jurisdictional planning, preparation, and response, functions better carried out by a centralized command structure at the state level.*

In this context, Governors should meet with responsible agency directors before disaster strikes in order to facilitate state-level horizontal response coordination and communication. Response scenarios should be clarified, rehearsed repeatedly, and updated when appropriate. Spheres of responsibility should be made clear. Local leaders should be included in planning groups to facilitate state–local vertical response coordination and communication, and analogous arrangements should be made with the relevant federal departments and agencies. These COBRA meeting equivalents should be held regularly to maintain advance planning and preparation.

Hospital and emergency medical responders are already included in disaster planning in many municipal and other local jurisdictions but should be more closely integrated into disaster response matrices, including tighter linkages to public health planning, a complex issue in light of the diffuse structure of medical care in the USA, the mix of public and private sector hospital sponsorship, and the multiplicity of funding streams that would be involved. Nevertheless, hospitals, ambulance services, and the wider clinical community must be more effectively integrated into the response matrix, with a centralized command structure able to facilitate rapid mobilization and deployment.

Finally, effective communication must be a priority, both within the disaster response matrix and externally, with the public. The NIMS report discusses the importance of having a common language among government agencies.[32] Cross-agency communication is vital and requires commonality or translation of terminology so that all responders understand each other. For example, the terms “surveillance,” “monitoring,” and “arrested” would have different meanings for people in public health and those in law enforcement. In addition, employing credible experts who are involved with the crisis response or with access to those who are is essential in communicating with the public. Elected officials should have a media presence in order to reassure the public that political leaders are involved, but for scientific or technical information media elements should have adequate access to scientific and medical experts. Special arrangements for effective linkages with the media should be established as part of the response matrix, with advance identification of credible information sources, routes of access to them, and definition of areas of expertise and responsibility.

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