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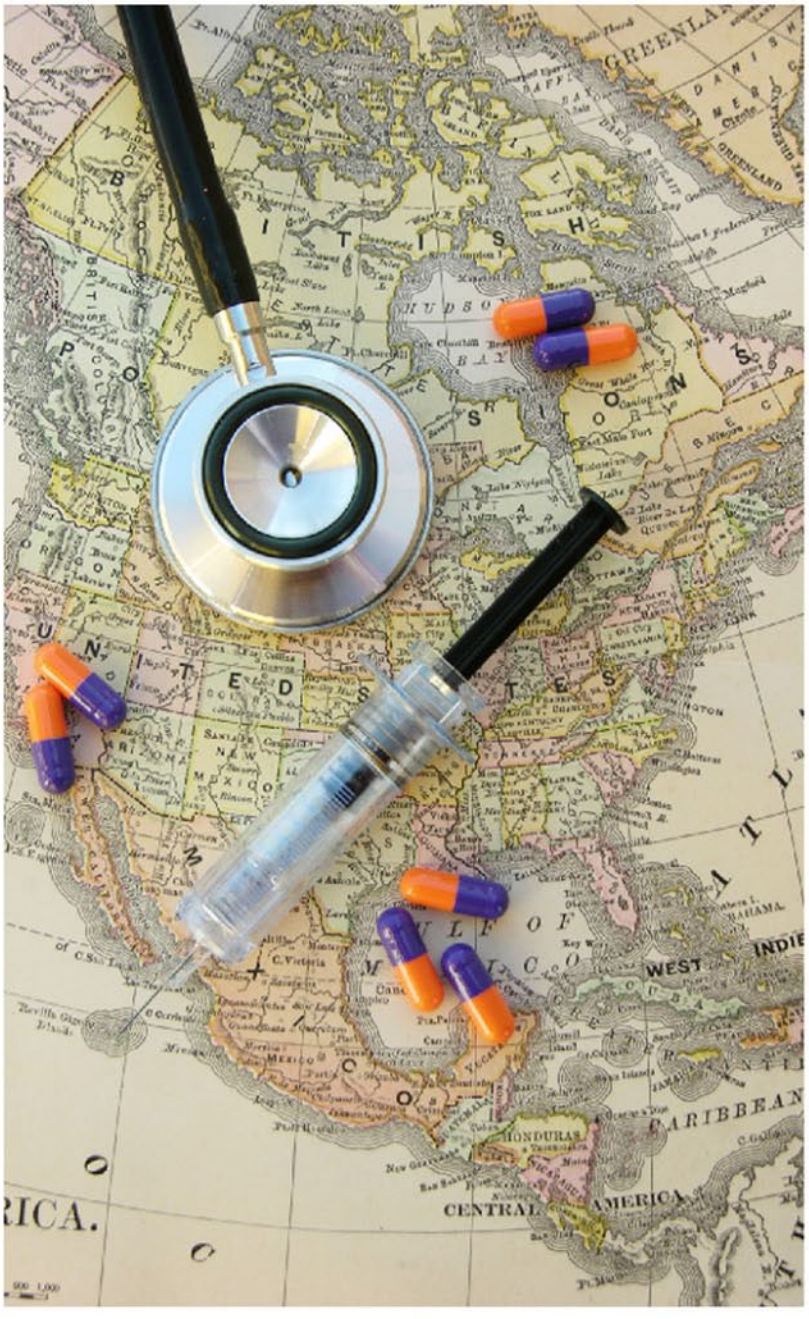


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Editor's Notes

By James D. Hessman, Editor in Chief

Floods, earthquakes, dirty bombs, hurricanes, and a global pandemic vie for top billing in this month's "roundup" issue of *DPJ* – but are offset to some extent, fortunately, by several new technological advances and a revised Hospital Incident Command System (HICS) that, when fully implemented, may well save thousands and perhaps, when and if implemented globally, even millions of lives.

Bruce W. Clements, first of the nine distinguished career professionals contributing to the issue, leads off with a DPJ "First": namely, pulling fact from the fictitious movie *Contagion*. There is one relatively minor political implausibility that is not fully resolved, Clements says, but the film does a fine job in raising public awareness of how pandemics can be transmitted and spread rapidly, as well as what measures may need to be taken in such an event.

Craig DeAtley follows with an encouraging insider's report on the recent HICS "Summit" in California, which developed a broad range of suggested revisions to and updates of current HICS policies and guidelines. Like many similar documents, HICS will almost assuredly become a never-ending story not only for the United States itself but also for U.S. friends and allies throughout the world. The "threat" – whatever it is at any given time – will undoubtedly change, without warning, and in many unforeseeable ways. This means that U.S. policies, attitudes, and (most important of all) preventive, recovery, and resilience policies must also change – both quickly and as frequently as necessary.

Big question, though: Is the United States presently prepared to cope with a global pandemic – or with any other type of mass-casualty incident, either natural or manmade? Well, both yes and no. Raphael Barishansky and Audrey Mazurek co-author a comprehensive report on medical countermeasures, with particular emphasis on the Strategic National Stockpile of medicines and medical supplies maintained and controlled by the Centers for Disease Control and Prevention in Atlanta.

Shannon Arledge adds not one but two articles focused on the innovative training provided – to meet a broad range of all types of mass-casualty incidents – by the Federal Emergency Management Agency's Center for Domestic Preparedness in Anniston, Alabama. And Joseph Cahill discusses the technological advances developed to offset, or at least ameliorate to some extent, the invisible effects of dirty bombs or other sources of nuclear radiation.

Sophia Paros adds a helpful Lessons-Learned report on radiological incidents, and the medical countermeasures needed to deal with and recover from such incidents. Beth McAteer follows with an authoritative commentary on other lessons learned, in just the last two months, in meeting and defeating the worst effects of such unfriendly acts of nature as Hurricane Irene and Tropical Storm Lee. The ubiquitous Adam McLaughlin winds up the issue with updates on recent technological, political, and even fiscal advances in such "States of Preparedness" as: Georgia (an app enhancement for emergency alerts); Michigan (a new Cyber-Command Center for the entire state); and California (not only a "Seconds Count" early warning earthquake system, but also Target-supported training for the budget-strapped Sacramento Police Department).

About the Cover: Susan Collins's imaginative rendition of "The Shot Felt Around the World" -- i.e., how to cope with a global pandemic. (iStock Photo of the Map of North America with stethoscope, medicine capsules, and medical syringe)

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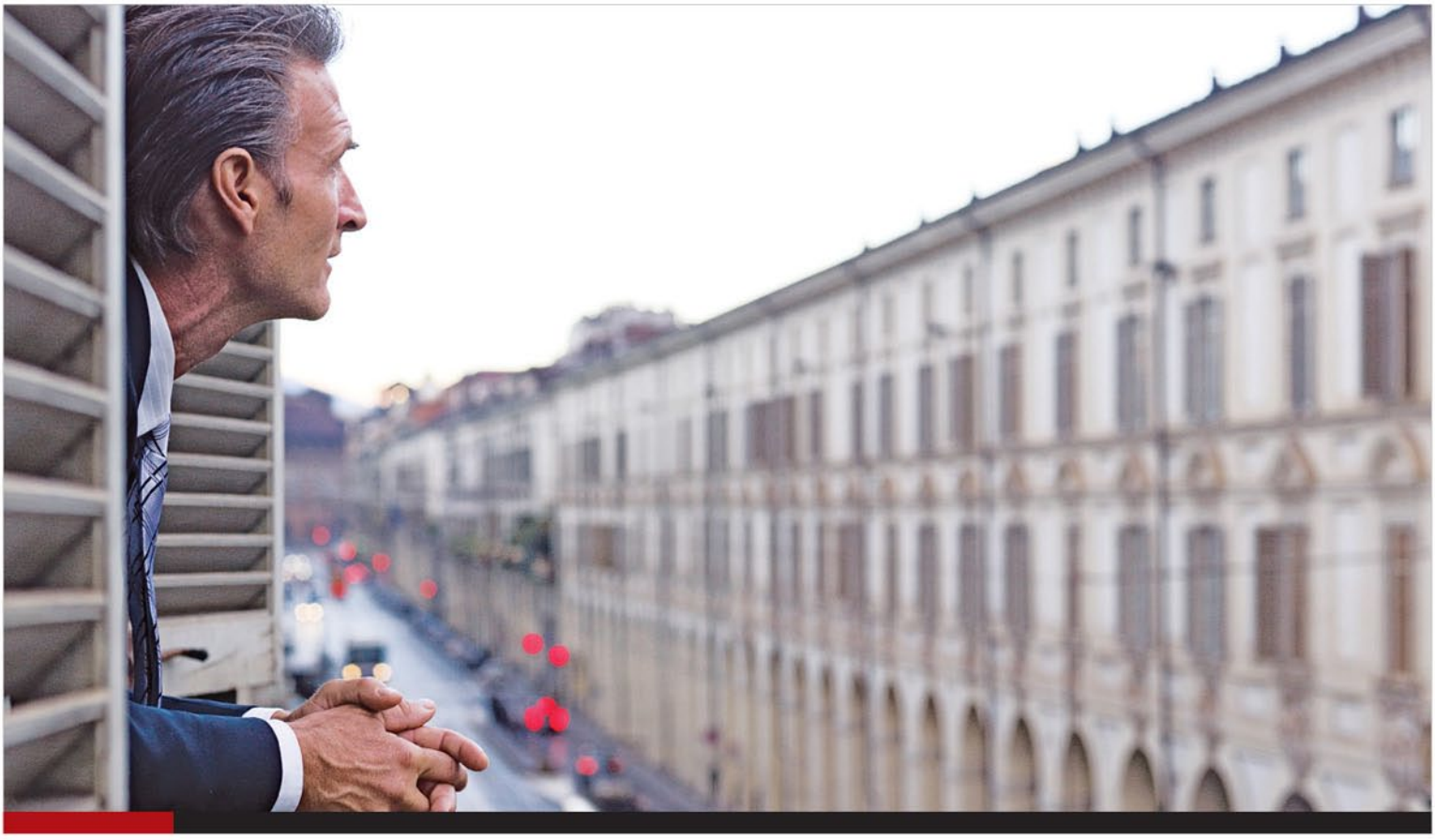

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A COLLABORATION IN CAREER AND PROFESSIONAL STUDIES

The Public Health Ethics of *Contagion*

By Bruce W. Clements, Public Health

The recent film *Contagion* illustrates the challenges a society may experience when facing a rapidly spreading and highly lethal virus. Director Steven Soderbergh carefully constructed the film to reflect a realistic public health and medical response to a severe pandemic. Many of the technical public health aspects of the film are believably depicted; the disease transmission pathways demonstrated in the film are plausible, for example, and the core issues discussed by public health officials also are both credible and accurate. Included in the latter are relevant comments about the epidemiological investigation and such basic infection control measures as social distancing and the frequent washing of hands.

The public panic and social disruption represented also are certainly possible, particularly about the problems likely when dealing with such a lethal and fast moving pandemic. However, there is one implausible scene in which vaccine allocation is depicted more or less as a lottery system. Although that scene may add to the film's dramatic impact, it does not do justice to the painstaking processes actually used to prioritize and allocate the limited medical countermeasures likely to be available, particularly during the early stages of a public health emergency.

When making these types of decisions in a real-life situation, there are several essential ethical principles that must be considered. These values fall into two broad ethical "value" categories: (a) substantive; and (b) procedural. Substantive values are those that drive the actions taken and/or positions promoted – including, but not limited to, such basic principles as trust and fairness. Procedural values encompass the standards used – accountability and transparency, primarily – in making important decisions. When procedural values are properly used, they promote substantive values. For example, when the public sees that leaders are establishing accountability and maintaining transparency, it becomes much easier to trust other actions taken by those same leaders.

In *Contagion*, though, the lottery system mentioned earlier, although intended to provide the limited supply of vaccine to the public as it becomes available, was not entirely plausible. A random date was selected, and those born on that day were offered the vaccine. The randomness of the system – one chance in 365 of being selected – was an obvious effort to at least *seem* to establish fairness. However, there are and should be other ethical values to take into consideration in such a scenario. Prominent among those values are public protection and reciprocity. In addition, the isolation and quarantine measures depicted in the film raise some "interesting" – some would say disturbing – questions about individual liberty.

Vaccination Prioritization: The "Public Protection" Value

The ethical principle known as "public protection" suggests that particular emphasis should almost always be placed on accomplishing the greatest good for the largest number of people in a given community. That guideline, however, does not always translate directly into what seems to be best for each and every individual, if only because at least some people at risk will, out of necessity, be prioritized higher or lower than others based on the overall risks and benefits at stake for the community's overall population.

In the United States, the primary group of experts who guide vaccination decisions are the 15 members of the Advisory Committee on Immunization Practices (ACIP), who are appointed by the Secretary of the U.S. Department of Health and Human Services to specifically provide such guidance on vaccine-preventable diseases. Those 15 people are selected primarily because of their expertise in disciplines related to immunizations. Applying factual processes to the *Contagion* scenario would almost certainly result in a very different vaccine prioritization method than what is depicted in the film.

During a pandemic, the impact of the disease on all segments of the population is first carefully, and comprehensively, evaluated and the population groups considered to be at increased risk of severe outcomes are then determined. ACIP carefully reviews all of the information available and then makes the recommendations used to guide state and local vaccination program policies. Probably the best recent example of how the system works is how the ACIP members determined who should be in the "Vaccine Priority Groups" for the H1N1 Influenza Vaccination. Long-standing members of the Seasonal Influenza Vaccine Priority Groups are people over 50 years old. However, that group was not included among the H1N1 Influenza Vaccine Priority Groups because the information available at the time suggested they were at a lower risk of infection than the members of certain other groups such as young children and pregnant women.

Healthcare Worker Protection: The "Reciprocity" Value

In *Contagion*, Lawrence Fishburne plays a CDC (Centers for Disease Control and Prevention) physician named Dr. Ellis Cheever. As a healthcare worker and public health official, he was provided, quite properly, his own high-priority vaccination. He then chose to pass his vaccine on to the child of a friend. But that scene raised at least two important questions in the minds of a number of moviegoers: (a) Should a healthcare worker have special consideration and receive his or her vaccination before others do? (b) Is it more important for a physician to be vaccinated than a child?

ACIP typically includes healthcare workers as a Vaccine Priority Group – for several reasons. To begin with, healthcare workers and EMS (emergency medical services) workers in general, are at increased risk of infection during pandemics; in addition, they also pose an infection risk to vulnerable patients under their care. An increase in healthcare worker absenteeism during a pandemic also diminishes healthcare system capacity during a time of particularly high demand. The primary ethical principle

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applicable in such situations is called "reciprocity" – which in practice means that, for those who bear a disproportionate share of the risk while they are serving others, it is reasonable and right to reciprocate and "pay them back," in a sense, for the added risk they carry by offering them additional protection. Such reciprocity extends beyond vaccination, of course, to any measure that reduces their risk – including the allocation of personal protective equipment and provision of family support.

Isolation and Quarantine: The "Individual Liberty" Value

It is important to distinguish between isolation and quarantine. Although both are intended to reduce the spread of disease, they are fundamentally different policies. Isolation is separating sick individuals from those who are well. Quarantine is separating those who are well, or at least seem to be, but *may* have been exposed, from those who are well and have not been exposed. Both processes, isolation and quarantine, are portrayed in *Contagion*. However, isolation is a relatively common process and is used regularly in healthcare today; quarantine, though, is less frequently used and is far more controversial.

The legal and political authority for quarantine in the United States is rooted in the Commerce Clause of the Constitution, which states, among other things, that Congress has the power to make "all laws which shall be necessary and proper" to regulate commerce with foreign nations. That statement has been and is interpreted to include the assurance of "public health" as it relates to persons arriving at U.S. ports of entry (land, sea, or air). The CDC is the agency responsible for maintaining the nation's quarantine capacity and has in fact established twenty quarantine stations across the country. However, if an infected individual passes through customs without displaying symptoms, or if an illness originates within the United States itself, there are several other relatively broad public health laws in place that provide the authority needed by local and state public health officials to institute the restrictive measures that might well be needed.

In *Contagion*, the character Beth Emhoff (played by Gwyneth Paltrow) returns from Hong Kong to the United States through Chicago. She has already unknowingly been infected, but is not yet symptomatic. In reality, if she had been symptomatic she might have been retained at the quarantine station for observation. After arriving home in Minneapolis she collapses and is rushed to the hospital with a mysterious illness. The depiction of the isolation and quarantine activities that follow is legally plausible – but in practice it raises a myriad of social, political, and philosophical issues. The quarantine measures portrayed in the movie challenge the most fundamental precept of democratic nations: the ethical principle of individual liberty. Although there are public health precedents that strike what seems to be a common-sense balance between public health and individual liberties – e.g., laws demanding that active tuberculosis patients receive treatment, and that public water supplies be fluoridated – the practicality of imposing a truly large-scale quarantine is questionable.

The actual international epidemic that most closely resembles the *Contagion* scenario is the 2003 severe acute respiratory syndrome (SARS) outbreak. The lessons learned from the quarantine efforts associated with SARS underscore the difficulties caused by and acceptability of restrictive measures imposed to assure public health. Public resistance increases dramatically as the scope of quarantine measures expands. History has shown that, when citizens hear that a widespread quarantine is coming, a common reaction is to flee the area to maintain personal autonomy. But that response, of course, can quickly and directly result in further spread of the disease. The complete quarantine of a major geographic area, another possible "solution," also would create unmanageable logistical challenges that would leave government officials responsible for the care and feeding of an almost totally immobilized population.

There is a difficult balance rarely accomplished by film makers. Documentaries may effectively, and accurately, present the technical details of health and medical issues – but those impersonal presentations seldom ignite the imagination or stir the emotions. On the other hand, films that stimulate the imagination are often so implausible that almost nothing useful can be gleaned.

Fortunately for the nation's moviegoers, *Contagion* strikes a reasonable balance. Although some aspects of the film are implausible and/or impractical, the film does a reasonably good job outlining and illustrating many of the key public health issues associated with biosecurity. In addition, by doing so, it provides the excellent context needed for an ethical real-life dialogue that must be continued.

Bruce Clements is the Public Health Preparedness Director for the Texas Department of State Health Services in Austin, Texas, and in that post is responsible for health and medical preparedness and response programs ranging from pandemic influenza to the health impact of hurricanes. A well known speaker and writer, Clements also serves as adjunct faculty at the Saint Louis University Institute for BioSecurity. His most recent book, Disasters and Public Health: Planning and Response, was released in 2009.

HICS National Summit

Building on the Past, Preparing for the Future

By Craig DeAtley, Health Systems

The current version of the Hospital Incident Command System, otherwise known as HICS, was sponsored by the California Emergency Medical Services Authority (EMSA) with federal grant funding and devised by a multidisciplinary group of subject matter experts in 2006. Reportedly used by 80 percent of hospitals in the United States, HICS provides a number of incident command system tools – including an IMT (incident management team) chart, job action sheets, and response forms.

On 11-12 October 2011, the California EMSA held a stakeholders "Summit Meeting" to begin laying the groundwork for the next version of HICS.

An Efficient Meeting Format & High-Level Participation

Invited to the day-and-a-half-long meeting were representatives from key healthcare and government organizations directly involved with and/or assigned specific HICS responsibilities. Among the 38 persons attending were senior representatives from the U.S. Department of Homeland Security (DHS), the U.S. Department of Health and Human Services (HHS), the Joint Commission, the National Association of County and City Health Officials, the American Medical Association, the American Hospital Association, the American College of Emergency Physicians, and the Center for HICS Education and Training. Also among the invited participants were five vendors representing several HICS educational systems.

The meeting began with presentations on the origins of HICS and what the medical literature says about it. One additional presentation – on the results of the 2009-2010 national survey on use of the Center for HICS Education and Training – also helped to provide several ideas for group discussion. A personal testimony – by Scripps Health President and CEO Chris Van Gorder (FACHE) – on how HICS is regularly used, and a presentation (by Peter Brewster, Interim NDMS (National Disaster Medical System) Director) on Effective Methods to Train Hospital Staff on HICS, also helped put HICS into perspective for the Summit attendees.

For the rest of the meeting, attendees worked in small groups to answer questions such as the following: (a) How is HICS working now? (b) What are the impediments to utilizing HICS? (c) What are some of the "best practices" recommended for implementing HICS? With help from a facilitator and note taker, each small group formulated its own answers to those and other questions and presented them to the larger group. Additional discussions followed and consensus opinions were developed (if and when possible).

Each small group was also assigned one of the HICS tools – e.g., an Incident Management Team (IMT) Chart; Job Action Sheets (JASs); Incident Planning Guides/Incident Response Guides (IPGs/IRGs); and various other types of educational materials – to review and comment on possible improvements. The results of the team discussions also were discussed with all of the meeting attendees. Throughout the process, copious notes were taken for inclusion in a *Conference Proceedings* report, which will be given to EMSA by the Center for Collaborative Policy of the California State University at Sacramento – the contractor hired to plan and facilitate the Summit Meeting.

Meaningful Results, Plus Recommendations for Improvement

The discussions at each small- and large-group session were particularly lively, with numerous ideas shared. There was unanimous agreement on the importance of HICS, and much of the current material was considered to be both vital and useful. Among the many suggested refinements offered during the Summit were the following:

- Continue HICS, as much as possible, as a NIMS-based system;
- Revise some of the more repetitive wordings in the Operations and Logistics Section to reduce redundancy;
- Add a Mental Health position to the IMT;
- Format an IMT design for small hospitals and after-business-hours use;
- Reformat and streamline the JAS;
- Regroup some of the IPGs/IRGs and add new ones relevant to such important topics and/or situations as medical gas, vacuum failure, active shooter/hostage barricades, and wildfires;
- Make the numbers and purposes of all forms easier both to read and to understand;
- Place the forms in order of intended purpose – i.e., Incident Action Plan, resource management, patient tracking, etc.;
- Address the topic of inclusion with Corporate and/or Coalition command structures; and
- Revise the Guidebook as necessary: (a) to reflect additional changes as they occur in the future; and (b) to provide additional details on implementation strategies.

Reportedly used by 80 percent of hospitals in the United States, HICS provides a number of incident command system tools…. In the words of Van Gorder, 'HICS is leadership in action'

"Leadership in Action" – Now and in the Future

Although the Summit was very successful in identifying potential improvements, it was only the first in a series of steps being taken by the California EMSA to revise HICS.

The Summit facilitators are now preparing a comprehensive proceedings report to submit to EMSA. This information will be given to the Center for HICS Education and Training – which EMSA anticipates contracting with for the next HICS revision. The Center's personnel served as the contractors for HICS V4.

As another part of the development process, those attending the Summit will be asked to review the newly devised/revised materials. A second larger group of volunteers will also be asked to review the materials. Personnel with a hospital background who are familiar with the HICS policy and guidelines can apply (see footnote below) to serve as one of the 80 secondary-review group members.

In the words of Van Gorder, "HICS is leadership in action." The HICS National Summit proved to be a very positive start. By building on the past, stakeholders are preparing a new and improved HICS for the future.

Footnote: To be considered as one of the 80 secondary-review group members, an expression of interest should be sent by 21 November, along with a resume, to EMSA at HICS@emsa.ca.gov . All reviewer comments will be analyzed and EMSA will approve the final revision. The materials will be posted, on the California EMSA and the HICS Center web page, sometime in the Fall of 2012, for access and downloading by any and all persons interested.

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 a Physician Assistant at Fairfax Hospital, a Level Trauma Center 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.

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MCM Dispensing: The Public Health Point of View

By Raphael Barishansky & Audrey Mazurek, Public Health

The distribution of medical countermeasures (MCMs) has the potential to be one of the largest challenges a public health entity will have to face. The U.S. federal government recognizes the need for ensuring that MCMs are available to combat emerging infectious diseases, pandemics, and bioterrorist attacks. Homeland Security Presidential Directive (HSPD) 21, which focuses on Public Health and Medical Preparedness, articulates the overall strategic direction and focus of public health preparedness for the foreseeable future. More specifically, it focuses primarily on four key components of public health and medical preparedness: bio-surveillance, countermeasures distribution, mass-casualty care, and community resilience.

There also are two documents, issued since HSPD 21 was announced, that recognize the importance of MCM dispensing as a fundamental element of public health preparedness; those documents are the National Health Security Strategy (NHSS) and the Biennial Implementation Plan (BIP). In addition, the U.S. Department of Health and Human Services (HHS) conducted a review, in 2010, of the department's MCM enterprise to ensure that the nation has in place, and follows, a forward-looking 21st century system. HHS recognizes that there are multiple components and organizations essential to the timely development, deployment, and use of MCMs, including providing critical investments in the public health system.

The Public Health Preparedness (PHP) Capabilities, released in March 2011 by the U.S. Centers for Disease Control and Prevention (CDC), defines MCM dispensing as "the ability to provide medical countermeasures (including vaccines, antiviral drugs, antibiotics, antitoxins, etc.) in support of treatment or prophylaxis (oral or vaccination) to the population identified in accordance with public health guidelines and/or recommendations." The PHP Capabilities document also outlines the required functions and performance measures of state and local public health entities in MCM dispensing, including but not necessarily limited to such responsibilities as the following: identifying and initiating MCM dispensing strategies; receiving MCMs; activating dispensing modalities; dispensing MCMs to identified populations; and reporting adverse events.

The Medical and Non-Medical Models for MCM Dispensing

The CDC's Strategic National Stockpile (SNS) provides the national supply of medications and medical supplies needed for emergency situations. Those supplies are pre-positioned throughout the United States so that a "push-pack" (containing a cache of pharmaceuticals, antidotes, and medical supplies) can be deployed anywhere within the United States, and U.S. territories, within 12 hours after receipt of a request to re-supply state and local caches.

The general model followed is predicated on the assumption that the CDC will, upon notification of an emergency situation requiring SNS assets, distribute the medications to state health departments – which will then work in cooperation with local partners to ensure that the medications are dispensed to the exposed/populations that might have been infected. The most traditional method used by local health departments to dispense medications to their own populations is to use either of two types of Points of Dispensing Sites (PODs):

(1) Medical Model – Uses medical personnel as dispensers, but licensed medical personnel control the dispensing process. Patients are provided with an in-depth educational session about the threat, medication, and other applicable information. The documentation of patients is extensive, and medical assessments are available at the PODs. The medical model is most likely to be used in situations (e.g., pandemic influenza) and in areas where all residents must come to a POD, in person, to receive their vaccinations.

(2) Non-Medical Model – Primarily uses non-medical personnel (e.g., county staff, volunteers). Patients are provided minimal educational information, and are required to fill out only minimal documentation at the POD. The purpose of this model is to provide medications to the most people in the quickest way possible. The non-medical model is most likely to be used in circumstances that require the rapid distribution of medications (e.g., as required by the Cities Readiness Initiative [CRI] to ensure the prophylaxis of a population within 48 hours after receiving SNS assets). In this model – required primarily in situations such as a biological attack in which aerosolized anthrax is the toxic agent used – only one household representative is required to report to a POD in person to pick up medications for all members of his or her family.

Open & Closed PODs, Drive-Thrus, Pharmacies, and the USPS

Since the 2001 anthrax attacks and other nationwide and worldwide public health emergencies that followed since, the U.S. government has invested a significant amount of resources and funding to state and local public health agencies and organizations to ensure the effective and efficient dispensing of medications. Each department is required to have written plans that detail how it plans to dispense MCMs to affected populations, keeping in mind how dispensing may be altered based on the specific public health emergency involved, the resources available to the jurisdiction, and the time frame in which the medications must be provided to the population. Among the several ways in which MCM dispensing can be carried out are the following:

Open PODs – Dispensing sites that provide medication to the general population. Residents would be made aware of the location of these sites, as well as other specific information during a public health emergency, through pre-developed scripting and messages distributed by public health authorities via various media. This is the most traditional type of MCM dispensing, and is used in situations where a majority of the population will be provided medications.

Closed PODs – Dispensing sites that serve a discrete population – e.g., military bases, colleges/universities, major businesses, nursing homes, correctional facilities, or even faith-based organizations. These sites would not be available to the general public. The staffing and materials related to distribution are usually supplied by the site itself, while the medication and training are provided by public health entities under a Memorandum of Understanding (MOU). The use of Closed PODs in dispensing will help alleviate the staffing and resource strain on local jurisdictions, which may simultaneously be using Open PODs and/or other methods of distribution. A key benefit of using Closed PODs is that they attend directly to their specific populations and to ensuring their safety.

Since the 2001 anthrax attacks and later nationwide and worldwide public health emergencies, the U.S. government has invested a significant amount of resources and funding to state and local public health agencies and organizations to ensure the effective and efficient dispensing of medications

Drive-Thru PODs – Residents can receive prophylaxis without getting out of their cars, trucks, or other vehicles. This option has been exercised by many jurisdictions – through the use of drive-thru flu clinics, for example, where residents can simply drive to a specific location where they will be directed to pre-designated stations to: complete any paperwork necessary, receive additional information (if needed), and receive their vaccinations. The Drive-Thru method is beneficial when considering such complicating factors as inclement weather conditions and/or poor sanitation that might deter residents from going to a traditional Open POD. The Drive-Thru PODs also help reduce the spread of disease by limiting face-to-face contact among patients.

Pharmacies – This model was actually used by some jurisdictions during the H1N1 outbreak. Residents will go to a participating pharmacy and receive their prophylaxis directly from pharmacists and other trained staff. A drive-thru model may also be used by the pharmacy if the location can support it. As is done with a Closed POD, the pharmacies would supply the staff and materials, but medication and training would be provided by a public health entity through an MOU. This model can be used as either a Closed or Open POD.

The United States Postal Service (USPS) – Some jurisdictions plan to use volunteer postal carriers, through the CRI Program, for the delivery of prophylaxis directly to residents' homes during a potential mass-casualty event. The USPS has developed the capability, experience, and knowledge required in delivering a broad spectrum of packages, letters, and other items throughout virtually all U.S. jurisdictions in a short period of time. This model admittedly presents certain challenges that other models may not – including, for example, the need to provide security for each of the postal workers involved. Many jurisdictions planning to use this model are doing so to help buy time while PODs are being set up, but usually not as a primary or sole dispensing model.

Partnerships, Volunteers, And Personal Responsibilities

No matter which mechanism is used to deliver MCMs, the partnerships between public health and federal, state, regional, and county agencies, first responders, private-sector businesses, non-profit organizations, and non-governmental organizations is critical. Law enforcement and fire agencies, emergency medical services (EMS) units, and homeland security/ emergency management officials will be particularly important because all of them have specific roles to play in any model or type of MCM dispensing plan used. For example, law enforcement agencies probably will be used to help secure the transport of SNS assets and provide security at PODs.

Other local agencies, such as departments of transportation, and public schools (if PODs will be located at schools), also will be important in providing the resources and infrastructure needed to carry out MCM dispensing. Volunteers from the Medical Reserve Corps (MRC), Community Emergency Response Teams (CERTs), and other volunteer organizations will also play major roles in supplementing the staffing needs at PODs and other MCM dispensing locations.

In addition to identifying and planning with partners, the other critical elements of any MCM dispensing plan are assuring that: (a) all partners are aware of and trained for the plan; and (b) each individual understands his or her own duties and responsibilities. The plan also has to be exercised appropriately and often (through both discussion-based and operational-based exercises).

To briefly summarize: As discussed above, the possibility of having to dispense MCMs to a relatively large population, usually under austere working conditions, is one that has the potential to stress even the best prepared health department and entire jurisdiction. Understanding the various components that make up an effective MCM distribution plan, exercising on those plan elements, ensuring that the community has available a sufficient number of both open and closed PODs, and determining that partner agencies are fully aware of their responsibilities, are all foundational elements in determining the level of readiness needed to quickly and efficiently dispense needed and available MCMs.

For additional information on the HHS review of their MCM enterprise, see: U.S. Department of Health and Human Services, The Public Health Emergency Medical Countermeasures Enterprise Review: Transforming the Enterprise to Meet Long-Range National Needs, August 2010.

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Audrey Mazurek is a senior associate at ICF International and a public health preparedness planner for the Prince George's County (Md.) Health Department. She also serves as an adjunct analyst at the Homeland Security Studies and Analysis Institute (HSI). Previous to assuming those positions, she was a program manager at the National Association of County and City Health Officials (NACCHO).

Tennessee Hospitals Use HERT to Enhance Preparedness

By Shannon Arledge, Exercises

Ten hospitals in Northeast Tennessee are one step closer to establishing mobile decontamination teams, thanks in large part to the training they recently completed at the Center for Domestic Preparedness (CDP) in Anniston, Ala. The 10 facilities sent 37 employees to the CDP to participate in the center's Hospital Emergency Response Training (HERT) course, which is designed to prepare hospitals to carry out safe and effective emergency medical responses to mass-casualty incidents.

The training the 37 employees received will be the basis for forming regional response teams trained specifically to provide mobile decontamination at each of the 10 hospitals in the state's northeast healthcare region. "In the event of a disaster our hospitals may need the assistance of other sister hospitals," said Brenda Greene, hospital coordinator for Northeast Tennessee. "Our Regional Response Teams will assist and provide a reserve of trained personnel. This training is exactly what we need to be more prepared."

According to Greene, the 10 hospitals have found that staff attrition causes vulnerabilities and weaknesses in personnel continuity. Internal control measures identified the need to increase the number of trained personnel on decontamination teams.

"Among our group this week are physicians, nurses, corporate directors, and safety and security personnel," Greene said. "When we form our decontamination teams everyone will be involved, not just those directly related to healthcare. Hospitals need to include everyone like housekeeping, administrative staff, and even nutritionists when they form response teams – we all have a role."

The HERT course requires hospital employees – i.e., anyone on the staff – to become familiar with decontamination procedures, which not only protect the employees and patients but also help protect a hospital from the cross-contamination that frequently occurs when disaster survivors enter a hospital before decontamination.

Incredible Training & Hands-On Experience

"The HERT class has changed my view from a firsthand experience," said Rob Adams, director of safety, security, and emergency management for the Mountain States Health Alliance. "The hands-on training is incredible. Talking about it is one thing, but dressing in decontamination suits and actually functioning in high temperatures for more than two hours is another. I can take this knowledge back and speak from experience – this is how you do it, this is why you do it, and this is how it can save your life and the lives of others."

The CDP training focuses on incident management, mass-casualty responses, and emergency responses to a catastrophic natural disaster or terrorist act. Healthcare courses are provided at the CDP's Noble Training Facility (NTF), a former U.S. Army hospital that was converted into a training site for health and medical education in disasters and mass-casualty events and now serves as the only hospital in the United States dedicated solely to training.

CDP training for state, local, and tribal responders is fully funded by the Federal Emergency Management Agency (FEMA), a major branch of the U.S. Department of Homeland Security. FEMA's mission is to support U.S. citizens and first responders "to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards."

Shannon Arledge is a Public Affairs Specialist at the FEMA (Federal Emergency Management Agency) Center for Domestic Preparedness in Anniston, Ala. 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.

Afterglow – Countering the Deadly Effects of Radiation

By Joseph Cahill, EMS

In the context of CBRNE (chemical, biological, radiological, nuclear, and explosive) incidents, radiation is differentiated from nuclear. Nuclear refers to an explosion precipitating a chain reaction, whereas radiation is and can remain a hazard long after a nuclear explosion – or a hazmat (hazardous materials) spill – even when there has been no actual explosion.

Radiation is in a sense double deadly, because it cannot be perceived by the human senses. Only the immediate damage resulting from radiation, in fact, can be sensed in the form of burns. The long-lasting risk of genetic damage and/or cancer is as imperceivable as the original radiation.

The first and most effective countermeasure against radiation exposure, such as that caused by a "dirty bomb," is of course avoidance. Advance intelligence, adherence to response policies, and common sense will keep most if not all responders out of Harm's Way. However, it is not always possible both to save lives and to ensure the desired safety of the responders themselves at the scene of a radiation incident. Because time is almost always a critical factor, the development and promulgation of accurate information – from the scene of an unfolding event – is therefore of paramount importance to saving the lives not only of those wounded or injured in the incident but also the responders themselves.

The first prerequisite for avoiding exposure is promptly recognizing that a radiation hazard does in fact exist. There are two main types of devices used to detect radiation: detection instruments; and dosimetry readers. Detecting the presence of radiation at an early stage of a response allows those on the scene to quickly recognize the hazard, thus giving all staff in decontamination areas time to check the effectiveness of their own working circumstances.

There is a second danger to consider, however – namely, that the effect of radiation is cumulative: the larger the dose and/or the longer the exposure, the greater the damage. Because the cumulative doses that can be tolerated by humans are already known, though, dosimetry allows responders to track their personal cumulative dosage so that they can exit the contaminated area prior to exceeding an unacceptable dose.

Precautions, Medications & Stockpile Solutions

If there is any possible risk of contamination, the wearing of standard PPE (personal protective equipment) is essential to survival. Both respiratory and skin protection are required in most situations, and are particularly important in the protection of any areas of the body where skin has been broken and thus more susceptible to infection.

A primary concern when working near a radioactive source is accidentally "internalizing" the toxic substance. In most cases, a person who has been working in a room where radioactive iodine-131 is present can simply walk out of the room if and when necessary. However, a person who has accidentally inhaled or ingested the iodine must receive immediate medical attention. Fortunately, there are a number of medical countermeasures that can be employed in the event of radiological exposure, whether by fallout from a nuclear detonation or because of other radioactive contamination.

Potassium Iodide tablets are often taken by those who are in or planning to enter an area believed to be potentially contaminated with radioactive iodine-131. Saturating the body with non-radioactive iodine eliminates the areas of skin available for radioactive iodine to seat; the Potassium Iodide therefore is or should be quickly excreted from the body, thus limiting the damage done by reducing the length of the toxic substance's exposure time.

After internal contamination with radioactive cesium-137, such as that released by Japan's Fukushima Daiichi Nuclear Power Station earlier this year, or by non-radioactive thallium, patients are sometimes given Prussian Blue capsules. Unlike the preventative nature of the non-radioactive Potassium Iodine tablets previously mentioned, Prussian Blue is given as a post-exposure way to drive the contamination from the body.

Potassium Iodine tablets and Prussian Blue capsules both can be obtained through the Strategic National Stockpile (SNS) of medications maintained by the U.S. Centers for Disease Control and Prevention (CDC). Radiation can be frightening because – unlike biological, chemical, or explosive hazards – there is no everyday counterpart to radiation hazards in the working world of the average citizen, or average responder. However, by taking the proper precautions, and ensuring that adequate medical countermeasures are on hand, the dangers caused by radiation hazards can be kept to a reasonably, and operationally, safe minimum.

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

Sacramento P.D. Incorporates Training with Private-Sector Businesses

By Adam McLaughlin, State Homeland News

The Sacramento, California, Police Department focuses considerable attention on the professional training of its officers – and some of that training involves such private-sector business entities as Target, Nugget Markets, and Sutter Health. The department has partnered with those companies, and others, to incorporate lessons in how to make the police department a better place to work – and one that also provides high-quality "customer service."

Sacramento Police Chief Rick Braziel started the program when he took over the department in 2008. About once a year, the department invites representatives from large companies that are well known for their customer service. "We have a motto around here: 'Treat your employees right and they will treat the customers right'," said Sergeant Jerry Camous, the department's in-service field training supervisor.

Investments in employees – which Camous noted can be difficult to make because of budget cuts – include improved training opportunities, counseling for help because of the stress of the job, and the recognition of successful job performance. "Typically in law enforcement that does not happen," he said. "In law enforcement, you only hear about the negatives."

In addition to the focus on customer service within the department, Sacramento's continuing emphasis on education goes well beyond the state's mandatory requirements. California's Commission on Peace Officer Standards and Training requires, for example, that police officers and dispatchers complete 24 hours of continuing professional training every two years. In addition, the commission requires four hours of training in each of three major operational areas: arrest and control; driving; and the use of firearms.

Sacramento officers, though, according to Camous, participate in a minimum of 98 hours of training every two years, including 18 hours of hands-on emergency vehicle operations training as well as special courses on how to deal with disabled people, the use of defensive tactics, and the investigation of domestic violence. The department also not only conducts 4 to 10 hours of annual handgun training but also schedules quarterly qualifications in that important skill.

Sacramento's continuing emphasis on education goes well beyond the state's mandatory requirements ... [which] could be paying off for the city in other ways…. Somewhat surprisingly, crime has actually dropped despite the recent cutbacks in the police department

According to Camous, cuts to the department's budget have made it more difficult to send officers outside the department for training. However, the department received an $8.1 million federal grant in September to rehire 25 officers. Those officers were among the 42 who had been laid off in July to avoid a budget deficit. "A lot of them [the officers who had been laid off] have been snatched up by other agencies because of our reputation," Camous said.

The police department's emphasis on professional training could be paying off for the city in other ways. Somewhat surprisingly, crime has actually dropped despite the recent cutbacks in the police department. According to department data, in fact, the city's crime rate has decreased significantly over the past four years. Violent crimes dropped from 5,128 in 2007, for example, to 4,110 in 2010; and property crimes dropped from 26,111 to 20,148 during the same time frame.

Adam McLaughlin, CEM, MS, MPA, is the operations manager for Elizabethtown Gas, an AGL Resources Company that delivers service to approximately 273,000 residential, business, and industrial natural gas customers in New Jersey. He previously served, for over six years, as the manager of emergency readiness, Office of Emergency Management of the Port Authority of New York & New Jersey. His responsibilities in that post included the development and coordination of Port Authority interagency all-hazard plans, and the design and development of emergency preparedness exercises. Prior to assuming the Port Authority post, he served in the Army for 10 years as an infantry and military intelligence officer; he is a combat veteran of Afghanistan.

Radiological and Psychological Medical Countermeasures

By Sophia Paros, Health Systems

As natural and manmade disasters increase in intensity, the need for hospital preparedness plans, as well as mass relocation plans, becomes critical when taking into account the public health and medical needs of at-risk individuals and groups in the event of a public health emergency. With respect to public health emergency management and treatment capabilities, the development and rapid distribution of medical countermeasures during CBRN (chemical, biological, radiological, nuclear) incidents becomes crucial. Medical countermeasures implemented by a jurisdiction in response to a CBRN incident could include staffing plans for hospitals, vaccines, and prophylaxis as well as measures to ensure the mental health of citizens.

In 2008, the University of Alabama at Birmingham conducted a study of nurses and emergency department physicians. The purpose of the study was to analyze the perceptions, concerns, and information needs of the focus-group participants and list some staffing challenges that hospitals would probably experience following a radiological emergency. The *Lessons Learned Information Sharing (LLIS.gov) Best Practice, Mass Evacuation Reception Planning: Overview of Planning Issues After a Nuclear Incident* (available on *LLIS.gov*), reviews this survey – in conjunction with other reports – to determine the critical functions that responders, receivers, and other essential personnel may be unwilling to perform.

The study – titled *Improving Hospital Preparedness for Radiological Terrorism: Perspectives from Emergency Department Physicians and Nurses* – concludes that participants "expressed deep concerns about a range of specific issues. Topping the list was the expectation that the hospital would be overwhelmed by a combination of injured people, contaminated people, and people fearful that they had been exposed or contaminated. The second highest ranked concern for focus group participants related to the safety and well-being of loved ones. Clinicians expressed a powerful commitment to professional duties and responsibilities, but often also indicated that family came first."

Participants "expressed deep concerns about a range of specific issues – topping the list was the expectation that the hospital would be overwhelmed by a combination of injured people, contaminated people, and people fearful that they had been exposed or contaminated; the second highest concern related to the safety and well-being of loved ones – clinicians expressed a powerful commitment to professional duties and responsibilities, but often also indicated that family came first"

GAO: Smaller vs. Larger, But a Drop-off in Experience

In addition to medical staff being fearful and potentially unwilling to participate in nuclear incident response efforts, the federal government faces additional challenges in acquiring the medical prophylaxis needed to deal with such incidents. The Government Accountability Office (GAO) issued a report on 13 April 2011 – *Public Health Preparedness: Developing and Acquiring Medical Countermeasures Against Chemical, Biological, Radiological, and Nuclear Agents* (also available on *LLIS.gov*) – addressing the need for additional research and development on the problems involving in acquiring medical countermeasures.

The findings of the GAO report indicate that the market for medical countermeasures attracts smaller biotechnology firms, rather than larger pharmaceutical firms, for development in large part because of the failure rate for development and licensure for most drug vaccines. However, the downside for using smaller firms is that HHS (the U.S. Department of Health and Human Services) must provide more guidance to the less experienced companies. When using smaller firms, therefore, it is prudent to plan for additional challenges in the mitigation process – e.g., providing animal countermeasures, determining the appropriate dosage of countermeasures for children, and conducting safety evaluations of countermeasures that have not yet been licensed.

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Drugs, vaccines, and diagnostic devices are all important, and predominantly recognized as medical countermeasures; however, psychological management following a nuclear incident is also an important aspect of incident response. A closely related *LLIS.gov Best Practice – Radiological Dispersal Device Incident Response Planning: Psychological Management* – provides an overview of issues and procedures that jurisdictions should consider when pre-planning for the psychological management of RDD (radiological dispersal device) victims, emergency responders, and the general public. As this Best Practice states, "Planners must consider that the behavioral responses of individuals and groups immediately after an RDD incident can complicate or impede emergency response operations." RDD incidents also trigger mass anxiety and stress, and in many jurisdictions probably could overwhelm critical services.

A separate publication – the National Nuclear Security Administration's *Emergency Operations Training Academy's RAP171DW: Crime Scene Issues, Hazards, and Law Enforcement Interface* guide – points out that "the psychological impact of the dispersion of radiological material into the community will far outweigh the impact of the [dirty bomb] explosion." Because the general public has very little knowledge of the hazards and effects of nuclear materials, it becomes imperative for emergency response personnel to understand psychological and behavioral responses unique to radiation exposure in order to effectively start behavior countermeasures for a successful nuclear response effort.

For additional information on the preceding and other medical countermeasures documents, log into *LLIS.gov* at www.llis.dhs.gov.

Sophia Paros, a contractor with SAIC, serves as the operations lead for Lessons Learned Information Sharing (LLIS.gov), the DHS/FEMA (Department of Homeland Security/Federal Emergency Management Agency) national online network of lessons learned, best practices, and innovative ideas for the nation's homeland-security and emergency management communities. She received a dual bachelor's degree in Computer Information Systems and Business from the College of Notre Dame of Maryland and is currently working on an M.S. in Information Security from The George Washington University.

CDP's School Bus Enhances Mass Triage Scenario

By Shannon Arledge, Exercises

The Center for Domestic Preparedness (CDP) in Anniston, Ala., is known for its realistic emergency response exercises. As part of the center's eight-hour Hands-On Training for CBRNE (chemical, biological, radiological, nuclear, explosive) Incidents (HOT-I) course, responders enter the CDP's toxic agent training facility and carry out various hazardous-materials technician operations in a CBRNE response environment using the nerve agents GB (Sarin) and VX. Thanks to the recent addition of a school bus to the simulated mass casualty exercise, responders participating in the course now have an added level of realism.

The school bus, filled with smoke – and with child-size mannequins crowding the seats and aisles – closely resembles a "real-life" emergency scene. That type of realistic training is typical of many CDP courses, which take first responders out of the classroom for a unique hands-on training experience that focuses on responses to a CBRNE incident.

"It was intense. When I first entered the bus, visibility was good but, as the smoke thickened, the level of difficulty increased," said Heather Jenkins, an Emergency Medical Technician (EMT) from California, after completing her training scenario. "My ultimate goal was to find the most critical patient, but it was not easy. This is something I have never experienced before, but it gave me an idea of what to expect – I feel more prepared. This is crucial knowledge anyone in emergency response should experience."

"Incorporation of the school bus into training scenarios lends an element of realism that keeps our student-participants motivated," said Mick Castillo, CDP technology integration specialist. "The scenario incorporates over 20 lifelike pediatric mannequins, an implementation that assists in simulating a mass casualty incident involving two dozen children. Whether caused by simple accident or at the hands of a terrorist, this scenario is as lifelike and realistic as we can make it."

The Northville Mannequins – And the Viability Factor

At a recent training session, students prepared for the exercise while they were receiving important information explaining the circumstances related to the incident itself, the school bus, and the potential victims or survivors. In addition, while the students were leaving the classroom setting, several explosions were heard from the nearby fictional city known as "Northville." As the smoke started to rise, CDP instructors commanded the responders to "go on air," prompting the class members to quickly don their breathing apparatus and divide into multiple response teams.

When team members entered the bus, they first noticed the child-size mannequins, suffering from a variety of symptoms. The students had to quickly assess the dangerous situation, triage victims, and remove survivors from the smoke-filled bus. The first survivor was quickly passed through the bus's emergency exit to waiting responders – only to find out from instructors that the injured "child" was not viable – i.e., could not be saved. The response team inside the bus then carefully re-examined the scene, checking the symptoms of other passengers, and found another survivor who was in fact viable. That survivor was quickly passed to and through the emergency exit, and emergency responders rushed the child away to a safe area to begin decontamination procedures.

"Where I work there is always a chance for a mass casualty event, and incorporating a training aid like the school bus creates a more realistic environment that requires students to perform," said Chris Dew, a firefighter/paramedic from the District of Columbia. "There is a reason I have returned here five times," he continued. "The training is invaluable. Experiencing triage like this and decontamination during a CBRNE response has increased my confidence 100 percent."

CDP training focuses on incident management, mass-casualty responses, and emergency responses to a catastrophic natural disaster or terrorist act. CDP training for state, local, and tribal responders is fully funded by FEMA (Federal Emergency Management Agency), a major branch of the U.S. Department of Homeland Security. "Fully funded" means that round-trip air and ground transportation, lodging, and meals are provided at no cost to local responders or their agencies. The availability of that special funding not only makes it possible to create and carry out more realistic exercises, using real equipment, to prepare trainees from all areas of the country to participate in real-life scenarios but also makes it politically much easier for budget-strapped jurisdictions to approve such training for their own responders.

For additional information on the HOT-I course, click here http://cdp.dhs.gov/resident/cbrne.html *or find all CDP training courses at* http://cdp.dhs.gov

Michigan Plans Cyber-Defense Squads, New Command Center

By Adam McLaughlin, State Homeland News

Michigan will develop a cyber-command center and form a number of "cyber-defense response teams," officials said, as part of a plan to heighten the state's profile within the computer security industry.

The Michigan Cyber-Command Center will be directed by the Michigan State Police from the state's Emergency Operations Center. The cyber-command center will be staffed by "a select group of skilled public and private professionals who are highly trained in emergency response to cyber-events," according to official announcements outlining the proposal. If and when activated after a security threat, the command center will be tasked with restoring computer systems and minimizing damage. Rapid-response teams also will be deployed and, among other duties, will help deploy secure networks; the teams will play an important role in the development of training standards. The cyber-command center will build upon the existing Michigan Intelligence Operations Center, which will continue to handle threat detection and monitoring.

The forward-looking program, called the Michigan Cyber Initiative, was announced earlier this month during the Michigan Cyber Summit. Governor Rick Snyder and a representative contingent of Michigan lawmakers participated in the Summit, as did U.S. Department of Homeland Security Secretary Janet Napolitano and Howard Schmidt, the White House's own cyber-security coordinator.

A Proof-of-Concept Demo & Other Leading Indicators

Officials pointed to Michigan's long history of participation and innovation in security initiatives as an important indicator that the state can take a leadership role in such matters. Two years ago, Michigan participated in a proof-of-concept demonstration of the federal government's Einstein traffic-monitoring system that was eventually turned over to the Multi-State Information Sharing and Analysis Center. Thanks in large part to its participation in the Einstein demonstration, Michigan resolved 40 malware incidents affecting 590 state devices.

Michigan also recently appointed a chief security officer, a first-of-its-kind position among state governments that will combine oversight of computers and physical infrastructure. Another "leading indicator" of the state's prominence in cyber-security activities is that five Michigan colleges and universities have been designated by the National Security Agency as National Centers of Academic Excellence in Information Assurance. In addition to the creation of the new cyber-command center, the state's newest cyber-security initiative will also be used to help improve curricula for cyber-security in schools and to provide new economic development opportunities for the U.S. cyber-security industry.

"This initiative underscores Michigan's commitment to cyber-security," said David Behen, Michigan's Chief Information Officer, in a recent statement. "It is an action plan that offers clear approaches for safeguarding our families, protecting Michigan's infrastructure, and shielding our economy."

A full version of the Michigan Cyber Initiative announcement, as well as a new cyber-toolkit, can be found at http://www.michigan.gov/cybersecurity.

Public Health Lessons from Hurricane Irene & Tropical Storm Lee

By Beth McAteer, Public Health

Flooding from Hurricane Irene and Tropical Storm Lee devastated communities and left many businesses and families facing unbelievable destruction. To ensure that health needs were met during and after the disaster, public health organizations provided continued surveillance and frequent assessments. In every community, a variety of vital emergency services are dedicated to protecting the health, safety, and well-being of local citizens. Police, firefighters, and emergency medical and healthcare personnel – both career and volunteer, who put their own lives on the line to save others – as well as public works and human/social service agencies and departments all play key roles in response to emergencies and disasters.

Historically, however, none of these emergency service groups or individuals has been assigned the legal responsibility to organize all emergency services within the community. No single group has the responsibility to work closely with all of the other groups and individuals involved to develop, implement, and test a truly comprehensive emergency operations plan. Moreover, no single group has been assigned the responsibility of ensuring that, during an emergency/disaster, the collective response of all emergency service departments and agencies will be effectively coordinated. That role almost always falls, therefore, to emergency managers – who coordinate such efforts before, during, and after the disaster.

Traditionally, the fire department handles fire responses during a disaster and assists EMS (emergency medical services) agencies in their responses. The police department focuses on public safety, crime prevention, traffic control, and evacuation concerns. The public works agency maintains the infrastructure support and ensures the reinstatement of services. Public health and environmental health agencies focus on disease surveillance and potential outbreaks of disease as a result of the disaster. Mass care coordination identifies the public health roles and responsibilities in providing medical care, health services, and shelter services during a disaster.

However, during a natural disaster of a relatively large magnitude – particularly one that requires the evacuation of densely populated communities – all emergency responder groups must be able, well in advance of the disaster, to quickly identify and support people within their communities. Emergency evacuation operations begin with the evacuation order and extend through the relocation and recovery period. The need for evacuations may result from any number of concerns, ranging from the loss of utilities to rising flood waters, and may be either "limited and localized" – i.e., lasting for a relatively short period of time – or "general and widespread" (lasting for a more extended period of time). Regardless of the size of a major disaster, evacuation plans must be in place – in advance – to support the entire population, particularly including those persons with functional needs.

Communications Before, During, and After – But Especially Before

Determining the needs of the impacted population before a disaster occurs is usually the responsibility of public health, emergency management, and various other partner agencies and organizations. However, the processes for the dissemination of situational awareness information also require close coordination *prior* to the disaster. Planning messages before the disaster escalates are critical for prompting people to take the appropriate precautionary steps needed to lessen the impact of the disaster. It is often difficult to communicate essential information about these steps before the disaster is declared; however, repeated messages that inform the public about the threat and provide basic instructions on the ways to protect individuals, families, businesses, and employees are or should be part of an overall crisis communications plan.

Issues with communications are often directly connected to coordination activities within and among organizations. In efficient and routine emergency operations, the vast majority of communications have occurred before the incident. Goals and tasks are often determined by tradition and, in fact, frequently have been formalized in statutes, contracts, charters, mutual-aid agreements, and standard operating procedures – all of which are especially important if critical infrastructure has been compromised and/or if a community must be evacuated because of an impending disaster.

Problems with communications and collaboration can be and frequently are compounded when organizations responding to disasters include those that, because they do not routinely respond to local emergencies, have had minimal previous contact. That can be the case in medical surge situations, during which community- and church-based organizations and their facili-

ties, schools, businesses, etc., are used as alternate care sites or shelters. Ironically, some disaster reports suggest that smaller communities, despite possessing fewer resources, tend on average to coordinate their disaster responses more effectively than larger and more urban areas do. This seeming anomaly may be attributed to: (a) a smaller community's greater need to work together; and (b) an increased likelihood that the responders involved have worked together before. Nonetheless, the guideline remains the same: When disaster strikes, prompt and proactive communications are essential to effectively mitigate the problems and lessen the damage.

Unfortunately – as planners, responders, and receivers for Irene and Lee had learned from previous disasters – there has far too often been a lack of *pre*-impact communications between and among key responder organizations. The reason, usually but not always, is that emergency managers did not wait to sense the "red flags" (i.e., danger signals) until they were already caught up in the middle of the disaster. Of course, the "receiving" communities and facilities need, and use, situational awareness and accurate communications to properly plan for the evacuees they probably will be receiving from hospitals or nursing homes in the areas most directly affected. Ensuring that accurate information – about the quantity and functional needs for each of the evacuees – is provided to the receiving communities allows for a much smoother transition.

Debris, Diseases, and Other Residual Damage

Public health concerns do not stop at that point, but continue through the recovery phase. Following events such as Irene and Lee, local water authorities and emergency management officials provide the guidance needed to impose water restrictions. In one recent example, the New Jersey Department of Health urged all residents to throw away any food that might have come into contact with storm waters – or went without refrigeration.

More recently, Pennsylvania officials alerted the public (on 9 September 2011) about public health concerns affecting anyone coming into contact with floodwater. Approximately 159 water and sewage treatment plants were affected, and in some areas caused sewage to spill into local streams and rivers. In addition, any floodwaters containing contaminants and/or debris became a continuing concern.

The days and weeks immediately following a disaster are particularly difficult. Disasters such as flooding almost always come on quickly, and with little or no warning. Following the aftermath of Irene and Lee, the State of New York implemented a Public Health Emergency warning (on 24 September 2011). The standing water left behind from Irene and Lee was ideal for mosquitoes and, therefore, possible mosquito-associated disease (which usually is the most widespread problem after heavy rains and flooding). In the aftermath of Irene and Lee, most Departments of Public Health in the states directly affected also provided guidance about the availability of tetanus vaccinations for those involved in recovery efforts and/or exposed to flood waters.

A Helpful List of Public Service Reminders

In addition, public service announcements were issued to remind citizens about proper precautions to protect their health and safety prior to returning to a flooded home or business. Following is a "must read" list of the most important of those announcements (including some that are frequently overlooked):

- Remove all floodwater, dirt, and debris left behind by the floodwater;
- Remove mold and mildew;
- Remove from the buildings any materials or furnishings that soaked up water;
- Remove carpets and padding that cannot be cleaned thoroughly enough to prevent mold and mildew from growing;
- Strip walls that were wet to the studs and remove the insulation – walls must remain open to allow them to completely dry;
- Inspect other wall cavities for visible mold growth;
- Open, clean, decontaminate, and dry any area inside a wall cavity showing visible mold growth;
- Inspect, clean, and decontaminate exterior and interior heating ventilation and/or air-conditioning systems that were in contact with floodwater;
- Remove, clean, disinfect, and reinstall air registers (vents) and diffusers;
- Throw away upholstered furniture, mattresses, and furniture made of particleboard or wafer board that is still moist or wet 24 hours after the floodwater recedes;
- Remove any chemical contamination and hazardous materials from the building; and
- Ensure that all areas of the building are dry before rebuilding or repairing – mold will grow on replacement materials if the studs, subfloor, and/or other building areas or surfaces are not completely dry.

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To briefly summarize: It is more important today than ever before that individual citizens, and communities, work together to be prepared to respond to a disaster such as a hurricane or flood. Knowing the increasingly important steps in prevention listed above will improve the health and safety of everyone affected by such a disaster.

It is essential for all partners and stakeholders to work together to respond and recover from disasters such as Irene and Lee that affect everyone in the community. Public health preparedness incorporates the practice of reality- and knowledge-based management and the link to the human element of a disaster. Most important of all: Take the initiative now available to plan, prepare, and communicate before such an event occurs in order to better protect and care for all persons who may be affected during or after the event.

For additional information related to public health concerns and precautions, click on: www.cdc.gov/disasters

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Beth McAteer is the Public Health Program Director for Witt Associates, a public safety and crisis management consulting firm. Ms. McAteer, who joined Witt Associates in 2010, has over 15 years' experience in the healthcare field in various positions, including a tour of duty at the Pennsylvania Department of Health (DOH), 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 (EMACs) to Hurricanes Katrina and Gustav. She also recently spearheaded the efforts to design and implement the enterprise-wide information technology solution to support patient/evacuee tracking for emergency medical services and hospital personnel throughout the Commonwealth of Pennsylvania.

Georgia and California

By Adam McLaughlin, State Homeland News

Georgia

GEMA, DPH Use Geo-Location App to Send Lifesaving Information

To provide emergency information directly to the public, the Georgia Emergency Management Agency/Homeland Security (GEMA) and the state's Department of Public Health launched a new app last month that provides a site for residents of that state to not only obtain updates, but also to store important information. The app, called Ready Georgia, allows users to create a profile that includes information such as emergency contact phone numbers, an out-of-town meeting place, and relevant work and school data. It also provides real-time hazard and weather alerts – as well as a site for Georgians to keep track of the emergency supplies they have on hand.

"Preparation is key to surviving disasters, and the Ready Georgia mobile app makes it easier than ever for Georgians to get prepared," said GEMA Director Charles English in a statement two weeks ago that, he pointed out, was particularly relevant "for National Preparedness Month." The profile-creation and disaster-plan features of the app are meant to improve preparedness before a disaster. But in the event of an emergency, the app also uses geo-location technology, which determines a resident's present location, to provide the locations of nearby shelters and show the flow of traffic on evacuation maps. "So, after an emergency, you know where to go," said Kevin Planovsky, co-founder of Vert, the company that developed the app, during a 21 September webcast.

To provide all of that information, and more, Planovsky said, the app: (a) pulls in shelter feeds from the American Red Cross; and (b) is integrated with Google Maps to display real-time traffic data. It also provides the locations of local FEMA (Federal Emergency Management Agency) disaster recovery centers so that those affected by an emergency can quickly and easily locate the centers closest to them.

GEMA spokeswoman Lisa Janak said that all of the data feeds are automatically updated (with the exception of information from the Georgia Department of Public Health, which must be manually input). The Ready Georgia app works with the iPhone, iPad, and Android devices. Janak said that the $30,000

cost to create the app for the Apple and Android platforms was paid for by a grant from the U.S. Centers for Disease Control and Prevention.

The app provides several types of alerts and information to users. When the application is open, it pulls in feeds from the National Weather Service, for example, as well as from GEMA and the Georgia Department of Public Health. "If there are outbreaks … we can give information and let you know where those outbreaks are so you can protect yourself," said Dr. Brenda Fitzgerald, commissioner of the Department of Public Health, during the same webcast.

California Hosts Testing of Early Warning Earthquake Systems

Six months after the massive earthquake and tsunami that devastated much of northeast Japan, U.S. scientists have started testing out a new warning system to alert Americans before another major quake hits the United States itself. The experiments are under way in California, ground zero of seismic activity in the United States. Scientists say that, even though the new system might provide only a few seconds' warning, those few seconds could make a huge difference in the number of lives saved.

The National Research Council has developed a 20-year "road map" to preparing the country for earthquakes, including quietly testing new warning systems in California. One early test shows a map of the state lighting up on a computer screen, with a red dot signifying an earthquake's point of origin. A clock then appears signaling a "countdown to impact" at key locations miles away from the starting point.

The system, which is not yet being broadcast to residents and/or businesses, may save only a few seconds at this point. With additional testing, though, scientists hope to create an early warning system similar to one in Japan that not only sends out text messages but also interrupts television programs when sensors detect the start of an earthquake. That system, which cost the Japanese government $500 million to create, is credited with having saved a number of lives during the 9.1-magnitude earthquake that precipitated the even more destructive tsunami in March.

The new U.S. system is designed to sense not only the first beats of energy after a fault breaks but also, using that extremely limited information, to estimate the probable magnitude of the imminent earthquake. A web of underground sensors can detect the different types of waves that come through – the first "P" or primary wave that causes less damage, or the secondary "S" wave – and issue an instant warning.

Project Chief Douglas Given of the U.S. Geological Survey pointed out that, even with only a very brief warning, trains can be stopped or slowed, air traffic controllers can stop take-offs and landings, power plants and factories can close valves, and children can dive under their desks for cover – all within the space of the precious seconds of time provided by the warning.

The early-warning project received additional impetus when American scientists recognized that the United States has fallen behind other earthquake-prone countries that have taken some imaginative new steps forward in developing their own earthquake warning systems. Japan unveiled the first early warning network in the world in 2007. Mexico, Taiwan, and Turkey have also created their own systems – which are less sophisticated than the Japanese network, but much better than the previous systems they were replacing.

The United States has been testing three different warning systems since 2006, and launched a prototype known as "ShakeAlert" in February 2011. At present, messages are sent only to about 30 scientists at USGS, the California Institute of Technology, and the University of California at Berkeley, where scientists are working, with a very limited budget, to resolve some difficult software problems.

The USGS has spent $2 million on the project so far, but researchers believe it will cost an estimated $80 million or so, over five years, to create an effective statewide alert system that can be used to warn the public at large. But the stakes are high in the earthquake business. Seven scientists are now on trial in Italy, for manslaughter, for not informing the public of small tremors that led to a major earthquake that killed more than 300 people.

The U.S. scientists are hoping to partner with private businesses to test the system in various areas around the country, with the Southern California Earthquake Center "keeping score" to independently verify if the new and better system now planned will indeed be able to provide the earlier warnings that might potentially save hundreds or thousands of lives sometime in the not-too-distant future.

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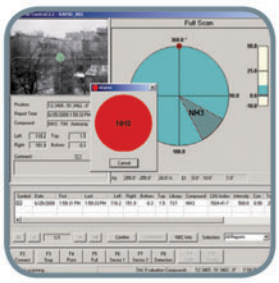

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