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Editor's Notes

By James D. Hessman, Editorial Remarks

After the floods subside, the earth stops shaking, the wildfires stop burning, and the winds die down, it is then time to recuperate, restore, and rebuild. Over the past two centuries or so, people have successfully developed the skills, and the scientific equipment, needed to prepare for, and sometimes avoid, these disasters.

However, the biggest killers have not been volcanoes, floods, tsunamis, or earthquakes, but rather invisible microorganisms that can attack the human body one cell at a time. Throughout history, infectious diseases, pandemic influenza in particular, have in fact killed more humans (and other animals) than the much more visible and exponentially more violent upheavals caused by what are generically described as "weather events."

Even with scientific progress, the battle between man and nature is still astronomically one-sided, and the 12 distinguished contributors to this month's printable issue of *DPJ* discuss some of the reasons why this is so. They also address how jurisdictions are managing medical surge events and working together to respond and recover from all hazard events.

Every day, citizens – ranging from firefighters and emergency medical technicians to doctors, nurses, and a broad spectrum of other first responders and healthcare workers – strive to protect the population and respond to various events. Included in this group of "heroes" are the Amateur Radio operators, who offer lifesaving communication services as described in Michael Corey's article. Thomas Russo tells about the key role that the South Carolina Region's Healthcare Coalition plays when mass fatalities cannot be avoided and families need to be consoled. Joseph Cahill addresses the need for using a "triage" approach to reduce transportation concerns when ambulances are in high demand.

In May 2011, thousands of unheralded, unsung volunteers from every walk of life came to the aid of their neighbors in Joplin, Missouri, thus writing another gallant chapter in American history – as Beth McAteer and Jack Herrmann both point out – that will be told and retold for many years to come. Meanwhile, the nation's scientists and lab technicians are still building new frontiers in the fight against infectious diseases. As David Gibson reports in his forward-looking article, there are several DOD (Department of Defense) programs designed primarily to protect warfighters, but those programs also have major fallout benefits for all citizens. Patrick Ross and Katherine Duncan suggest a few barriers to build, which they point out is the best defense for spreading disease before a threat actually surfaces.

In the long term, this is a story without an end. Formidable obstacles still remain. One obstacle is political in nature: the pending Supreme Court decision, discussed by Theodore Tully, on the Healthcare Reform Act, which may well have the potential to solve some long-running problems. Raphael Barishansky discusses lessons learned and cooperative efforts required as reflected in a new standards of care for future crisis response. Shannon Arledge shares information from the Federal Emergency Management Agency's Center for Domestic Preparedness on realistic training being offered to better prepare for real threats. And Craig DeAtley discusses the District of Columbia's healthcare coalition efforts to prepare for the next big surge event.

About the Cover: Before and after photos (taken on 8 September 2005 and 11 August 2006) of a parking area near the Memorial Hospital in Gulfport, Mississippi. More than 45 million cubic yards of land-based debris was left in Mississippi by Hurricane Katrina, according to officials of the Federal Emergency Management Agency. (FEMA photos by Mark Wolfe)

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Amateur Radio and the Healthcare Field

By Michael Corey, Emergency Management

Tornadoes, hurricanes, hazmat incidents, and many other disasters – both natural and manmade – can and do affect local communications in many communities throughout the nation. Events can overload communication systems – or, worse, cause complete disruptions that can severely impact a community's ability to respond to weather disasters and/or other emergencies. Although normal lines of communication may be effective and robust, each jurisdiction needs a back-up plan for times when normal operating systems are down. Redundancy is critical, particularly in the field of communications.

The Amateur Radio Service is regulated by the Federal Communications Commission (FCC) and is used primarily for voluntary noncommercial communications – particularly emergency communications. For more than 100 years, U.S. Amateur Radio operators have volunteered their time, equipment, and skills to their home communities. In times of emergency, they have partnered with a broad spectrum of public safety and emergency management organizations and agencies, as well as healthcare providers – generically referred to as "served agencies."

What Amateur Radio Cannot Do

Before discussing what Amateur Radio can do for healthcare, it is important to dispel any misconceptions by understanding what it *cannot* do. The healthcare field is quite diverse – ranging from primary care providers, to emergency medical centers, to disaster medical response teams, to public health administrators. The communication needs of those groups are as diverse as the types of care provided by individual healthcare facilities and organizations, and range from day-to-day business communications to the communication needs that arise during an emergency.

As a noncommercial radio service, commercial and business communications are in fact prohibited – in accordance with the FCC rules and regulations outlined for Amateur Radio operators. During an emergency, Amateur Radio can be used only if the following three qualifications are met: (a) there must be an immediate threat to life and/or property; (b) there must be no other means of communication available; and (c) Amateur Radio must not be used on a routine basis.

What Amateur Radio Can Do: Four State Examples

Amateur Radio plays a key role in supplementing, rather than supplanting, existing communications. It is not even intended to be the first alternative in a communications emergency, but, rather, an option that can be used "when all else fails." Each jurisdiction should already have an "all else" option in their emergency plans. The following examples demonstrate both the emergency communications capabilities and the public service aspects of Amateur Radio.

South Carolina – Evacuations as "the Key to Resiliency": In South Carolina, Amateur Radio operators came together to install "repeaters" – i.e., devices used to receive signals and retransmit them to cover a larger geographical area – and other equipment in hospitals to provide support during patient evacuations. The program,

known as the South Carolina Healthcare Amateur Radio Team (SC HEART), started in the Charleston area and has now expanded to provide services to more than 60 hospitals around the state. The project has the support of Amateur Radio groups, businesses, healthcare providers, and the state government. Large-scale patient evacuations do not occur very often, but South Carolina is in a hurricane-prone area, so readiness is the key to resiliency. SC HEART members regularly participate in training and various drills and exercises to maintain a high level of readiness.

Washington – Field Support for MCI Situations: Western Washington Medical Services Communications (http://www.ww7mst.org/) is a group of Amateur Radio operators who assist healthcare providers when normal lines of communication are down – or perhaps overloaded during a disaster. These operators provide communications to hospitals, blood banks, medical suppliers, and public health offices, and also serve as field support during mass-casualty incidents. In addition, they provide critical communication links between various healthcare providers, as well as between those healthcare providers and the state's emergency operations centers. The Washington group offers voice as well as digital/data communications.

Mississippi – Medical Surge Capacity & SMAT II: The State Medical Assistance Team is a response group that provides "medical surge capacity in an emergency through the provision of trained medical personnel, medical products, pharmaceuticals, and a physical plant for triage, treatment, tracking, and transport of patients" (quoted from the South Mississippi State Medical Assistance Team, SMAT II, Team Applicant Packet). The team includes a full spectrum of healthcare professionals – including doctors, nurses, pharmacists, and technicians – as well as a broad range of logistical and support personnel. There is also a communications team of Amateur Radio operators available to support general communications, backup communications, and maintenance of communications equipment that is carried in response vehicles. These operators regularly train and exercise with the full team, a practice that helps build cohesiveness within the group.

Louisiana – Post-Katrina Challenges: Seven years after the devastating disaster that struck the city of New Orleans and its surrounding areas, the ghost of Hurricane Katrina continues to impress and challenge local and state planners, responders, and receivers – all of whom are still focused on the scope of the damage that occurred, the reactions of individual residents (and emergency responders) faced with an unimaginable crisis, and the preparedness challenges that still remain. Amateur Radio operators played a key role in healthcare communications under true emergency situations during Katrina. In the midst of the flooding, a woman who was pregnant and had gone into labor made her way to a charity hospital that was still staffed and had effectively become an island within the city. Working by flashlight, doctors were able to determine that the birth would require not only a caesarean section but also safe transport to another facility. Fortunately, that hospital, like many others in the area, was equipped with Amateur Radio apparatus and had one volunteer operator available to provide communications during the storm. Moreover, all normal systems were down, but the operator, who had been providing communications to the hospital 20 hours a day since the beginning of the disaster, was able to use the Amateur Radio network to request a helicopter to transport the woman to another hospital, thus saving both lives.

HIPAA, Training & Operators

Obviously, Amateur Radio operators serve as a vital just-in-case asset to the healthcare field during times of emergency or disaster. However, there is one major concern unique to the healthcare field that must be addressed. That concern relates to the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Amateur Radio communications are not secure and operators are not permitted to evade or obscure the information they are transmitting. In short, there is no reasonable expectation of privacy for the information being transmitted via Amateur Radio.

There are, however, other modes of communication, such as packet (i.e., a data mode), that may provide at least some degree of privacy for information sent, but total confidentiality cannot be guaranteed or expected. However, not all information that must be sent falls under HIPAA guidelines. Healthcare agencies should plan ahead, therefore, to determine how they will address this concern – waiting until disaster strikes is obviously not the time to make this decision. It also seems clear that Amateur Radio operators assisting an organization should receive training on HIPAA regulations so they know what is expected of them during an actual emergency.

In recent years, there has been a growing trend of hospital employees and others in the healthcare field acquiring Amateur Radio licenses to be prepared in case of emergency. Although this seems on the surface to be a good idea, it also presents two additional challenges: (a) During an emergency, these

employees may have more important tasks to do, so they may not have time to be communicators; and (b) The same employees are less likely to be involved in Amateur Radio when there is no emergency – a likelihood that would become much more apparent during an emergency. Amateur Radio clubs and groups can and will help, though – usually by providing training and involvement opportunities to licensed employees.

Amateur Radio operators are an almost invisible but very welcome asset to the agencies they serve in their home communities – for a variety of reasons. Through everyday practice as operators, they gain experience building stations, understanding networks, practicing preparedness, exercising their technical skills, and strengthening other "people skills" that are all needed during times of disaster. They are ready volunteers who are both able and willing to serve their communities when called upon.

Moreover, because of the technical nature of the Amateur Radio service, operators understand the need for constant training and education as well as infrastructure utilization. When the infrastructure is already established and fully functioning as it should, Amateur Radio operators will leverage it for maximum advantage. When the infrastructure is disabled, or gone entirely – i.e., a worst-case scenario – the same operators will continue to serve their communities and help facilitate, both effectively and efficiently, the communications that are needed to cope with disasters of all types.

Michael (Mike) Corey, KI1U, is the Emergency Preparedness and Response Manager for the American Radio Relay League (ARRL – the national association for amateur radio in the United States). He also plays an integral part in the management of Amateur Radio Emergency Services (ARES), and possesses almost 20 years of experience in the field of emergency communications. He has worked with ARES and SKYWARN, a program for trained volunteers to spot and report severe weather, in Indiana and Mississippi. He also is the author of the ARRL Storm Spotter's Handbook, published in January 2010, and previously worked as the Communications Officer for the Howard County Sheriff's Department in Indiana – and, later, as the Communications Officer of the University of Mississippi Police Department. He holds a Bachelor's degree in Political Science from Indiana University and Master's degree in Criminal Justice from the University of Mississippi.

Mass-Fatality Surge & Family Assistance

By Thomas P. Russo, State Homeland News

The outbreak of tornadoes that rocked the Midwest and Southeast regions of the United States in 2011 illustrated not only how quickly disaster can strike but also how important it is for communities to be fully prepared to cope with such emergencies. The cooperative effort that followed demonstrated a willingness of neighbors to assist neighbors with response and recovery operations – but, more importantly, underscored the need for responses that are based on region-wide planning.

These realizations played directly into and supported the transition of the Hospital Preparedness Program (HPP) of the U.S. Department of Health and Human Services (HHS) from facility-level preparedness to a community-centric model. A number of region-wide healthcare coalitions already have formed, in fact, and brought together not only healthcare partners but also various allied disciplines representing neighbor jurisdictions.

The lessons learned from the 2011 tornadoes, coupled with the HPP-revised mission (region-wide capabilities), served as the impetus to: (a) expand the coastal South Carolina Region's coalition; and (b) focus greater attention on a critical planning element that earlier had received only cursory consideration. Fatality management, which is among the eight primary HPP target capabilities, served as a priority operational goal for the work of this regional coalition. Fatality surge planning could broaden the coalition's base by bringing together not only facility and jurisdiction representatives, but also various public- and private-sector partners, into a revitalized and more collaborative planning framework.

Training, Exercises & Evaluations

During the summer of 2011, hospitals discussed the need for mass-fatality planning at the region's healthcare coalition meetings. The topic came up due to coroners who had approached hospital emergency planners and asked if anticipated hospital expansion plans included the addition of morgue units – a need that becomes evident in light of the fact that, of three counties in the region, two had no morgue capacity at all, and the third had only enough capacity to accommodate 10 human remains. Throughout the region, therefore, coroners were dependent on hospital morgue resources in the event of disasters that resulted in a large number of fatalities.

One result of these discussions was that public health representatives, working in cooperation with area hospitals, started to reach out more directly to coroners and emergency managers throughout the region to begin serious talks about mass-fatality incidents. It was also determined by coalition partners that the local chapter of the American Red Cross (ARC) should be involved because of the major role the ARC has played, for many years: (a) in coping with aviation disasters; and (b) in providing family assistance. It became clear very quickly that no single jurisdiction possessed all of the resources needed to effectively manage a mass-fatality event. The logical conclusion, therefore, was that coping with such incidents would necessitate a regional response. In other words, regionalization is a core planning principle that should be fully integrated into future mass-fatality response and recovery operations.

In addition to writing an effective plan, a consensus emerged among the coalition members that an acceptable plan must also include training and exercises. It was the new emphasis on a comprehensive training, exercise, and evaluation program, in fact, that led the coalition to approach the local airport authority, which is required by the Federal Aviation Administration (FAA) to conduct a full-scale exercise (FSE) once every three years. Eventually, the workgroup was rounded out with inclusion of a regional air carrier and the Southern Baptist Disaster Relief organization, which has considerable experience in roles that support a Family Assistance Center (FAC). The outcome of this collaborative effort was a consensus on three primary objectives:

1. Write a Mass Fatality/Family Assistance Center (MF/FAC) plan;
2. Conduct a tabletop exercise using a mass-fatality scenario that activates family assistance; and
3. Carry out a full-scale exercise that activates mass-fatality situations and family assistance needs, as well as the assets required to support such activations.

Coalition members decided to start with a workshop that combined the two-day FEMA (Federal Emergency Management Agency) 386 Mass Fatality Incident Operations

Course – with a third day focused specifically on family assistance. Because few members fully understood the expectations for family assistance, it became critical to hear from state and federal partners. Before a plan could be written, members needed to know what the expectations of responding partners would be for a community that is suddenly responsible for the re-unification of families with their decedents.

The MF/FAC Workshop

The MF/FAC workshop was held 6-8 December 2011, with the first two days dedicated to the FEMA 386 course content and the third day devoted to the FAC component of mass-fatality responses. The specific goal for the third day was to identify the planning elements that attendees determined should be incorporated into a region-wide MF/FAC plan.

The coalition was successful in recruiting several members of the Disaster Mortuary Operational Response Team (DMORT), including a representative from the DMORT Family Assistance Center Team (FACT). The DMORTs are prominent among the hardest working components of the HHS's National Disaster Medical System.

More than 30 organizations were represented at the workshop by 82 participants – including representatives from government, non-government, and private-sector organizations and a broad range of social service agencies. Attendees were divided into six breakout groups that clustered agency personnel into response components that could carry forward into development of the MF/FAC plan. The six workgroups focused on the following broad (and sometimes overlapping) topic areas:

- Incident scene management (public safety, fire/rescue, EMS, law enforcement);
- Mortuary services (coroners, vital records, funeral directors);
- Family assistance (ARC, social service agencies, behavioral and spiritual care);
- Healthcare and hospital care (hospitals);
- Public information (public information officers representing county, city, ARC, and the private sector); and
- Resource management (county & state emergency management).

Each breakout group identified key planning elements that served as the basis for developing the MF/FAC plan. The plan was then written and circulated for review and comments. A core group met to incorporate comments and finalize the details of the plan.

Planning for an MF/FAC Exercise

The Homeland Security Exercise and Evaluation Program (HSEEP) guidance was used to plan an MF/FAC tabletop exercise. An exercise design team was established to assist with the exercise scenario, exercise design, and organization attendee list. At the first meeting (Initial Planning Conference), dates for both a Mid-Term Planning Conference (MPC) and a Final Planning Conference (FPC) were set and the exercise date was finalized.

The scenario agreed upon would be an off-site aviation accident that resulted in both mass casualties and mass fatalities. Objectives were discussed, along with documentation requirements – e.g., the writing of a Situation Manual and an After Action Report. The specific exercise purpose was:

> *[To] test the region-wide family assistance plan to coordinate and integrate local, state, and federal resources that could respond to the coastal region after the impact of a disaster that results in mass fatalities and that requires activation of a family assistance center to support response and recovery.*

The design strategy was to present participants with five modules that could guide them from the pre-incident stage through recovery with the establishment of the FAC. The exercise would begin with a commercial airliner in distress, continue with the public safety response, and conclude with a social service interagency response – identifying the required resources anticipated for recovery operations. A common theme throughout all of the modules would be the role of family assistance as defined by private-sector air carriers, with consideration of the responsibilities of the National Transportation Safety Board (NTSB) also incorporated. The intent would be to identify the expectations and capabilities of local community agencies and organizations to support and sustain fatality surge recovery.

Tabletops, Full-Scale Exercises & Beyond

The "First Alliance" MF/FAC tabletop exercise, held in April 2012, was attended not only by local responding agencies but also by some state agencies – augmented by "call-in attendance" by representatives of the Disaster Assistance team of the NTSB. After examining the casualty and fatality counts introduced in the scenario's modules, it was determined that, although hospitals probably could handle the trauma cases, the area's capability to handle burn patients was less than adequate – air assets would be required, therefore, to transport the patients who could not be treated locally. The morgue capacity and regional morgue storage capacity also were considered to be inadequate. Therefore, state morgue assets would be needed to support regional mortuary services.

The after-action report revealed a number of discrepancies between the region's family assistance plan and the plans provided by participating agencies. As a result, participants were encouraged to review their plans and incorporate various corrective improvements that had been recommended.

Currently, plans are underway for a full-scale exercise, scheduled for January 2014, that will build on the results of the April tabletop exercise. The healthcare coalition will continue to focus on its mass-fatality capabilities as well as various related aspects of fatality surge and family assistance operations. The roles played by individual agencies will be examined as they relate to rural areas of the region, where passenger rail service is a prominent transportation source. In addition, the role of family assistance will be explored in greater depth for noncommercial passenger incidents, where federal resources may not always be available to support such response operations.

Thomas (Tom) P. Russo, MA, CEM, has nearly 30 years of experience in strategic planning, project management, and professional development, 17 of which have been in public health. Trained in emergency management, public health, homeland security, and association management, he is the emergency preparedness planner for Region 6 of the South Carolina Department of Health & Environmental Control. Russo holds a Master's degree in Homeland Security Studies from the Naval Postgraduate School's Center for Homeland Defense and Security and has authored a number of articles on topics ranging from pandemic policy and preparedness to the continuity of operations planning readiness for medical facilities.

Taxis for the Sick

By Joseph Cahill, EMS

Every EMS (Emergency Medical Services) staff member learns a truism very early in his or her career: EMS is frequently used to provide basic transportation for people who are really not sick enough to need an ambulance and/or taken immediately to the emergency room. In fact, during the everyday operations of many resource-poor systems, ambulances deployed on "taxi ride" calls draw scarce resources away from those endangered by truly life-threatening emergencies. For that reason alone, local medical resources may well be stretched to and beyond their capacity during a local or regional crisis.

Another truism is that the general public has a limited understanding of the role played by EMS; regardless of the quality of the services reasonably available, there will always be at least some of those served who will never be satisfied. Fortunately, most U.S. cities and towns already have taken the opportunity, when available, to help shape public understanding, and individual expectations, by spreading the message that EMS and 9-1-1 calls are intended and should be used "for emergency purposes only."

Of course, the overarching mandate for most EMS systems within the United States is to provide lifesaving care – including, if and when needed, transportation to a hospital or other healthcare facility. However, a realistic and effective system goal would be: (a) to provide rapid EMS services, including transportation, to all callers who require that level of services; and (b) to provide a somewhat lower level of services (again, including transportation) to those who, insofar as can be determined, do not actually require the same "highest level" of services – and, therefore, do not monopolize the ambulances and other emergency resources available.

Some EMS systems – the one in San Antonio, Texas, is a good example – distribute vouchers that allow nonemergency patients to be transported to hospitals, clinics, or pharmacies via taxi. This practice is a relatively low-cost way to return ambulances to the 9-1-1 system as quickly as possible and make them available primarily for those with truly life-threatening illnesses and injuries.

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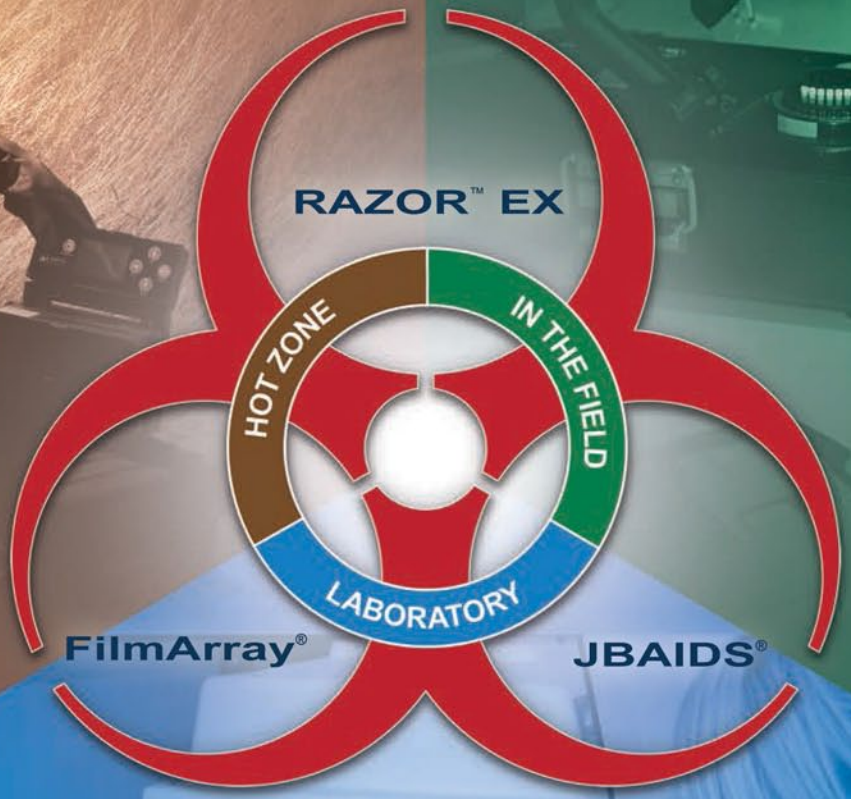

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Establishing Priorities & Permitting Refusals

Other jurisdictions address the problem by using a prioritization system in which all calls received are sorted by priorities – which are based on what the various callers tell the 9-1-1 operator. The ambulances and EMS staff are then dispatched according to the priorities assigned. In some systems, the dispatchers are even permitted to refuse calls that are categorized into the lowest possible priority level.

The ability to use this model obviously varies from state to state, and from city to city. In New York State, for example, EMS is required to respond to all requests for emergency medical assistance – regardless of the nature of the request. Of course, this policy may reflect an attempt to reduce the legal (and, therefore, financial) risks to the agency, particularly in cases where the caller's ability to assess *and to communicate* what is actually happening is uncertain.

Some state laws also now allow EMS to refuse to transport patients suffering from non-life-threatening conditions. The EMS providers are even permitted to leave patients on scene *after:* (a) responding to the call; (b) assessing the patient's condition; and (c) determining that the patient does not, in fact, require emergency treatment. The principal concern with this scenario is that EMS staff might (unintentionally, of course) make an erroneous decision and mistakenly leave behind a patient who does in fact need emergency care.

To minimize such types of error, it is particularly important to: (a) involve a physician, whenever possible; (b) provide

the thorough training needed to make accurate on-scene decisions; and (c) perform periodic reviews – of both the policies established and the operations actually carried out. Here it should also be noted that, if there really is a justifiable concern about EMS staff making erroneous decisions related to *not* treating a patient, the same concern should be factored into the decisions made when actually treating patients.

As with most effective plans, the "taxi" model can be scaled either up or down to meet sudden and uncharacteristic increases in the volume of calls received. In a regional crisis, for example, the leadership may decide to lessen the requirement for taxi vouchers to be issued to lower-priority patients, and/or to change the threshold used for leaving patients on the scene. The bottom line is that the taxi-voucher option still offers one reasonably practical solution to reduce the high cost of healthcare in general and, at the same time, expand the availability of emergency resources needed during both routine operations and medical surge events.

For additional information on:
San Antonio EMS, visit http://www.sanantonio.gov/safd/emsdiv.asp

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Joseph Cahill is a medicolegal investigator for the Massachusetts Office of the Chief Medical Examiner. He previously served as exercise and training coordinator for the Massachusetts Department of Public Health and as 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. Prior to that, he was the department's Division 6 ALS coordinator, covering the South Bronx and Harlem. He also served on the faculty of the Westchester County Community College's Paramedic Program and has been a frequent guest lecturer for the U.S. Secret Service, the FDNY EMS Academy, and Montefiore Hospital.

Finding Beds in the Middle of a Disaster

By Beth McAteer, Emergency Management

One of the most recent examples of medical surge in action was the response effort following a devastating EF5 tornado that ripped through the city of Joplin, Missouri, with virtually no warning on 22 May 2011. Among the most heavily damaged components of the city's vital infrastructure was the area in and around the St. John's Regional Medical Center – a 367-bed facility that was in the center of the tornado's destructive path, which stretched along an axis 13.8 miles long and up to one mile wide.

Fortunately, Joplin had already started – prior to the 2011 emergency – to coordinate its plans with other healthcare coalition members to build a regional hospital partnership. Since 2010, participation in regional planning efforts from hospitals within the state has grown from 88 percent to almost 95 percent. In addition, participation in healthcare coalitions themselves has increased significantly across the nation – from only 43 percent in 2010 to almost 85 percent earlier this year. This fortunately timed focus on regional planning undoubtedly enhanced the medical surge capacity available during the 2011 tornado season.

In 2011, the residents of Joplin, Missouri, were faced with an unprecedented disaster. The community's successful response to the medical surge problems that followed can be credited to effective community-based planning, the availability of alternate care sites, and the efforts of numerous willing caregivers.

Medical surge can be defined as the ability to provide adequate medical evaluation and care during significant weather events that exceed the limits of a community's normal medical infrastructure. Individual hospitals, such as St. John's, plan for and routinely handle surge requirements resulting from seasonal fluctuations in respiratory ailments, for example, and/or major disasters in the local community. The need for a greater surge capacity may also develop from a number of unexpected scenarios ranging from violent weather events (hurricanes and tornadoes) to highly toxic and widespread chemical releases to pandemic influenza and other acutely infectious disease outbreaks. The causes of any of these may be natural or manmade, accidental or deliberate, time-limited or open-ended, and either localized in one county or spread across a state, a multi-state region, or the entire country.

Considerations, Constraints & Collapses: Community-Based Planning

Each scenario presents its own set of considerations and constraints that will largely determine how surge capacity is handled. In the event of an emergency, most hospitals will activate their own internal disaster plans and redirect resources as needed to care for the most seriously ill or injured. However, in order to continue normal hospital operations – while also managing an overwhelming surge of additional, and unexpected, patients – an expansion of the local medical infrastructure is usually needed as well.

One significant success in Joplin was the regional hospitals' focus (*before* the tornado struck) on community-based planning – which, as it turned out, provided the mechanisms needed to cope successfully with the numerous problems that developed in the minutes, hours, and days following the tornado. The Joplin experience demonstrated, among many other things, that when a community has to rely on its own responders and citizen volunteers to effectively manage such disasters, community-based planning is an effective way to build surge capacity. In Joplin, that planning included the establishment of two alternate care sites (ACSs) at local high schools.

Although the cause and size of almost any surge event imaginable cannot be precisely estimated, surge management planning provides an effective approach to develop a varying number of "what if" scenarios. Under normal circumstances, the existing hospital infrastructure is typically used to meet most surge capacity needs. However, in the case of St. John's, the hospital suffered a direct hit from the tornado that caused enormous damage – e.g., broken windows, collapsed walls, and a torn-off roof. The tornado also destroyed the hospital's generators, damaged

sprinklers and sewer pipes, and disrupted service to all of the major utilities (water, gas, and electricity). The St. John's officials had no choice, therefore, but to order the evacuation of all of its 183 patients.

Numerous Problems, Several Guidelines & Four Important Actions

The St. John's experience was not unusual in that respect. Almost all of the nation's hospitals have a limited ability to quickly expand their everyday healthcare capacity. One way to increase that capacity, therefore, is to expand surge planning geographically to include not only the local public health community but also the capacities and capabilities of several surrounding communities, counties, regions, and entire states. During large-scale health emergencies such as natural disasters that strain all local capacities, though, there are several guidelines that are worth considering. This type of planning is part of an all-hazard planning and preparedness culture that the healthcare and community practitioners need to instill in their operations and practices.

Following are four of the more important actions that should be taken before making any final decisions:

1. Determine the current state of medical readiness – specifically including local first-responder capabilities, local bed capacity, and surge capacity currently available.

2. Review current preparedness plans and the activities, exercises, and drills already being used to strengthen and coordinate medical readiness.

3. Discover any current overlaps and/or inconsistencies in medical readiness plans and activities.

4. Coordinate the drills, exercises, and training sessions required for everyone, and every facility, involved in the plan, so that a real disaster is not the first time a plan is actually (and fully) implemented.

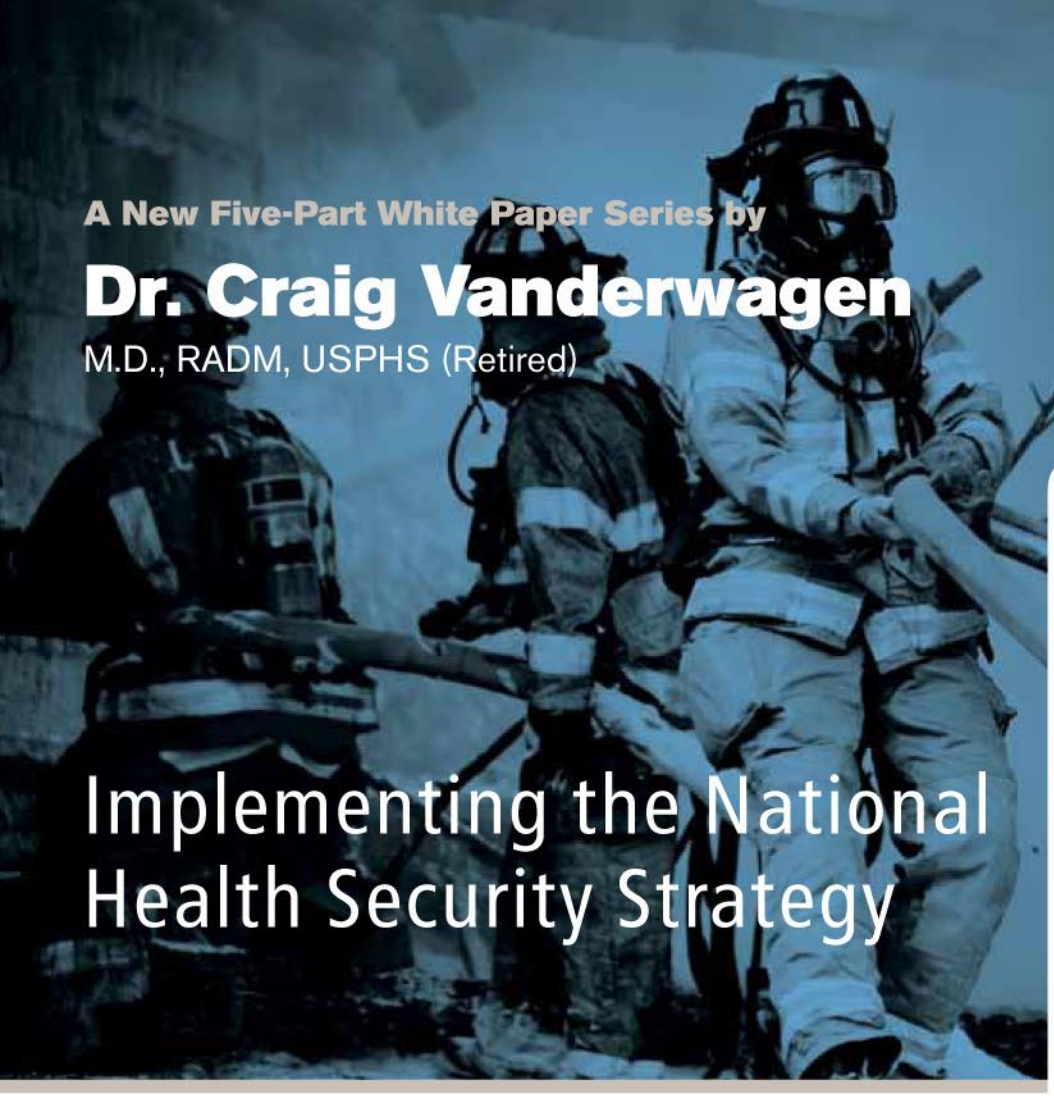
In many cases, the communities that are most effective in coping with disasters are, not surprisingly, the ones that drill – and keep drilling. In the case of Joplin, there was very little time between the tornado warning and the actual impact, so no evacuations were possible prior to the physical destruction of the hospital. However, the hospital staff had been well trained and for that reason was able, fortunately, to move St. John's patients to the hallway, give them pillows and blankets for additional protection, and close the blinds, window coverings, and doors.

To effectively manage an unexpected surge of patients, a community-based triage and medical care system is also required to reduce the huge burden imposed on individual hospitals and other healthcare facilities by efficiently redirecting, to other healthcare facilities, various segments of the population directly affected. During and after the Joplin tornado, St. John's patients suffering from obvious physical injuries were transferred to Freeman West in Joplin and Freeman Neosha, which is 18 miles from Joplin – the remaining 124 patients, who did not require the same level of surgery, cardiac, and trauma capabilities, were transferred to other area hospitals.

Additional Complications – Dealing (Compassionately) with the Worried Well

The lesson learned: For maximum operational effectiveness, an effective surge plan involves: (a) the establishment of temporary facilities for critical and noncritical inpatient and outpatient care; (b) the combined use of field triage, population-based triage, and secondary triage; and (c) an effective community outreach plan, combined with public education, to help in transporting the directly affected population to treatment at another appropriate system location. Healthcare coalitions, such as the one in Joplin, offer community-level planning and sharing of resources and personnel for disaster and/or emergency events.

But this is not all that should be done and/or considered in the preplanning stages. Communities must also prepare for another group of "victims" who often present themselves, during times of sudden crisis, at various hospitals, emergency medical centers, and ACSs – the so-called "worried well" and/or "potentially exposed." During and after large-scale emergency events, many citizens become understandably concerned about the current or impending crisis, thus triggering panic and surge at healthcare facilities – even though many local residents may be at low risk of injury. The worried-well population could in fact be even larger than the population that undoubtedly does require treatment. If nothing else, the worried-well problem reinforces the importance of establishing adequate field triage, population-based triage, and secondary triage capabilities.



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After being triaged, many people requiring medical care may – depending on the surge capacity available – be sent to a hospital, returned to their homes, or transferred to temporary care facilities designated (again, beforehand) to provide a given level of medical care. In Joplin, where an estimated 8,000 homes, office buildings, and other structures were destroyed or severely damaged, the option of releasing patients to their homes was problematic. ACSs – i.e., any facility, including spaces within a hospital but outside the Emergency Department (ED), where medical care may be provided during a mass-casualty surge incident – offered information about shelters and alternate housing so that people could go "home." The use of ACSs further expands the medical surge capacity available during major incidents while at the same time decreasing the burden on the hospital system(s) most directly affected.

Effective Pre-Planning Stressed – The Growing Importance of Trained Volunteers

The type of ACS that should be activated depends on the magnitude, severity, and nature of the specific public health emergency or pandemic, as well as the resulting medical needs of the local community directly affected. The ACS concept augments the existing healthcare system's capacity for care in a specific service area, but is dependent upon the transportation system locally available for the movement of patients, decedents, and material resources. When the medical system is overwhelmed, hospitals must use ACSs to effectively manage: (a) the spread (of a pandemic, for example); and (b) the influx of a large number of potential patients likely to present themselves throughout the community.

Having a volunteer organization to assist first responders in properly handling a medical surge incident is yet another way a community can increase local capacity if, as, and when needed. To build that capability, an active volunteer program must be developed and maintained to deal with incidents that are faced by emergency responders on a daily basis. The program should be robust enough, of course, to identify pre-trained staff who are able to deal with the many (and sometimes unexpected) specific needs that develop during and/or because of a pandemic-type event.

One standardized approach that should be considered is having medically trained volunteers provide assistance during disasters and/or other emergency situations. When the time comes, these volunteers can be called upon to respond – e.g., the Oklahoma Medical Reserve Corps was activated to assist in Joplin. In the event of an emergency, hospitals activate their internal disaster plans and redirect resources to care for the most seriously ill. However, the ability to cope with an overwhelming surge of patients may require a significant expansion of the local medical infrastructure.

Effective surge management planning relies on: (a) community-based planning by the local hospital and public health communities; (b) the development and use of alternate care facilities; and (c) the strategic use of volunteers. Ultimately, an interdisciplinary team of emergency responders and community volunteers should work together to develop an effective and efficient response to a medical surge emergency. It is important to exercise planning efforts on a regular basis and update those plans based on the lessons learned and the best practices.

Probably the most difficult challenges to cope with during an actual disaster, such as the one that devastated Joplin, are: maintaining situational awareness; using triage and tracking to maximum advantage; providing an effective alternative to the frequently limited radio communications available; maintaining a knowledgeable and commanding presence in the emergency operations center; dealing with unreliable cell service; and finding ways to reduce the inability to inform people who are seriously injured that the hospital is already overwhelmed. The development and use of regional partnerships might well be the right answer to those problems.

Beth McAteer is the Public Health Program Director for Witt Associates, a public safety and crisis management consulting firm. She joined Witt Associates in 2010 with more than 15 years' experience in the healthcare field in various positions – including a tour of duty at the Pennsylvania Department of Health, where she served as Emergency Medical Services Program Manager for the Commonwealth's Clinical Education and Preparedness program. She also coordinated the response and deployment of Pennsylvania's EMS Strike Teams in support of two federally declared disasters through the Emergency Management Assistance Compacts to Hurricanes Katrina and Gustav, and spearheaded the effort to design and implement an enterprise-wide information technology solution to support patient/evacuee tracking for emergency medical services and hospital personnel throughout the Commonwealth of Pennsylvania.

Healthcare Reform: Major Effects on Hospital Preparedness

By Theodore (Ted) Tully, Health Systems

As most Americans know, the Obama administration's healthcare reform act is currently being challenged in the U.S. Supreme Court. Regardless of the outcome, most decision-making officials in hospitals across the nation should already have started to plan for the many changes in medical care the act requires. Unless the act is dramatically struck down in its entirety, in fact, the sweeping revisions required for implementation will affect the day-to-day operations of almost all U.S. hospitals in many ways. The *business* of healthcare also will dramatically change as hospitals are reimbursed in one way or another *by keeping patients out of hospitals*.

To plan for this shift, many hospitals are already: (a) developing stronger physician alliances; (b) concentrating more closely on patient-satisfaction scores; (c) developing various accountable-care organizations – i.e., new and/or revised alliances between physician groups and hospitals; and (d) strengthening their focus on home-care coordination.

If these aspects of the act remain law, the changes mandated will also require a stronger focus on how hospitals prepare for their new and somewhat revised patient populations. If the shifts mandated by the law are fully implemented and patient care significantly shifts out of hospitals and into home care, current emergency preparedness planning policies must also change.

Changes take time and are not easy to implement, but the planning and implementation processes must start as early as possible. If managed correctly, new healthcare reform policies may well solve such long-running problems as the lack of surge capacity and/or emergency power.

A Shift in Focus on Alternate Care Sites

If patient care – and the reimbursement policies attached to it – does shift from inpatient sites to offices and/or healthcare facilities other than hospitals, even greater shifts will undoubtedly be required to cope with surge events such as hurricanes, earthquakes, and even mass-casualty terrorist incidents. However, such changes might actually increase the ability of hospitals to surge internally. If the healthcare reform act does, in fact, lower the daily hospital census, additional bed spaces will become available, and hospitals will find it easier to create more single-patient rooms – a shift that would probably lead to an increase in patient satisfaction scores (continuing a trend that has occurred even at inter-city hospitals during the past decade). If engineered appropriately – i.e., the installation of dual headboards, for example, in rooms with the capacity for a second patient – these single-patient rooms will be able to meet or exceed current surge-event capacities and the result might be as much as a net increase of 50 percent or more additional patients.

Emergency planners have for the past decade discussed the problems involved in moving patients to alternate care facilities. However, the plans to use such nontraditional venues as stadiums, schools, and even hotels in emergency situations are very costly to develop and prepare for, in large part because a sustainable infrastructure – e.g., food, medical supplies, emergency water, and power – also would be required. Another major challenge in creating such alternate sites is maintaining, retraining, and managing a workforce that is currently focused primarily, and sometimes exclusively, on hospital-based care.

In addition, if the healthcare-reform processes mandated by the act incentivize the U.S. hospitals to coordinate an improved and more effective home healthcare system nationally, and/or a better alternate-care environment – e.g., rehabilitation centers and nursing-home facilities that could be used following same-day surgery – the result could be a more attractive, more practical, and even more sustainable solution to current alternate-care problems.

Emergency Benefits Likely From New EMR Requirements

The incentive to develop a comprehensive electronic medical record (EMR) system has also been thrust upon the nation's hospitals in recent years. Some hospitals have seen the benefits

of using EMRs in relatively small spaces such as emergency rooms, but the implementation costs for an entire institution are staggering. Nonetheless, because of continuing reductions in federal grant dollars – combined with the new requirements mandated by the healthcare reform act – most but not all U.S. hospitals are now moving more quickly to implement their EMR systems. It is expected that – in anticipation of the EMR requirements postulated to meet a 2014 deadline – most of the nation's hospitals will soon reach at least some level of EMR implementation, and that change will beneficially affect almost all operating and recovery rooms, nursing stations, doctors' offices, and other spaces throughout each and every one of the nation's hospitals.

For emergency planning in hospitals, implementation of the healthcare reform act also requires improvements to such material assets as emergency power. The increase in portable hospital data terminals – or so-called Wireless on Wheels (WOW) systems – requires not only significant augmentation/upgrading of the current electrical grids in some hospitals but also a reliable source of emergency power (to cope with unplanned interruptions). If power surges or brownouts do occur, valuable EMR data could be lost. The added benefit to hospitals of upgrading their emergency power capabilities has been obvious for quite a few years, though – many of the nation's hospitals are still operating with generators and cutover switches that date back to the mid-1900s.

It seems likely that many if not most of these grant-funded improvements would never have been carried out solely to meet emergency-preparedness requirements under the normal operating budgets of most hospitals. Given the current EMR requirements for more and better emergency power, the greater power capacity available in the future will be an added benefit to hospitals in meeting their emergency needs.

Improved Patient Flow – From Admission to Discharge

A fully functioning EMR system will help hospitals track patients more effectively, and at all times, throughout the patient care process – in clinics and at other sites outside traditional facilities, for example. During emergencies and/or in other situations when hospitals must be able to transfer patients quickly and safely to other facilities, an effectively managed EMR system will ensure that patient medical records follow the patients to each destination. Hurricane Katrina in 2005 was but one of several worst-case examples of why an effective EMR system is needed both during and after the evacuation of a large number of patients. In contrast, the after-action report on the tornado that devastated Joplin, Missouri, last year described that area's EMR system as a "major strength in planning." An effective EMR system also helps immensely even in less than worst-case scenarios – a hospital fire, for example – when patients are simply relocated to other areas of the same hospital, as happened in January 2009 when the Mount Sinai Hospital in New York City had to move over 400 patients.

Only time will tell, of course, how the U.S. healthcare system might change in other ways, particularly in view of the sweeping reforms that are currently required of hospitals within the next two years. It is not yet known if Congress and/or the Supreme Court will make additional changes to adjust the healthcare reform act before, and if, it is implemented in its entirety. Regardless of the outcome of the case now before the Supreme Court, hospital administrators must plan for it (or similar legislation) to be implemented, at least in part, in various ways and perhaps at various times. Many of the nation's hospital administrators are in fact already attempting to position themselves, and the institutions they manage, to cope with the sweeping changes now anticipated.

How hospitals evolve and change might (given the probable future growth in patient-centered care, an improved EMR system, and other changes in hospital infrastructures) actually help make them better prepared for at least some if not all future emergencies. It is particularly important, therefore, for hospital emergency planners to attend and actively participate in planning meetings. To be fully ready for the changes now imminent, they must be able to present a stronger and better articulated case for surge planning – involving, for example, the redesign of single-patient rooms, changes in emergency power, and improved coordination with hospital home-care agencies and personnel. If planned and implemented properly, these coming shifts in the nation's current healthcare continuum may and should actually make hospitals better prepared for the next major healthcare emergency.

Theodore (Ted) Tully is the Administrative Director for Emergency Preparedness at the Mount Sinai Medical Center in New York City. He previously served as Vice President for Emergency Services at the Westchester Medical Center (WMC), as the Westchester County EMS (emergency medical services) Coordinator, and as a police paramedic/detective in Greenburgh, New York. He also helped create the WMC Regional Resource Center, which is responsible for coordinating the emergency plans of 32 hospitals in lower New York State.

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Beyond Vaccines: Defeating Future Flu Viruses

By David Gibson, DoD

From the beginning of 1918 until the end of 1920, the world suffered through a deadly influenza (flu) pandemic that infected an estimated 500 million people in numerous countries throughout the world. Before it was over, at least 50 million people had died, including 650,000 Americans. Nearly half of the U.S. soldiers who perished in Europe during World War I died from the influenza virus rather than from combat injuries. The rapid spread of the so-called "Spanish flu" has been attributed to closely packed troop quarters and massive troop movements, coupled with the increased travel possibilities available from the developing transportation system.

Although later influenza outbreaks have not matched the severity or devastation of the 1918-1920 pandemic, the number of influenza-related deaths in the United States in any given year is between 3,000 and 49,000, according to the U.S. Centers for Disease Control and Prevention (CDC). This wide range of death rates reflects circulation variability of numerous influenza virus strains in addition to wide fluctuations in duration and severity of each flu season. Regardless of the exact number of deaths in any recent year, the risk posed by new influenza outbreaks remains a serious threat to public health – and, for that reason, several government agencies (such as the CDC) are not only focusing greater attention on the strategies needed to mitigate the impact of any and all future flu pandemics, but also striving to ensure that the global death toll suffered in the early 20th century is not repeated.

Legislation & Guidelines For Outbreak Response

Recognizing that new epidemics and/or pandemics may arise before treatments that address specific diseases are cleared through the U.S. Food and Drug Administration (FDA), several steps already have been taken to ensure that the nation can expeditiously and effectively respond to such outbreaks. Following are three prominent examples of the actions already taken:

- President William J. Clinton's 30 September 1999 Executive Order (EO) 13139 stipulates the conditions under which a promising, yet unlicensed, medical countermeasure may be administered to military personnel when no FDA-approved medical product is available.
- The Project BioShield Act of 2004 (Public Law 108-276; "An Act") established the comprehensive Emergency Use Authorization (EUA) program, which permits the FDA to approve the emergency use of drugs, devices, and medical products that had not been previously approved, cleared, or licensed by the FDA
- The U.S. Department of Defense (DOD) 27 February 2008 Instruction 6200.02 provides guidance that should be used on the application of FDA rules to DOD Force Health Protection Programs – specifically including directions on when it is appropriate to use an unapproved product under an EUA or, if an EUA is not feasible, under an investigational new drug (IND) application.

Enhancing the Nation's Response

Beyond the toll on the U.S. civilian population, it has been estimated that another flu outbreak similar to the 2009 H1N1 pandemic could cause overall case ("attack") rates exceeding 10 percent per month on U.S. military forces. The impact on military medical and operational capabilities could be considerable. For that reason, President Obama directed the DOD leadership to expand its Chemical Biological Defense Program portfolio by including the medical countermeasures needed to cope with emerging infectious diseases such as naturally occurring and/or biologically engineered influenza viruses. This guidance was provided in the 2009 National Security Council: President's Policy Directive-2 (PPD-2): National Strategy for Countering Biological Threats.

DOD already takes a proactive role in providing seasonal flu vaccines to military personnel (and to all eligible beneficiaries). However, although the use of vaccines is considered one of the best ways to prevent infection, the effectiveness of a specific flu vaccine depends primarily on matching that vaccine to the strains that are forecasted for a given season. Because of the rapid mutation rate of the influenza virus prevalent in any given year, it is always a major challenge ensuring the prediction for the "next" virus. Moreover, those suffering from immune deficiencies, or allergies to egg products, cannot

receive these vaccines. Reasons such as these have made it clear over the past 10 years that medical interventions for influenza should include not only vaccines but also post-exposure therapeutics.

Leading the effort to complement the DOD's vaccine approach is the Joint Project Manager-Transformational Medical Technologies (JPM-TMT), Emerging Infectious Diseases-Influenza Medical Countermeasure (EID-Flu MCM) acquisition program. JPM-TMT is a component of the DOD's Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD). The specific goals of JPM-TMT's EID-Flu MCM acquisition program are: (a) to protect the nation's warfighters from emerging infectious diseases – specifically from the influenza virus (whether naturally occurring or biologically engineered); and (b) to revolutionize influenza treatment by developing a novel, broad-spectrum (i.e., efficacious against multiple strains of influenza), post-exposure therapeutic.

Although anti-viral drugs are already currently available, the influenza virus is constantly mutating, and continues to demonstrate increased drug resistance. In the United States, four antiviral drugs are currently FDA-approved for use against influenza: amantadine and rimantadine – approved for influenza A; and Tamiflu® (oseltamivir phosphate) and Relenza® (zanamivir) – approved for both influenza A and influenza B. The CDC still recommends Tamiflu and Relenza for the treatment of influenza infection, but no longer recommends amantadine and rimantadine because of resistance that has built up against these two drugs. However, for many strains of the influenza virus, there are no FDA-approved therapeutics.

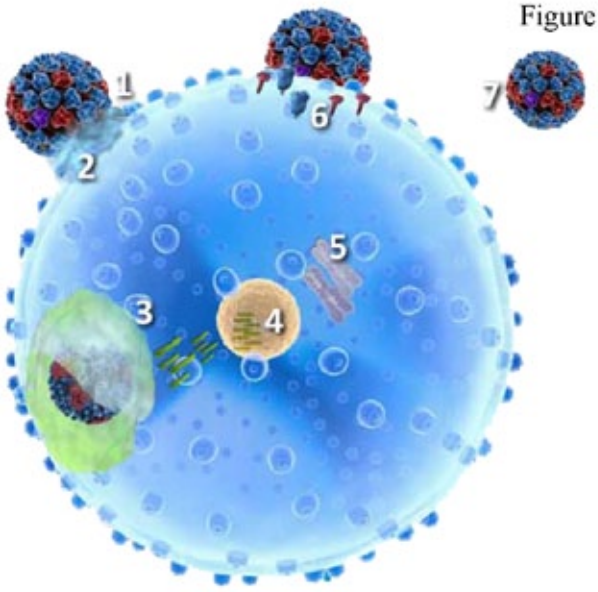
A New Paradigm to Flu Treatment Emerges

Recognizing that a new approach to fighting influenza should be taken, in May 2011, JPM-TMT's EID-Flu MCM acquisition program issued a Request for Proposal (RFP) for drug candidates that: (a) were broad-spectrum; (b) had already filed an Investigational New Drug application with the FDA; (c) were not on clinical hold; and (d) demonstrated a unique mechanism of action. In March 2012, the program contracted with MediVector Inc. to further develop Favipiravir (T-705), a promising broad-spectrum drug candidate capable of addressing multiple strains of the influenza virus. T-705 demonstrated effectiveness against drug-resistant strains of influenza virus, including those resistant to Tamiflu®, Relenza®, amantadine, and rimantadine.

MediVector Inc. was selected through a full and open competition and an extensive source selection process by a team of interagency participants. T-705, which was initially developed by Toyama Chemical Co., Ltd., a subsidiary of FUJIFILM Holdings Corporation, has undergone clinical trials in Japan that show high efficacy against influenza. The EID-Flu MCM contract with MediVector Inc. will help support the steps necessary to acquire FDA approval, which is required for such drugs in the United States.

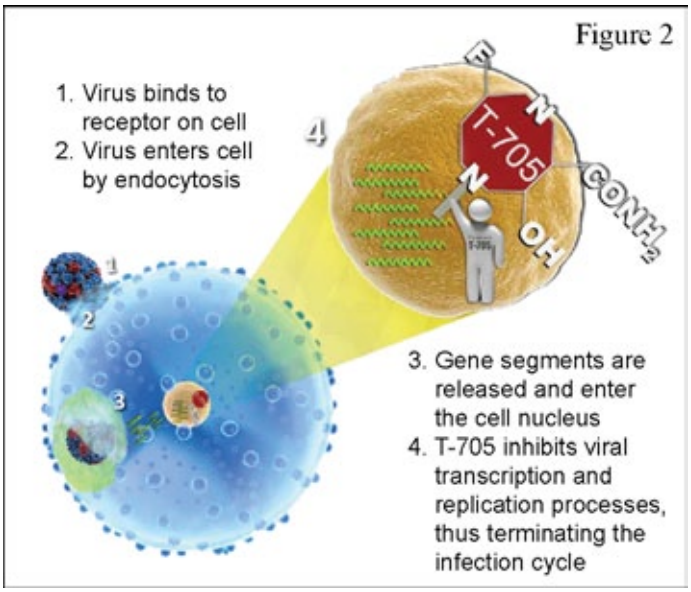
T-705's unique mechanism of action (i.e., the specific biochemical interaction through which a drug substance produces its pharmacological effect) sets it apart from current FDA-approved anti-influenza drugs. The compound terminates the infection cycle of the flu by targeting and interfering with the viral proteins involved in the virus transcription and replication process. To illustrate the mechanism of action in T-705, it is helpful to understand how a virus infects a cell. Figure 1 demonstrates the influenza infection replication process in a cell and the subsequent spread or release of the virus from the cell.

Figure 1



1. Virus binds to receptor on cell
2. Virus enters cell by endocytosis
3. Gene segments are released and enter the cell nucleus
4. Transcription of mRNAs and replications of virus genes occur
5. Viral proteins are synthesized
6. New viruses are produced through packaging process
7. New viruses are released from the cell

Figure 2 shows: (a) how the virus enters the cell in the usual fashion; and (b) how application of T-705 disrupts the infection replication process. Results from a 2005 study (Furuta et al.) – published in *Antimicrobial Agents and Chemotherapy* by the American Society for Microbiology – indicate that "T-705 interferes with an early to middle stage of influenza virus replication."



Even more valuable is T-705's demonstrated effectiveness against viruses with similar replication processes – including some on the CDC's list of Category A and B bioterrorism agents. These results are particularly important in demonstrating how the DOD's efforts in leveraging existing research and development projects help to fight other viruses that pose bioterrorism risks.

To briefly summarize: Through JPM-TMT's strategic investments and partnerships with innovative biotech firms, pharmaceutical corporations, other government agencies, and academic institutions, DOD is taking an active role in expanding the nation's medical inventory of the therapeutics needed to cope with emerging infectious diseases. Providing support for the nation's warfighters is the program's primary focus, of course; success – in the form of an FDA-approved, broad-spectrum counter-influenza drug – will benefit the nation as a whole. Moreover, by facilitating the advanced development and acquisition of broad-spectrum medical countermeasures and systems, JPM-TMT also enhances the DOD's, and the nation's, ability to respond to and cope with potential biowarfare agents and a future national infectious-disease emergency or pandemic.

For additional information on:
JPM-TMT, visit www.jpmtmt.mil

Yousuke Furuta et al.'s 2005 study "Mechanism of action of T-705 against influenza virus" (published in Antimicrobial Agents and Chemotherapy, Vol. 49, pp. 981-986), visit http://aac.asm.org/content/49/3/981.full

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Lieutenant Colonel David Gibson is the Product Manager for Joint Project Manager-Transformational Medical Technologies (JPM-TMT), Emerging Infectious Diseases-Influenza Medical Countermeasure acquisition program (EID-Flu MCM). JPM-TMT is a component of the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD). The mission of JPM-TMT is to provide the warfighter and the nation with innovative medical solutions to protect against and treat emerging, genetically engineered, or unknown biological threats. Lieutenant Colonel Gibson has previously served in a variety of command and staff positions. He was last assigned to the Pentagon as the Executive Assistant to the Army Surgeon General and Commanding General, U.S. Army Medical Command.

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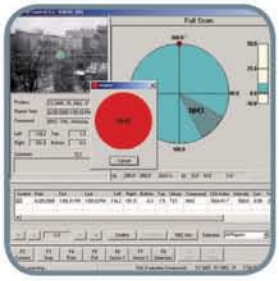

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If & When Needed: The Building of Pandemic Barriers

By Patrick Rose & Katherine Duncan, Public Health

The most threatening aspects of pandemics are their unpredictability and asymmetric spread. Other catastrophic events – e.g., earthquakes, hurricanes, floods, even man-made disasters such as terrorist attacks – usually begin and end within an easily defined period of time and in a specific geographic area. Considering their duration and scope, pandemics have the potential to advance very quickly to the level of catastrophic events because their spread can be almost instantaneous. The initial outbreak often is not recognized, in fact, until it has reached a tipping point – i.e., when very specific symptom patterns are recognized and/or a significant number of citizens become afflicted with a recognizable illness.

Since the spread of infectious diseases heeds no geographical boundaries, it is difficult to predict the ultimate extent of pandemics in terms of morbidity and mortality rates. The added complexity involved in preparing for a medical surge in this context, therefore, can make the preparation for a pandemic an extremely daunting task. In addition, a pandemic's prolonged unpredictability can create widespread fear as the infection continues to spread and area hospitals become overwhelmed. To help mitigate the spread of fear, and/or of the illness itself, various types of "barriers" – e.g., the establishment of alternative healthcare sites – can and should be built and maintained to preclude the hospitals already involved from becoming incubators of the disease and fostering its spread.

Although the variable duration and extent of pandemics create unique challenges, they also generate certain opportunities to alter the course of these public health emergencies – primarily by: (a) developing a better understanding of how the disease spreads; and (b) introducing the medical protocols needed to prevent the spread, to uninfected individuals, of the specific disease encountered, thus creating the barriers referred to above. Allowing for flexibility in facilitating a response to pandemics and building upon the foundation of an effective protocol to react to seasonal epidemics – influenza is the most obvious example – are the core tenets of any effective medical-surge preparedness plan.

It is particularly important to remember that most pandemics disproportionally affect healthcare professionals – who themselves are most often exposed to and in the closest proximity to a disease – and for that reason alone can quickly diminish a hospital's ability to adequately respond to mass-casualty surges. The most effective preparedness plans to cope with pandemics include anticipating the needs prior to a medical surge event to ensure that: (a) the increased capacity projected does not paralyze and/or adversely affect other hospital operations; and (b) the fear of a disease outbreak does not in itself impede the abilities of healthcare professionals to carry out their responsibilities. The availability of alternative healthcare sites will provide the primary barrier that alleviates such concerns and ensures that hospitals can respond effectively while protecting all of the parties involved in fighting the pandemic.

Following are some additional specifics related to the three primary barriers used to prevent the further spread of a pandemic:

Barrier 1 – Alternative Healthcare Sites

Hospital emergency departments (EDs) are frequently overwhelmed by the increased patient volume caused by a pandemic, especially when ED overcrowding is already a concern. The establishment and use of alternative healthcare sites – at local walk-in clinics, for example, or even at schools or local community centers – to serve as primary triage facilities for patients exhibiting disease-related symptoms would create the first barrier required to limit the extent of a medical surge. These and other local sites can create the support network needed to thoroughly assess and prioritize the medical condition and treatment recommended for the persons affected.

Using alternative healthcare facilities as primary triage sites also helps protect the patients with pre-existing illnesses who are already in the hospital. Routine cases can be treated at the alternative sites while more critical cases are sent to the ED – with the proper protocol needed to prevent infection spread – thus preventing the ED from becoming overrun while at the same time freeing vital hospital resources for those requiring higher levels of care.

When designating locations to serve as alternative healthcare sites, the proximity of such sites to local hospitals must be carefully considered. The sites should be far enough away to reduce the possibility of an infectious spread to the hospital's current patients (and medical staff), but still close enough to facilitate the safe transfer of critically ill patients. Admittedly, the logistics involved in such situations can be very complex, but the process of planning and developing the sites will help to establish the essential partnerships needed between hospitals and their community partners. Such partnerships not only provide the cornerstone opportunity needed for securing a strong medical workforce but also can help significantly in effectively mitigating the overall threat caused by a pandemic.

Barrier 2 – The Protection Of Healthcare Professionals

Pandemic barriers are only as effective as the strength, both in number and in health, of the medical workforce directly involved. Maintaining the workforce requires not only coping with the almost inevitable attrition of healthcare professionals but also securing and expediting the credentialing procedures involving: (a) personnel from other hospitals; and (b) the volunteers also needed to help with many pandemic response activities. The protection of healthcare professionals is an integral part of pandemic preparedness – and, therefore, the second barrier needed in the fight against the spread of an infectious disease.

As the frontline defenders in the battle against infection, healthcare professionals are therefore, by definition, the most exposed population. Accordingly, they must be equipped with the best defenses available to protect themselves – including, but not limited to: quick access to antivirals; routine on-site vaccinations; and the immediate availability of proper PPE (personal protective equipment) gear. To maximize the effectiveness of these protective priorities a judicious investment in the appropriate level of training, outreach, and education is also needed. Previously tested strategies for procuring and securing sufficient quantities of PPE, vaccines, and antivirals for healthcare professionals – *before* they are absolutely needed – should be developed in coordination with local public health officials.

Antivirals and vaccines may well be the most valuable tools available in preventing pandemic spread, so it is particularly important that a lack of education and/or availability not limit their use, especially in the very community that is directly responsible for their distribution. In addition to making these tools available on short or no notice, healthcare professionals must be informed, beforehand, of the availability of these resources, and of their importance. Strong communication channels within the hospital – which now include the use of social media to engage healthcare professionals – not only inform these professionals but also help to dispel untruths and unfounded rumors, which can be equally as important. Nothing is more effective at neutralizing proper planning, probably, than the toxic spread of erroneous information, which can quickly erode the barrier created by the recruiting and training of a strong medical workforce.

Barrier 3 – Standards of Healthcare

In any health crisis resulting in a medical surge, the potential exists that the healthcare needs of patients will exceed the resources available. The third barrier, therefore, addresses the standards of healthcare required to distribute resources in the ways that would most effectively reduce the morbidity and mortality rates of the population as a whole. Doing so, though, might inevitably mean that not every patient will receive care that would be quite as thorough as might reasonably have been expected in a non-surge situation. For that reason alone, it also is particularly important that preparedness planning not only include discussions of the standards of care available and required, but also establish the guidelines that must be followed governing how treatment protocols may have to be modified in surge situations so as to best serve the population as a whole. Resources and personnel are never limitless, which means that distribution failures and personnel attrition are inevitable facts of life; reaching early agreement on predetermined resource allocations sets the stage for dealing with worst-case scenarios more effectively.

As the number of emerging infectious diseases detected in populated areas continues to increase, it seems inevitable, therefore, that there will be more pandemics in the foreseeable future. With limited means of predicting, much less preventing, pandemics, preparedness planning becomes even more essential. The U.S. Centers for Disease Control and Prevention (CDC) has taken the lead in this area by creating improved standards for information exchange – primarily through the CDC's own Public Health Information Network. The CDC also has made available a standard template for preparedness planning – namely, the 2011 list of *Public Health Preparedness Capabilities*, developed by the CDC's Office of Public Health Preparation and Response. This resource provides the detailed guidance needed for the development of a strong and adaptable healthcare system that incorporates the primary barriers needed to block or at least mitigate the spread of infection. The same CDC guidelines also should help improve the response mechanisms needed to cope with the extremely difficult situations that will inevitably develop during future medical surges resulting from disease outbreaks.

Patrick Rose, PhD (pictured), is a Policy Analyst at the Center for Health & Homeland Security (CHHS), in Baltimore, Maryland, and a Fellow in the 2012 class of Emerging Leaders in Biosecurity Initiative at the Center for Biosecurity at the University of Pittsburgh Medical Center. At the Center for Health & Homeland Security, he is a member of the Exercise and Training Division working on the CHHS Homeland Security Exercise and Evaluation Program with various state and federal agencies. He also provides subject-matter expertise to international delegations through the Senior Crisis Management Training at CHHS in cooperation with the U.S. State Department's Office of Anti-Terrorism Assistance.

Katherine Duncan is a fourth-year medical student at the University of Maryland's School of Medicine. She has served as a member of numerous medical aid groups traveling to developing countries to treat patients in medical surge situations. She has also represented her medical school in discussions with state legislators concerning physician shortages, loan-assistance repayment programs, and Medicare reimbursement rates. After graduating, she plans to continue her medical training with a residency in Ophthalmology at the University of Maryland.

A New Standard of Care for Crisis Incidents

By Raphael M. Barishansky, Standards

Public health and medical personnel are often put in the position of preparing for and responding to various emergency situations – both naturally occurring such as pandemics, as well as manmade incidents and events. However, sometimes the incident is too large for local authorities to manage effectively and/or simply overwhelms the current healthcare system of the jurisdiction(s) immediately involved – e.g., the 2011 tornado that devastated Joplin, Missouri, the 2011 earthquakes that rocked both New Zealand and Japan, or even the 2009-2010 H1N1 pandemic that affected the entire nation. Nonetheless, even in extreme circumstances, numerous decisions must be made to ensure that available resources reach the patients who will benefit the most.

In 2009, at the request of the U.S. Department of Health and Human Services (HHS), the Institute of Medicine (IOM – an independent nonprofit organization that advises the federal government on health matters) formed a committee of subject-matter experts in the fields of emergency management, public health, emergency medical services (EMS), medicine, and bioethics. The committee developed the guidance needed to help state and local health officials establish and implement standards of care during and in the aftermath of major disasters.

In its first report – *Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations*, published in September 2009 – the committee defined a crisis standard of care (CSC) as "a state of being that indicates a substantial change in health care operations and the level of care that can be delivered in a public health emergency, justified by specific circumstances." The committee also noted that there is no single national set of guidelines for states that could be generalized to fit all crisis events. The report concluded with six clear recommendations for the nation's medical/public health community to embrace regarding these standards of care:

- Develop consistent state crisis standards-of-care protocols with five key elements;
- Seek community and provider engagement;
- Adhere to ethical norms during crises related to the standards of care;
- Provide legal protections needed for healthcare practitioners and institutions charged with implementing the crisis standards of care;
- Ensure consistency in crisis standards-of-care implementation; and
- Ensure intrastate and interstate consistency among neighboring jurisdictions.

Recent Updates and Standard Templates

In its follow-up report – *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response*, released in March 2012 – the committee examined the effect of its 2009 report and developed templates to guide the efforts of professionals and organizations responsible for CSC planning and implementation. Integrated planning for a coordinated response by state and local governments, emergency medical services (EMS), healthcare organizations, and healthcare providers in the community all are critical to mounting successful responses to disasters. To that end, the report provides a foundation of underlying principles, the steps needed to achieve implementation, and various pillars of the emergency response system – each of which is separate, but together are essential for upholding the jurisdictions that have overarching authority for ensuring the effectiveness of CSC planning and responses.

The aforementioned templates make up the bulk of the document; each one is specific to a distinct discipline – e.g., EMS, hospitals, state and local governments – with significant responsibilities during a catastrophic event. But at the same time the document is clear that integrated planning is the most critical element in mounting a successful response to sudden disasters.

Public Health Specifics – On Two Functional Templates

There are two templates specific to public health: (a) one outlines the core functions of state and local governments in the development of CSC plans; and (b) one outlines the core functions essential for implementing CSC plans in individual states during CSC incidents. Both templates show the amount of time and attention that went into: (a)

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ensuring that all stakeholder interests had been taken into serious consideration; and (b) realistic expectations had been outlined.

The first template, which is specific to state- and local-level public health organizations, is grouped by various functions including: (a) establishing a CSC planning committee; (b) drafting a workable plan; (c) introducing the plan to various stakeholders as well as to the general public; (d) adopting and disseminating the plan; and (e) maintaining and updating the plan.

The second template is deeper and more specific: focusing on actual implementation of the CSC plans and the various roles and responsibilities assigned to both state and local public health organizations. Among the various functions identified in this template are the following: (a) alerting and activating all applicable partners in accordance with the triggers identified in the plan; (b) notifying partners, and the media, and ensuring that redundant communications system are in place ahead of time; (c) also ensuring that command and control, communications, and coordination requirements will be met; (d) providing public information capabilities; (e) understanding overall operations – specifically including those related to conventional, contingency, and crisis operations; (f) managing logistics, including staffing, supplies, and space; and (g) planning for termination, demobilization, recovery, and evaluation.

A lot of disaster events have occurred and a lot of lessons have been learned since 2009. The cooperative effort required for responding to similar future events is reflected a the "new and improved" report on crisis standards of care.

An Integrated Effort & Continuing Cooperation

Because the vast majority of public health agencies at U.S. state and local levels already have been an element in emergency planning, and significant effort between and among various stakeholders may have already occurred, the IOM report also: (a) includes a number of milestones designed to guide the integration of CSC into existing disaster plans; and (b) suggests that appropriate agencies and organizations be assigned to lead each stage of the effort (see table on *Crisis Standard of Care Milestones and Proposed Lead Agencies*). Here it is worth noting that the need for interagency cooperation is frequently emphasized, particularly at the state level.

Key Points to Remember: Cooperation & Advance Planning

The "take-home" point of this well-developed document is the recognition that, in the face of a major catastrophic event, no single agency or organization can "do it alone." Even with this understanding, it is important to understand that, in one sense, all disasters truly are "local." Understanding the capabilities of the local system, and surrounding systems, as well as the hazards and potential threats that also could occur during such events – examples include the possibility that hospitals and EMS bases may be without power; staff and/or volunteers may not be quickly available; medicines, supplies, and hospital beds could be in short supply; and medical attention may have to be delivered to alternate care facilities – cooperation, on a continuing basis, is of paramount importance in all planning and implementation efforts.

Taking the time now, before an incident, to assure that the lead state health department is making the necessary adjustments to the scope of the practice, treatment, and transport protocols needed, and that ambulance staffing and call-center responses also figure into crisis response plans. Among other duties, state public health authorities, working in conjunction with their state EMS agencies, will take the lead in establishing the triggers and thresholds that will signal the shift from conventional care … to contingency care … and, finally, to crisis care.

For additional information on:
IOM's Report "Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response," visit *http://www.iom.edu/Reports/2012/Crisis-Standards-of-Care-A-Systems-Framework-for-Catastrophic-Disaster-Response.aspx*

Raphael M. Barishansky, MPH, is the chief for Public Health Emergency Preparedness for the Prince George's County (Maryland) Department of Health. Prior to establishing himself in this position, he served as executive director of the Hudson Valley Regional EMS (Emergency Medical Services) Council, based in Newburgh, New York. A frequent contributor to the DomPrep Journal and other publications, he can be reached at rbarishansky@gmail.com.

A Healthcare Coalition's Support for Evacuating a Facility

By Craig DeAtley, Health Systems

As recent experiences have shown – the hospital evacuations in Joplin, Missouri, and Loma Linda, California, are perhaps the best examples – the partial or complete evacuation of a healthcare facility is traumatic, complex, and extremely challenging not only for the facility itself but also for the entire local community. To evacuate a facility both quickly and effectively requires community support and many months of preplanning. During the past year, the District of Columbia Emergency Healthcare Coalition (DCEHC), recognizing that problem, has been upgrading and refining a response plan to coordinate the support of all Coalition partners for the evacuation of a hospital or other healthcare facility in the nation's capital.

The DCEHC was created in 2007 using Coalition Partnership grant funding provided by the Office of the Assistant Secretary for Preparedness and Response (ASPR). The Coalition is composed of: (a) the city's private-sector healthcare organizations (all city hospitals, skilled nursing facilities, community clinics, blood banks, dialysis centers, and the Poison Center); and (b) their government partners (the Department of Health, Fire/EMS, the Office of the Chief Medical Examiner, the Department of Mental Health Services, and the Homeland Security and Emergency Management Agency).

Since its inception, the Coalition has been both a planning and a response organization; an Emergency Operations Plan (EOP) serves as the doctrinal foundation for both capabilities. The EOP is based on a hazard-vulnerability analysis, which is updated every two years, and focuses primarily on system-wide risks rather than only those of individual members. Facility evacuation was one of the higher-risk components of the system that the Coalition decided to address.

A task force composed of a wide array of Coalition partners was convened and regularly met to complete two assignments. The first was to create a planning template that could be used for the evacuation of a healthcare facility – the same template could be used by hospitals and skilled nursing facilities to write their own plans for how they would organize and conduct an evacuation. The adoption of the facility-planning template was recognized by many facilities as filling a planning void that had long been neglected. In addition, because it includes standardized terminology, notification practices, and lists of operational considerations, it makes it easier for the Coalition to provide the assistance needed.

A Double-Duty Document, Two Major Assumptions & Three Primary Scenarios

The second assignment was to create a plan spelling out specifically how the Coalition should and would provide support to a single evacuating healthcare facility. The Healthcare Facility Evacuation Incident Specific Annex begins with a list of assumptions. Among them is a document that can be used: (a) to facilitate either a partial or a complete evacuation of a hospital or skilled nursing facility; and (b) to request evacuation support from healthcare organizations in neighboring Maryland and Virginia. The guidance takes into account the Coalition's Memorandum of Understanding (MOU) in requesting and/or providing mutual aid – a pledge by facilities to help one another when able to do so.

The annex assumptions also identify three primary evacuation scenarios as being: emergent (minutes), urgent (hours), or semi-urgent and beyond (one or more days). At the heart of the Coalition's capability to assist is the Healthcare Coalition Response Team (HCRT), which is composed of trained personnel who rotate taking weekly call as Duty Officers. The HCRT is assigned several responsibilities in its primary role of supporting a facility evacuation.

Those responsibilities include but are not necessarily limited to: providing notification to other Coalition partners about the incident; collecting data from member organizations about their resources available to assist with evacuations; serving as an interface with regional coalitions in Maryland and Virginia to collect data regarding the resources available in those states (particularly in the areas closest to Washington); facilitating patient tracking (if and when requested by the evacuating facility); facilitating the coordination of various jurisdictional response efforts; and furnishing the supporting documentation and guidance forms needed to facilitate mutual aid and cooperative assistance for the evacuating facility.

The District of Columbia Emergency Healthcare Coalition is helping to prepare the nation's capital and surrounding areas for the next big surge event – through planning, coordination, and training.

Accompanying Paperwork – Complete with Instructions

The HCRT personnel may be appointed for evacuation support, resource tracking, and patient tracking facilitation. Each position's responsibility is defined in the Annex. An operational checklist provides HCRT members with numerous "action steps" beginning with incident recognition and initial notification/activation mobilization. The longest section focuses on incident operations, outlines some suggested action steps, and refers to a number of different forms – each of which serves a specific purpose. Included on the list are an Evacuating Facility (Supported Facility) request form, a patient checklist (for evacuating and receiving facilities); a mutual-aid offer-of-assistance form; and a form used for resource tracking at a supported facility. Other forms have been created for: (a) tracking the personnel of an evacuating facility; and (b) requesting reimbursement for the mutual aid provided. Each of these documents comes with an accompanying instruction sheet and is made available both as a printed version and electronically (on the Coalition's intranet-based information-sharing system).

Following completion of the draft document, task force members and others used it during a tabletop exercise, then revised it in accordance with the numerous lessons learned during the exercise. The plan was used again during a functional exercise, where the scenario was the partial evacuation of a nursing home threatened by a large neighborhood fire – a number of injuries required transport to Emergency Departments, while the nursing home patients were evacuated to other nursing homes and/or to hospitals with available beds. Additional modifications were then made, based on the lessons learned during the exercise, and became part of the Coalition's Emergency Operations Plan.

The evacuation of a hospital or skilled nursing home will never be easy. However, based on the experiences of those who have actually carried out such evacuations, having a plan in place that recognizes the need for coordinated and timely support from other healthcare facilities in the area will be essential to success. The nation's capital is now better prepared than ever before to deal with a major mass-casualty incident – whether manmade or a whim of nature – if and when it happens. Not incidentally, the Coalition's next priority of this type is addressing the need to respond effectively to multiple healthcare facilities requiring evacuation support all at the same time.

Craig DeAtley is the Director of the Institute for Public Health Emergency Readiness at the Washington Hospital Center, the National Capital Region's largest hospital, Emergency Manager for National Rehabilitation Hospital and co-executive director of the Center for HICS Education and Training. Prior to assuming 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 an Emergency Department Physician Assistant for Best Practices, a large physician group that staffs emergency departments in Northern Virginia; he also has been a volunteer paramedic with the Fairfax County Fire and Rescue Department, and a member of the department's Urban Search and Rescue Team. He also has served as the Assistant Medical Director for the Fairfax County Police Department since 1991.

Integrated Capstone Event Expands Training for Responders

By Shannon Arledge, Exercises

Long known for its highly specialized hands-on training classes for emergency response personnel, the Federal Emergency Management Agency's (FEMA) Center for Domestic Preparedness (CDP) recently combined three courses, and 108 responders, into what is called an Integrated Capstone Event (ICE). This exercise gave students from multiple disciplines a unique opportunity to experience the full impact – i.e., not focused primarily, or exclusively, on their own professional specialties – of a mass-casualty incident.

Typically, each CDP class culminates with an end-of-course scenario specific to the individual professional objectives learned during the training, and many facets of the exercise are notional. The ICE, however, eliminates much of this artificiality, and provides a much more realistic scenario for the students to perform their own skills and use their CDP training to maximum advantage.

"Integrating multiple courses into a combined event is extremely important because it replicates what will happen in an actual community," said Charles Medley, Chief of the CDP's Training Delivery Branch. "During a mass-casualty event, every element of emergency response will engage. Emergency responders need to learn to integrate now, and the CDP is committed to providing the training environment where they can learn to do that."

Collective, Simulated, Realistic: "Amazing!"

The ICE scenario combined students from the Emergency Medical Operations (EMO), Hazardous Materials Technician (HT), and Hospital Emergency Response Training (HERT) courses, who collectively handled field and hospital operations in response to a simulated explosion at a nearby college.

"This [training event] gives you an idea of what is going to happen and how the different units are going to work together," said John Combs, a police officer from Fayetteville, North Carolina. "As a first responder, this gives me an idea of how the fire service, hazardous materials, EMS, and healthcare [professionals] work. As a police officer I normally do not … [have the opportunity] to take part in this kind of training – this is a good training day for me."

"I feel we need to practice like this all across the country to prepare ourselves for any kind of emergency or disaster," added Trudy Mueller, an emergency room nurse from Conneaut,

Ohio. "This training helps us work together and understand … [each other's] strengths and weaknesses. It is important to train with all the groups together, not just a single group."

"Combining the EMO class, hazardous materials class – as well as the hospital emergency response course – is amazing," said Ryan Sell, a firefighter/paramedic from Iolla, Kansas. "We had groups involved from the inception of the incident, through each stage."

Future ICEs, which will be scheduled at least once each quarter at the CDP, will usually combine three or more courses in a wide variety of response operations. The Event recently completed "was our second ICE, and we continue to find things that we can fine-tune and improve for future Integrated Capstone Events," said Medley. "We have already identified a number of steps we can take to enhance the scenario, manage our role players, and improve logistics."

Shannon Arledge is a Public Affairs Specialist at the FEMA (Federal Emergency Management Agency) Center for Domestic Preparedness in Anniston, Alabama. A retired Marine gunnery sergeant, he served in numerous public affairs/public information assignments during his 20 years on active duty, including tours of duty at Headquarters Marine Corps, the Defense Information School, and Marine Barracks Washington. He deployed twice to the Persian Gulf in support of Operations Enduring Freedom and Iraqi Freedom as Public Affairs Chief for Marine Forces U.S. Central Command (Forward) and Public Affairs Chief for the 2nd Marine Aircraft Wing. He is a graduate of the Defense Information School for Public Affairs and Visual Information, and has a Bachelor of Science degree in Management from the University of Phoenix.

The 2012 PHP Summit: Sustaining Preparedness

By Jack Herrmann, Public Health

Travel and training dollars are in short supply and many local, state, and federal public health agencies are for that reason restricting use of the precious funding they have to participate in only one or two major conferences per year. This year, the Annual Public Health Preparedness Summit was one of those events. Almost 1,500 preparedness professionals from across the country were drawn to Anaheim, California, for the 7th Annual Public Health Preparedness Summit – on 21-24 February 2012.

This year's conference theme – *Regroup, Refocus, Refresh: Sustaining Preparedness in an Economic Crisis* – focused on a number of ways the U.S. public health and medical communities are tightening their purse strings while still attempting to build and sustain the efforts to protect the health and welfare of the nation during times of sudden disaster and other major emergencies.

Reality Meets Fiction – And Scores a Decisive Win

The conference opened with a plenary panel of representatives from agencies involved in the response to the devastating tornado that smashed into Joplin, Missouri, in the spring of 2011. Panelists emphasized the importance of pre-disaster planning – i.e., bringing the right people together to understand and collaborate on the roles and responsibilities each organization is assigned both during and after a disaster. The advance planning carried out by local and state public health agencies, working together with healthcare systems and community-based organizations, was cited numerous times as the principal reason the response to the tornado not only was so successful but also required little if any federal response.

Although some conference attendees reacted negatively to the absence of a significant federal response presence, other local, state, and federal leaders suggested that the local and state responses provided an excellent example of how the many years of federal preparedness funding that followed the 9/11 attacks had benefited the Joplin community. Building resilience at the local and state level, within faith-based and other community organizations – and with the general public – allowed Joplin to take care of itself and do almost everything necessary to put the fragmented pieces of the community back together again.

Conference attendees also were treated to a timely presentation involving "the big screen." Scott Z. Burns, screenwriter for the Warner Brothers film *Contagion*, was joined by not only the film's leading science consultant but also a number of federal public health and national security leaders to ensure that actual facts were used to provide a firm foundation for the fictional plot used in the making of the movie. Burns shared several humorous anecdotes about how he developed the plot – and why, in his opinion, the film's message was and is so important to tell to a national audience.

Professionals came from near and far to attend the 2012 Public Health Preparedness Summit. By sharing ideas and experiences, attendees gained valuable knowledge to help their local jurisdictions sustain preparedness even during times of economic crisis.

Lillian Shirley, President of the National Association of County and City Health Officials (NACCHO), then moderated a panel of federal leaders – from the White House, the U.S. Department of Health and Human Services (HHS) Office of the Assistant Secretary of Preparedness and Response, the U.S. Department of Homeland Security's Office of Health Affairs, and the U.S. Centers for Disease Control and Prevention – who provided their own knowledgeable perspectives of the nation's ability to respond, quickly and effectively, to the outbreak of a highly virulent infectious disease. Afterward, various audience members shared their stories about their own successes (or, in some cases, lack of success) in building community preparedness; many also expressed their concerns about several gaps in preparedness that still exist.

The Future of Public Health: Henderson's Views

The closing session of the Summit featured comments by Dr. Donald A. Henderson – a distinguished scholar at the Center for Biosecurity of the University of Pittsburgh Medical Center – who served as Director of the Office of Public Health Preparedness and Principal Science Advisor at the HHS Office of the Secretary in the aftermath of 11 September 2001. He provided a retrospective and thought-provoking account of where the field of public health preparedness has been over the past decade. He also eloquently discussed not only various areas where he sees notable accomplishments as well as a number of other areas where he continues to see opportunities for improvement.

Here it is worth noting that Dr. Henderson was principally responsible, in the wake of the 9/11 terrorist attacks, for determining how to best use the huge increase in homeland preparedness funding ever appropriated by Congress. In his Summit comments, he expressed his personal concern that a continued decline in federal preparedness appropriations will undoubtedly diminish, to at least some degree, the advances that have been made over the past 10 years, and would put the country at significant risk for additional terrorist attacks in the not-too-distant future.

In addition to these excellent plenary sessions, the 2012 Summit offered nearly 100 interactive and sharing sessions, workshops, town hall meetings, and other venues for stimulating discussion, sharing research findings, and discovering the new tools and resources now available in public health preparedness. Other highlights included sessions on crisis standards of care, radiation preparedness, decision-making during a crisis, social media technology, points of dispensing methods, and the needs of vulnerable populations.

The next Summit is scheduled for 12-15 March 2013 in Atlanta, Georgia. For additional information, visit the Summit website at www.phprep.org.

Jack Herrmann is Senior Advisor and Chief for Public Health Preparedness with the National Association of County and City Health Officials (NACCHO). In that role, he oversees the organization's preparedness portfolio, which is aimed at strengthening the preparedness and response capabilities of local health departments. He also serves as the organization's chief public health preparedness liaison to local, state, and federal partner agencies, and chairs the annual Public Health Preparedness Summit. He has extensive experience in disaster management and response and has participated in numerous disaster relief operations with the American Red Cross.

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