

Emergency Preparedness

Manual for Anesthesia Department Organization and Management

Joseph McIsaac, MD, MS, Editor

ASA Committee on Trauma and Emergency Preparedness

Contributors

Jill Antoine, MD

Paul Barach, MD, MPH

J. Kent Garman, MD

Carin Hagberg, MD

Harriet Hamer, MD

Bill Horton, MD

Bonnie Tompkins, MD

Heather Kaiser, MD, MPH

Content Outline

- I. Preface**
- II. Hospital Preparedness**
- III. Anesthesiology Departmental Preparedness**
- IV. The Big Picture: The National Response Framework and Incident Command Systems**
- V. Physician Volunteerism During Major Disasters and Community**
- VI. Emergencies**
- VII. Summary**
- VIII. Resources**

I. Preface

Since the September 11, 2001 attacks on the United States, the public health sector has had an increased focus on improving disaster preparedness, response, and recovery efforts. At national and state levels, the focus has primarily been directed to pre-hospital and emergency department preparation for conventional or weapons of mass destruction (WMD) mass casualty incidents. Disaster response, however, does not stop at the emergency department. The entire hospital must work cohesively together to manage the patient surge and mitigate the impact of a large influx of patients, many who may need timely intervention. A modern Department of Anesthesiology is not limited to the operating theater; rather, it interfaces with a wide variety of services and is essential to delivery of quality medical care. The Anesthesiology Chair, in conjunction with departmental leadership and the Hospital Emergency Preparedness Committee, is responsible for ensuring continuity of care during a crisis.

Preparedness is a basic skill. All members of the Anesthesiology Department should understand the overall plan and their individual roles during a disaster. Trauma care and triage, mass casualty surge capacity, pandemic disease response, infrastructure preservation, nuclear, chemical, biological exposure, personal protective equipment, family care planning, personal preparedness, and emergency communications are topics that must be regularly reviewed during departmental in-service training. While it is important to have experts who champion the cause, provide education, and establish standards, it is ultimately the Department of Anesthesiology Chair's responsibility to ensure that the department staff have obtained the knowledge and skills necessary to provide effective care during a disaster.

II. Hospital and Departmental Preparedness

In a public health emergency resulting in mass casualties, such as a terrorist attack, an influenza pandemic, or a catastrophic natural disaster, health care facilities and hospitals will be required to triage and provide medical treatment to large numbers of individuals. In an event involving nuclear, chemical, or biological agents, there is also a risk of toxic injury to health care responders through contamination from the site and the patients themselves.

A. The Hospital Plan

The first stage of plan development is to perform a hazard vulnerability analysis (HVA). This is simply a listing of various internal and external hazards with an assessment of the likelihood of an event versus the impact on the institution and its ability to respond. This list can then be prioritized. Over time, as specific hazards are deemed to be manageable, others rise to the forefront requiring further preparation. The HVA should be reviewed and revised on a yearly basis.

Once an event occurs, its impact is determined by the institution's capacity to absorb the surge and its overall response.

“Surge capacity is a health care system's ability to expand quickly beyond normal services to meet an increased demand for medical care in the event of bioterrorism or other large-scale public health emergencies.” (1)

<http://www.phe.gov/Preparedness/support/mscc/Pages/default.aspx>

Medical Surge Capacity and Capability Handbook

<http://www.phe.gov/Preparedness/planning/mscc/handbook/Documents/mscc080626.pdf>

Simple counter-measures can save many lives but require an appropriate and timely emergency response with the availability of basic decontamination, protective equipment, antidote supplies, and trained rescue and medical teams. Paramedics and emergency department staff, in most cases, will be the front line at the hospital in a major disaster. However, given that surge capacity will quickly be met and overwhelmed, other providers will also be of critical and essential importance in the disaster response.

Anesthesiologist's knowledge and training provide them with the unique ability to respond during a disaster by providing life support and stabilizing measures for patients through their intrinsic role in trauma and critical care, perioperative medicine, and pain management. In any case scenario of public health emergencies, even a small event, anesthesiologists are very likely to be directly involved in either the operative or critical care of the victims. For further information,

an excellent review of disaster planning is available in the Handbook of the Medical Care of Catastrophes by JSP Lumley. (2)

Hospital disaster policies should ideally be developed and coordinated in conjunction with the city, state, and national disaster medical systems and other health facilities. The guiding goal should be the prevention and minimization of death, disability, and suffering as a large number of patients are treated in a short period of time.

In the event of a public health emergency, a Hospital Preparedness Program (HPP) should entail the following:

1. **Integration:** Integration of both private and public medical capabilities with public health and first responder systems;
2. **Medical preparedness:** Increasing the preparedness, response capabilities, and surge capacities of hospitals, other healthcare facilities and emergency medical service systems;
3. **At-risk populations:** Identifying at-risk populations and determining their public health and medical needs (including trauma care facilities);
4. **Coordination:** Coordinating all levels of planning, preparedness, response, and recovery activities; and
5. **Continuity of operations:** Maintaining necessary and adequate public health and medical services.

The disaster plan must:

- Specify both process and outcome objectives
- Identify rapid surveillance methods
- Identify equipment needs, strategies for medical and public health intervention, and chain of command among participating response organizations
- Identify linkages and information flow among participants
- Identify personnel who will intervene, and timing and phasing of response
- Identify methods for communicating with the public
- Identify clinical and administrative leaders and their lines of management

B. Logistics

Disaster management will strain hospitals and health care workers. In addition to emergency departments, critical care units and rehabilitation beds will be overwhelmed. Current recommendations to help hospitals prepare for such an event focus on the three S's – supplies, staff, and space. (3)

1. Supplies and Equipment

Hospitals and health care facilities usually function with a “just-in-time” supply chain. Limited supplies, including pharmaceuticals, are stored on-site and are

delivered and replenished when needed. While this method of supply helps diminish hospital storage costs, it also threatens a successful disaster response. In addition to the supplies, hospitals are likely to run short of vital equipment, such as ventilators, oxygen, and decontamination units.

Ventilators are especially crucial, such as during an influenza pandemic, as they are critical equipment for the management of respiratory failure. A departmental plan should entail plans for ventilator use, as well as proper universal precaution procedures and an adequate supply of personal protective equipment (PPE). A back-up plan should be established in case supplies run out, such as cleaning and reusing materials, or in the event that hospital gas supplies or generator capabilities fail. Austere conditions may exist for an extended period during some disasters. Preparation will mitigate the impact.

2. Hospital Staff

Workforce shortages are an ongoing challenge for most hospitals and health care facilities. Providers and staff members need to be prepared to go to work in the midst of a chaotic and uncertain environment. Research suggests that hospital personnel are more willing to respond to disasters if they perceive safety at the hospital and believe they will be an effective, important member of the response efforts. Providers rely on their relief to show up so they can address their own family and personal needs. (4)

The department's disaster plan requires that employees be familiar with and be prepared to perform other duties or jobs requested. Employee identification badges and stickers for access should be obtained and updated. Every employee from hospital administrator to housekeeper plays an important role in providing the best clinical care for patients during a threat of disaster.

Teams should be determined based on availability and skill mix. Employees should be organized into A-B-C teams.

- **A Team (Ride Out Team)** members are assigned to the facilities during the disaster. In general, A Team reports to their designated facility 2 days/48 hours prior to anticipated events. Facilities need to consider accommodating family members and providing childcare needs of members of the A Team.
- **B Team (Ramp Up and Relief Team)** members report to their designated work locations 3 days/72 hours prior to the anticipated disaster. The B team will assist in the overall preparedness until relieved by the A Team. The B Team will report back to work within 24 hours as relief support, as determined by the system command center.
- **C Team** members should provide overall preparedness support up to 2 days/48 hours prior to the anticipated disaster and available to report to work within 24-48 hours after the disaster, as determined by the system command center. The C Team should provide relief to the B team if necessary and be involved in restoring normal operations.

A facility command center should be established to provide all local facility internal communications, including updates and information to patients and

families. Only authorized personnel should be permitted to enter and remain in the facilities.

The Emergency Center can be further divided into separate teams:

- i. **Medical triage** – responsible for the quick assessment of patients
- ii. **Immediate care** – responsible for the treatment of life threatening injuries
- iii. **Urgent care** – responsible for treatment of non-life threatening injuries/illness
- iv. **Non-urgent care** – responsible for treatment of patients who need first aid only Ambulatory Care areas may be utilized as back up for minimal only care.
- v. **Clerical** – responsible for logging each patient according to each area they are treated

3. Space

During a disaster, hospitals will be required to treat the sudden influx of “injured”, “walking sick” and “sick” patients. An influx of the “worried well” can also be expected.

The following suggestions regarding space should be considered in the event of a disaster (3):

- i. Discharge of any patients (including emergency department) who can continue their care safely at home.
- ii. Cancel elective surgical procedures and reassign staff.
- iii. Limit the use of ancillary services including radiological and laboratory testing.
- iv. Group like-patient types together to allow efficient patient care.
- v. Increase capacity of patient rooms.
- vi. Convert other areas of the hospital to patient bed areas, such as waiting rooms and outpatient clinics.

Other mechanisms to increase surge capacity include the development of staff call centers and the use of home consult services. (3)

4. Surge Prediction

The Agency for Healthcare Research and Quality (AHRQ) Hospital Surgery Model estimates the hospital resources to treat casualties arising from biological, chemical, nuclear or radiological attacks. (5)
<http://archive.ahrq.gov/prep/hospurgemodel/description/>

The Hospital Surge Model specifies the number of casualty estimates according to:

- i. The number of casualties arriving at the hospital, by an evaluation of condition (e.g. mild or severe symptoms, and day/time).
- ii. The number of casualties in the hospital, by unit (ED, ICU, or floor) and day.
- iii. The cumulative number of dead or discharged casualties, by day; and
- iv. The required hospital resources (personnel, equipment, and supplies) to treat casualties, by unit and day.

Although this model is an excellent tool to estimate hospital resources for a public health emergency, it does not take into account the number of anesthesia care providers necessary to support surgical care. Each Anesthesiology Department will need to make its own estimate of anesthesia care providers based local conditions. Additionally, the AHRQ has established guidelines to assist pediatric hospitals in converting standard to surge capacity in order to provide care for large numbers of critically ill children. (6)
<http://archive.ahrq.gov/prep/pedhospital/>

III. Anesthesiology Departmental Preparedness (7)

There is a paucity of literature on planning and training for disasters at the Departmental level. Anesthesiology and the leadership of the operating room should use the same processes that are required to prepare the hospital. The hospital's Hazard Vulnerability Analysis (HVA) is the basis for a departmental HVA. Priorities will then emerge depending on local circumstances and capabilities.
<http://www.calhospitalprepare.org/hazard-vulnerability-analysis>

Anesthesia care providers should be considered "first responders" as they may be called upon to perform lifesaving emergency treatment, such as intubation or resuscitation. An experienced emergency medicine physician, anesthesiologist or surgeon should be involved with or in charge of a triage team(s). Teams that are deployed to the pre-hospital environment or into a contaminated zone must be appropriately trained in advance.

Mass casualties, by definition, involve numbers of patients that overwhelm the system, either due to absolute numbers or to a degradation of the facility's capacity. Anesthesia care providers must be prepared to rapidly provide surgical anesthesia to large numbers of trauma victims. Depending on circumstances, it may include anesthetics that allow patients to breathe spontaneously and protect their own airway, if possible. Total intravenous anesthesia using a combination of sedative hypnotics and narcotics or regional anesthetic techniques should be considered when access to technology is compromised (lack of power or availability of operating rooms).

Consider assigning an experienced anesthesiologist to the Emergency Department as a liaison. This individual can keep the OR Chief apprised of the situation (numbers and types of patients), allowing for better preparation ahead of casualty transport to the OR.

Department responsibilities for planning and supplying continuing operations need to be addressed. A department plan should be established and it should be tested, practiced and revised, as necessary. The plan should encompass nursing, anesthesiology, surgery and support staff. The plan consists of:

- The Chain of Command
- Task priorities
- Patient Flow
- Logistics
- Communications
- Isolation and personal protection

Several actions need to occur in rapid succession and should be summarized on a single sheet of paper prominently displayed or readily available to the entire staff.

A. Operating Room Chief Priority Tasks (Modified from Figure 13.3. (7))

- Briefly coordinate with the Chief of OR Nursing to assess status (number of staffed ORs available: immediately, in 30 minutes, and in 60 minutes).
- Anesthesia floor manager should co-locate with the OR nursing manager to ease communication and coordination. Anesthesia floor manager should become the OR Medical Director until relieved.
- Notify all surgical teams of disaster (including pertinent information such as WMDs), instruct them to finish expeditiously any ongoing cases, and prepare to receive trauma patients.
- Elective cases should be placed on hold.
- Assign free staff to set up for trauma/emergency cases.
- Activate disaster personnel call-in tree (a branched tree is more efficient than a list).
- Notify PACU and ICU to discharge patients, call in personnel and expand bed capacity.
- Coordinate with anesthesia techs to ensure adequate supplies of fluids, drugs, and disposables.
- Instruct supply personnel to restock/overstock all locations.
- Coordinate with Blood Bank, Pharmacy, and Central Supply to expect increased demands.
- Coordinate with Surgical Chief to assess availability and assignment of surgeons.
- Send liaison to ED to assess situation and report back (number and types of cases).
- Consider assembling contingency teams for “off-floor” response (airway emergency management, ED and ICU assistance).
- If airborne infectious disease is suspected, or there is the potential for chemical or radiological contamination, coordinate with Security and Facilities Management to institute isolation/personal protection procedures.
- Ensure there is a back-up communications plan and staff are aware of it.

It is expected that emergency personnel who are well trained, confident in their skills, and assured that their families are safe will report for duty during a crisis. The converse is also true. The department leadership must ensure that each member feels adequately trained, has access to appropriate equipment, and has a family disaster plan in place. Ancillary support personnel are an important part of an effective disaster response. If the individuals who deliver supplies, transport patients, and clean the facility lack confidence or feel their families are at risk, they will be unavailable when needed. The job of the physician and nurse will be that much harder.

B. Self Protection

Personal Protective Equipment (PPE) training, use, and maintenance deserves as much attention in Anesthesia practice as does other types of equipment. Training in advance ensures safe use. The Powered Air Purifying Respirator (PAPR) provides a higher level of respiratory personal protective equipment (PPE) than the N95 respirator. Although no PPE can guarantee absolute respiratory protection from biological disease exposure, the PAPR has been suggested by the Centers for Disease Control (CDC) and Occupational Safety and Health Administration (OSHA) as an alternative to the N95 when performing aerosol-generating procedures, which include endotracheal intubation, on patients with Avian/Pandemic Influenza/SARS/XDR-TB. (8-10) The minimal respiratory protection that should be worn under these conditions is a fit tested and seal checked N95 respirator with full barrier contact protection, which includes gown, gloves, hat, goggles and face shield, and shoe covers. The N95 does not provide protection for those with a beard.

Although hospitals stock PAPRs, Employee Health (EH) Departments may have no formal PAPR training programs, as many EH departments are over-extended trying to keep up with N95 fit testing. During Pandemic Influenza, Anesthesia Departments may need to conduct PAPR training themselves. Just-in-time training in PAPR use is not appropriate for Providers who perform intubation and other aerosol-generating procedures regularly; just-in-time training is, however, appropriate for personnel who would need to enter a contagious environment on a one time basis, for instance to provide a consult or perform maintenance.

A PAPR is a belt-worn unit that draws air in through a High Efficiency Particulate Air (HEPA) filter and exhausts it at a high flow rate into a protective head-covering hood, preventing contaminated air from entering, and providing filtered air to the wearer. If the PAPR full head and shoulders hood is chosen as opposed to the loose fitting face piece helmet, complete contact protection is provided for the head and neck. Although the level of respiratory protection with the PAPR is higher than that of the N95, the risk of self-contamination from incorrect removal (doffing) may be greater with the PAPR than with the N95 (11,12). Therefore, the donning and doffing procedure should be practiced in advance and undertaken with extreme care.

The PAPR is not to be used during surgery because it exhausts the wearer's exhaled air directly into the operating room environment, creating a wound infection hazard. This issue is currently unresolved.

The PAPR hoods are disposable, but in a high demand situation, will need to be reprocessed between uses and between users. The hoods should be cleaned with dilute bleach or quaternary ammonium solution, according to the manufacturer's instructions. Cleaning protocols should be approved by the hospital Infectious Disease Practitioner.

Other PAPR issues are discussed in a workshop on PAPR Training, included for Anesthesia Departments and individuals to use in conducting their own training in the use of PAPRs for respiratory protection from infectious respiratory diseases. This workshop should be done with the approval of the Employee Health Departments, which may be different for Anesthesia residents, staff, and CRNAs; anesthesia providers may be independently or self-employed and are therefore responsible for their own training.

It should be noted that PAPRs for PPE for chemical hazardous material exposure require 8 hours of awareness and operations level training by a certified hazardous material HAZWOPER (Hazardous Work Operations) instructor. Hospital based first-receivers of victims of exposure to hazardous chemical materials may not enter a contaminated area or care for a non-decontaminated patient unless they have received this training and are dressed in hazmat PPE. Hazmat PPE includes full chemical barrier protection and a chemical PAPR, made of butyl rubber with chemical vapor filter canisters (12). Biological PAPRs employ particulate filters only and do not provide protection from chemical vapors or liquids. The storage containers for biological PAPRs should be clearly marked as not for use in chemical exposure.

Previous ASA publications include discussions on Pandemic Influenza and PPE (13,14).

C. Communications

The most commonly cited reason for mission failure during a crisis is a breakdown in communications. Cellular systems, the Internet, and traditional telephones are vulnerable to weather, overload, and deliberate disruption. Back-up communications should be an integral part of disaster planning at all levels. The simplest system is to write out a clear and succinct message, in plain English (free of medical jargon) to a specific recipient. It should be dated, time stamped, and contain the name and location of origination. Written messages can be hand carried to a central communications point where they can be prioritized and sent to the appropriate parties. While relatively slow, this can be a very effective means of communications.

Handheld radios are useful tools when limited to a few key leaders or central communications points. However, unless extensive training in net control techniques is practiced, they cannot handle more than a few users before the system becomes overloaded. An alternate is to enlist outside communicators, such as the local amateur radio community (<http://www.ares.org>, <http://www.hdscs.org>). These individuals have the capability to provide voice, text, and even video communications using their own equipment. They can serve both as a link from the hospital EOC to outside agencies and as a supplement to internal communications between departments. Clearly, successful back-up

communications depends upon practicing these techniques during drills.

D. Evaluation of Anesthesiology Department Plan (15)

The JCAHO requires all hospitals to conduct disaster exercises twice a year. Although not all will involve surgical scenarios or simulated patient care, it is vital that the Operating Room and the Department of Anesthesiology participate in these exercises.

The essential components of a hospital and department disaster preparedness plan should consider five aspects in evaluating of the success of their plans, namely:

- 1. Structure:** How is the hospital and department response organized? What resources are needed and available (equipment and personnel)? How are disaster response teams organized and trained?
- 2. Process and Effort:** How well are individuals prepared? Were barriers encountered, and how these were dealt with? Were all predetermined activities carried out in response to disaster conditions?
- 3. Outcomes:** What was and was not achieved as a result of the medical and public health responses?
- 4. Adequacy:** What was the extent of death and disability that could have been prevented? What was the extent to which the disaster-related needs of the population affected were met?
- 5. Costs:** What did the medical and public health response cost? Was the money spent most effectively relative to the benefits received?

E. Role of Medical Regulatory Agencies in Disaster Management

Local, state and national bodies develop regulations for disaster preparedness and management, which apply to healthcare providers and institutions. Currently these regulations have largely evolved through local and regional initiatives, since regulation of health care delivery is primarily a state and local responsibility. Federal regulation of healthcare is limited to conditions for payment under federal programs and regulations involving workforce protection.

Currently, there is a lack of uniformity among municipal and state regulations governing healthcare providers. This has led many medical groups and hospitals to establish Compliance Offices and Service Continuity Offices. Compliance Offices track all regulations, which may apply to the practice or facility. Service Continuity Offices clarify how these regulations are applied to a specific practice or institution. Within this structure there is an opportunity to develop institutional policies, which allow the entity to meet its role in disaster management without creating unnecessary opportunity for institutional liability/loss.

An example is verification of professional licensing, credentialing and delineation of practice privileges. Currently, credentialing and privileging are considered a medical staff responsibility. Professional licenses are granted by states and may be honored by other states by reciprocity. National registries of practitioner credentials have been established. States have also established mechanisms for temporary

licensing of retired physicians during disasters. The decision to accept such credentialing and grant practice privileges remains the responsibility of each practice/hospital medical staff.

Credentialing and the granting of practice privileges have professional liability implications. Liability and also logistic or management factors may determine the appropriate granting of privileges during a disaster.

A department chairman or designee should fully understand the disaster plan of the local facility, understand who is responsible for identifying applicable regulations and understand who is responsible for developing policies that implement these regulations. The role of each practice and healthcare facility, in a disaster, is determined **locally** (and is subject to local, state and federal regulations).

Each anesthesiologist and each Department Chairperson should be aware of his or her role in the practice/hospitals' unique local disaster plan.

F. Summary

It is imperative that the critical infrastructure of a hospital be maintained and protected in a disaster. The number one priority is safety of both patients and provider teams. Considerable coordination of efforts is required to support effective preparation for and proper response to a disaster.

The department's plan should address the personal safety and home preparedness of all staff. Hospital personnel must be educated on how to obtain accurate information, protect themselves and their families, and avoid becoming casualties themselves. Without this preparedness, not only will patients' care be adversely affected but the health of the caregiver and his/her family members may be placed in jeopardy.

IV. The Big Picture: The National Response Framework and Incident Command Systems (NRF-NIMS-ICS- HICS)

A. National Response Framework (NRF)

The National Response Framework (NRF) presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies. It establishes a comprehensive, national, all-hazards approach to domestic incident response. The National Response Plan was replaced by the National Response Framework effective March 22, 2008. (<http://www.fema.gov/emergency/nrf/>)

The National Response Framework defines the principles, roles, and structures that organize how we respond as a nation.

The National Response Framework:

- Describes how communities, tribes, states, the federal government, private-sectors, and nongovernmental partners work together to coordinate national response;
- Describes specific authorities and best practices for managing incidents; and
- Builds upon the National Incident Management System (NIMS), which provides a consistent template for managing incidents.

Information on the National Response Framework including Documents, Annexes, References and Briefings/Trainings can be accessed from the NRF Resource Center. (<http://www.fema.gov/emergency/nims/index.shtm>)

B. National Incident Management System (NIMS)

The following is a web site describing NIMS from the Department of Homeland Security. It can be found at:

<http://www.fema.gov/emergency/nims/AboutNIMS.shtm>:

The *National Incident Management System* (NIMS) provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment. NIMS works hand in hand with the *National Response Framework* (NRF). NIMS provides the template for the management of incidents, while the NRF provides the structure and mechanisms for national-level policy for incident management. (National Incident Management System, December 2008, Department of Homeland Security)

Advantages of NIMS

NIMS incorporates incident management best practices developed and proven by thousands of responders and authorities across America. These practices, coupled with consistency and national standardization, will now be carried forward throughout all incident management processes: exercises, qualification and certification, communications interoperability, doctrinal changes, training, and publications, public affairs, equipping, evaluating, and incident management. All of these measures unify the response community as never before. **NIMS is not an operational incident management or resource allocation plan.** NIMS represents a core set of doctrines, concepts, principles, terminology, and organizational processes that enables effective, efficient, and collaborative incident management.

NIMS was created and vetted by representatives across America including:

- Federal government
- States
- Territories
- Cities, counties, and townships
- Tribal officials

- First responders

5 Key features of NIMS

1. **Incident Command System (ICS):** NIMS establishes ICS as a standard incident management organization with five functional areas -- command, operations, planning, logistics, and finance/administration -- for management of all major incidents. To ensure further coordination, and during incidents involving multiple jurisdictions or agencies, the principle of unified command has been universally incorporated into NIMS. This unified command not only coordinates the efforts of many jurisdictions, but also provides for and assures joint decisions on objectives, strategies, plans, priorities, and public communications.
2. **Communications and Information Management:** Standardized communications during an incident are essential and NIMS prescribes interoperable communications systems for both incident and information management. Responders and managers across all agencies and jurisdictions must have a common operating picture for a more efficient and effective incident response.
3. **Preparedness:** Preparedness incorporates a range of measures, actions, and processes accomplished before an incident happens. NIMS preparedness measures including planning, training, exercises, qualification and certification, equipment acquisition and certification, and publication management. All of these serve to ensure that pre-incident actions are standardized and consistent with mutually agreed doctrine. NIMS further places emphasis on mitigation activities to enhance preparedness. Mitigation includes public education and outreach, structural modifications to lessen the loss of life or destruction of property, code enforcement in support of zoning rules, land management, and building codes, and flood insurance and property buy-out for frequently flooded areas.
4. **Joint Information System (JIS):** NIMS organizational measures enhance the public communication effort. The Joint Information System provides the public with timely and accurate incident information and unified public messages. This system employs Joint Information Centers (JIC) and brings incident communicators together during an incident to develop, coordinate, and deliver a unified message. This will ensure that Federal, state, and local levels of government are releasing the same information during an incident.
5. **NIMS Integration Center (NIC):** To ensure that NIMS remains an accurate and effective management tool, the NIMS NIC will be established by the Secretary of Homeland Security to assess proposed changes to NIMS, capture, and evaluate lessons learned, and employ best practices. The NIC will provide strategic direction and oversight of the NIMS, supporting both routine maintenance and continuous refinement of the system and its components over the long term. The NIC will develop and facilitate national standards for NIMS education and training, first responder communications and equipment, typing of resources, qualification and credentialing of incident

management and responder personnel, and standardization of equipment maintenance and resources.

The NIC will continue to use the collaborative process of federal, state, tribal, local, multi-discipline and private authorities to assess prospective changes and assure continuity and accuracy. National Incident Management System (NIMS) National Integration Center <http://www.fema.gov/emergency/nims>.

This is the official FEMA website for the National Incident Management System. You can download the entire NIMS document from this site

C. National Disaster Medical System

<http://www.phe.gov/preparedness/pages/default.aspx>

The National Disaster Medical System (NDMS) is a federally coordinated system that augments the nation's medical response capability. The overall purpose of the NDMS is to supplement an integrated national medical response capability for assisting state and local authorities in dealing with the medical impacts of major peacetime disasters and to provide support to the military and the Department of Veterans Affairs medical systems in caring for casualties evacuated back to the U.S. from overseas armed conventional conflicts.

The National Response Framework utilizes the National Disaster Medical System (NDMS), as part of the Department of Health and Human Services, Office of Preparedness and Response, under Emergency Support Function #8 (ESF #8), Health and Medical Services, to support Federal agencies in the management and coordination of the Federal medical response to major emergencies and federally declared disasters including:

- Natural Disasters
- Major Transportation Accidents
- Technological Disasters
- Acts of Terrorism including Weapons of Mass Destruction Events

It is the mission of the National Disaster Medical System to temporarily supplement Federal, Tribal, State and Local capabilities by funding, organizing, training, equipping, deploying and sustaining a specialized and focused range of public health and medical capabilities.

Components of the National Disaster Medical System

- Medical response to a disaster area in the form of personnel, teams and individuals, supplies, and equipment.
- Multispecialty Specialty Enhancement (MSET)
- <http://viewer.zmags.com/publication/1e73a969#/1e73a969/42>
- Disaster Medical Assistance Team (DMAT)
- Disaster Mortuary Operational Response Teams (DMORT)

- International Medical Surgical Response Team (IMSURT)
- National Veterinary Response Team (NVRT)
- Patient movement from a disaster site to unaffected areas of the nation.
- Definitive medical care at participating hospitals in unaffected areas.

D. Incident Command System (ICS)

The ICS is a widely applicable management system designed to enable effective and efficient incident management by integrating facilities, equipment, personnel, procedures, and communications operating within a common organizational structure.

The Incident Commanders (ICs) structural organization builds from the top down; responsibility and performance begin with the ICS element and the IC. The IC(s) is responsible for the overall management of the incident. For most disaster incidents, a single IC carries out the command activity. The need for a Unified Command (UC) occurs when an incident affects the statutory responsibility of more than one agency or jurisdiction. It provides guidelines to enable agencies with different legal, geographic, and functional responsibilities to coordinate, plan, and interact effectively.

Command encompasses the IC and the Command Staff. Command Staff positions may be established to assign or delegate responsibility for command activities that the IC cannot perform due to the complexity of the incident or other situational demands. These positions may include the Public Information Officer (PIO), Safety Officer, and Liaison Officer, in addition to others as required and assigned by the IC.

The PIO is responsible for communicating with the public, media, and/or coordinating with other agencies, as necessary, with incident related information requirements. The PIO is responsible for developing and releasing information about the incident to the news media, incident personnel, and other appropriate agencies and organizations. Depending on the size or complexity of the incident, a lead PIO should be assigned for each incident and may have assistants, as necessary, including supporting PIOs representing other responding agencies or jurisdictions. The Safety Officer monitors incident operations and advises the IC/UC on all matters relating to operational safety, including the health and safety of emergency responder personnel.

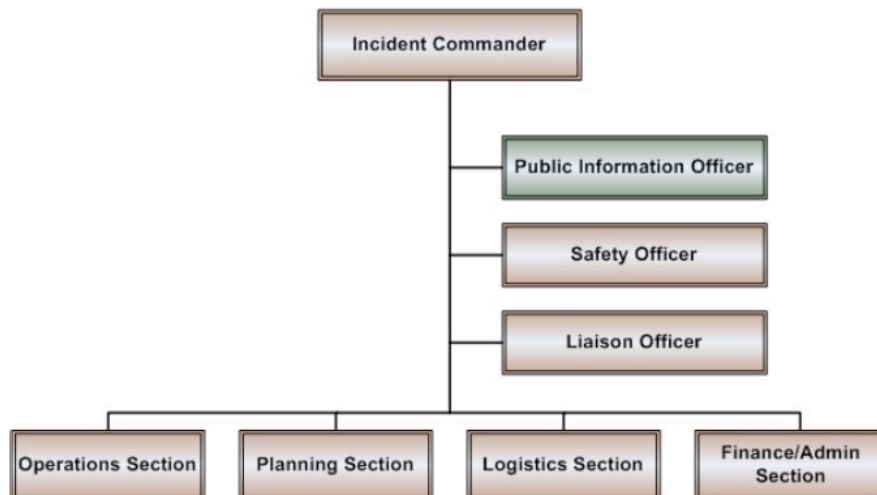
The **Liaison Officer** is the IC/UC point of contact for representatives of other governmental agencies, non-governmental organizations (NGOs), and/or the private sector (with no jurisdiction or legal authority) to provide input on their agency's policies, resource availability, and other incident related matters.

The ICS has five major management functions: Command, Operations, Planning, Logistics, and Finance/Administration. This structure is modular and can extend to incorporate all elements necessary for the type, size, scope, and complexity of a given incident (Figure 1).

The IC/UC normally assigns one or more Section Chiefs to manage the following ICS functional areas (the Section Chiefs are the General Staff):

1. **Operations Section:** Responsible for managing on-scene tactical operations to meet the incident objectives as established by the IC or UC.
2. **Planning Section:** Collects, evaluates, and disseminates incident situational information to the IC/UC and incident management personnel.
3. **Logistics Section:** Meets all service and support needs for the incident, including ordering resources through appropriate procurement authorities from off-incident locations.
4. **Finance/Administration Section:** Responsible for all administrative and financial considerations surrounding an incident, including financial reimbursement to individuals, agencies, and departments.

Figure 1—ICS Organizational Chart



E. Hospital Emergency Incident Command System (HICS)

1. HICS is ICS Adapted for Hospital Use

Confusion and chaos are commonly experienced by the hospital at the onset of a medical disaster. However, these negative effects can be minimized if management responds quickly with structure and a focused direction of well-defined activities. The Hospital Emergency Incident Command System (HICS) is an emergency management system, which employs a logical management structure, defined responsibilities, clear reporting channels, and a common

nomenclature to help unify hospitals with other emergency responders. There are clear advantages to all hospitals using this particular emergency management system.

Based on public safety's Incident Command System, HICS has already proved valuable in helping hospitals serve the community during a crisis and resume normal operations as soon as possible. A survey of California hospitals in the spring of 1997, reveals a significant number of hospitals have, or will be incorporating HICS within their emergency plans. HICS is quickly becoming the standard for health care disaster response and offers the following features:

- Predictable chain of management
- Flexible organizational chart allows flexible response to specific emergencies
- Prioritized response checklists
- Accountability of position function
- Improved documentation for improved accountability and cost recovery
- Common language to promote communication and facilitate outside assistance
- Cost effective emergency planning within health care organizations

The complete HICS document can be downloaded from:

<http://www.hicscenter.org/pages/index.php>

2. Courses on the National Incident Management System and the Incident Command System.

NIMS Courses offered through FEMA: <http://emilms.fema.gov/>

This FEMA Independent Study site offers links to multiple distance learning Incident Management courses. Personnel in many fields are required to take the IS700 course. This site lists multiple courses, which may be of interest or required for emergency management personnel, fire service personnel, first responders, public health workers, hospital personnel, and the general public.

3. Available Independent Study (IS) Interactive Web-based Courses

- IS-100 Introduction to Incident Command System, I-100
 - * IS-100.HC Introduction to the Incident Command System for Healthcare/Hospitals - New
- IS-100.LE Introduction to the Incident Command System, I-100, for Law Enforcement
- IS-100.PW Introduction to the Incident Command System, I-100, for Public Works Personnel
- IS-100.SC Introduction to the Incident Command System for Schools - New
- IS-15.A Special Events Contingency Planning for Public Safety Agencies
- IS-197.SP - Special Needs Planning Considerations for Service and Support Providers - New
- IS-200 ICS for Single Resources and Initial Action Incidents
- IS-200.HC Applying ICS to Healthcare Organizations - New
- IS-253 Coordinating Environmental and Historic Preservation Compliance
- IS-317 Introduction to Community Emergency Response Teams

- IS-331 Introduction to Radiological Emergency Preparedness (REP) Exercise Evaluation
- IS-340 Hazardous Materials Prevention
- IS-362 Multi-Hazard Emergency Planning for Schools
- IS-546 Continuity of Operations (COOP) Awareness Course
- IS-547 Introduction to Continuity of Operations (COOP)
- IS-650 Building Partnerships with Tribal Governments
- IS-700 National Incident Management System (NIMS), An Introduction
- IS-701 Multiagency Coordination System (MACS) - New
- IS-702 National Incident Management Systems (NIMS) Public Information Systems
- IS-703 NIMS Resource Management
- IS-800.A National Response Plan (NRP), An Introduction - Revised
- IS-860 Introduction to the National Infrastructure Protection Plan (NIPP) - New
- IS-1900 - NDMS Federal Coordinating Center Operations Course

4. NIMS Training for Public Health Departments

<http://www.jhsph.edu/preparedness/training/online/nims.html>

This online module created and hosted by The Johns Hopkins Bloomberg School of Public Health offers an introduction to the National Incident Management System (NIMS). The content conforms to the FEMA IS-700 awareness level NIMS training, with special emphasis on its applications for public health agencies.

5. Yale New Haven Health online courses on NIMS and ICS

<http://ynhhs.emergencyeducation.org/>

Introduction to Emergency Management with NIMS (EM 103 NIMS)
 This course meets the National Incident Management Systems objectives of IS 100: An Introduction to ICS,
 IS 700: An Introduction to the National Incident Management System and
 IS 800: Introduction to the National Response Plan for health care delivery organizations. Incident Command Systems (ICS) for Health Care w/NIMS (EM 140 NIMS) This course meets the National Incident Management System objectives for IS 200: Basic ICS, IS 700: An Introduction to the National Incident Management System.

6. The National Incident Management System (NIMS) & The Incident Command System (ICS): A primer for Volunteers (University of Minnesota Center for Public Health Preparedness)

<http://cpheo.sph.umn.edu/cpheo/umncphp>

<http://ustar.ahc.umn.edu/cpheo/catalog/main.cfm>

V. Physician Volunteerism During Major Disasters and Community Emergencies

(Reprinted from J. Kent Garman, M.D., M.S., ASA Newsletter, September 2006, Volume 70)

During last year's Hurricane Katrina disaster in the Gulf States, there was an outpouring of both personal and financial support for the victims. Physicians also wanted to help and, in many cases, tried to find a method to volunteer their services in the area. In fact, more than 3,500 physicians signed up through the Internet with the U.S. Department of Health and Human Services (HHS) as available for immediate deployment. Few of these volunteers were actually used. Many individual physicians simply went to the Gulf and pitched into the chaos with varying results. Most physicians, however, found that their desire to lend their medical skills could not be fulfilled. Many physicians who wanted to help were very frustrated at their inability to do so.

A number of volunteer civilian physicians and other health care providers were, in fact, deployed under federal auspices within two days of the disaster and served under very harrowing, dangerous and frustrating (yet gratifying) conditions. How did this happen? Because of this disaster, the federal government and state governments now realize that it is vitally important to have a group of pre-credentialed and trained health care professionals available in case of a future emergency. Much attention is being paid to the possibility of a flu pandemic and the need for surge capacity of hospital beds, drugs, supplies and, most importantly, health care providers.

The question this article will answer is: How can physicians and other health care providers become preregistered, pre-credentialed and pre-trained to respond to a future disaster or community emergency? How can they fit into a plan to provide surge capacity to augment local health care facilities that have been overwhelmed by patients?

A. Fitting into a Plan for Future Disasters

The first fact to understand is that emergency agencies usually do not want individual, unsolicited and uncredentialed physicians to just show up for work. Physicians who try this are usually sent home. If they do actually work, they are subjecting themselves to extreme liability risk since they are usually not covered by one of the federal liability protection programs. Also, since they are not usually credentialed to practice medicine in other states, they are sometimes actually violating state law if they do practice without a license. Good Samaritan laws covering medical volunteers vary widely from state to state and cannot be counted on to protect an individual physician from liability. Organized federally credentialed groups are working as federal agents or employees and are exempt from these problems under the Federal Tort Claims Act. Having said this, there were many individual physicians who managed to contribute their skills under very difficult circumstances in the Katrina disaster.

The American College of Emergency Physicians and the National Association of EMS Physicians have published a "Policy on Unsolicited Medical Volunteers"¹

which states that an organized approach is needed for all medical volunteers in a disaster [Table 1]. They advise that medical personnel should not respond to an emergency unless officially requested by the jurisdiction's emergency medical services agency.

Table 1: Policy on Unsolicited Medical Volunteers



Unsolicited Medical Personnel Volunteering at Disaster Scenes

Approved by the ACEP Board of Directors June 2002
(Policy #400320, Approved June 2002)

The American College of Emergency Physicians (ACEP) and the National Association of EMS Physicians (NAEMSP) believe an organized approach is needed for the utilization of unsolicited medical personnel who volunteer to respond to disaster scenes or mass casualty incidents. To ensure the efficient, effective, and safe mobilization of such volunteer medical resources, medical command must come under the authority of the medical director for the emergency medical services (EMS) system and the jurisdiction's established incident command system (ICS). This practice will ensure the integration of all medical functions in the area and accountability under the jurisdiction's established (ICS) without hampering authorized and established functioning rescue efforts.

Volunteer medical personnel (eg, physicians, nurses, emergency medical technicians, etc.) should not respond to a disaster scene unless officially requested by the jurisdiction's established ICS. All personnel must understand the authority and resources of local EMS and health care systems, the importance of staffing their facilities as their primary responsibility, and the dangerous conditions associated with on-site operations.

Reprinted with permission from the American College of Emergency Physicians.
Copyright © 2006 American College of Emergency Physicians. All rights reserved.

The federal government divides the responsibility for various medically related areas in major disasters and emergencies among at least seven different agencies. (16) [Table 2] All of these agencies participated in various ways during the Katrina disaster. Physician volunteers were recruited under HHS and the Department of Homeland Security (DHS), Division of Emergency Preparedness and Response [Federal Emergency Management Agency (FEMA)]. Some Veterans Administration hospitals also were tasked to contribute medical volunteers to the effort.

Table 2: Civilian Medically Related Programs of the U.S. Government

- U.S. Department of Health and Human Services (HHS) Office of the Assistant Secretary for Public Health Emergency Preparedness (ASPHEP)
- HHS Bioterrorism Hospital Preparedness Program
- Department of Homeland Security (DHS) Division of Emergency Preparedness and Response (FEMA)
- DHS National Pharmaceutical Stockpile
- Centers for Disease Control and Prevention (CDC)
- CDC Bioterrorism Health Preparedness and Response
- Department of Veterans Affairs (VA)

Medical Reserve Corps Technical Assistance Series, Coordinating with Your Local Response Partners, page 6. Web Document: <www.medicalreservecorps.gov/page.cfm?pageID=77>.

Some medical volunteers were asked to deploy to the Gulf area with the Red Cross. Reports from some physicians were that they were not allowed to use their medical skills in shelters because of Red Cross liability concerns.

B. Methods for Civilian Physicians to Volunteer

It turns out that there are several effective methods for civilian physicians to volunteer their skills to join an organized group of physicians and other health care

workers in case of a major national disaster. Much of the content below has been obtained from public Web sites. The websites are listed for the convenience of the reader.

There are varying levels of commitment and effort for volunteers. The three methods are listed in order of increasing commitment, effort and time commitment.

1. Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) Plan

The ESAR-VHP program is a national mandate funded by the federal Health Resources and Services Administration (HRSA). (17) It provides multiyear grants to states for bioterrorism preparedness. The program is on a “fast track” since federal funding ends August 2007. Most states are planning to complete registrations before 2007.

The grant mandate is to develop a system that provides for the advanced registration and credentialing of clinicians in order to augment a hospital or other medical facility and thereby meet the increased patient/victim care needs during a declared emergency. The program hopes to capture, in advance, the historically large stream of health care personnel who wish to volunteer their expertise during a disaster or emergency.

ESAR-VHP plans to enroll the following professionals: M.D., D.O., R.N., N.P., D.D.S., pharmacists, paramedics, respiratory care and behavioral health. All volunteers must have an active, unencumbered license.

Although this program is the least formal of all the programs, it does plan to determine how the ESAR-VHP volunteers will be integrated, insured, trained, housed, supervised and managed during the emergency incident.

Physicians and other health care providers should expect to receive information soon about volunteering for this program. Since there is really no formal time commitment incurred by signing up, it is probably a good idea to do so since it will give you the opportunity to help in case of a future disaster or emergency. <http://www.phe.gov/esarvhp/pages/registration.aspx>

2. Medical Reserve Corps (MRC)

The second method concerns joining a Medical Reserve Corps (MRC). There are currently more than 300 MRCs in the United States. Your closest one can be located on the MRC website. (18)
<https://www.medicalreservecorps.gov/HomePage>

An MRC is a community-based network of volunteers that assists public health efforts in times of special need or disaster, e.g., during a major communicable disease outbreak, an earthquake, flood or an act of terrorism. Members of an MRC also may volunteer their time throughout the year in order to promote community public health and education. The MRC program office is headquartered in the Office of the Surgeon General. It functions as a clearinghouse for information and best practices to help communities establish,

implement and maintain MRC units across the nation.

The MRC program office sponsors an annual leadership conference, hosts a Web site and coordinates with local, state, regional and national organizations and agencies to help communities achieve their local visions for public health and emergency preparedness.

MRCs bring volunteers together to supplement existing local emergency plans and resources. In order to be effective during times of emergency, volunteers must be organized and trained to work in emergency situations. The MRC is designed to provide that organizational structure and to promote appropriate training of volunteers according to local community needs and vulnerabilities.

Any variety of individuals depending on community need may comprise MRCs. Volunteers may include, but are not limited to, current or retired health professionals (such as physicians, nurses, mental health professionals, dentists, dental assistants, pharmacists and veterinarians), social workers, communications/public relations professionals, health care administrators, clergy, etc. Each MRC can customize its membership to fit community needs.

MRC volunteers can choose to support communities in need nationwide. When the Southeast was battered by hurricanes in 2004, MRC volunteers in the affected areas and beyond helped communities by filling in at local hospitals, assisting their neighbors at local shelters and providing first-aid to those injured by the storms. Over this two-month period, more than 30 MRC units worked as part of the relief efforts, including those whose volunteers were called in from across the country to assist the American Red Cross and FEMA. MRCs also are tied into most states' emergency medical services authority and can be activated by either state or county EMS agencies as well as by the federal government. All deployments are voluntary.

3. Disaster Medical Assistance Team (DMAT)

The next and most organized method is the DMAT. (19) Many of these units were, in fact, immediately deployed to the Katrina disaster under HHS/FEMA.

As an example, the San Francisco Bay Area DMAT (CA-6)(20) was mobilized within two hours of the disaster and deployed a 35-member team directly to New Orleans by air within eight hours. Support supplies were moved by ground transport. The team, however, simply relieved another DMAT and used their prepositioned supplies. The San Francisco DMAT took more than a half million dollars worth of supplies and equipment to the disaster, including a complete tented field hospital.

The DMAT program is a federal program under the National Disaster Medical System (NDMS)(21) that organizes and pretrains medical and paramedical volunteers. Nationally there are currently more than 29 deployable teams, each with 50 to 150 civilian volunteers (22)[Table 3]. Deployed teams usually consist of 35 medical and paramedical professionals and support personnel.

Table 3: Listing of DMAT Teams

AK-1 ... Anchorage	FL-6 ... Orlando	OH-5 ... Dayton
AL-1 ... Birmingham	GA-3 ... Atlanta	OH-6 ... Youngstown
AL-3 ... Mobile	GA-4 ... Augusta	OK-1 ... Tulsa
AR-1 ... Little Rock	HI-1 ... Wailuku	OR-2 ... Eugene
AZ-1 ... Tucson	IN-4 ... New Albany	PA-1 ... Pittsburgh
CA-1 ... Santa Ana	KY-1 ... Fort Thomas	PHS-1 ... Washington
CA-2 ... San Bernardino	MA-1 ... Boston	RI-1 ... Providence
CA-4 ... San Diego	MA-2 ... Worcester	SC-1 ... Charleston
CA-6 ... Martinez	MI-1 ... Wayne	TN-1 ... Chattanooga
CA-9 ... Los Angeles	MN-1 ... St.Paul	TX-1 ... Houston/EI Paso
CA-11 ... Sacramento	MO-1 ... St. Louis	TX-3 ... Galveston
CO-2 ... Denver	NC-1 ... Winston-Salem	TX-4 ... Metroplex
CT-1 ... Hartford	NJ-1 ... Lyons	WA-1 ... Seattle
FL-1 ... Pensacola	NM-1 ... Albuquerque	
FL-2 ... Port Charlotte	NV-1 ... Las Vegas	To access the Web sites for these teams, go to < www.dmatca6.org > and click on "Other DMAT teams."
FL-3 ... Tampa	NY-2 ... Westchester	
FL-4 ... Jacksonville	NY-4 ... Pomona	
FL-5 ... Miami	OH-1 ... Toledo	

NDMS, under the Department of Health and Human Services, fosters the development of DMATs. A DMAT is a group of professional and paraprofessional medical personnel (supported by a cadre of logistical and administrative staff) designed to provide emergency medical care during a disaster or other event.

Each team has a sponsoring and funding organization such as a major medical center, public health or safety agency, nonprofit, public or private organization. The DMAT sponsor organizes the team and recruits members, arranges training and coordinates the dispatch of the team.

In addition to the standard DMATs, there are highly specialized DMATs that deal with specific medical conditions such as crush injuries, burns and mental health emergencies. Other specialty teams include Disaster Mortuary Operational Response Teams that provide mortuary services, Veterinary Medical Assistance Teams that provide veterinary services and National Medical Response Teams that are equipped and trained to provide medical care for victims of weapons of mass destruction.

DMATs deploy to disaster sites with sufficient supplies and equipment to sustain themselves for a period of 72 hours while providing medical care at a fixed or temporary medical care site. In mass casualty incidents, their responsibilities include triaging patients, providing austere medical care and preparing patients for evacuation. In other types of situations, DMATs may provide primary health care and/or may serve to augment overloaded local

health care staffs. Under the rare circumstance that disaster victims are evacuated to a different locale to receive definitive medical care, DMATs may be activated to support patient reception and disposition of patients to hospitals.

DMATs are designed to be a rapid-response element to supplement local medical care until other federal or contract resources can be mobilized or the situation is resolved.

DMAT members are required to maintain appropriate certifications and licensure within their discipline. When members are activated as federal employees, licensure and certification are recognized by all states. Additionally DMAT members are paid while serving as part-time federal employees and have the protection of the Federal Tort Claims Act in which the federal government becomes the defendant in the event of a malpractice claim.

DMAT teams are expected to be deployable within 12 hours and wear insignia and military-style uniforms while deployed. An individual is expected to complete extensive, free online and field training before being qualified for deployment. There are immunization, training and meeting attendance requirements to maintain membership. Meetings of DMATs are held regularly with some overnight or multiday field exercises.

DMATs need more physicians. In order to join, simply find the unit closest to you and contact the unit commander. In order to be qualified for temporary federal service, it is necessary to complete extensive federal application forms. The application process takes from one to four months to go through the various federal approvals. In the meantime, the new member can take the required online training and participate fully with the unit with the exception of federal deployment.

It is important to stress that DMATs are civilian, volunteer organizations. All deployments and participation are fully voluntary.

4. Multispecialty Enhancement Team (MSET)

<http://viewer.zmags.com/publication/1e73a969#/1e73a969/42>

5. Conclusion

It is interesting that FEMA, in August 2001, predicted the three most likely catastrophes that might hit the United States. First was a terrorist attack in New York City, second was a full-strength hurricane hitting New Orleans and third was a major earthquake in California along the San Andreas Fault. Two of these predictions have already come true — is California next?

Will our communities be stressed by a flu pandemic? If so, health care facilities will be overwhelmed and will need help from a volunteer group of health care providers.

Since it appears that the United States will continue to face major natural and

manmade disasters in the future, it is important for a flexible disaster medical response system to be available for immediate activation and deployment. Most physicians are willing and perhaps even enthusiastic about being involved in these efforts. It is important for the medical community to understand that a pre-organized and formal structure will allow a more expeditious and effective response than individual efforts. A pool of trained and organized physician volunteers is needed for future disasters.

Individuals can, and probably will be registered and participate in multiple volunteer organizations. For example an individual could be registered in the ESAR-VHP program, be a member of a local MRC and a member of a Federal deployable DMAT.

If there is no DMAT unit or MRC in your area, it is possible for individuals or organizations to organize one of these units. Both the DMAT (21) and MRC (18) Web sites have extensive information available on how to join, organize and run one of these organizations.

5. Volunteer Opportunities and Registries

Volunteer Network

<http://www.volunteer.gov>

The USA Freedom Corps official website is a user-friendly site to identify and link to multiple volunteer organizations across the country. Individuals, groups and educators can find volunteer resources including Ten Tips to Volunteering Wisely.

Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP)

www.medicalreservecorps.gov/.../MRC_Resources/RegionV/Regional_Conference_Aug_2008/ESAR-VHP_Tise.pdf - 2008-10-29

The Health Resources and Services Administration is assisting each state and territory in establishing a standardized volunteer registration system for health professionals. The name for this system may vary from state to state. The Department of Health and Human Services in each state may be contacted for details of volunteering a specific state.

Medical Reserve Corps

<http://www.medicalreservecorps.gov>

Learn more about the Medical Reserve Corps, find MRC units, identify training opportunities on the easy to navigate national website.

Citizen Corps

<http://www.citizencorps.gov>

This site provides public information on preparedness and encourages volunteerism. There are links to the following volunteer opportunities, Community Emergency Response Teams (CERT), Fire Corps, Neighborhood Watch Program, Medical Reserve Corps (MRC) and Volunteers in Police Service (VIPS).

CERT: Community Emergency Response Teams

<http://www.citizencorps.gov/cert>

Community Emergency Response Teams are active throughout the country. This site provides basic information about training, and the location of teams. There is also information about starting a CERT program in your area.

VI. Summary

It is the responsibility of the Anesthesiology Chair to ensure departmental readiness for disasters. Disaster preparedness is a fundamental skill required of all members. The department's HVA should be aligned with that of the hospital. The plan should be simple, emphasizing inter-departmental cooperation to ensure continuity of care in the face of patient surge and degraded infrastructure. The Anesthesiology Service should participate in the twice yearly JCAHO mandated disaster exercises and have a seat on the Hospital Emergency Management Committee.

VII. Resources

A. Personal and Family Preparedness

Ready.gov

<http://www.ready.gov>

Ready.gov is a site that contains information on personal preparedness special areas are Ready America, Ready Business, and Ready Kids. It is sponsored by Homeland Security and the Citizen Corps.

Family Preparedness Guide

www.doh.state.fl.us/rw_webmaster/FamilyPrepareGuide_English.pdf

State of Florida Family Preparedness Guide, available in several languages

KidsGetAPlan.com

<http://www.kidsgetaplan.com/>

A child friendly, age appropriate preparedness guide for children.

Sesame Workshop.org

<http://www.sesameworkshop.org/initiatives/emotion/ready>

An activity booklet for young children.

American Academy of Pediatrics Family Readiness Kit

<http://www.aap.org/family/frk/aapfrkfull.pdf>

Parent's Guide to Family Preparedness

B. Hospital and Departmental Preparedness

Hospital Preparedness Website

http://www.tvfr.com/safetytips/emer_prep/hospital.aspx

Extensive set of frequently updated references. One of the best resources on all aspects of hospital preparedness.

Hospital Disaster Surge Modeling

<http://hospitalsurgemodel.ahrq.gov/>

Detailed logistical analysis of personnel and equipment over time for various scenarios.

Pediatric Hospital Surge

<http://www.ahrq.gov/prep/pedhospital/>

Disaster Conceptual Framework

<http://pdm.medicine.wisc.edu/Guidelines/Chapter3.pdf>

Provides a conceptual framework and common nomenclature.

Hazard Vulnerability Analysis

www.gnyha.org/22/File.aspx

www.ashe.org/ashe/products/pubs/hazvulanalysis.html

training.fema.gov/emcourses/E464CM/02%20Unit%202.pdf

Pediatric Terrorism

<http://www.ahrq.gov/research/pedprep/>

C. General Disaster Sites

PandemicFlu.gov

<http://www.pandemicflu.gov>

PandemicFlu. Gov is an official U.S. Government Web site and is managed by the Department of Health and Human Services.

CodeReady

<http://www.codeready.org>

CodeReady is a Minnesota initiative created to help all Minnesotans be informed, organized and connected on emergency preparedness. Learn how to create a plan, build a kit and become prepared.

Federal Emergency Management Agency (FEMA)

<http://www.fema.gov>

Federal Emergency Management Agency: This comprehensive website offers information on personal and family preparedness with many forms and brochures that can be downloaded. This site provides information regarding all types of hazards and is an excellent resource for anyone preparing for, responding to, or recovering from a disaster.

American Red Cross

<http://www.redcross.org>

Each year the American Red Cross responds to over 70,000 disasters across the country. This comprehensive website provides detailed information for personal, family and workplace preparedness, as well as information on classes and volunteer opportunities.

New York City Healthcare

<http://www.nyc.gov/html/doh/html/bhpp/bhpp.shtml>.

D. On-Line Training Resources

These courses, textbooks, and training sites offer self-study and home study courses at no charge or at a very nominal fee and offer a certificate of completion and, in most cases, offer continuing education credit.

A Complete list of excellent resources and links
<https://cpheo1.sph.umn.edu/nims/learn.html>

AMA Management of Public Health Emergencies
<http://www.ama-assn.org/ama/no-index/physician-resources/18200.shtml>
A resource guide for Physicians and other community responders. A good place to start your on-line study. You can also order a free CD-ROM.

AMA: Bioterrorism Agents Quick Reference Guide
<http://www.ama-assn.org/ama1/pub/upload/mm/415/quickreference0902.pdf>

AMA: Anthrax: frequently asked questions
http://www.ama-assn.org/ama1/pub/upload/mm/415/anthrax_faqs.pdf

AMA: Smallpox: frequently asked questions
http://www.ama-assn.org/ama1/pub/upload/mm/415/smallpox_faqs.pdf

AMA: Disaster Preparedness
<http://www.ama-assn.org/ama/pub/physician-resources/public-health/center-public-health-preparedness-disaster-response.shtml>

Blast Injury
http://www.bordeninstitute.army.mil/published_volumes/blast_injury/blast_injury.pdf

CDC Environmental Health - Emergency Preparedness and Bioterrorism
<http://www.bt.cdc.gov/>
A very important on-line resource with everything you need to know:

Community Emergency Response Team (CERT)
https://www.citizencorps.gov/cert/training_mat.shtm
Good stuff- material can be downloaded.

Health & Human Services, Disasters
<http://www.hhs.gov/disasters/>
Links to everything you want to know.

Homeland Security Digital Library
<http://knxup2.hsdl.org/uPortal/render.userLayoutRootNode.uP>
Lots of resources, have to register.

Medical Aspects of Biological Warfare
http://www.bordeninstitute.army.mil/published_volumes/biological_warfare/biological.html
The definitive military text on the subject.

Medical Aspects of Chemical and Biological Warfare
http://www.bordeninstitute.army.mil/published_volumes/chemBio/chembio.html

Medical Management of Radiological Casualties Handbook
<http://www.afri.usuhs.mil/www/outreach/pdf/2edmmrhandbook.pdf>

Personal Protective Equipment (PPE)
<http://www.health.state.mn.us/divs/idepc/dtopics/infectioncontrol/ppe/ppepaper.html>

US Army site with treatment handbooks for chemical and biological weapons casualties
<https://ccc.apgea.army.mil/products/info/obtainmaterials.htm>

B. Glossary of Abbreviations for Emergency Preparedness

(Note: All these terms can be searched on the Internet for more information)

ARC	American Red Cross
ASPHEP	Assistant Secretary for Public Health Emergency Preparedness
ASPR	Office of the Assistant Secretary for Preparedness and Response
BARDA	Office of The Biomedical Advanced Research and Development Authority
CBRNE	Chemical, Biological, Radiological, Nuclear, Explosive
CDC	U.S. Centers for Disease Control and Prevention
CERT	Community Emergency Response Teams
CinC	Commander in Chief
COOP	Continuity of Operations
DHS	Department of Homeland Security
DMAT	Disaster Medical Assistance Team
DMORT	Disaster Mortuary Operational Response Team
EOC	Emergency Operations Center
ERT	Emergency Response Team
ESAR-VHP	Emergency System for the Advance Registration of Volunteer Health Professionals
FCO	Federal Coordinating Officer
FEMA	Federal Emergency Management Agency
HEICS	Hospital Emergency Incident Command System
HHS	U.S Department of Health and Human Services
HRSA	Health Resources & Services Administration
ICP	Incident Command Post
ICS	Incident Command System
JFO	Joint Field Office
MACS	Multiagency Coordination System
MRC	Medical Reserve Corps

NBC	Nuclear, Biological, Chemical
NDLS	National Disaster Life Support
NDMS	National Disaster Medical System
NIMS	National Incident Management System
NIPP	National Infrastructure Protection Plan
NIRT	Nuclear Incident Response Team
NMRT	National Medical Response Team
NRP	National Response Plan
OEP	Office of Emergency Preparedness
OMSPH	Office of Medicine, Science and Public Health
OPEO	Office of Preparedness and Emergency Operations
OPSP	Office of Policy and Strategic Planning
OSG	Office of the Surgeon General
PAPR	Powered Air Purifying Respirator
PHICS	Public Health Incident Command System
POTUS	President of the United States
PPE	Personal Protective Equipment
REP	Radiological Emergency Preparedness
RRCC	Regional Response Coordination Center
SEMS	Standardized Emergency Management System
WMD	Weapons of Mass Destruction

VIII. References

1. Caffari K, AMA News Staff. December 15, 2008. <http://www.ama-assn.org/amednews/2008/12/15/bisal1215.htm>.
2. Lumley JSP, Ryan JM, Baxter PJ, and Kirby N. Handbook of the Medical Care of Catastrophes. Royal Society of Medicine, 1996.
3. <http://www.rwif.org/files/research/3613.1208.readyornot.tfahrpt.pdf>
4. Balicer, D et al. Characterizing hospital worker's willingness to report to duty in an influenza pandemic through threat and efficacy-based assessment. BMC Public Health 2010; 10:436
5. Barach P, Candiotti K. Current Concepts in Treatment of Agents of Mass Destruction. In: Schwartz A, ed. Refresher Courses in Anesthesiology. Vol 32. Philadelphia, PA: Lippincott Williams & Wilkins, 2004: 19-27.
6. Boyer, EW, Fitch, J, Shannon, MW, Pediatric Hospital Surge Capacity in Public Health Emergencies, Agency for Healthcare Research and Quality, US DHHS, January, 2009.
7. Mclsaac, JH, "Operating Room Preparation for Mass Casualties," in Mclsaac JH, ed., Hospital Preparation for Bioterror: A Medical and Biomedical Systems Approach. Amsterdam, Academic Press, 2006.
8. Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007, Jane D. Siegel, MD; Emily Rhinehart, RN

MPH CIC; Marguerite Jackson, PhD; Linda Chiarello, RN MS; the Healthcare Infection Control Practices Advisory Committee
<http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf>

9. OSHA Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers,
<http://www.osha.gov/Publications/3328-05-2007-English.html#Introduction>
10. Pandemic Update V, <http://www.pandemicflu.gov/plan/panflureport5.html>
11. Jorge E. Zamora, John Murdoch, Brian Simchison and Andrew G. Day, Contamination: a comparison of 2 personal protective systems CMAJ • August 1, 2006; 175 (3). doi:10.1503/cmaj.060094.
<http://www.cmaj.ca/cgi/content/abstract/175/3/249>
12. OSHA Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances
http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html
13. <http://www.asahq.org/clinical/PandemicDocument.pdf>
14. PPE for SARS/Avian/Pandemic Influenza: N95 or PAPR?
<http://www.asahq.org/Newsletters/2008/01-08/tompkins01-08.html>
http://www.asahq.org/Newsletters/2008/02-08/addendum02_08.html
15. http://www.jointcommission.org/standards_information/standards.aspx
16. Medical Reserve Corps Technical Assistance Series, Coordinating with Your Local Response Partners, page 6. Web Document:
http://www.medicalreservecorps.gov/page.cfm?pageID=77__
17. Technical White Paper on ESAR-VHP program, Health Resources and Services Administration, U.S. Department of Health and Human Services,
<http://www.hrsa.gov/bioterrorism/esarvhp>
18. Medical Reserve Corps Web site: <http://www.medicalreservecorps.gov>
19. Disaster Medical Assistance Team Web site:
<http://www.hhs.gov/aspr/oepo/ndms/teams/dmat.html>
20. California DMAT CA-6 Web site: <http://www.dmatca6.org>
21. National Disaster Medical System Web site: <http://www.oep-ndms.dhhs.gov>
22. DMAT Team Recruitment Web Site:
<http://www.hhs.gov/aspr/oepo/ndms/join/index.html>