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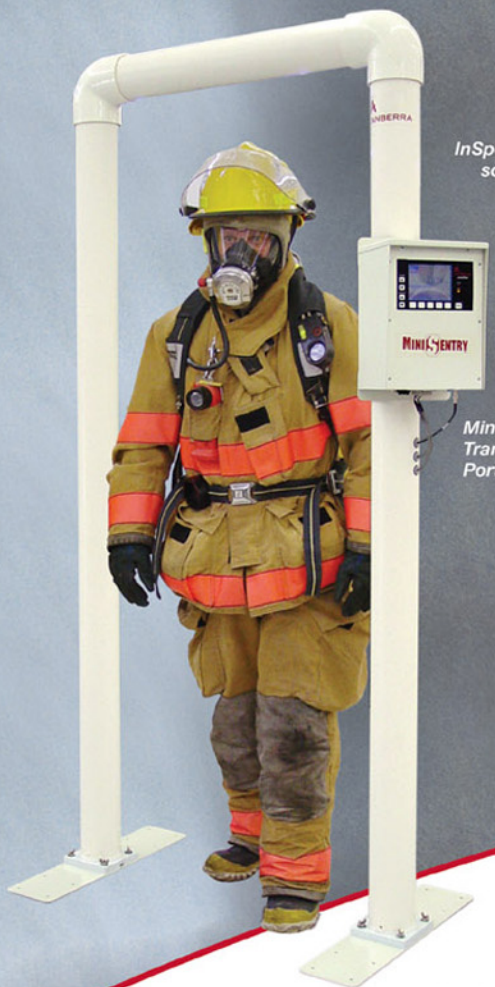

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Business Office
517 Benfield Road, Suite 303
Severna Park, MD 21146 USA
www.DomesticPreparedness.com
(410) 518-6900

Staff

Martin Masiuk
Publisher
mmasiuk@domprep.com

James D. Hessman
Editor in Chief
JamesD@domprep.com

John Morton
Managing Editor & Interviews
jmorton@domprep.com

Susan Collins
Creative Director
scollins@domprep.com

Sharon Stovall
Web Content Coordinator
sstovall@domprep.com

Carole Parker
Database Manager
cparker@domprep.com

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Editor's Notes

By James D. Hessman, Editor in Chief

An innovative proposal to form a new "Home Guard" to upgrade the nation's homeland-defense capabilities leads this month's issue of *DPJ*, and is handsomely complemented by an "All Systems Go" on the Coast Guard's primary communications network, a detailed analysis of the possibility of using a "cordon sanitaire" approach to cope with an avian-flu pandemic, and a "how to" blueprint for developing and implementing viable planning and operational standards that can be used by emergency responders anywhere in the country.

The Home Guard proposal is the well-reasoned idea postulated by Lawrence J. Korb, a former assistant secretary of defense now serving as senior fellow at the Center for American Progress, and Ian Moss, a researcher at the center. Their plan recognizes that today's hard-pressed National Guard has too many overseas commitments to carry out its primary homeland-security responsibilities and suggests that a new and well trained civilian HLS corps be formed and assigned not to the Department of Defense but to the Department of Homeland Security.

The Coast Guard's new Rescue 21 communications system, discussed by Christopher Doane and Joseph DiRenzo III, represents a significant upgrade to the multi-mission service's previous, but increasingly unreliable, Mayday distress communications network. Rescue 21 not only will save an untold number of lives now and for many years to come but also, as a major bonus, significantly improve the USCG's ability to carry out its port-security and maritime-defense missions as well.

Michael Allswede's careful examination of the cordon-sanitaire proposal to designate various U.S. hospitals as "flu-only" facilities pinpoints the many economic, political, and legal reasons why that seemingly attractive proposal not only would *not* work but actually could magnify the adverse effects of an avian flu pandemic and create a myriad of other medical problems at the same time.

Everyone knows that the establishment of uniform and universally acceptable standards is of vital importance in almost every field of human endeavor, but relatively few know how such standards are developed, tested, and adopted. Diana Hopkins, a respected expert in the development of equipment and operating standards in the fields of homeland security and national defense, provides a step-by-step report on the process that should be of considerable interest to all *DPJ* readers.

Also included in this month's issue are: (a) a report by Joseph Cahill on the need for an accurate and comprehensive "resource typing" system that can be used by homeland-security professionals at all levels of government; (b) a discussion (by Craig DeAtley) of the reasons why U.S. hospitals should expand their plans for dealing with mass-casualty incidents to include a mass-*fatality* annex; (c) some helpful suggestions (from Kirby McCrary) on how communities throughout the country can transform debris-removal *problems* into possible new streams of revenue; and (d) a grim analysis (by Joseph Steger) of how, and why, the outbreak of a flu pandemic might quickly escalate into various crowd-control problems that would severely challenge local law-enforcement agencies at the worst possible time.

State Homeland News guru Adam McLaughlin rounds out the issue with crisp reports on: a new tsunami warning system in Humboldt County, California; the Dallas, Texas, Emergency Response Team program being considered as a best-practices example for other cities across the country; the Massachusetts effort to tighten the safety rules governing chemical-industry facilities throughout that state; and the common-sense decision by Chicago officials to make the city's public schools safer by giving the police department access to the school system's video surveillance cameras.

About the Cover: Petty Officer 2nd Class William P. Kelly, a crewmember of Coast Guard Station Sand Key (Fla.), keeps a 47-foot utility boat on a steady course during a rescue demonstration being carried out by another 47-foot utility boat and an HH-60 Jayhawk rescue helicopter assigned to Coast Guard Air Station Clearwater. (Coast Guard photo by Sondra-Kay Kneen.)

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Rescue 21 Update

Advanced Comm Capabilities For the New Century

By Joseph DiRenzo III and Christopher Doane, Coast Guard

Mayday! Mayday! The internationally recognized distress call for mariners and aviators; however, if no one hears the call, help will not be dispatched. The U.S. Coast Guard has been taking steps to make sure that their ships and shore stations do hear the call, whenever and wherever it is sounded, and are able to respond effectively. The service has been busy for quite some time installing an advanced new state-of-the-art command, control, and communications system known as Rescue 21.

For several decades the Coast Guard relied primarily on VHF-FM line-of-sight communications to receive distress calls from mariners. That system uses antennas mounted on towers known as high-level sites to increase the range of the system – which, unfortunately, was still plagued with some coverage gaps. The system also lacked any direction-finding capability, forcing responders to depend upon locations provided by the caller. Far too often, though, the positions provided were inaccurate, which meant that lengthy (and expensive) searches were needed to locate a vessel in distress. The lack of direction-finding capability also removed at least one way to rapidly identify a hoax distress call because there was no way to correlate the caller's information with the direction from which the call was coming.

Another problem was that this legacy system uses analog recording equipment, which degrades clarity and offers no means for "cleaning up" a garbled transmission. The importance of possessing a "degarbling" capability was exemplified in the case of the sailing vessel *Morning Dew*. In the early morning hours of 29 December 1997, the *Morning Dew* – with a father, two sons, and a nephew on board – struck the rock jetty at the entrance to the harbor of Charleston, South Carolina. Ultimately all four passengers perished.

Too Little, Too Late – What Might Have Been

A post-incident investigation determined that the local Coast Guard station did hear someone calling the Coast Guard, but the transmission was mostly unintelligible, and the station's personnel could not determine the location of the transmission. Coast Guard watch standers radioed a response, but received no clear additional transmission. A replay of the recording of the original transmission did not help at the time – but in a later review of the tapes, with the full circumstances of the incident known, the word "Mayday" could be made out. One can only wonder if the outcome would have been less tragic if the Coast Guard's watch standers had a digital communications system available with the ability to clean up the recording.

Rescue 21 addresses all of the equipment shortfalls identified in the *Morning Dew* case, and more. The system includes, among other subsystems and capabilities: direction-finding equipment; multiple voice/data channels; protected communications for government operators; a tracking system for Coast Guard assets; a

In the words of Coast Guard Commandant Admiral Thad Allen, "Rescue 21 is helping the Coast Guard take the 'search' out of search and rescue."

digital voice recording capability with enhanced playback; and, if the source transmitter is properly registered, the ability to quickly provide information about the specific vessel, its current position, and other situational data. In the words of Coast Guard Commandant Admiral Thad Allen, "Rescue 21 is helping the Coast Guard take the 'search' out of search and rescue."

The installation of Rescue 21 systems is still ongoing, but unit sets already have been deployed to 11 Coast Guard regions – enough, in other words, to permit Allen to truthfully declare that the system is now "operationally ready." The system – which uses a total of 350 communication towers – eventually will be installed at 46 Coast Guard sector commands and 220 stations. However, full implementation, originally scheduled for 2006, is now scheduled for 2011.

The views expressed herein are those of the authors and are not to be construed as official and/or reflecting the views of the commandant or of the U.S. Coast Guard.

Dr. Joseph DiRenzo III (pictured) and Christopher Doane are retired Coast Guard officers and visiting senior fellows at the Joint Forces Staff College. Both have written extensively on port and maritime security issues. Both also are mentors at Northcentral University in Prescott, Arizona.

The Time Is Now!

The Creation of a Home Guard For Domestic Preparedness

By Lawrence J. Korb and Ian Moss, Viewpoint

Over the past few years Americans have witnessed the inability of the federal and state governments to effectively respond to catastrophes such as Hurricane Katrina and the wildfires that ravaged parts of Southern California. The systems and institutions that previously were believed capable of responding to major natural disasters and/or other mass-casualty incidents such as a terrorist attack simply lacked the human and material resources and preparedness training required to meet the needs of a large number of citizens in distress.

The U.S. National Guard – which for the past five years has been heavily supplementing the nation's active-duty armed forces during their protracted engagements in Iraq and Afghanistan – has been transformed from its original purpose as a strategic reserve to an operational reserve. Since the 9/11 terrorist attacks, close to 80 percent of the 350,000 men-and-women-strong Army National Guard has been mobilized and deployed overseas, many units several times. The foreseeable future seems likely to be no different, given the myriad challenges that face the U.S. military in meeting contingencies in other areas of the world. This transformation of the National Guard to an active-duty supplemental force has greatly diminished its ability to protect Americans at home.

To help shoulder the homeland-defense burden and fulfill the government's obligation to protect American citizens, at home, in the event of a major emergency, the president and state governors, it is hereby suggested, should establish a Home Guard force in each state. The Home Guard would be a non-deployable corps of well trained units of skilled volunteers, would fall both administratively and operationally under the Department of Homeland Security (DHS), and would be responsible for duties historically carried out during emergency situations by the National Guard. The volunteers filling the ranks of the Home Guard – veterans of the nation's armed forces, medical personnel, construction workers, firemen, and police officers, among others – would have to possess (and/or rapidly develop) the skills critical to responding to homeland disaster situations.

Following Through On a Long-Awaited Challenge

There would be a number of intangible benefits resulting from the establishment of a Home Guard, the first and most important of which might be that this new domestic preparedness force would provide another opportunity for Americans to serve their country. There already are models of the Home Guard in 23 states. These 23 state organizations should be federally funded, and expanded to include the remaining 27 states and the District of Columbia. Meanwhile, the president should request that Congress increase the budget of the Department of Homeland Security by approximately $10 billion – i.e., roughly the cost of one month of operations in Iraq.

Future Home Guard appropriations totals could be determined later, and in more specific detail, by the administration and Congress, but $10

billion probably would be enough to cover start-up costs. Meanwhile, there would be huge but intangible benefits derived from the reduction in the wear and tear on the National Guard, which for at least a few years might have to continue serving as a supplemental force in overseas assignments, but without the stress of having to shoulder a major share of the homeland-defense burden at the same time.

In 2002, President Bush issued a call for Americans to help their country by suggesting that all U.S. citizens should serve the equivalent of two years of their lives in what he called a "Freedom Corps." However, he failed to follow through with an actual legislative proposal, and Congress itself did not follow through on the president's imaginative suggestion. The result has been that six years later the American people are still woefully underprepared to respond timely or adequately to a natural or manmade domestic disaster.

It is extremely important, however, that the actions necessary to implement the president's proposal be taken as soon as possible and that a Home Guard of some type be both authorized and funded. The American people not only deserve it, they also need it, and would support it. The United States cannot let another catastrophic event such as Hurricane Katrina occur before doing what is clearly necessary – i.e., create a Home Guard.

The numerous threats to the safety and wellbeing of American citizens today could come not only from overseas; they also could be launched from U.S. soil in the form of a domestic chemical or biological attack. Whatever the event or incident, Americans in all regions of the county must be well prepared, well equipped, and well organized to meet the challenges facing them – challenges that, as a nation, the United States could successfully meet and defeat. But not until some truly dramatic changes are made in the nation's current homeland-security posture.

Dr. Lawrence J. Korb (pictured), former Assistant Secretary of Defense (Manpower, Reserve Affairs, Installations, and Logistics) and a recipient of the Department of Defense Medal for Distinguished Public Service, is a Senior Fellow at the Center for American Progress and a Senior Advisor to the Center for Defense Information. He also has served as dean of the Graduate School of Public and International Affairs at the University of Pittsburgh and as Vice President of Corporate Operations at the Raytheon Company.

Ian Moss, a Marine Corps veteran who served as a Spanish and Albanian cryptologic linguist while on active duty, is a researcher at the Center for American Progress. He holds a Bachelor of Arts Degree in Spanish from the University of Texas, and a Master's Degree in Political Science from Northeastern University.

The Myth of the Cordon Sanitaire

By Michael Allswede, Public Health

The operational as well as theoretical concept of the *"cordon sanitaire"* – a French phrase literally translated as "quarantine line" – is one of containment. Originally, cordon sanitaire referred to the segregation of persons suffering from communicable and untreatable diseases from their healthy fellow citizens through use of a physical demarcation of some type – a wall or fence, for example. A "sanitarium" was and is the common manifestation of this concept, and refers to a facility in which diseased persons suffering from tuberculosis, leprosy, syphilis, polio, smallpox, and even mental disorders are separated from the population at large and required to live in separate, often fenced-off, buildings where they would stay until recovering from their diseases, or eventually die.

As a potential countermeasure to a pandemic avian flu, the idea of establishing local cordon-sanitaire facilities has resurfaced in some communities in the form of proposals to designate certain hospitals as "flu only" facilities. In effect, this countermeasure would create flu sanitariums within the U.S. healthcare system. However, although the intention is laudable, there would be significant difficulties in attempting to implement the cordon-sanitaire concept in most of the nation's communities. Chief among those difficulties would be challenges of authority, of economics, and of scale, as well as various difficulties and challenges related to influenza biology itself.

The "emergency support function" annexes to the national response framework designate various support functions and legal authorities to manage and administer federal, state, and local healthcare assets to solve common problems in the emergency-response field. Emergency Support Function #8 (ESF #8), for example, specifically designates the U.S. Department of Health and Human Services (HHS) to serve as the official "Public Health and Medical Services" authority – and authorizes HHS to receive support from other federal agencies.

Fifty States And a Multitude of Complexities

However, although the ESF annexes might serve as effective administrative strategies, a closer review of the annexes shows that there is *no direct authority* granted by any of them for the establishment of a cordon sanitaire. In fact, ESF #8 specifically focuses only on the coordination of efforts required between and among public-health authorities, medical subject-matter experts, and local authorities.

The authority postulated in this important federal document extends to the Department of Defense, the Veterans Administration, and other federal agencies – led by HHS, though. But ESF #8 does *not* allow the federal government to dictate to state health departments what they should or should not do.

It should be emphasized here that state health departments already possess the legal authority to impose a cordon sanitaire on their own. But that authority exists in 50 different versions and must be carried out by 50 different groups of personnel possessing a broad spectrum of different capabilities. Further complicating this key structural difference is the overlay, in most if not all states, of the numerous county and municipal health departments that also have been granted varying degrees of authority to impose a cordon sanitaire.

This diffusion of authority, of course, would be, and is, an obvious and major concern to decision makers at all levels of government. But an even more significant point of concern, probably, is that an estimated 90 percent or more of the nation's hospitals, doctors' offices, medical centers, and other healthcare facilities are owned and operated as *private businesses*. Their owners – private citizens who deliver most of the nation's medical care – may or may not choose to comply with orders issued by state and federal authorities. Here it should be emphasized that failure to comply with a public health order is a civil offense in most states – but not a criminal offense. The simple fact is that federal or state authority extends to the employees of federal and state health care agencies, but not necessarily to the vast majority of physicians and other private-sector healthcare professionals living and working throughout the United States.

Flying Blind in Flu Biology

One of the keys to the success of a well managed cordon-sanitaire campaign is to determine which citizens have or do not have a particular disease. Unlike smallpox, to cite the most notorious example, a fundamental challenge related to flu biology is that communicability – i.e., the ability to infect another person – almost always starts *before* the flu patient is aware that he or she is ill. Moreover, some individuals will continue to be infectious even after they recover from the flu.

Another relevant concern is that a pandemic flu travels within a population much more rapidly than tuberculosis, syphilis, leprosy, polio, or numerous other diseases. In addition, because healthcare personnel usually are exposed first, and most often, to those within the general population who are seriously ill, the likelihood is that the influenza will already be well underway within the healthcare-provider population before it is recognized in the general population. Designating a "safe" or flu-free hospital is therefore likely to be a failed strategy from the start if a strong avian-flu surveillance program

focused on medical personnel has not been instituted *before* avian flu is evident in the population of a community at large. There is no such program now in existence in U.S. private-sector medical facilities.

Avian flu is detected by a rather complicated set of analyses, carried out in reference laboratories. But most flu tests are valid only for testing for the common form of the flu – called "Group A." Moreover, a positive test does not differentiate avian flu from the common flu but only determines that the person tested has "the flu" (of some type). Theoretically, such a determination may be of some administrative use, but *no* individual who tests positive should have contact with patients and/or work in a flu-only facility. This common-sense requirement represents a two-edged sword for decision makers, because it not only subtracts a number of healthcare personnel from healthcare facilities that have not been designated as flu-only, but also forces those who test positive to be grouped among those who have been exposed to avian flu – whether they actually are suffering from avian flu or not.

Beyond the Boundaries Of Common Sense

Another complication to consider: There is no guiding protocol either for trading personnel between competing medical facilities or for compelling private citizens to work in avian-flu facilities against their will. Further exacerbating the situation is the fact that most U.S. hospitals are complex organizations staffed by a relatively large number of personnel – any of whom may violate the boundaries established by a cordon sanitaire if he or she is suffering from an asymptomatic flu infection and works in an area of the facility (the cafeteria, for example) where he or she would be in contact with other personnel.

The designation of a hospital as flu-only would be nothing short of financial suicide for the institution. From a strictly financial viewpoint, most U.S. medical facilities are high-overhead/low-margin businesses. This means that high payroll, equipment, and supply costs are incurred just to open the facility – and to keep it operational thereafter. Largely because of these high overhead costs, almost all U.S. private-sector medical facilities require a 95-97 percent occupancy rate just to remain solvent. In the beginning of a flu outbreak, though, a pre-designated "flu" hospital would be empty or close to it, costing that facility a rather large sum of money. Because the personnel who work at a facility so designated would be at increased risk of contracting the disease themselves, additional precautions must be taken to ensure their safety. These precautions include the use of infectious control supplies, surveillance testing, and medical prophylaxis – all of which involve high additional costs.

Procedures such as bypass surgery, hip replacements, and other elective surgeries generally earn money for most U.S. medical institutions. Medical illnesses such as influenza, however, usually are *not* money makers for the institution. Leaving aside such questions as the denial of care by insurance companies – which frequently require that their subscribers receive care in their own "network" hospitals – the designation of a medical facility as flu-only means that that facility will be damaged financially at the very time that it needs additional financial support. Here it is relevant to point out that ESF #8 does not designate any authority to compensate for these costs.

Another point to consider: The public perception that a particular healthcare facility has been designated as a "flu" hospital can have lasting effects. Many potential patients may want to avoid treatment of any type, for any medical condition, in that medical facility for a long time to come due to fear of disease – or because the facility may have lost some key personnel to the flu. In short, one of the first and most important casualties in an avian-flu outbreak probably would be any medical facility designated as flu-only.

All healthcare facilities within almost any U.S. community will generally be operating at or near capacity during *normal* working days. The addition of a significant number of flu patients would create an overload in any case that will be made even worse by designating a hospital as flu-only, because other facilities in the same community must provide care for which there is no additional space or personnel. In addition, the designated flu-only hospital also has a finite capacity and a limited number of personnel. However, most predictions of a potential avian-flu pandemic indicate that even the designation of 25 percent of the medical facilities within a particular community would fall short of the number that would be needed to cope with a major outbreak of the avian flu.

To summarize: The combined problems of unclear authority, flu biology, financial constraints, and the expected scale of pandemic operations create challenges that would be difficult at best to surmount in sudden times of crisis. There also is a significant risk of the public perceiving bias, based upon racial or socio-economic factors, on the designation of specific hospitals as flu-only facilities. For all of these reasons, it is probably a better strategy for *all* facilities within the same community to develop at least some capability for sustained flu operations, rather than imposing a potentially unwelcome cordon sanitaire on a population unfamiliar with the concept and its short- as well as long-term political, economic, and medical implications.

Dr. Michael Allswede is director of the Strategic Medical Intelligence Project on Forensic Epidemiology and the creator of both the RaPiD-T Program and the Pittsburgh Matrix Program for hospital training and preparedness. He also has served on a number of expert national and international groups in the preparedness field.

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Resource-Typing Implications For EMS and Emergency Management

By Joseph Cahill, EMS

"Resource typing," an important term used in the national incident management system (NIMS), refers to the development of common national definitions for any resource – which, when that umbrella word is used generically, could be anything from a dump truck to a fire fighter or policeman to an ambulance.

The purpose of resource typing is to give those responsible for managing the response to a disaster a common understanding of what a specific resource is when it is being requested. This approach is the best and perhaps only way to ensure that, when someone in authority requests a resource – an ambulance, for example – during a disaster, that person can specify the *type* of the resource needed. In the ambulance example, the requestor can specify the level of medical training and hazardous-materials training also needed to operate it.

As with all emergency plans and systems, resource typing needs top-down support and constant, daily use. When an emergency plan unravels, it is often because it has been used only during the most severe disasters, which makes it less familiar to front-line responders and, therefore, counter-intuitive as well as, perhaps, counterproductive. In order for resource typing (or any other emergency plan, or terminology) to work, it must be woven into the fabric of day-to-day operations. That is why top-down support and everyday use mean, among other things, incorporating resource typing within the day-to-day structure of the emergency medical services (EMS) system and enforcing the resource-typing theme at all levels within the system.

Small things mean a lot in making a term such as resource typing work as more than just a concept – for example, if the units within a specific EMS system conform to the national resource-typing definitions, the terminology of the agency should also follow that used in NIMS policy guidelines and similar documents. For example: Many EMS systems utilize "fly cars" – i.e., non-transport-capable vehicles that bring EMS equipment and trained personnel to the scene; a transport-capable ambulance follows the fly car to the scene of the disaster.

Multipurpose Use, But Some Short-Term Objections

The terminology used has to continue to serve the operational needs not only of the system itself but also of the community it serves. The suggestion here is not that the system should be forced to conform to a national standard but, rather, that the national standard should be reserved for only those units that do meet the standard. When they do not, a completely different term should be used. In this way, when a unit is compliant (with NIMS), the term tells those outside the system that the unit is as advertised, and when the unit is not compliant the unique local term used in its stead tells them that it is something that is perhaps unknown.

Raising this discussion above the agency level, resource typing is absolutely designed to be implemented as part of a mutual-aid plan. Mutual-aid plans are agreements between agencies or communities whereby each agrees to lend its resources to the other in times of emergency. These agreements, which are now routinely used in response to day-to-day emergencies, must be written to require the use of the NIMS resource-typing definitions. By referencing the definitions without being overly specific on the details, the mutual-aid plan stays up to date as the definitions change, with no rewriting required.

As happens with almost any changes to a system already in place, those in an EMS agency may resist the type of nomenclature changes suggested here. However, with the support of the local command structure, these changes will become second nature soon enough.

Joseph Cahill, a medicolegal investigator for the Massachusetts Office of the Chief Medical Examiner, previously served as exercise and training coordinator for the Massachusetts Department of Public Health, and prior to that was an emergency planner in the Westchester County (N.Y.) Office of Emergency Management. He also served for five years as the citywide advanced life support (ALS) coordinator for the FDNY - Bureau of EMS, and prior to that was the department's Division 6 ALS coordinator, covering the South Bronx and Harlem.

Crowd-Control Challenges in Pandemic Emergencies

By Joseph Steger, Law Enforcement

The widespread outbreak of an infectious disease poses tremendous challenges for all disciplines in the emergency-services community. Pandemic emergencies are generally regarded as a significant public-health problem, but it is important that all stakeholders recognize that such pandemics present the law-enforcement community with major challenges as well.

Fortunately, pandemic outbreaks have been rare in the United States. However, strains of influenza virus entering the United States produced tens of thousands of deaths in 1957 and 1968, and what is known as "The Great Pandemic of 1918" was responsible for 30–50 million deaths throughout the world. Societal conditions in the 21st century, however, are considerably different from what they were during previous outbreaks. Today: (1) contagious diseases can rapidly traverse the globe; (2) The American people have been conditioned to expect a highly effective health-care system not only to mitigate but even to prevent outbreaks – another way of saying that governmental intervention is expected to deal swiftly and effectively with pandemic emergencies; (3) A particularly virulent strain of disease outbreak resulting in high mortality would probably induce shock and fear throughout the country; and (4) The speed of modern communications will help provide rapid notification to the American people of pandemic developments – and, in all likelihood, lead to some sensationalized reporting as well.

The nation's emergency planners, at all levels of government, know that major pandemic emergencies will have a particularly adverse effect on all disciplines of the U.S. first-responder community. Some planning estimates forecast as much as a 40 percent reduction in the staffing of first-responder agencies following a major outbreak of a contagious disease. Law-enforcement agencies will nonetheless be expected to maintain civil order, with depleted resources, while facing a probably frightened and potentially hostile population.

Shifting Roles For Law Enforcement

During the height of a pandemic emergency, law enforcement (L-E) agencies will be called upon to carry out additional responsibilities. Depending on the severity of the pandemic, L-E officials may have to allocate scarce resources to several key functional responsibilities, each of which involves a significant crowd-control challenge. To begin with, local medical services may require law-enforcement protection of pharmaceutical stockpiles. Law-enforcement units also may be required to cope with protests, demonstrations, and even some riots. During severe and concentrated pandemic outbreaks, L-E units may be responsible for establishing and securing quarantine and isolation areas. Lastly, law-enforcement personnel may be required to augment the staffs of correctional facilities working to secure those facilities and/or suppress major disruptions.

Everyone of these functional responsibilities requires advance planning and preparation. Local L-E personnel and agencies probably will be required to bear most of the burden for a certain period of time. Moreover, the very nature of severe pandemic situations will test even the best multi-jurisdictional integration plans and agreements. For these and other reasons, all plans and preparations must take into account the almost certain depletion of functional staffing as a universal characteristic of pandemic situations.

Protection of Pharmaceutical Stockpiles

As a severe pandemic progresses through various phases of infecting the local population, some communities may become aggressively dissatisfied with the pharmaceutical distribution procedures and protocols that have been established. Community reaction is likely – in some instances, at least – to threaten the important storage and distribution centers for drugs and vaccines. To help cope with severe pandemic situations, the U.S. Department of Health and Human Services (HHS) has established agreements with law-enforcement agencies to protect the national stockpile sites of these essential medicines. Local L-E officials should develop similar plans to protect local stockpile sites from theft and/or the disruption of distribution operations.

An integrated, multi-layered approach for the protection of pharmaceutical stockpiles is essential. For that reason alone, L-E agencies, local medical services, and local emergency-management officials should develop integrated plans for the extensive public notification of pharmaceutical distribution-center operations, protocols for the physical security of distribution centers and storage sites, the procedures needed to maintain information security on pharmaceutical stockpile storage sites, and public notification of the effectiveness of pharmacological and treatment intervention. Incorporation of these elements in local strategies for integrated planning will help ensure an optimum balance of mitigating public fear and uncertainty while

also maintaining the physical security of stockpile sites and distribution centers.

Managing Demonstrations And Civil Unrest

Pandemic emergencies may last for several months during which cycles of improvement may be immediately followed by elevated infection rates. Over the course of the pandemic period, the public may become dissatisfied with real or perceived public-health management. In worst-case situations, health-care and/or government facilities may be targeted for demonstrations. Protest activities are likely to start as orderly expressions of public dissatisfaction; however, these same demonstrations may be exploited by persons with malicious intentions. Terrorists in particular may use the concentration of people for a peaceful protest as the stage for an attack. From the strategic perspective of a terrorist group, attacks carried out during already dangerous emergency situations enhance the psychological impact of the attack.

The World Health Organization (WHO) identifies six phases of a global pandemic. Phase 1 indicates a steady state in which no pandemic infections in humans have been identified. Phase 2 is declared when there is a marked increase in infections among animal species of a viral strain that has the potential for infecting humans. Phase 3 is characterized by an identified sub-strain of viral infection in humans, but with no detected human-to-human transmission. When small clusters (fewer than 25 people) of sub-strain-infected people are identified with infections lasting less than two weeks, and resulting from limited human-to-human transmission in a localized area, the WHO declares a Phase 4 pandemic. Phase 5 infections are characterized by larger clusters (generally 25–50 people) with infections lasting two to four weeks (but remaining generally localized). In Phase 6, the virus is highly transmittable between humans and there has been a marked increase in infections and sustained transmission beyond local areas.

Demonstrations and protests may become violent on their own accord, of course. When a pandemic emergency progresses over a long period of time and elevated infection rates seem to be the norm, such demonstrations and protests can be expected to become more intense and aggressive. Law-enforcement agencies are nonetheless expected – with fewer personnel, it should be remembered – to deal with such situations with appropriate crowd-control countermeasures. In any event, pandemic civil-disturbance planning should incorporate measures to de-escalate tensions, especially during the protest planning phases, if any. One way to do this is to leverage multi-

jurisdictional agreements to augment the number of personnel available.

Securing Quarantine And Isolation Areas

The implementation of quarantine and isolation restrictions encompasses a broad spectrum of medical, legal, and political issues, often with great intensity. Medical and public-health officials may establish quarantine sites in local hospitals and medical centers. Providing security for small and relatively localized quarantine sites may not require significant law-enforcement staffing. However, during severe pandemic outbreaks travel may be limited and isolation areas may have to be established to help reduce the spread of infection. For those and other reasons, the legal authorities needed to order quarantines and/or establish isolation areas must be clearly defined, in advance, from the local level up through the state level.

In addition, individual law-enforcement professionals must be absolutely clear on the rules and regulations governing the use of force authorized to enforce quarantine and isolation-zone containment; the latter task may require significant additional law-enforcement resources. Under severe conditions, quarantine and isolation-zone containment also may involve crowd-control operations, and the very establishment of isolation zones may result in civil disobedience from both sides of the fence.

The comprehensive integration and participation of all stakeholders is essential both for law-enforcement planning and in the preparations for possible quarantine and isolation containment. Among the most important of these stakeholders are the local district attorney's office and the state attorney general's office, as well as local elected decision makers. However, public-health and emergency-management officials, community medical leaders, and law-enforcement personnel, working in concert, should be capable of developing, and carrying out, effective integrated multi-disciplinary plans and preparations.

Correctional-Facility Crowd-Control Considerations

Communicable diseases frequently spread through correctional facilities more rapidly than through the general population. As might be expected, pandemic-generated fear and uncertainty are particularly prevalent in correctional facilities. The prisoner population itself usually includes a large number of persons already suffering from compromised health conditions. The more virulent strains of an infectious disease are therefore likely to produce a proportionately higher mortality rate in a correctional facility. Largely for that reason, prisoner populations may react violently to the correctional staff during a pandemic, and local L-E personnel may be needed to help control the facility and to support the correctional staff in suppressing prisoner rebellions.

Coordinated planning – involving correctional staffs, law enforcement, and the medical community – is vital in preparing to address these types of situations. Custodial crowd control requires considerable coordination under normal conditions. In a pandemic situation, disruptive prisoners may be both asymptomatic and infected, significantly increasing the risk of transmission to other prisoners as well as to correctional and law-enforcement officials. The plans developed to deal with such situations should therefore consider the secure movement of selected prisoners, if practical, to ensure their isolation from others. Some prisons and jails already hold prisoners from other jurisdictions. Local interagency agreements for prisoner housing and safekeeping need to be reviewed and, where necessary, amended to provide for the movement of any prisoner determined to be an obstacle to overall safety and security during a pandemic.

Planning and Preparation Of Paramount Importance

Law-enforcement officers and command staff are generally very well versed in the tactics, techniques, and procedures for managing crowd control. The pandemic emergency creates significant difficulties in coping with crowd-control situations. Well integrated planning is essential to ensure that all agencies having a role in the management of pandemic events are coordinated in supporting the L-E crowd-control mission. The procedures required for a multi-jurisdictional, interdisciplinary coordinated response must be developed and practiced through various exercise methodologies.

Recognizing and preparing for additional assignments also must take into account the fact that the characteristic realities of pandemics may greatly complicate overall law-enforcement operations. For that reason, emergency service professionals must periodically review and practice their intra- and inter-agency response protocols.

To summarize: Pandemic emergencies have unexpectedly struck the United States, and other nations throughout the world, many times in the past. The very nature of viral mutation and evolution suggests that the next major pandemic threatening the United States will be unexpected – and, probably, shocking to modern society. Realistic preparedness is essential to mitigating the impact of, and accelerating recovery from, pandemics at the local level.

Joseph Steger is the pseudonym of a senior law-enforcement commander whose undergraduate background in a pre-medical program led to initial certification as an EMT in 1981. He retained that level of certification for eight years and across three states while serving as a federal law-enforcement officer. Over the years, Steger has worked closely with CONTOMS-trained tactical medics and physicians in numerous situations.

The DuoDote™ Auto-Injector (atropine 2.1 mg/0.7 mL and pralidoxime chloride 600 mg/2 mL) is indicated for the treatment of poisoning by organophosphorus nerve agents as well as organophosphorus insecticides.

Important Safety Information

The DuoDote Auto-Injector is intended as an initial treatment of the symptoms of organophosphorus insecticide or nerve agent poisonings; definitive medical care should be sought immediately. The DuoDote Auto-Injector should be administered by Emergency Medical Services personnel who have had adequate training in the recognition and treatment of nerve agent or insecticide intoxication.

Individuals should not rely solely upon agents such as atropine and pralidoxime to provide complete protection from chemical nerve agents and insecticide poisoning. Primary protection against exposure to chemical nerve agents and insecticide poisoning is the wearing of protective garments including masks designed specifically for this use. Evacuation and decontamination procedures should be undertaken as soon as possible. **Medical personnel assisting evacuated victims of nerve agent poisoning should avoid contaminating themselves by exposure to the victim's clothing.**

In the presence of life-threatening poisoning by organophosphorus nerve agents or insecticides, there are no absolute contraindications to the use of the DuoDote Auto-Injector. When symptoms of poisoning are not severe, DuoDote Auto-Injector should be used with extreme caution in people with heart disease, arrhythmias, recent myocardial infarction, severe narrow angle glaucoma, pyloric stenosis, prostatic hypertrophy, significant renal insufficiency, chronic pulmonary disease, or hypersensitivity to any component of the product.

Please see brief summary of full Prescribing Information on adjacent page.

References: 1. DuoDote™ (atropine and pralidoxime chloride injection) Auto-Injector [package insert]. Columbia, MD: Meridian Medical Technologies™, Inc.; 2007. **2.** Agency for Toxic Substances and Disease Registry. Medical Management Guidelines (MMGs) for nerve agents: tabun (GA); sarin (GB); soman (GD); and VX. Available at: http://www.atsdr.cdc.gov/MHMI/mmg166.html. Accessed February 21, 2007. **3.** Holstege CP, Dobmeier SG. Nerve agent toxicity and treatment. *Curr Treat Options Neurol.* 2005;7:91-98. **4.** Data on file. Columbia, MD: Meridian Medical Technologies™, Inc.

DuoDote™ AUTO-INJECTOR

(atropine and pralidoxime chloride injection)

Rx Only
Atropine 2.1 mg/0.7 mL
Pralidoxime Chloride 600 mg/2 mL

Sterile solutions for intramuscular use only

FOR USE IN NERVE AGENT AND INSECTICIDE POISONING ONLY

THE DUODOTE™ AUTO-INJECTOR SHOULD BE ADMINISTERED BY EMERGENCY MEDICAL SERVICES PERSONNEL WHO HAVE HAD ADEQUATE TRAINING IN THE RECOGNITION AND TREATMENT OF NERVE AGENT OR INSECTICIDE INTOXICATION.

INDICATIONS AND USAGE

DuoDote™ Auto-Injector is indicated for the treatment of poisoning by organophosphorus nerve agents as well as organophosphorus insecticides.

DuoDote™ Auto-Injector should be administered by emergency medical services personnel who have had adequate training in the recognition and treatment of nerve agent or insecticide intoxication.

DuoDote™ Auto-Injector is intended as an initial treatment of the symptoms of organophosphorus insecticide or nerve agent poisonings; definitive medical care should be sought immediately.

DuoDote™ Auto-Injector should be administered as soon as symptoms of organophosphorus poisoning appear (eg, usually tearing, excessive oral secretions, sneezing, muscle fasciculations).

CONTRAINDICATIONS

In the presence of life-threatening poisoning by organophosphorus nerve agents or insecticides, there are no absolute contraindications to the use of DuoDote™ Auto-Injector.

WARNINGS

CAUTION! INDIVIDUALS SHOULD NOT RELY SOLELY UPON ATROPINE AND PRALIDOXIME TO PROVIDE COMPLETE PROTECTION FROM CHEMICAL NERVE AGENTS AND INSECTICIDE POISONING.

PRIMARY PROTECTION AGAINST EXPOSURE TO CHEMICAL NERVE AGENTS AND INSECTICIDE POISONING IS THE WEARING OF PROTECTIVE GARMENTS INCLUDING MASKS DESIGNED SPECIFICALLY FOR THIS USE.

EVACUATION AND DECONTAMINATION PROCEDURES SHOULD BE UNDERTAKEN AS SOON AS POSSIBLE. MEDICAL PERSONNEL ASSISTING EVACUATED VICTIMS OF NERVE AGENT POISONING SHOULD AVOID CONTAMINATING THEMSELVES BY EXPOSURE TO THE VICTIM'S CLOTHING.

When symptoms of poisoning are not severe, DuoDote™ Auto-Injector should be used with extreme caution in people with heart disease, arrhythmias, recent myocardial infarction, severe narrow angle glaucoma, pyloric stenosis, prostatic hypertrophy, significant renal insufficiency, chronic pulmonary disease, or hypersensitivity to any component of the product. Organophosphorus nerve agent poisoning often causes bradycardia but can be associated with a heart rate in the low, high, or normal range. Atropine increases heart rate and alleviates the bradycardia. In patients with a recent myocardial infarction and/or severe coronary artery disease, there is a possibility that atropine-induced tachycardia may cause ischemia, extend or initiate myocardial infarcts, and stimulate ventricular ectopy and fibrillation. In patients without cardiac disease, atropine administration is associated with the rare occurrence of ventricular ectopy or ventricular tachycardia. Conventional systemic doses may precipitate acute glaucoma in susceptible individuals, convert partial pyloric stenosis into complete pyloric obstruction, precipitate urinary retention in individuals with prostatic hypertrophy, or cause inspiration of bronchial secretions and formation of dangerous viscid plugs in individuals with chronic lung disease.

More than 1 dose of DuoDote™ Auto-Injector, to a maximum of 3 doses, may be necessary initially when symptoms are severe. **No more than 3 doses should be administered unless definitive medical care (eg, hospitalization, respiratory support) is available.**

Severe difficulty in breathing after organophosphorus poisoning requires artificial respiration in addition to the use of DuoDote™ Auto-Injector.

A potential hazardous effect of atropine is inhibition of sweating, which in a warm environment or with exercise, can lead to hyperthermia and heat injury.

The elderly and children may be more susceptible to the effects of atropine.

PRECAUTIONS

General: The desperate condition of the organophosphorus-poisoned individual will generally mask such minor signs and symptoms of atropine and pralidoxime treatment as have been noted in normal subjects.

Because pralidoxime is excreted in the urine, a decrease in renal function will result in increased blood levels of the drug.

DuoDote™ Auto-Injector temporarily increases blood pressure, a known effect of pralidoxime. In a study of 24 healthy young adults administered a single dose of atropine and pralidoxime auto-injector intramuscularly (approximately 9 mg/kg pralidoxime chloride), diastolic blood pressure increased from baseline by 11 ± 14 mmHg (mean ± SD), and systolic blood pressure increased by 16 ± 19 mmHg, at 15 minutes post-dose. Blood pressures remained elevated at these approximate levels through 1 hour post-dose, began to decrease at 2 hours post-dose and were near pre-dose baseline at 4 hours post-dose. Intravenous pralidoxime doses of 30-45 mg/kg can produce moderate to marked increases in diastolic and systolic blood pressure.

Laboratory Tests: If organophosphorus poisoning is known or suspected, treatment should be instituted without waiting for confirmation of the diagnosis by laboratory tests. Red blood cell and plasma cholinesterase, and urinary paranitrophenol measurements (in the case of parathion exposure) may be helpful in confirming the diagnosis and following the course of the illness. However, miosis, rhinorrhea, and/or airway symptoms due to nerve agent vapor exposure may occur with normal cholinesterase levels. Also, normal red blood cell and plasma cholinesterase values vary widely by ethnic group, age, and whether the person is pregnant. A reduction in red blood cell cholinesterase concentration to below 50% of normal is strongly suggestive of organophosphorus ester poisoning.

Drug Interactions: When atropine and pralidoxime are used together, pralidoxime may potentiate the effect of atropine. When used in combination, signs of atropinization (flushing, mydriasis, tachycardia, dryness of the mouth and nose) may occur earlier than might be expected when atropine is used alone.

The following precautions should be kept in mind in the treatment of anticholinesterase poisoning, although they do not bear directly on the use of atropine and pralidoxime.

- Barbiturates are potentiated by the anticholinesterases; therefore, barbiturates should be used cautiously in the treatment of convulsions.
- Morphine, theophylline, aminophylline, succinylcholine, reserpine, and phenothiazine-type tranquilizers should be avoided in treating personnel with organophosphorus poisoning.
- Succinylcholine and mivacurium are metabolized by cholinesterases. Since pralidoxime reactivates cholinesterases, use of pralidoxime in organophosphorus poisoning may accelerate reversal of the neuromuscular blocking effects of succinylcholine and mivacurium.

Drug-drug interaction potential involving cytochrome P450 isozymes has not been studied.

Carcinogenesis, Mutagenesis, Impairment of Fertility: DuoDote™ Auto-Injector is indicated for short-term emergency use only, and no adequate studies regarding the potential of atropine or pralidoxime chloride for carcinogenesis or mutagenesis have been conducted.

Impairment of Fertility: In studies in which male rats were orally administered atropine (62.5 to 125 mg/kg) for one week prior to mating and throughout a 5-day mating period with untreated females, a dose-related decrease in fertility was observed. A no-effect dose for male reproductive toxicity was not established. The low-effect dose was 290 times (on a mg/m^2 basis) the dose of atropine in a single application of DuoDote™ Auto-Injector (2.1 mg).

Fertility studies of atropine in females or of pralidoxime in males or females have not been conducted.

Pregnancy:

Pregnancy Category C: Adequate animal reproduction studies have not been conducted with atropine, pralidoxime, or the combination. It is not known whether pralidoxime or atropine can cause fetal harm when administered to a pregnant woman or if they can affect reproductive capacity. Atropine readily crosses the placental barrier and enters the fetal circulation.

DuoDote™ Auto-Injector should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers: Atropine has been reported to be excreted in human milk. It is not known whether pralidoxime is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when DuoDote™ Auto-Injector is administered to a nursing woman.

Pediatric Use: Safety and effectiveness of DuoDote™ Auto-Injector in pediatric patients have not been established.

ADVERSE REACTIONS

Muscle tightness and sometimes pain may occur at the injection site.

Atropine

The most common side effects of atropine can be attributed to its antimuscarinic action. These include dryness of the mouth, blurred vision, dry eyes, photophobia, confusion, headache, dizziness, tachycardia, palpitations, flushing, urinary hesitancy or retention, constipation, abdominal pain, abdominal distention, nausea and vomiting, loss of libido, and impotence. Anhidrosis may produce heat intolerance and impairment of temperature regulation in a hot environment. Dysphagia, paralytic ileus, and acute angle closure glaucoma, maculopapular rash, petechial rash, and scarletiniform rash have also been reported.

Larger or toxic doses may produce such central effects as restlessness, tremor, fatigue, locomotor difficulties, delirium followed by hallucinations, depression, and, ultimately medullary paralysis and death. Large doses can also lead to circulatory collapse. In such cases, blood pressure declines and death due to respiratory failure may ensue following paralysis and coma.

Cardiovascular adverse events reported in the literature for atropine include, but are not limited to, sinus tachycardia, palpitations, premature ventricular contractions, atrial flutter, atrial fibrillation, ventricular flutter, ventricular fibrillation, cardiac syncope, asystole, and myocardial infarction. (See **PRECAUTIONS**.)

Hypersensitivity reactions will occasionally occur, are usually seen as skin rashes, and may progress to exfoliation. Anaphylactic reaction and laryngospasm are rare.

Pralidoxime Chloride

Pralidoxime can cause blurred vision, diplopia and impaired accommodation, dizziness, headache, drowsiness, nausea, tachycardia, increased systolic and diastolic blood pressure, muscular weakness, dry mouth, emesis, rash, dry skin, hyperventilation, decreased renal function, and decreased sweating when given parenterally to normal volunteers who have not been exposed to anticholinesterase poisons.

In several cases of organophosphorus poisoning, excitement and manic behavior have occurred immediately following recovery of consciousness, in either the presence or absence of pralidoxime administration. However, similar behavior has not been reported in subjects given pralidoxime in the absence of organophosphorus poisoning.

Elevations in SGOT and/or SGPT enzyme levels were observed in 1 of 6 normal volunteers given 1200 mg of pralidoxime intramuscularly, and in 4 of 6 volunteers given 1800 mg intramuscularly. Levels returned to normal in about 2 weeks. Transient elevations in creatine kinase were observed in all normal volunteers given the drug.

Atropine and Pralidoxime Chloride

When atropine and pralidoxime are used together, the signs of atropinization may occur earlier than might be expected when atropine is used alone.

OVERDOSAGE

Symptoms:

Atropine

Manifestations of atropine overdose are dose-related and include flushing, dry skin and mucous membranes, tachycardia, widely dilated pupils that are poorly responsive to light, blurred vision, and fever (which can sometimes be dangerously elevated). Locomotor difficulties, disorientation, hallucinations, delirium, confusion, agitation, coma, and central depression can occur and may last 48 hours or longer. In instances of severe atropine intoxication, respiratory depression, coma, circulatory collapse, and death may occur.

The fatal dose of atropine is unknown. In the treatment of organophosphorus poisoning, doses as high as 1000 mg have been given. The few deaths in adults reported in the literature were generally seen using typical clinical doses of atropine often in the setting of bradycardia associated with an acute myocardial infarction, or with larger doses, due to overheating in a setting of vigorous physical activity in a hot environment.

Pralidoxime

It may be difficult to differentiate some of the side effects due to pralidoxime from those due to organophosphorus poisoning. Symptoms of pralidoxime overdose may include: dizziness, blurred vision, diplopia, headache, impaired accommodation, nausea, and slight tachycardia. Transient hypertension due to pralidoxime may last several hours.

Treatment: For atropine overdose, supportive treatment should be administered. If respiration is depressed, artificial respiration with oxygen is necessary. Ice bags, a hypothermia blanket, or other methods of cooling may be required to reduce atropine-induced fever, especially in children. Catheterization may be necessary if urinary retention occurs. Since atropine elimination takes place through the kidney, urinary output must be maintained and increased if possible; intravenous fluids may be indicated. Because of atropine-induced photophobia, the room should be darkened.

A short-acting barbiturate or diazepam may be needed to control marked excitement and convulsions. However, large doses for sedation should be avoided because central depressant action may coincide with the depression occurring late in severe atropine poisoning. Central stimulants are not recommended.

Physostigmine, given as an atropine antidote by slow intravenous injection of 1 to 4 mg (0.5 to 1.0 mg in children) rapidly abolishes delirium and coma caused by large doses of atropine. Since physostigmine has a short duration of action, the patient may again lapse into coma after 1 or 2 hours, and require repeated doses. Neostigmine, pilocarpine, and methacholine are of little benefit, since they do not penetrate the blood-brain barrier.

Pralidoxime-induced hypertension has been treated by administering phentolamine 5 mg intravenously, repeated if necessary due to phentolamine's short duration of action. In the absence of substantial clinical data regarding use of phentolamine to treat pralidoxime-induced hypertension, consider slow infusion to avoid precipitous corrections in blood pressure.

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Proactive Standards for the Emergency Responders

By Diana Hopkins, Standards

Those working in the U.S. emergency-responder community know first-hand what tools, incident action plans, and gear they need in the field, and are also the most knowledgeable about the performance requirements and standards these products must meet to best serve their community. Yet, like many others in both government and industry, emergency responders need a better grasp of the principles and processes involved in standards development in order to expedite the availability of urgently needed standardized products.

There are many different ways to approach the subject of standards development, rather than waiting to be invited to a "stakeholders table" (typically formed and funded by one or more federal agencies). And stepping outside the box to become more proactive could help provide more control over the schedule and other parameters of standards development. The steps outlined below not only should help to make standards development more understandable to end users but also help expedite the process.

The Basic Principles Involved in the Development Of National Standards

There are many different types of standards, but if a particular standard is intended to be used on a national scale, it requires the balanced consensus underpinning of national standards to ensure not only its relevancy but also its acceptability by users. Understanding the principles that guide the development leads to an appreciation of the processes that follow. The National Technology Transfer and Advancement Act (NTTAA) of 1995 and Circular No. A-119 (Revised) (both of which are available at http://standards.gov) are recommended reading. Many other sources are available via the internet for consulting or training on the principles and processes of standards development.

An established standards development organization (SDO) can be used to develop the standard according to its own national standard process and infrastructure. The stakeholder also has the option of independently forming an appropriate infrastructure and process – following the guidelines of the previously mentioned NTTAA and Circular A-119 (Revised) – as well as the most recent edition of *ANSI Essential Requirements: Due Process Requirements for American National Standards*; that publication, copyrighted by the American National Standards Institute (ANSI), is available at www.ansi.org. If the creation of an independent standards development infrastructure and process is too complex a task, outside experts and SDOs can be recruited to assist.

Defining the Scope Of the Standards Requirement

This part of the task is a four-step process, usually carried out in the following order:

1. *Determining What Standards Already Exist* – To define the scope of the work involved, some research is necessary to discover if the standard needed already exists. This is a fundamental first step required in the process of developing almost any national standard because it: (a) ensures that an adequate standard does *not* already exist; (b) helps to substantiate the need for a new standard; and (c) may determine the existence of an extant standard that simply needs modification to fulfill new and/or additional needs. Again, established SDOs and/or outside experts and consultants can help with the determination process, if desired.

2. *Establishing Acceptable Performance Criteria* – The development of performance criteria should start by asking certain relevant questions, including the following: (a) What does the product or system have to do specifically to meet the need, and at what level of performance, and/or with what, if any, permissible margin of error? (b) Should the product first be tested in a laboratory, under pristine conditions, to ensure that it works, before it is subjected to testing in the field? (c) Is training necessary to ensure performance? In answering these questions it is important to note that the standard-development process can stop once a consensus on performance criteria has been reached. Any entity providing a product (gear, threat-detection device, incident action system) must be prepared to prove that product conforms to the national consensus standard that has been established. Depending on the specific type of standard involved, it may be necessary to solicit the assistance of technical experts, scientists, and/or statisticians to convert the requirements into agreed-upon measurable units. The testing protocol, after it has been approved and validated, would then be used to ensure that manufacturers' products conform to the performance-criteria standards previously approved.

3. *Developing and Using an Acceptable Testing Protocol* – If desired, the standard development process can continue to include the development and validation of a testing protocol. In other words, if a standard is developed for a

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detection device, to cite but one example, that device must be tested to ensure that it conforms to the standard already established. This requirement leads to at least two additional questions, though: (a) What test should be used? (b) How can it be determined that particular test works as intended? It probably is a good idea to use validation experts and statisticians at this stage, and the final test validation protocol must be approved by the consensus group. Note: There may be additional laboratory testing costs associated with this step, but the stakeholders in standards development groups are often compelled not only to cope with this requirement but also to complete the other steps required to meet the necessarily high expectations established for the development of nationally acceptable standards.

4. *Carrying Out Conformity Assessments* – If desired, the standards development process can continue to include conformity assessments. After the testing protocol discussed above has been validated and approved, it can be used by manufacturers and other providers to ensure that their products conform to the standard(s) previously established. During the earlier "Performance Criteria" step, it could be up to the stakeholders to determine the importance and/or extent of conformity testing needed. The general rule here is that the greater the conformity testing required, the greater the confidence level in the standard's performance will be, and that important albeit intangible benefit has to be weighed against the cost of additional testing.

Determination of Stakeholders, Stakes, and Resources

Stakeholder selection is always one of the first considerations in the development of appropriate standards and must be kept in mind at all times during the selection process. Ideally, therefore, stakeholder selection criteria should include not only those with an interest in and knowledge of the standards area, but also outside experts, whose only stake is good science, as well as other stakeholders who might be able to contribute such valuable resources as funding, technical expertise, laboratory facilities, and training to the overall standards development effort.

Diana Hopkins, creator of the consulting firm "Solutions for Standards," is a 12-year veteran of AOAC International and, until recently, senior director of AOAC Standards Development. Most of her work since the 11 September 2001 terrorist attacks has focused on the development of standards for U.S. homeland security and national defense. In addition to being an advocate of ethics and quality in standards development, Hopkins is also an expert in technical administration, governance, and process development, and is a certified first responder.

Mass Fatality Management Planning - A Hospital Perspective

By Craig DeAtley, Health Systems

Most hospital emergency-preparedness efforts within the United States focus on doing "the greatest good for the greatest number" (of live patients). However, U.S. disaster literature reveals relatively few instances in which a hospital has confronted and been forced to deal with a large number of dead and/or dying citizens. Nonetheless, today's risk of mass-casualty transit accidents, fires, explosions, and outbreaks of pandemic flu or other lethal diseases provide valid reasons why the nation's hospitals *should* give much more thought to how they would cope with large numbers of fatalities rather than simply provide care for those still living. For that reason, a well prepared hospital will have a Mass Fatality Plan included as an annex to the hospital's overall Emergency Operations Plan (EOP).

Writing a well constructed plan should and usually does begin by convening authorities (including writers) already familiar not only with the topic – and a working knowledge of their own facility – but also with the community's capabilities for caring for the dead. The hospital participants should include clinically trained staff, administrative personnel, legal counsel, and, if available, medical ethicists. External participation should be sought from the medical examiner's office – and/or the coroner's office – and local funeral homes as well as state and local fire/EMS, law-enforcement, and public-health agencies.

The planning meetings should address the individual and collective situations of all of those who have died (regardless of their individual ages) as well as those expected to pass away – but still have some signs of life present (e.g., a pulse, blood pressure, etc.). The plan, once drafted, should be reviewed by the hospital's Emergency Preparedness Committee, and then forwarded to decision-making officials for final approval and adoption. After the plan is approved it should be made available, in both written and electronic formats, for use by morgue personnel and members of the hospital's own "Command Post" to use as and when needed during and in the aftermath of a mass-casualty incident (MCI).

Terminology and Other Relevant Considerations

A comprehensive mass-fatality plan will address a number of factors, including but not necessarily limited to the following:

- The terminology used (which should be consistent throughout);
- The possibility that the event or incident for which the plan is being written may be either natural or manmade (e.g., the result of a terrorist attack);
- A list, preferably short, of the decision makers who are authorized to activate the plan – as well as some suggested decision criteria that should be considered prior to implementation;
- The management of persons who die inside the hospital (or other medical facility) as well as those who die either at the scene of the incident or while en route to the hospital or other medical facility;
- The criteria required for notification and/or close consultation with local and/or state medical examiners or coroners, as well as funeral-home director(s) to decide on handling procedures, safety precautions, and documentation requirements;
- The decontamination of decedents who might have been contaminated during or because of the incident;
- The possible expansion of the storage space available for bodies – e.g., through the use of internal refrigeration areas, refrigerator trucks, rooms, and/or tents equipped with commercially available cooling devices and/or similar systems;
- The respectful handling of the dead – an umbrella term that includes but is not necessarily limited to the proper identification of those deceased, the "stacking" or other mingling of the bodies (if and when necessary), relevant religious and cultural concerns that should be observed, and the prompt disposition of the bodies (by transferring them to a medical examiner's office, for example, or to a funeral home);
- The collection, management, and security of valuables;
- Family notification procedures (which whenever possible should be carried out in collaboration with local officials – e.g., at a family assistance center);
- The behavioral health support that might be available (not only for a decedent's family but also for hospital personnel);
- The laws, rules, and regulations governing evidence collection and preservation;
- Law-enforcement investigation expectations; and
- Documentation procedures.

After the plan has been completed, a creative training program should be developed and provided to those persons expected to implement the plan. Such training could be carried out through traditional classroom-based presentations or through on-line education, or both. Tabletop drills and/or functional exercises can be scheduled to rehearse actual use of the plan as part of a broader MCI response effort focused on a mass-fatality management theme.

Coordination, Cooperation, and Training

In conducting a "live" drill, knowing how to emulate the dead is a particularly important aspect of the training that must be addressed. The use of volunteer "victims" playing the dead, and/or of CPR "dolls," and/or the use of paper-cutout victims are among the various options that are worth considering.

For a rigorous evaluation of the plan, any exercises scheduled should be conducted in company with the external partners who assisted in writing and/or reviewing the plan. Among those partners (individuals as well as organizations) should be the medical examiner/coroner, law-enforcement and fire/EMS personnel, and the directors or managers of funeral homes. Any changes made to the plan should be based on the lessons learned from the training and exercises.

To summarize: Almost all of the nation's hospitals routinely plan, train, and exercise to maximize their ability to save lives, but deaths will sometimes occur nonetheless, and must be dealt with. Deaths that occur simultaneously in large numbers present a variety of problems not only for the hospital involved but also for the community that the hospital serves. For that reason alone, it is important that a community's Mass Fatality Annex be written by a multidisciplinary group of personnel from the hospital – but with significant assistance provided by other "stakeholders" in the community. The final version of the plan should be comprehensive yet succinct, easily readable, and available for ready access – whether for training or for a real-world emergency.

Craig DeAtley is the director of the Institute for Public Health Emergency Readiness at the Washington Hospital Center, the District of Columbia's largest hospital. Prior to his current position, he was an Associate Professor of Emergency Medicine at George Washington University for 28 years before leaving to start the Institute. He also works as a Physician Assistant at Fairfax Hospital, a Level Trauma Center in Northern Virginia, he has been a volunteer paramedic with the Fairfax County Fire and Rescue Department since 1972, and a member of their Urban Search and Rescue Team since 1991. He currently serves as the team's Medical Team Coordinator and also serves as the Assistant Medical Director for the Fairfax County Police Department.

Debris Recycling – Transforming Disasters Into Opportunities

By Kirby McCrary, Viewpoint

"Landfilling" – i.e., using disaster debris as landfill in the aftermath of an incident that creates a significant amount of debris – may be the most viable option for some communities, but an increasing number of them are determining that, with land availability and cost at a premium, it just does not make good economic sense to use landfill space as a permanent depository, more or less, for disaster debris. This is especially true when it is realized that there are many alternative uses for various types of debris that are available to most communities.

Following a debris-generating event, many types of debris are encountered, both from the event itself (which directly deposits debris onto the public right of way) and from the public (when private citizens bring the debris to the right of way for later removal). Such debris might include typical vegetative debris (woody), construction and demolition (C&D) debris, white goods, household goods, hazardous household waste (HHW) and toxic materials, electronic waste (E-waste), and putrescent debris (animal carcasses, for example). Markets can be found for many of these types of debris that not only provide a community with an alternative to landfilling the debris but also create a possible new stream of future revenues.

Under the FEMA (Federal Emergency Management Agency) Public Assistance (PA) Program for Debris Management, a community that elects to recycle disaster debris is required to report the amount of the proceeds received through recycling, and those proceeds are then used by FEMA to offset the community's federal assistance reimbursement. However, the agency is now encouraging communities to seriously consider recycling disaster debris, and one of the carrots being dangled is the possibility for the applicant community to retain the recycling proceeds with no reduction in its reimbursement payment.

A Bonus, a Loophole, a Time Limit

The only current way to receive this bonus is for an applicant community to have a FEMA-approved Debris Management Plan that includes a recycling component. Here it should be noted that, although a recycling component is a requirement for approval of the plan, FEMA does not specify the extent of the program – only that an applicant community take the steps needed to establish some type of recycling effort. The PA Pilot Program for Debris Management is due to expire at the end of this year, however – and what new form it might then take in relation to the recycling requirement and other program provisions has not yet been determined.

There are many excellent sources available for identifying the various possible uses of recycled disaster debris; a quick search of the Internet, for example, yields a plethora of options, including the following possibilities for recycling the types of debris indicated:

- *Vegetative Woody:* horticultural mulches; the remanufacture of wood chips into engineered wood; the use of wood fuels in co-generation plants and/or industrial boilers; the use of wood chips as a bulking agent in biosolids, compost, and animal bedding; and the making of planks and other dimensional lumber sawed from whole trees.

- *Construction and Demolition (C&D):* crushed concrete, brick, or asphalt used as a sub-base for roads; crushed concrete and brick used in drainage applications; concrete, block, masonry, and other clean debris used as borrow pit fill; reusable building supplies such as lumber and whole bricks and blocks; and aluminum, tin, and other scrap metal sold to dealers.

- *White Goods:* possible market for metal casing as scrap; the re-use of some components as repair parts; the used resale market for rubber-coated shelves, baking racks, etc.; and the recovery of refrigerants (i.e., Freon or chlorofluorocarbons).

- *Household Goods:* cardboard and paper products; and household metals and plastics.

- *Electronic Waste (E-waste):* computers and monitors resold or used as parts; cables resold or sold as scrap; and processed and/or donated to organizations.

- *Putrescent (animal carcasses):* compost.

- *Other:* recovered screened material (RSM) for various approved uses; and the use of reclaimed dirt as landfill cover or for agricultural purposes.

Winds, Wet Events, And Putrescent Waste

The type of debris stream available for recycling also will be dependent to at least some extent upon the type of disaster experienced. Wind "events" (tornadoes, for example) and earthquakes yield significant amounts of acceptable types of recyclable debris, whereas "wet" events – e.g., typhoons and hurricanes – yield significantly less acceptable types and quantities. In all cases, however, local, state, and federal laws must be strictly followed when and where applicable to such debris streams as Freon recovery, the disposition of mercury and/or lead from computers,

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hazardous materials, putrescent waste, and the contaminated residue generated by a "reduction" operation (grinding or burning). Even the soil within a temporary debris storage and reduction (TDSR) site can be considered for recycling if proper methods of safeguarding against contamination have been put in place and maintained during operations.

It should be obvious that plans and proposals to recycle in the aftermath of a debris-generating event should be developed and considered prior to a disaster, if only because this approach gives the community the best opportunity to realize the greatest benefits. Those opportunities can later be investigated more thoroughly so that: (a) contractual relationships can be agreed to by the community for specific types of recyclable debris; and (b) the best means of segregating and collecting the recyclable debris from other types of debris also can be determined. Clear and concise procedures for tracking the recyclable debris, and for reporting on its final disposal, should be established and maintained as well.

FEMA recognizes not only the importance of recycling disaster debris but also the societal benefits that can result, and for that reason is attempting to make a community's involved efforts more palatable both to local decision makers and to the public at large. Depending on the extent of those efforts, the monetary rewards can be significant to the community in general – and beneficial to American society as a whole.

Kirby McCrary is president of Disaster Recovery Resources Inc., headquartered in Winston-Salem, N.C., and a registered professional engineer in both North Carolina and Florida. He was heavily involved in debris-management operations in Florida during the 2004-2006 hurricane seasons and, following Hurricane Wilma, oversaw all debris-removal and monitoring activities in Broward and Palm Beach Counties on behalf of the Florida Department of Transportation.

California, Massachusetts, Illinois, & Texas

By Adam McLaughlin, State Homeland News

California Successful Test Of Tsunami Warning System In Humboldt County

Officials from the California Governor's Office of Emergency Services (OES), the Humboldt County Office of Emergency Services, and the National Weather Service (NWS) are evaluating a "live" tsunami warning test that was transmitted over the Emergency Alert System (EAS) in late March.

The test began with EAS activation and transmission of the test message via local radio and television stations, as well as over the National Oceanic and Atmospheric Administration (NOAA) Weather Radio system. Initial results indicated that there were no unanticipated technological issues that developed, and that no emergency 9-1-1 calls had been made to safety answering points.

"Although the test is still being assessed, I am confident that the information we glean from this exercise and the public feedback will help us save lives and reduce injuries when a real tsunami or other emergency occurs," said OES Director Henry Renteria.

The still ongoing evaluation of the test will include analysis of: (a) the NWS tsunami activation sequence; (b) how well and how quickly television and radio stations in the area received the EAS messages – and how well each station was able to re-transmit the message without other problems occurring; and (c) the public's response to the exercise.

Humboldt County residents who were listening to their radios or were watching television during the test heard the standard alert tone before the test message. The audio message stated that a test was being conducted, but the text crawl at the bottom of TV screens did not include the word "test." To avoid causing confusion for the hearing-impaired, plans were made in advance to include an open-captioned public-service announcement just before the test, and an additional crawler was generated at the top of the TV screen during the test.

An extensive public education and outreach campaign has been conducted by local, state, and federal officials for the past several weeks that, in addition to alerting statewide news media, included public service announcements, the distribution of flyers, the use of Caltrans highway message boards, and coordination with organizations that serve the disabled populations as well as non-English speakers. The public was informed in advance that sirens would not be heard during the test – but an internal bench test indicated that the siren signal system was in fact operating properly at the time and could have been used if necessary.

A public hotline also was established to answer questions and address any concerns stemming from the test. The hotline also informed residents that the test would occur, that there was no tsunami emergency – and, therefore, that there was no need to evacuate.

Humboldt County is one of the most tsunami-aware communities in the United States, and maintains strong relationships with OES, the County Office of Emergency Services, and the NWS. It was selected for the pilot test because the radio transmitters used to send information via NOAA Weather

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Radio in the region have minimal spillover into neighboring counties.

Massachusetts
Fire Chiefs Push for Tougher Chemical-Plant Regulations

In late March, Danvers (Mass.) Fire Chief James Tutko joined other chiefs from around the state in calling for the stricter regulation of chemical processing to prevent or at least minimize the possibility of another explosion like the one that rocked Danversport in November 2006.

An estimated 30 or so fire chiefs from the Fire Chiefs Association of Massachusetts gathered in the bay of the Danvers Fire Department urging the state's lawmakers to pass a bill that includes a number of regulations related to chemical processing procedures as currently carried out by Bay State firms both large and small. The bill would, among other things, require plants of all sizes to provide a chemical-processing safety plan to the State Fire Marshal's Office, where a team of experts would audit the plans at least twice a year.

"If that had happened in the Danvers incident, they probably would have found shortcomings in the processes that would have prevented what happened there that night," Tutko said. The Danvers Fire Department and many others throughout the state do not have the expertise on staff to inspect chemical plants – to ascertain, for example, how chemicals are mixed at a specific plant. Legislation is needed to close what the fire chiefs, and others, think is a major loophole in the state's safety regulations – namely, that, although chemical *storage* is regulated at the state and local levels, chemical *processing* is not.

The bill, which has been working its way through the Massachusetts legislature, would also create a database of companies that mix chemicals, including information on the types and amounts of chemicals they are storing.

The 22 November 2006 explosion at the CAI Inc. and Arnel Corporation's ink and paint plants at 128R Water Street damaged 250 buildings, destroyed 19 of them, injured 20 people (including two firefighters), and damaged scores of vehicles, according to a recent report issued by the State Fire Marshal's Office.

> ***"The step we are announcing today will help us keep our young people safer when they are in and around school buildings throughout the city."***

State and federal investigators have concluded that there were shortcomings in how CAI operated. The investigators said that the blast resulted when solvents were inadvertently overheated after they were left stirring in an unsealed mixing tank. That combination of factors resulted in flammable vapors that escaped, built up, and then exploded.

"You may be asking yourself," Tutko said, "is this [creating] just another layer of bureaucracy?" He pointed out, though, that a recent State Fire Marshal's Office initiative paid big dividends when the office inspected 40 chemical plants throughout the state. "Out of that 40 plants that they entered, they found two that had conditions that were conducive to the type of explosion we had here in Danvers," Tutko said.

The cost to implement the regulations included in the bill would be $1.8 million, Tutko said. The program would be overseen by the State Fire Marshal's Office. Fees or user certificates could cover at least some of expenses, but probably not all of them. Tutko pointed out, though, that the 2006 explosion has already cost $26 million, not including another $1.5 million the town expects to spend this year to fix roads and utility lines damaged by the blast.

"We have a substantial industrial segment here in the community, and the potential [for another explosion] is always there," said Danvers Town Manager Wayne Marquis. "We like to think people are doing what they should be doing, but unless we have that outside expertise handling those processes, you can't know for certain."

Illinois
Chicago Schools and Police Department Share Video Cameras

The Chicago public schools system and city officials agreed last month on a partnership that will give the Chicago police department and the city's Office of Emergency Management and Communications a remote connection to the safety cameras installed inside and outside the city's public schools.

"When this program is fully implemented over the next few months," said Mayor Richard M. Daley, "we will have a comprehensive school security system that will make it far easier for us to respond more quickly and effectively to any emergency at a school building.

"As a city," he continued, "we have a responsibility to do all we can to protect our young people and give each and every one of them a better chance for a good life. The step we are announcing today will help us keep our young people safer when they are in and around school buildings throughout the city."

Daley and the other city officials participating in the agreement made the announcement against the backdrop of last month's violence against young people during which four public school students were killed, and another five wounded, in separate gun incidents. Over the past several years the Chicago public school system has installed numerous safety cameras in and around school buildings to help improve safety on school grounds. Until now, however, the real-time video provided by more than 4,500 cameras – installed both inside and outside an estimated 200 or so public elementary and high schools and administrative sites – has been available only to school officials.

Under the new agreement, the city's police department and the Chicago Office of Emergency Management and Communications will have remote-connection access to the safety cameras that, Daley said, will allow first responders to an emergency situation at a school to be able to view real-time video from both inside and outside the building on their portable data terminals.

Chicago is believed to be the first major U.S. city to field this type of integrated system. With the first buildings already on line, full implementation of the system is expected to be completed over the next few months. "Let me make clear," Daley said, "that routine monitoring will occur using only the outside cameras. The inside cameras will be viewable to authorized users only during emergencies.

"This new cooperative effort," he continued, will allow law-enforcement personnel "to assist the school system in monitoring the entrances and exits of our school buildings. It gives us another set of eyes to keep track of who is coming to and going from the school."

Texas

Conference Aims to Improve Dallas's Disaster-Response Efforts

Representatives from numerous public and private organizations met together at a Dallas Emergency Response Team (DERT) conference earlier this month to expand the partnership model citywide. DERT is a unique public-private partnership created to improve communications between business organizations and public safety departments before a disaster happens. The conference brought together city officials, building owners and managers, security professionals, and other emergency planners from the private and non-profit sectors to deal with the special challenges posed by various "critical incidents" – i.e., disasters and emergencies of various types affecting the city.

Whether a particular incident is the threat created by a tornado, or the quite different threat posed by a terrorist attack, members of the DERT group work together to prepare for, respond to, and recover from any and all types of critical incidents. The partnership model, which already has achieved significant success in downtown Dallas, soon will be replicated throughout the entire city.

The DERT plan is now in place, officials said, in two of the seven Dallas Police Department patrol districts. The organizers of last month's conference expressed hope that this month's meeting will provide the impetus needed to expand the DERT plan to the remaining districts.

Kenneth Shaw, director of the city's Office of Emergency Management, said the plan will become particularly important when Dallas-Fort Worth hosts the 2011 Super Bowl. Early estimates indicate that event will bring hundreds of thousands of visitors to the Dallas/Fort Worth area. Shaw said that more than $2 million will be spent on fire and police services during the week of the game.

Among the principal speakers at the conference were the chiefs of the Dallas Police Department and Dallas Fire-Rescue, FBI agents, and Dallas Mayor Tom Leppert. The conference program provided a wealth of information for property and business owners and managers as well as security directors, building engineers, business-continuity planners, and disaster-recovery specialists. Conference participants were able, among other things, to: 1. View the emergency-response equipment used by disaster experts; 2. Meet with law-enforcement and firefighting personnel who will have key DERT responsibilities; 3. Schedule exercises with the Office of Emergency Management to test their plans, procedures, and training for both real-life and simulated events; 4. Learn about the training opportunities open to DERT members throughout the North Central Texas region; and 5. Understand the city's commitment to fostering and expanding its partnership with the area's business and non-profit communities.

The DERT system has received high-level recognition from the U.S. Department of Homeland Security, which asked the group to develop a template of its program that can be used by other cities throughout the nation. In addition, the Government Accountability Office has included information about the DERT project in an audit of "best practices" in disaster response planning. "It's all about relationships," Shaw said, "and Dallas is leading the way in building a strong public-safety partnership … [between] the city and our private businesses and industries."

Adam McLaughlin is with the Port Authority of NY & NJ, and is the Preparedness Manager of Training and Exercises, Operations & Emergency Management, where he develops and implements agency-wide emergency response and recovery plans, business continuity plans, and training and exercise programs.

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