Challenge of Hospital Emergency Preparedness: Analysis and Recommendations

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ABSTRACT

In the United States, recent large-scale emergencies and disasters display some element of organized medical emergency response, and hospitals have played prominent roles in many of these incidents. These and other well-publicized incidents have captured the attention of government authorities, regulators, and the public. Health care has assumed a more prominent role as an integral component of any community emergency response. This has resulted in increased funding for hospital preparedness, along with a plethora of new preparedness guidance.

Methods to objectively measure the results of these initiatives are only now being developed. It is clear that hospital readiness remains uneven across the United States. Without significant disaster experience, many hospitals remain unprepared for natural disasters. They may be even less ready to accept and care for patient surge from chemical or biological attacks, conventional or nuclear explosive detonations, unusual natural disasters, or novel infectious disease outbreaks.

This article explores potential reasons for inconsistent emergency preparedness across the hospital industry. It identifies and discusses potential motivational factors that encourage effective emergency management and the obstacles that may impede it. Strategies are proposed to promote consistent, reproducible, and objectively measured preparedness across the US health care industry. The article also identifies issues requiring research. (*Disaster Med Public Health Preparedness.* 2009;3(Suppl 1):S74–S82)

Recent US history is replete with large-scale emergencies and disasters from natural, technological, and terrorist-related causes. Each incident demonstrated some significant element of organized medical emergency response. Hospitals, which may be viewed as frontline organizations in medical and public health emergencies, have played prominent roles in many of these incidents.

Published reports reflect a wide variation in the effectiveness of hospitals' performances in managing their response during these major emergencies. Two hospitals that received large patient caseloads from the September 11, 2001, terrorist attacks on the World Trade Center and the Pentagon—Saint Vincent's Hospital in Manhattan (New York) and Virginia Hospital Center-Arlington, respectively—were praised for having developed emergency operations plans before the incident, and for their ability to accommodate victims who arrived at their doors with little advance notice.[1–3] The 2007 Virginia Polytechnic Institute and State University (Virginia Tech) campus shooting highlighted a hospital system that rapidly responded to an unexpected, complex, multiple-casualty incident despite the challenges created by coordination of casualty transport and patient tracking.[4] Conversely, the response of hospitals in Rhode Island to the February 2002 fire at The Station nightclub has been described in terms of the lack of coordination between facilities and the resultant confusion.[5] Hurricane Katrina's impact on New Orleans' hospitals revealed a medical system that was ill-prepared to maintain a medically safe environment and essential health care services for their patients.[6,7] Poor performance during emergencies and disasters has resulted in negative publicity, financial liability, business loss, loss of lives, and permanent closings.

These and other well-publicized incidents have captured the attention of government authorities at all levels, as well as regulators and the public. Health care has assumed a more prominent role as an integral component of any community response, which has resulted in increased funding for hospital preparedness, along with a plethora of new preparedness guidance.

Methods to objectively measure the results of these initiatives are only now being developed.[8] It is clear, however, that hospital readiness for likely emergencies and disasters remains uneven across the United States and, without a significant disaster experience, many hospitals remain unprepared.[9,10] They may be even more poorly prepared to accept

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and care for patient surge from chemical or biological attacks, conventional or nuclear explosive detonations, unusual natural disasters, or novel infectious disease outbreaks.

This article explores potential reasons for inconsistent emergency preparedness planning across the hospital industry. It identifies and discusses potential motivational factors that encourage effective emergency management and the obstacles that may impede it. Strategies are proposed to promote consistent, reproducible, and objectively measured preparedness among all hospitals across the US health care industry. The article also identifies issues requiring research.

HISTORY OF HOSPITAL EMERGENCY PREPAREDNESS

The evolution of hospitals in the 20th century, and their perceived emergency role in the community, is a complicated historical narrative. Many hospitals were originally designed as shelters for sick and indigent people, sponsored by religious organizations, with daily functions directly supported by charitable donations from the community.[11] During the early part of the 20th century, hospitals' central role in the burgeoning field of clinical medicine led to new concepts of these institutions as centers for medical treatment, community health, and wellness. Their expansion as community hospitals was generously supported with local assistance through donations, local government support, and other methods. Because of the generous community support and the ability to pass on preparedness costs, hospitals expected to play an important role in community emergencies and disasters, and these expectations became a public expectation as well.[12]

During the past 50 years, however, the primary sources for hospital revenue gradually became insurance payments, federal tax dollars through entitlement programs, and governmental grants. Health care in the United States was largely reinterpreted in business terms, and hospitals are now expected to operate using modern business efficiencies (eg, just-in-time inventory) and cost justification for expansion or maintenance of any services. Hospitals have also lost their special status in many communities and are now often viewed as financial commodities that derive their value solely from their importance in the free marketplace.[13] Despite this evolution from a social service to a business model, the public and policymakers continue to expect that hospitals will be fully prepared for any hazard and provide needed medical services in times of emergent community health care needs. Although most hospitals are private sector assets, they are expected during emergencies and disasters to serve an essentially public sector function in treating mass casualties. They are also expected to function as key facilities and maintain services in spite of direct hazard impact on their facilities.

A pronounced decrease in health care assets in many communities has occurred during the past 2 decades due to medical economic conditions, despite continued medical needs.[14,15] It now seems disingenuous to many health care professionals to expect increased hospital surge capacity for disasters while allowing the closure, due to medical economics, of health care facilities and emergency departments across the United States.[16]

After the terrorist attacks of September 11, 2001, the federal government recognized this discrepancy. Multiple funding programs promoted the study of medical preparedness for mass casualties, particularly related to bioterrorism and other terrorist hazards. Funding sources were established or enhanced for hospitals to pursue preparedness activities, including training and acquisition of equipment and supplies. Major programs include the National Bioterrorism Hospital Preparedness Program (now the Hospital Preparedness Program),[17] the Metropolitan Medical Response System,[18] the Urban Area Security Initiative,[19] and others.

OBSTACLES TO ADEQUATE PREPAREDNESS

Many obstacles to adequate hospital preparedness for emergencies and disasters may be identified.[20] Their relative importance is unclear due to the lack of focused research in this area.

Medical Economics

The US hospital industry has experienced adverse economic changes in the past several decades. This can be considered a major impediment to hospital motivation for funding preparedness for unexpected emergencies and disasters. Many hospitals are confronted with financial viability issues on a daily basis, due not to lack of patient volume but to perceived inadequate payment for services.[21] Emergency preparedness concerns may seem irrelevant to hospital executives when faced with daily trepidation for the hospital's immediate future. As noted in the General Accountability Office's report on emergency preparedness related to medical surge, "State officials reported that it was difficult to continue to engage private-sector hospital chief executive officers in emergency preparedness activities at a time when these hospitals were facing day-to-day financial problems."[9] This issue was conveyed clearly to the lead author by a hospital executive as he described his grave concern that his hospital may not be available for the emergency appendectomy 3 months in the future. This far exceeded any concern for some unusual or unlikely disaster, particularly one that his hospital was not responsible for generating.

Risk Perception

Among the significant motivational impediments to emergency preparedness is the current risk perception among industry leaders and hospital decision makers. Despite a widespread agreement that institutional emergency preparedness is important, the focus of federally funded guidance and preparedness programs on terrorism hazards creates confusion in the industry. Most locales in the United States have no direct experience with major acts of terrorism. Individuals charged with preparing their communities for terrorism inci-

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dents have little expectation that the community is truly a high-probability target.[22] Directives that focus primarily on preparedness for terrorist attacks, therefore, do not have the same resonance as those that encourage methods that will clearly be effective for a more likely natural disaster or technological emergency that compromises hospital operations.[23] In communities that do not view their terrorism risk as significant, relative apathy may result.

Risk perception may also be negatively affected by the traditional hazard vulnerability analysis (HVA). The Joint Commission requires all hospitals to conduct an HVA, and many use the Kaiser model or a similar tool.[24,25] These tools primarily rank hazards in their order of priority, rather than developing an understanding of vulnerability elements that are much more amenable to achieving risk reduction. If hospitals measure the success of their preparations strictly in terms of being prepared for armageddon-level terrorism hazards or other massive hazard types in their HVA (per the Department of Homeland Security's [DHS's] 15 national scenarios[26]), then the psychological effect of trying to prepare for these overwhelming situations may result in a sense of futility or complete apathy.

Planning Assumptions

Another issue clouding preparedness motivation may be the traditional planning assumptions that are based on conventional wisdom rather than evidence- and experience-based research. Examples include

- *Expecting orderly distribution of casualties:* Many hospital administrators perceive that it is the responsibility of the community's public agencies to primarily prepare for managing a large-scale disaster. Some therefore expect that emergency medical services, fire department, and law enforcement agencies responding to the scene will conduct thorough triage operations in the field and accomplish orderly distribution of casualties to hospitals equipped to deal with them.[27–29] This erroneous understanding can lead to an unfounded "opt-out" assumption that the hospital will receive only processed casualties and can close to additional patients when full, or defer receiving casualty types that they do not treat typically.
- *Expecting only ambulances transport casualties:* Emergency medical services is the typical transport for severely ill or injured patients. This expectation can be extended to the idea that only significantly injured or ill patients arrive at hospitals for treatment, leading to inadequate preparation to accommodate "the walking wounded" or concerned, potentially ill, or injured patients who arrive by other means. As a result, hospital capacity may be committed to the earliest arrivals, compromising treatment of severely injured or sick patients who are transported later.
- *Expecting that only safe casualties will arrive:* It has been commonly assumed that all victims of hazardous materials releases or chemical attacks will be fully decontaminated by hazardous materials teams before arriving in the emergency department.[21] By failing to view decontamination activities as essential to the hospital's role in protecting staff, current patients, and the hospital's service continuity, inadequate decontamination facilities and procedures result and hospitals place their own personnel and facility at risk.
- *Expecting prompt and comprehensive community assistance:* Some believe that if an attack on the hospital itself, or a direct natural hazard impact, leaves it severely debilitated, then the community will be quick to respond and provide assistance and support.[30] This is perhaps one of the more dangerous assumptions underlying some hospitals' disaster preparedness, because significantly ill patients are so dependent upon reliable function of sophisticated medical services.

Cost Versus Benefit

As noted earlier, the financial and personnel time cost associated with emergency preparedness can be a major disincentive. Hospital executives may be even more reluctant to embark upon or support preparedness that is financially burdensome while producing little objective and immediately tangible benefit. Hospital boards, executives, and senior clinical leaders are entrusted to protect the financial survival of their hospitals in a competitive health care marketplace despite severely constrained price setting and many unfunded mandates. Expending funds without an immediate return on investment or other inherent economic benefit may appear to contradict tenets of modern business practice, in which excess and unproductive capacity is trimmed, and just-in-time inventory with just enough staffing is considered the standard for effective business management.[12]

Hospital executives must also consider the actual day-to-day costs of maintaining a heightened state of readiness in their facility. Building a surge capacity may require investing in equipment and supplies that may never be used. Resources must be stored, maintained, and frequently replenished or rotated because of shelf-life limitations. Similarly, health care executives may be reticent to release key employees from their daily roles to participate in training and exercise, when these activities do not appear directly relevant to establishing operational competence in everyday hospital operations.

Another cost-versus-benefit analysis may lead hospital leadership to consider the use of insurance as protection instead of emergency preparedness, particularly for low-likelihood hazards that have not historically affected the hospital. Business analysis of this risk may result in the insurance approach becoming an attractive alternative to burdensome, complex, and potentially expensive emergency preparedness. Health care executives who have not directly experienced adverse outcomes from hospital emergencies may conclude that purchasing business interruption, premise liability, and malpractice insurance for these situations may be more cost-effective from a business perspective than the perceived bottomless pit

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of emergency preparedness expenses. Experienced executives recognize that poor response to disasters can create enterprise level risk that is not covered by insurance, plus ethical dilemmas and permanent compromise of professional reputations. It is not clear, however, that this lesson is widely promulgated throughout the hospital industry.

Business and Legal Risks

Comprehensive hospital emergency preparedness inherently involves common meetings and planning activities with other health care organizations within the community. Although it is widely encouraged, this practice may be perceived by some hospital executives and boards as perilous.[31] Developing a common HVA requires divulging information about operational strengths and vulnerabilities. The sharing of information is important when planning mutual aid, establishing guidelines for casualty distribution, and addressing other key issues. It also may be viewed as releasing sensitive or proprietary information to business rivals. The following questions then arise:

- Does coordination with competing health care organizations give away a competitive advantage?
- Is this a conflict in the custodial and fiduciary responsibility of health care executives and boards?

In addition, hospital executives must consider the legal ramifications of implementing new emergency operations plans and preparedness activities. The legal community has only recently become heavily involved in the emerging area of health care preparedness and the liability for both regulatory compliance and adverse outcomes during emergencies and disasters. Few legal precedents therefore exist to establish clear answers to the many questions that arise. Legal concerns for senior executives and board members may include the following:

- Does acknowledging vulnerabilities increase personal and institutional liability?
- Does involvement in community preparedness and agreeing to accept large numbers of patients in a disaster set legal expectations for mass casualty medical care to be provided within the usual standard of care framework?
- Does realistic planning for medical surge (including adapting medical service delivery according to resource availability) create liability in the heavily regulated health care environment?
- Is it acceptable to plan to abrogate standards of care and applicable health care regulations and, if so, can this be done ethically and legally?

A concern exists among hospital executives that governmental preparedness mandates, meant to set goals to achieve a certain level of readiness in case of disaster, could be legally interpreted as new health care standards that establish or assign proximate cause for tort actions. These mandates are unfamiliar to most hospital legal departments and could create unrecognized legal requirements and potential liabilities for their institution during a mass casualty response.[32]

FACTORS PROMOTING HOSPITAL PREPAREDNESS

Since 2001, many initiatives have promoted adequate health care emergency preparedness across the United States. Because of hospitals' increasingly recognized importance in health care emergency response, they have been major beneficiaries of these health care preparedness efforts. As with the potential obstacles discussed above, the relative importance of each factor in promoting effective hospital emergency preparedness remains unclear due to the lack of focused research.

Funding

The nationwide medical economics that compelled contraction of emergency department and other hospital services during the past 2 decades has been increasingly acknowledged by the federal government. Despite not addressing the underlying problems in medical economics, the federal and state governments have established increasingly robust funding programs to supplement the hospital industry's efforts to plan, train, and develop resources for mass casualty incidents.

The US Nunn-Lugar-Domenici Defense Against Weapons of Mass Destruction Act, passed in 1996, had as one of its objectives the funding for public health and medical emergency response to terrorism incidents. Also referred to as the Domestic Preparedness Training Program, this initiative resulted in the allocation between 1996 and 2000 of more than $36 billion toward preparedness for mass casualty incidents, with a portion of this funding going to hospitals.[33,34]

Since the 2001 terrorism incidents, the federal government has launched multiple funding programs that have provided funding and associated guidance for hospitals.[35–37] These funding sources have been a direct impetus for much of the hospital emergency preparedness activity that has occurred in the past 8 years.[38,39] As federal funding decreases, however, needed preparedness levels may not be reached.[39]

Federal Government Focus and Guidance

Before the 2001 terrorist attacks, no single federal department or agency was focused specifically on hospital preparedness across the public and private sectors in the United States. This changed with the passage of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002.[40] Hospital preparedness funding and guidance was established within the Health Resources and Services Administration. This responsibility was later transferred to the Assistant Secretary for Preparedness and Response by the 2006 bioterrorism act reauthorization. It provides annual funding through the Assistant Secretary's Hospital Preparedness Program grants to states, which then pass funding to hospitals that agree to meet program benchmarks and preparedness requirements in priority areas.[41] In addition, this program has produced in-depth guidance for hospitals and health care

professionals related to emergency preparedness and response. Other guidance documents have been produced through the Department of Health and Human Services (HHS)/Centers for Disease Control and Prevention, through research projects administered by HHS/Agency for Healthcare Research and Quality, and through DHS-funded initiatives (eg, Centers of Excellence, Lessons Learned Information Sharing System).

During the past decade, the Department of Veterans Affairs has developed emergency management guidance for its medical centers that is generally applicable to all hospitals. The guidance is freely available via Web downloads.[42] It is increasingly accessed as guidance by hospitals considering improvements in their emergency preparedness.

Many other guidance documents for hospital emergency preparedness have been developed by academic centers and consultants, generally through federal funding programs administered at the state and local levels. In fact, the large number of only loosely related guidance documents may be becoming a problem, with no mechanisms to address overlapping and/or conflicting guidance, or consistent terminology or conceptual logic to relate the guidance documents to each other.

Standards and Regulations

The Joint Commission (TJC; formerly the Joint Commission on Accreditation of Healthcare Organizations) has expanded and refined accreditation standards related to hospital emergency management. The standards effective for 2009 present emergency management requirements as a separate chapter, and establish the requirement for an effective emergency management program that creates and maintains an emergency operations plan.[43] The framework establishes an expected baseline level of all-hazards disaster preparedness planning, and essentially instructs hospitals how to carry out these plans and develop mechanisms to monitor their effectiveness.[44] Because TJC accreditation is an important element in being eligible to participate in Medicare, Medicaid, and other health care plans that provide payment for services, TJC standards may be among the strongest motivators for hospital administrators to address emergency preparedness.

Other standards, such as those produced by the National Fire Protection Association and the American Society for Testing and Materials, include some motivation toward emergency preparedness at varying levels within the health care organizations.[45,46] Similarly, states and large municipalities have produced regulations related to emergency preparedness that require emergency preparedness activity on the part of hospitals.[47] These may be viewed by hospital leadership as additions to the many unfunded mandates facing health care organizations, and so properly focused motivation by these requirements may be less than desired.

Experience and Examples

Immediately after the September 11 and anthrax attacks in 2001, many hospital and community leaders experienced a renewed sense of mission to improve health care preparedness.[48] Acceptance of a newly defined role as integral members in the "war on terror" and their relevance to homeland defense was voiced, with organizations representing both public and private health care calling on their members to be better prepared to respond to events outside their control.[49,50] There have also been calls for hospitals to act together in a coordinated response, thereby improving the ability to effectively respond when disasters strike.[51] The example of strong performance by St Vincent's Hospital on September 11, 2001, which had undertaken serious emergency preparedness after the 1993 World Trade Center bombings, was widely publicized through articles and conference presentations.[2] Some of this motivation has been maintained. For example, the American College of Healthcare Executives has issued a strong policy statement endorsing comprehensive emergency management for health care organizations.[52] The American Hospital Association also strongly supports emergency readiness.[53]

Examples of adverse outcomes from inadequate preparedness, as noted in the introduction section of this article, have been noted extensively in the media and informal Web published observations. These failure examples, however, may be less visible in professional publications read by health care decision-makers, thereby missing a motivational opportunity with the health care industry.

Community Standards for Involving and Supporting Local Hospitals

Finally, a less tangible but a potentially important development noted in the post–September 11 period is the increasing recognition by public agencies and political authorities of the importance of hospitals as critical infrastructure and emergency response assets. The creation of new partnerships between hospitals and first responder organizations has established methods for bridging differences in work styles, funding mechanisms, and organizational cultures.[54] Joint planning and training, and resultant field exercises, have brought public safety, law enforcement, and emergency management together with hospital personnel so that groups that previously viewed one another with mutual misunderstanding have developed effective working relationships in this area. The positive feedback from this development has been noted at all levels of hospital organizations, and can enhance motivation toward increased hospital emergency preparedness. This change has also supported the development of collaborative efforts among local hospitals.

Although the above factors have been specifically implemented to promote hospital emergency preparedness, it is not clear that in the aggregate the many factors described earlier have adequately and uniformly maintained preparedness actions across the hospital industry. In addition, hospital lead-

ership's motivation may be distracted or diminished as it is translated from theoretical intent into the reality of action.

ANALYSIS AND RECOMMENDATIONS

Analysis of the many factors described in this article leads to multiple considerations that could enhance motivation within the hospital industry to improve and sustain emergency preparedness.

Research

Little formal research has been published focused primarily on the motivation for emergency preparedness among hospital and other health care executives, the factors that affect this motivation, or optimal strategies for promoting the adequacy and long-term sustenance of health care emergency management in the hospital industry. Much of what is written is anecdotal and inferential. As an example, this article presents research filtered through professional judgment, developed by decades-long empirical observations, to establish the overview findings. Given that emergency preparedness is increasingly recognized as essential to comprehensive health care administration, and the acknowledgment that the frequency and severity of major hazard incidents will not be decreasing, increased research in this area is imperative. In-depth understanding of motivational factors and potential impediments is necessary to develop informed strategies that promote and maintain health care emergency management for the long term. Achieving this understanding requires well-constructed, objective, and unbiased research using a range of research methods. These methods may include surveys and in-depth case studies, such as those done using the Harvard Business School case study model.[55] Research should specifically focus on the motivational factors and concerns affecting senior hospital executives, board members, medical and nursing leadership in hospital administration, and health care engineers.

More Appropriately Focused Motivational Efforts

Due to guidance from DHS, federal funding programs emphasize the importance of achieving the National Strategy for Homeland Security, updated in October 2007.[56,57] In following this directive, HHS programs funding public health and hospital preparedness focus on terrorism and other catastrophic hazards.[58] This emphasizes national goals, despite DHS claims to the contrary.[59] The result is program funding and guidance that is not commonly aligned with local risks and concerns. This strategy should be reevaluated and emphasis shaped to address local, likely hazards using all-hazards processes that will also improve readiness for unusual natural or technological disasters and terrorism-generated casualties.

More appropriately focused motivation is indicated. Attention directed specifically on hazards and vulnerabilities that are clearly within the hospitals administration's purview (emergency evacuation, internal security incidents, realistic protection of personnel) may be valuable. Maintaining a medically safe environment for patients and visitors and a generally safe and secure workplace for staff should receive as much or more attention as preparing for the mass casualties presented in the DHS national scenarios. This more meaningful focus may combat a significant problem noted in a recent Government Accountability Office report, "State officials also reported that as time passed and no mass casualty events occurred, increasing hospital capacity for a mass casualty event seemed to be a waning priority for hospital chief executive officers."[9]

Methods to Reward Effective Preparedness Actions

There is little reward for effective, adequate emergency preparedness, short of experiencing a major emergency or disaster in which the organization demonstrates visibly competent performance. The absence of objective, measurable incentives or rewards leaves personnel attention and preparedness funding to each budget cycle. The predictable result is that preparedness becomes a casualty of profitability assessments and funding decisions by the hospital's financial operatives. Motivation for improvement and sustainment, therefore, becomes primarily personnel dependent and can change with personnel turnover and with adverse developments in the organization's position within the health care marketplace.

Some federal funding programs may, in fact, create inverse rewards by shifting federal funding allocations to less prepared facilities or locations, leaving the individuals who earnestly addressed preparedness issues without an equal level of dedicated money.

Innovative research with objective pilot programs may be necessary to determine effective ways to reward objective, measurable, and sustainable hospital emergency preparedness.

More Appropriately Focused Preparedness Guidance

The federal government, together with state and local governments, has expended large sums of money on training programs and exercises. DHS and HHS have provided contractors and funding for hospitals to conduct training and exercises. Hospitals have also borne great expense, although poorly documented, through in-kind contributions such as overtime costs and additional staffing, employee time focused on initiating and supporting training and exercises, and expenditures for supplies and equipment used during the funded activities. At the end of each effort, it is not always clear what the organization gained in terms of objective risk reduction or enhanced, sustainable capabilities, which is a problem.

More effective mitigation and preparedness guidance that establishes operationally competent response capabilities is needed. All current guidance should be reexamined with this goal. Future federally funded and/or academically developed hospital emergency management guidance should be validated as effective in establishing operational level (rather

than the usual "awareness" level) competency. Candidate areas for early attention include the following:

- Guidance on how to perform a useful HVA to identify and stratify vulnerability elements, and guidance on how to accomplish risk reduction in achievable increments. For example, instead of merely stating that the hospital emergency power supply is vulnerable to flooding, specific analyses of the fuel supply storage, the fuel pump, the technical specifications of the generator, the electrical switching mechanisms, and other parameters should be characterized. Critical vulnerabilities can then be highlighted in a way that demonstrates a reasonable path to reducing or eliminating vulnerability. This is especially important for addressing mass effect hazards that may directly compromise hospital operation.
- Guidance that focuses on realistic management and response process rather than just large-scale acquisition of materials such as personal protective equipment. Guidance should ensure that these processes are all-hazards capable and easily sustainable after development and implementation.
- Guidance on establishing useful interorganizational processes, such as competent mutual aid, that can reduce risk without carrying enormous year-to-year costs.
- True "train the trainer" guidance that produces operational proficiency rather than only the usual awareness level of competence. Hospitals can then establish internally conducted, ongoing training programs that may be customized to the organization's context and conducted when time convenient and cost-effective.
- Guidance that demonstrates that adequate all-hazards preparedness will address small, likely hazards as well as provide the foundation (eg, patient, staff and facility protection, effective hospital incident management) for the larger, less likely incidents that are the focus of DHS.

Guidance validated by research for objectively assessing risk reduction and other benefits of earnest preparedness are imperative to fully integrate health care emergency management into strategic planning and other critical elements of health care business management.

Revision of Federal Funding Programs

Current federal funding programs are promulgated through yearly hospital applications that evolve from year to year. Because of program guidance approval cycles and fiscal year constraints, the work periods are commonly compressed, thereby making complex changes in health care systems difficult. Attributes of current funding programs should be reexamined and revised. Multiyear funding should substitute for annual funds that must be expended within the initial fiscal year. The program tasking should be based on coherent, actionable strategic guidance. The guidance must promote the individual hospital's development of clear, meaningful project objectives that are achievable, sustainable, and in total accomplish strategic objectives. This will create multiyear projects that permit development and full implementation of operationally ready health care continuity and medical surge elements.

The methods for measuring grantees' compliance with funding requirements also should be examined and revised. Program oversight should focus on measurements that drive sustainable process, realistic mutual aid methods, and integration into community response, rather than on materiel that is expensive, has a limited shelf life, and is unusable without effective methods for storing, deploying, and managing the resources during emergencies.

Funding for training should require competencies to be defined. Training vendors should be held accountable for demonstrating that successful participants in their programs will achieve an operational level of proficiency in the described competencies.

Finally, accompanying all of these recommendations should be a strategy to achieve recognition by the public that hospital preparedness is primarily a local and state issue, with adequate preparedness providing significant local and state benefit. Depending on the federal Hospital Preparedness Program to fund and sustain hospital readiness for emergencies and disasters over the long term is unlikely to result in local investment of time and attention as well as funds. Innovative methods have been proposed for developing locally based, sustained funding for hospital preparedness.[12,60] These and other strategies deserve renewed examination for local funding solutions that achieve realistic and locally important preparedness, particularly for likely incidents as established by the community's HVA.

Summary and Conclusions

Much has occurred in the realm of recognizing the importance of hospital preparedness for major emergencies, both mass casualty and mass effect, during the past 2 decades. Clearly, the vast majority of hospitals have demonstrated significant improvement in their emergency preparedness during the past 2 decades. Hospital readiness, however, may be defined as the ability to effectively maintain hospital operations, sustain a medically safe environment, and adequately address the increased and potentially unusual medical needs of the affected population. Little evidence exists to indicate that the majority of hospitals have reached this for their likely hazard incidents. Although many initiatives are ongoing to address this critical issue, a more focused approach to understanding and promoting emergency preparedness motivation among key hospital decision makers is indicated.

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