

# CONCEPTS IN DISASTER MEDICINE

## National Health Preparedness and Response Centers: Revisiting the Increasingly Critical Need to Expand Cooperative Emergency Response Capabilities in the United States

Donald A. Donahue, DHEd; Frederick M. Burkle Jr., MD, MPH, DTM; Ronald R. Blanck, DO

### ABSTRACT

In 1999, a robust National Health Preparedness and Response Center was conceptualized and piloted, but never fully operationalized. This study revisits the expansive, coordinated efforts invested in this concept, considered an overdue remedy for persistent shortfalls in medical Chemical, Biological, Radiological, Nuclear, and High Yield Explosives training, proficiency, and preparation. The concept defined a robust mission for longstanding, proven programs for prepositioning equipment and associated training of personnel. This study explores the reasons that ended military and governmental support, attendant funding, and operations of the created Joint/Interagency Civil Support Center, which ceased on September 30, 2006. Unfortunately, the concept remains relevant. Major gaps in disaster medical response capabilities have been recognized for decades. Experts from the Institute of Medicine, United States Northern Command, and multiple academic centers and professional organizations have identified these shortcomings, but the national response posture remains disjointed, under-resourced, and based upon obsolete planning premises. Given increasing threats, the authors recommend revisiting the collaboration of military, civilian, academic, and governmental resources that once established the Joint/Interagency Civil Support Center as a multidisciplinary and trans-disciplinary model for a new National Health Preparedness and Response Center coordinated framework for enhanced resilience and operational response capabilities on a national level.

**Key Words:** chemical, biological and radiation disasters, disaster preparedness, disaster response, multidisciplinary national response

In the closing days of the 20th century, a grass roots effort took hold within the Pentagon to improve deployable medical capabilities and to expand these enhanced capacities to be more responsive to domestic disasters, thereby establishing a robust homeland medical response capacity while simultaneously increasing the ability to support traditional and emerging military operations. The goal of this broader perspective would be to enhance the worldwide projection of health services in support of traditional military functions, including combat operations and peacekeeping missions such as in Bosnia-Herzegovina and Kosovo, and to increase the national ability to deploy comprehensive medical support at home and abroad for disaster relief and humanitarian missions.

This 1999 initiative resulted in the creation of the Joint/Interagency Civil Support Center (JICSTC). JICSTC was unusual in that it (1) did not originate from policy analysis or legislative mandate, but rather

as a result of consensus among action officers\* that a need existed, and (2) it anticipated the dynamic participation of not only the active component military medical services, but also those of the Reserve Components (RCs), the Public Health Service, and select nongovernmental organizations. From conception, the enhanced health-care delivery capacities would be a joint military and interagency effort, reflective of the increased complexity of deployed medical operations. Initial enthusiasm for operationalization of the JICSTC concept was significant. The endeavor received Department of Defense (DoD) approval,<sup>1</sup> \$63.5 million in funding for 5 years of operations,<sup>†</sup> and sufficient interest to generate remarkable throughput,

\*The Army and sister services use the term “action officer” to refer to a staff member (staffer). Action officers shape information and submit recommendations to senior decision-makers that, when approved, become decisions. US Army Training and Doctrine Command. Action Officer Staff Writing. <https://www.plainlanguage.gov/media/actionoff.pdf>.

<sup>†</sup>Presidential Budget Decision, increased to \$66.0 million the following fiscal year by means of an embedded inflation factor

**TABLE 1**

<b>Organizations Trained at JICSTC</b>			
<b>Training Year</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Student population	865 <sup>th</sup> CSH <sup>a</sup> 309 <sup>th</sup> Medical Group Patterson Army Clinic	48 <sup>th</sup> CSH – COES <sup>b</sup> 328 <sup>th</sup> CSH- COES 396 <sup>th</sup> CSH- COES 452 <sup>d</sup> CSH- COES 220 <sup>th</sup> Chemical Company 300 <sup>th</sup> Chemical Company 310 <sup>th</sup> Chemical Company 357 <sup>th</sup> Chemical Company 366 <sup>th</sup> Chemical Company 398 <sup>th</sup> Chemical Company 4 <sup>th</sup> Battalion, 98 <sup>th</sup> Training Division Individualized training: reserve, active, civilian Joint Service: Army, Air Force, Coast Guard	301 <sup>st</sup> CSH - COES 352 <sup>d</sup> CSH - COES 6253 USAH <sup>c</sup> 396 <sup>th</sup> CSH 348 <sup>th</sup> CSH Individual medical soldiers DMRTI C4 trainers 370 <sup>th</sup> Chemical Company 340 <sup>th</sup> Chemical Company VA Hospital Emergency Response Teams National Guard Medical Readiness Unit 714 <sup>th</sup> AES <sup>d</sup> (Air Force) Walter Reed Army Medical Center 1497 Students 7744 Man days Exercise development for exercise Red Dragon CBRNE Clinician Course
Throughput	1813 Student 5616 Man days	722 Students 5233 Man days Mass casualty decontamination training Exercise development for exercise Red Dragon	

<sup>a</sup> Combat Support Hospital.<sup>b</sup> Clinical Operating Equipment System, an early entry 44-bed hospital configuration.<sup>c</sup> United States Army Hospital.<sup>d</sup> Aeromedical Evacuation Squadron.

reflected in **Table 1**, and an extensive waiting list during the 3 y JICSTC operated in a limited, pilot status.

Unfortunately, despite initial success, 1 hospital commander commented “this was the best team building training I have ever encountered, bar none,” the authorization and funding were declined by the DoD executive agent for Medical, Nuclear, Biological, and Chemical (NBC) operations as “not our mission” (Personal conversation, Colonel Phil Naven, April 10, 2004). Subsequent multiple bureaucratic and funding shortfalls and the intrusion of the wars in Afghanistan and Iraq caused the concept to lose favor, and it subsequently disappeared. However, the need for similar operational approach for the United States did not, and with today’s increasingly complex crises and threats requires that the original concept be readdressed.

Taking from the original concept development, the authors argue here for revisiting the original tenants of the initiative. With an increasingly changing, complex, and threatening global environment, the establishment of 3 National Health Preparedness and Response Centers, based, in part, on the original JICSTC initiative would properly address a persistent and pernicious shortfall in domestic disaster response capability; enabling major federal response within 24 h, reducing equipment maintenance costs, and fulfilling the goals of the 2007 Homeland Security Presidential Directive/HSPD-21, Public Health and Medical Preparedness.

### Historical Look Back: Discerning the Need

The JICSTC was first created to fulfill what was seen as a training shortfall that, left unresolved, would hinder the ability to

meet an emerging DoD medical mission priority. There was no 1 driver that pointed to the need for a solution; rather the JICSTC concept was born out of the convergence of several factors that evolved over a period of several years.

In 1999, an ad hoc workgroup operating within other forums in the Pentagon began to informally assess the emerging Homeland Security and Military Assistance to Civil Authorities (since renamed Defense Support to Civil Authorities) mission, and particularly the role of the RCs in mounting a widespread medical response. It was reasoned that any response to a significantly large event within the boundaries of the United States, particularly one involving weapons of mass destruction (WMDs), would draw upon the technical acumen of National Guard and Reserve members who, when not on military duty, are in effect dispersed throughout the nation.<sup>†</sup> This ad hoc group included representation from across the DoD and from other governmental offices, shown in **Table 2**.

<sup>†</sup>The United States military is comprised of 3 components, the Active, the National Guard, and the Reserve. The Active Component is the standing, full time military defined in Title 10, United States Code and consisting of the Army, Navy, Marines, and Air Force. The National Guard is defined by Title 32, US Code and consists of Army and Air force elements under the authority and controlled by 54 states, commonwealths, territories, and the District of Columbia. National Guard elements receive equipment and training from and can be federalized and integrated into the Active Component to meet federal missions. As a primarily state asset, the National Guard can also be mobilized for state missions, including disaster response and security activities. Members of the National Guard typically receive 38 days of training annually (not counting mission mobilizations) and are otherwise in a civilian status. The Army, Navy, Marines, and Air Force include respective Reserve forces, a part time commitment similar to that of the National Guard but under federal authority and authorization as defined by Title 10, US Code.

## TABLE 2

### JCSTC Ad Hoc Workgroup Participation

- The Army, Army National Guard and Army Reserve
- The Navy and Naval Reserve
- The US Marine Corps and Marine Reserve Force
- The Air Force, Air Reserve, and Air National Guard
- The US Coast Guard
- The Directorate of Military Support (DOMS) within the Army Office of the Deputy Chief of Staff for Operations (DCSOPS), then the executive agent for DSCA
- The Office of the Assistant Secretary of Defense (Health Affairs) (OASD(HA))
- The Office of the Assistant Secretary of Defense (Reserve Affairs) (OASD(RA))
- The Director of Domestic Emergency Preparedness - Medical Programs (Military Assistance to Civil Authorities), who was also the Department of Defense Project Manager for and representative to the *Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction*, also known as the Gilmore Commission
- The Department of Health and Human Services (DHHS) Office of Emergency Preparedness (subsequently renamed the Office of Emergency Response and, later, the Office of the Assistant Secretary for Preparedness and Response)

Spanning several years, this evaluation included examination of the geographic distribution of DoD medical assets, review of the capabilities of the National Disaster Medical System (NDMS), an informal assessment of the state of preparedness within the broader DoD medical community, and analysis of the relevant training, existing doctrine, and the available plans and guidance.

This effort benefited from several contemporary activities that sought to evaluate readiness posture both regionally and on a national level, including the Top Officials (TOPOFF) exercises. These additional inputs pointed to the emerging role of DoD as a potential responder within the realm of the (then) Federal Response Plan (FRP) and Emergency Support Function (ESF) 8-Medical. Moreover, analysis of the distribution of the force revealed RC medical assets as “forward deployed” with regard to a consequential domestic relief mission. Countering this, however, was the fact that medical equipment sets for RC organizations are typically in depot storage and would require a period of weeks to months to be withdrawn and deployed to any unanticipated mission.

Concurrent to these deliberations, multiple evaluative and policy documents were issued that pointed to a need for enhanced medical NBC training. These included multiple analyses by the (then) United States General Accounting Office that addressed a lack of preparedness in medical NBC within the Department of Defense.<sup>2-4</sup>

In response to these critiques, the Joint Staff and Army Office of the Surgeon General (OTSG), the latter in its capacity as executive agent for medical NBC training, co-hosted 2 off-site meetings to address medical NBC training.<sup>5</sup> These meetings

resulted in the mutually agreed upon decision to enhance medical NBC training. In parallel, the Department of Health and Human Services (HHS) delivered its 3359 Report to Congress in 2001 that delineated a role for DoD medical assets in domestic response. Ensuing improvements were primarily focused on continuing medical education initiatives, which are limited in availability to the active component and virtually unavailable to RC medical personnel.

The Defense Medical Readiness Training Institute was subsequently tasked by the Assistant Secretary of Defense for Force Health Protection and Readiness to review the Services' current Chemical, Biological, Radiological, Nuclear and (High Yield) Explosives (CBRNE) medical training and develop a standardized Tri-Service CBRNE Training Program.<sup>8</sup> This process built upon existing directives on general military training<sup>6</sup> as well as training for the RCs,<sup>7</sup> medical readiness,<sup>8</sup> and CBRNE specific operations.<sup>9</sup>

The DoD Force Health Protection Council approved the Tri-Service CBRNE Training Program on September 22, 2003. The program consisted of:

- standards of proficiency necessary to support medical CBRNE readiness;
- who needs training;
- the frequency of training;
- a recommended Tri-Service training program (with alternative courses);
- metrics to measure compliance; and
- reporting requirements.

The Standards of Proficiency were developed to provide standardized training to all military medical personnel, including civil service and contract personnel. DMRTI then issued “Chemical, Biological, Radiological, Nuclear, and (High Yield) Explosives (CBRNE) Training—Standards of Proficiency and Metrics,” on October 1, 2003.

Building upon the work of the ad hoc workgroup, the Office of the Chief Army Reserve (OCAR) reviewed multiple existing plans and guidance to identify specified and suggested tasks therein specifically for the Army Reserve medical force. Key documents reviewed included the FRP and ESF 8, the US Army Soldier Biological and Chemical Command (SBCCOM) Improved Chemical Response Plan and SBCCOM Improved Biological Response Plan,

<sup>8</sup>The term CBRNE replaced the cold war terms CBR (chemical, biological, and radiological) and NBC (nuclear, biological, and chemical). The evolution of the concept of homeland security prompted by the 9/11 and anthrax attacks of 2001 resulted in a differentiation between the consequences of a nuclear detonation and a radiological weapon (also known as a “dirty bomb”) and the inclusion of high yield explosives as a weapon of mass destruction. Committee on the Future of Emergency Care in the United States Health System, Board on Health Care Services, National Academy of Sciences. Hospital-Based Emergency Care: At the Breaking Point. Washington, DC: National Academies Press; 2007.

## **Need to Expand Cooperative Emergency Response Capabilities in the United States**

and the NDMS plans. These plans were matched against knowledge gained from operational experience in civilian emergency department, hospital administration, and public health leadership roles. This comparison identified skills that would or could be required of DoD medical personnel performing a domestic mission that were not taught at the time.

Conversely, multiple other courses that would be applicable to both traditional missions and Defense Support to Civil Authorities (DSCA) were identified (such as Field Management of Chemical and Biological Casualties, Medical Management of Chemical and Biological Casualties, and Medical Effects of Ionizing Radiation), but these were shown to be administered at different locations, were in addition to mandatory training requirements, and attendance at which was limited by fiscal constraints and quota availability.

For example, the 2000 DoD Annual Report to Congress on Chemical and Biological Defense Program described the Fiscal Year 1999 training throughput of the US Army Medical Research Institute for Chemical Defense (USAMRICD). USAMRICD trained 229 military and non-DoD personnel in its “Field Management of Chemical and Biological Casualties Course” (FCBC), addressing first echelon management of chemical and biological agent casualties.<sup>10</sup>

A more extensive USAMRICD offering, “Medical Management of Chemical and Biological Casualties Course” (MCBC), trained 2375 military, non-DoD, and non-US medical professionals. MCBC provides DoD personnel, primarily physicians, physician assistants, and nurses, with a working knowledge of the potential threat of chemical and biological weapons and the status and scope of medical defense strategies.<sup>10</sup>

Thirty preventive medicine officers and other medical professionals assigned to deployable units, or directly responsible for NBC consequence management, attended the tri-Service “Medical NBC Readiness Workshop.” This course provided instruction in the medical management of the full spectrum of possible NBC threats, from battlefield NBC scenarios to the conduct of peacetime operations in areas deliberately contaminated with radioactive materials or industrial chemicals.<sup>10</sup>

While these numbers seemed significant, it was unclear what impact this training program was having on the ability to augment response to a domestic CBRNE incident. The RCs included some 4500 physicians at the time; a population closer to 3300 today. Of these, how many had attended MCBC? An early 2001 inquiry to USAMRICD posed this question with regard to anyone from the Army National Guard or Army Reserve (Personal conversation, LTC D.A. Donahue and COL B.A. Maliner, February 2, 2001). The

sobering answer was “only nine.” Remarkably, this response elicited a surprised follow-up: “Only nine last year?” “No,” came the reply, “nine, ever.” It became abundantly clear that a population that might be seen as a “go to” resource following a chemical or biological attack—military trained medical professionals—did not, in fact, exist.

At the same time, the Army Reserve was examining the state of core medical training and readiness. This review revealed opportunities for improvements that received concurrence from the medical general officers, but which would have to be executed within the existing validated and funded activity level. This would require innovative arrangements and expansion of cooperative training agreements with various outside entities that have historically existed particularly with the Department of Veterans Affairs (VA).

## **Developing the Strategy**

The analysis of potential courses of action to both remedy the persistent shortfalls in medical CBRNE training and proficiency and to prepare for the emerging DSCA mission identified a longstanding, highly successful, and proven concept of prepositioned equipment sets and associated training regimen with that equipment. Most prominent of the examples of this technique was the widespread forward storage of equipment in Europe under the Prepositioning of Material Configured in Unit Sets program and the attendant Return of Forces to Germany (more commonly known by its acronym, REFORGER) exercises. This approach placed required materiel close to the projected deployment site and allowed personnel to be rapidly deployed to “ready to roll” equipment. Moreover, the continuous training rotation facilitated a corresponding maintenance cycle, with equipment sets being rotated through ready, training, and maintenance phases.

The factors that drove the successful Cold War readiness posture dictated the parameters for the establishment of a medical readiness training center that would include both training and deployment support functionality. Desirable characteristics would include availability for joint training, capability to support the initiative, relevance to the US domestic population, and transportation infrastructure to support multiple deployment modalities.

## **How the Joint/Interagency Civil Support Training Center (JICSTC) Was Established**

In 2001, the Chief, Army Reserve (CAR) issued a policy directive that mandated enhanced medical NBC and WMD training in anticipation of the emerging DSCA mission. In 2003, the CAR signed a second medical NBC training policy memorandum that included direction to establish a center of excellence to train for DSCA. This center was to be funded from newly designated homeland security/defense funding,

with the added benefit that clinical and operational skills gained from DSCA training would enhance war fighting capabilities as well.

The US Army Reserve Command responded to the CAR's directive and created the JICSTC at Fort Dix in 2003, as had been envisioned. JICSTC was to be a center of excellence to provide 1-stop training in medical CBRNE and Homeland Security operations and to serve as a response platform for urgent medical missions. JICSTC was designed to be funded through DoD and hosted by the Army Reserve at Fort Dix, New Jersey, leveraging existing training and response capabilities and replicable in 2 other regions to afford total geographic coverage of the Continental United States. Initial operations were established by adding a task order to the Regional Training Site-Medical (RTS-Med) contract and by reallocating resources from the existing 3 RTS-Med sites to JICSTC.

Over the slightly more than 3 y that JICSTC operated, 3032 individuals received unique training. Participants included Active, Guard, and Reserve members, medical and non-medical units, and joint military and civilian assets, as depicted in Table 1. At discontinuation of operations, there was a waiting list for JICSTC rotations driven entirely by word of mouth. The Army Reserve G-3 (Operations) Homeland Defense Office had been planning on conducting casualty decontamination training at JICSTC.<sup>\*\*11</sup>

As a primary source for CBRNE medical response expertise, DoD was envisioned as a logical host for this function. Assumption of the role of host to JICSTC was seen as a logical function for the Army Reserve as it held a major training role within the Army, including for medical personnel. Joint training would be provided to the medical components of the active, National Guard, and reserve forces. It is important to note that while the focus is domestic consequence management,<sup>††</sup> skills and capabilities gained are equally applicable to overseas and wartime missions. This extended interagency process would provide additional training and support to VA, HHS/PHS, DHS, and State Department medical personnel.

JICSTC implementation was coordinated with and approved by the United States Northern Command (NORTHCOM), the Defense Medical Readiness Training Institute (DMRTI), the Assistant Secretaries of Defense (Reserve Affairs) and (Health Affairs), the Under Secretary of Defense (Personnel and Readiness), the DHHS Office of Emergency Response, and VA. The concept was later endorsed by the DHS Office of Health Affairs and the Uniformed Services University of

the Health Sciences; the latter institution incorporating JICSTC into the strategic plan for its Center for Disaster and Humanitarian Assistance Medicine.

While the ability to respond to any location within the Continental United States would appear to dictate multiple locations, a single location was decided upon to launch the initial effort. The contiguous Fort Dix, McGuire Air Force Base, and Naval Air Engineering Center Lakehurst complex was selected to launch the prototype effort. Factors that supported establishment of JICSTC at this location are delineated in Table 3.

### Immediate Acceptance and Success

JICSTC enjoyed almost immediate acceptance and success. Even before the first course was launched, the Air Force Reserve Command Surgeon inquired as to when he could begin sending students to the Center. Because formal designation as a DoD-sanctioned course was never pursued, JICSTC was not listed in the formal training catalog, the Army Training Requirements and Resources System. Requests for training were, therefore, driven by word of mouth. This proved to be sufficient to support operations for the 3 y JICSTC operated.

A major contributing factor to the success of JICSTC was the exceptional support provided by several organizations committed to the training mission. Primary among them was the USARC NBC section that provided chemical decontamination and operations training, the New Jersey National Guard which provided modeling and simulation support, and Fort Dix itself which hosted the Center for its entire span of operations. JICSTC trained members from all 3 Army components—Active, Guard and Reserve—plus Navy Reservists and civilians.

JICSTC was envisioned to include integration of existing courses, such as revised and abridged versions of the FCBC and MCBC. Coordination of this aspect was completed but could not be executed until formal funding was implemented.

Among the successes of JICSTC was the introduction of DSCA-focused courses, such as the overview of the FRP and the successor National Response Plan, orientation to the Incident Command System, and Medical Aspects of Urban Search and Rescue, a course unique to this training endeavor. The urban search and rescue course and exercise proved to be extraordinarily popular, with 1 hospital commander telling the instructor cadre that it was the best technical and teambuilding exercise he had ever encountered. Significantly, prior and current military medical training does not include intense instruction on collapsed structure medicine, an environment in which the victim and the rescuer are both at risk for injury or death.

<sup>\*\*7</sup> Classes in FY04. 7 Classes in FY05 (50 pax each max). 1 Train the trainer course (65 students). Hand off to Army Reserve DIV(IT)s OCT 04.

<sup>††</sup>Those measures taken to protect public health and safety, restore essential government services, and provide emergency relief to governments, businesses, and individuals affected by the consequences of a chemical, biological, nuclear, and/or high-yield explosive situation.

### TABLE 3

#### Planning Factors Favoring the Fort Dix Location

- The installation was owned and operated by the Army Reserve, which represents the largest contingent of medical, chemical, and civil affairs response capability, as well as being the parent command of JICSTC.
- Regional tri-service presence.
- Relevant activities on the Dix-McGuire-Lakehurst complex (now a joint base):
  - Available buildings and ample land for training
  - The Air Mobility Warfare Center (AMWC)
  - An unused hospital building (the old Walson Army Hospital, which was being evaluated by the VA) that could have been used to train in and be maintained as potential contingency hospital site. The building has since been razed
  - An operational Army Reserve Deployable Medical System (DEPMEDS) site
  - A Fleet Hospital headquarters
  - USCG Atlantic Strike Team
  - New Jersey Air National Guard
  - New Jersey Army National Guard, including the State Area Command headquarters
  - Navy Reserve and Marine Force Reserve activities at Lakehurst
  - Power Projection Platform, capable of processing service members for deployment
  - Test, Measurement, and Diagnostic Equipment support
  - New Jersey State Police urban search and rescue training site on Lakehurst
- Proximity to East coast population centers, within three air hours of 25 percent of the U.S. population
- Excellent deployment base for a “hot mission” to the Northeast and east of the Mississippi River
- Excellent transportation infrastructure:
  - Two large DoD airstrips (McGuire and Lakehurst)
  - Major civilian airports (four within a two hour drive, plus several regional airfields)
  - Extensive road network (New Jersey Turnpike, Garden State Parkway, Interstate highways, U.S., State, and local routes)
  - Rail support
  - Superior access to sea lift, six major seaports within a two hour drive
  - Proximity to large concentration of units (medical, civil affairs, etc.) that could be response core to actual mission
  - Far enough away from major cities so as not to be a high probability target
  - Relative accessibility to other military installations: Fort Monmouth (since deactivated), NWS Earle, Picatinny Arsenal, USCG Station Cape May, USMA West Point, NAS Willow Grove (since deactivated), Fort Indiantown Gap (PAARNG), Dover AFB, Fort Hamilton, Naval Station New York, NJANG facility at Atlantic City International Airport, and Warren Grove Bombing Range
- Proximity to supporting universities that provided faculty: University of Pennsylvania, Johns Hopkins University, and George Washington University
- Proximity to headquarters or offices of Non-Governmental Organizations (NGOs)

Post training cycle surveys were administered. These were unfortunately lost upon the discontinuance of JICSTC operations. Student feedback was nearly universally positive, including statements such as that made by the clinic commander at Fort Monmouth, who indicated his intention to send his entire staff to JICSTC. The Air Force Reserve

Command Surgeon inquired about sending teams to the training and a waiting list was created to document interest and schedule future training rotations.

The plans for JICSTC included several other classes that were identified in the review of existing courses, such as Risk Communication (both to the public and with the media), Mass Pharmaceutical Distribution for Non-Pharmacy Medical Personnel, and Basics of Forensic Dentistry. This were to be implemented through the cooperation of and under the auspices of affiliated universities and select faculty who are recognized subject matter experts (SMEs) and coordinated with DMRTI to link to DoD Medical Training Standards.

JICSTC would also incorporate already established and emerging offerings from outside DoD, such as the Centers for Disease Control and Prevention (CDC) initiative Basic Disaster Life Support (BDLS) and Advanced Disaster Life Support (ADLS) courses, now maintained and promulgated by the independent National Disaster Life Support Foundation.

Lastly, JICSTC was envisioned as a test bed that would allow the examination of best practices from DoD, other Federal agencies, and from academia. As a joint and interagency forum, JICSTC would be uniquely positioned to foster cross training, familiarization with disparate shelter systems and medical equipment sets, and organizational processes. This would support a research and development functionality that would span the range of clinical acumen, procedures and techniques, and materiel. The seeds of this cross-fertilization were witnessed in the participation of students from diverse organizations. Full realization of this capability would rely, however, on full scale operation of JICSTC.

#### Snatching Defeat From the Jaws of Victory

As JICSTC was being established, full funding was secured by means of a Program Budget Decision (PBD) issued by the Office of the Assistant Secretary of Defense (Reserve Affairs). The PBD, offered in Fiscal Year 2003, dedicated \$63.5 million for the initial 5 y of JICSTC operations pending inclusion in the Army Program Objective Memorandum (POM) process. In Fiscal Year 2004, this amount increased to \$66.0 million. Transfer and execution of this funding was dependent on acceptance by the executing command. The Chief of Operations for the Office of the Chief, Army Reserve (OCAR) deferred to OTSG as the executive agent for medical NBC training. The program manager at OTSG also declined this funding, stating “I don’t know that this is our mission... Why would we want to do that?”

Concurrently, the formal approval process was being pursued for JICSTC to be authorized as a formal DoD institution. An Operational Requirement Document (ORD) was drafted, endorsed by DMRTI and NORTHCOM, and approved by the Office of the Assistant Secretary of Defense

(Health Affairs). A subsequent Initial Capabilities Document (ICD) was drafted, but never submitted following the declination of funding by the executive agent and the retirement of the staff officers who were promoting the JICSTC initiative.

Conceptualization and creation of JICSTC was coordinated by the medical operations staff at OCAR. This effort was supported by the USARC Surgeon, 2 successive Directors of Domestic Emergency Preparedness - Medical Programs (Military Assistance to Civil Authorities) within Reserve Affairs, the Army Deputy Surgeon General for Mobilization, Readiness and Reserve Affairs, and the Army Surgeon General.

During the latter half of its operational lifespan, all of these individuals either retired or were rotated to other assignments. The successor USARC Surgeon did not support continuing JICSTC operations and, in fact, briefed USARC leadership that DoD did not support this mission within the Army Reserve. The draft ICD was never forwarded for approval and given several cycles of personnel turnover, the offered funding from Reserve Affairs was never pursued, leading to its eventual withdrawal. Because it was not seen as a priority and the Army was unaware of the potential funding, JICSTC was not included in the approved POM resourcing. Given the lack of command support and attendant funding, operations of JICSTC as an unfunded initiative were ceased on September 30, 2006.

The benefit of a supplemental training, maintenance, and deployment platform that addressed a nascent domestic mission while enhancing core combat capabilities was forfeited as the operational focus shifted to Afghanistan and Iraq. Now, more than a decade later, there is no indication of a substantially improved capability to respond to a catastrophic disaster. Myriad capabilities exist, but are disjointed or rely on overly optimistic assumptions.<sup>12</sup> NDMS training and deployment capabilities remain limited due to budgetary constraints.<sup>13</sup> Ominously, the need for a robust, comprehensive medical response capacity has never been greater.

The slow but steady expansion of nuclear weapons capabilities, the proliferation of industrial and medical radiation sources with minimal or questionable security safeguards, and an abundance and variety of non-state actors committed to terrorism underscores the need for a Nuclear Global Health Workforce.<sup>14</sup> Novel diseases are emerging and travelling at an unprecedented pace.<sup>15</sup> Since the original JICSTC ceased operations, there have been 5 declarations by the World Health Organization of a Public Health Emergency of International Concern (PHEIC)<sup>‡‡</sup> and multiple significant outbreaks that did not meet the standard to be designated a PHEIC, eg, MERS-CV. More people are now refugees

or internally displaced than at any time in history. And there is a willingness of states to use chemical weapons at home and abroad unseen since World War I.

### Reviving the Concept: The Need Persists

The JICSTC concept remains relevant. Major gaps in domestic disaster medical response capabilities have been recognized for more than 2 decades. Experts from the Institute of Medicine,<sup>16</sup> United States Northern Command,<sup>§§</sup><sup>17</sup> and multiple academic centers and professional organizations<sup>18</sup> have identified these shortcomings, but the national response posture remains disjointed, under-resourced, and based upon obsolete planning premises. Coordinated federal response capabilities are seen as formidable, but in reality address niche needs and do not offer a comprehensive and encompassing response.<sup>12</sup> The 2014 Ebola incidents and recent Blue Ribbon Study Panel on Biodefense<sup>19</sup> serve to underscore the perpetuated risk of medical disaster response deficits.

The intent for JICSTC was to create 3 sites, located in such a manner as to offer relative geographic proximity to all 56 states and territories. The centers will provide unique course content based on experience and research into the evolving needs of a post-disaster society. Projected locations are based upon geographic proximity to the US population, availability of multiple deployment modalities, and available support infrastructure. The establishment of 3 National Health Preparedness and Response Centers would enable major federal response within 24 hours, reducing equipment maintenance costs, and fulfilling the goals of the 2007 Homeland Security Presidential Directive/HSPD-21, Public Health and Medical Preparedness.

The value of a rapid medical response was demonstrated following the destruction, by an EF-5 tornado, of St. John's Regional Medical Center in Joplin, Missouri on May 22, 2011. An 8000 square foot (743.2 m<sup>2</sup>) mobile field hospital from the Missouri Disaster Medical Assistance Team (DMAT) was available some 110 road miles away in Branson, having been deployed for the 2011 National Level Exercise. This facility was moved to Joplin, allowing the St. John Regional staff to resume providing limited care on May 29th.<sup>20</sup>

This same experience also highlighted shortcomings in the current system. The 6 days between the twister's impact and the resumption of local health-care capacity left a gap in the ability to treat immediate injuries and conditions, such as fractures, penetrating wounds, pneumonia, mucormycosis, and others resulting from the storm. Quicker establishment of alternative treatment venues would invariably improve outcomes, the extent of which being dependent on the specific disaster.

<sup>‡‡</sup>H1N1 swine flu (2009), 2014 polio declaration (2014), Ebola in Western Africa (2014), Zika virus (2016), and Ebola in the Republic of the Congo (2019). WHO.

<sup>§§</sup>US Northern Command – often referred to as NORTHCOR – was established Oct. 1, 2002 to provide command and control of Department of Defense (DOD) homeland defense efforts and to coordinate defense support of civil authorities.

## Need to Expand Cooperative Emergency Response Capabilities in the United States

The ability to locate the alternative health-care facility close to the disaster's impact would increase access and facilitate patient transport. The deployment of the hospital ship USNS Comfort to Puerto Rico following Hurricanes Irma and Maria provided a state of the art, 1000 bed medical center. The administrative and logistical challenges of accessing the floating medical center severely limited the benefit of its presence.<sup>21</sup>

The training and response centers would be unique venues differentiated by distinctive characteristics. Training will be conducted on the equipment that would be actually used in response to a disaster. In what has been described as the "firehouse model," this familiarizes responders to the equipment, identifies incompatibilities, and creates an inherent maintenance and upgrade cycle that has been shown to dramatically reduce operational costs. Ideally, 3 sets of equipment would be prepositioned at each site: 1 used for training, 1 moved into maintenance after training use, and the third in a "go" status after maintenance; all in a continuous cycle.

Current world crises are increasingly coordinated under a multidisciplinary and trans-disciplinary framework. Health-care providers, as just 1 element, no longer focus on the response phase alone of the disaster cycle, but need to be equally proficient in prevention, preparedness, response, recovery, and rehabilitation.<sup>22</sup>

The JICSTC experience was notable because it brought together military, civil, academic, non-governmental, and professional society representation into an ongoing, hands-on experience that also served as a research laboratory. This produced unexpected, significant insights. Early on, during a collapsed structure treatment exercise, instructors sounded an intermittent horn blast. Military participants stopped and donned chemical protective masks, the horn sounds being the accepted signal for a chemical attack. Participants who were members of an urban search and rescue team immediately fled the area. It was at this point learned that intermittent horn blasts are the signal for an imminent collapse in urban search and rescue. It became clear that different communities used like signals for divergent reasons, placing all but 1 in immediate peril at the sounding of the signal.

The knowledge, skills, and abilities developed and honed by the military health community for addressing the impact of CBRNE events in conflict are directly applicable to such events occurring domestically, whether deliberate or accidental. The military has arguably unparalleled ability to project comprehensive medical services to remote and austere environments, irrespective of whether the need derives from conflict, natural disaster, or intentional acts. The greater integration of this capability, including the diffusion of technical expertise across the domestic response infrastructure, stands to enhance the nation's resiliency.

During the writing and review of this manuscript, it has been suggested that what is needed

is a fundamental "redrawing" of the US national emergency response architecture across federal and state forces (eg, Titles 10 and 32). Bringing to bear the depth and scope of an effort resembling the Goldwater-Nichols Act would inform the structure, assets, equipping, and funding—and gravitas—of national emergency preparedness. Despite concerted efforts over the past, almost 2 post-9/11 decades to finance and develop "preparedness and response," capabilities remain fragmented and lacking surge, scalability and durability in the face of potentially catastrophic events (Summary statement of an anonymous peer reviewer).

While this is an argument left for another day, the authors propose that reestablishment of a successful training and response initiative would be a powerful next step toward enhanced preparedness.

The anticipated collaboration of an academic consortium, diverse professional societies with a common goal, and a military-public-private partnership would provide definitively enhanced resilience and response capabilities on a national level. Unique linkages to degree programs, provision of continuing medical and professional education, creation of a common operating language, fostering of interoperability, certification, and registration of skills, decreased equipment maintenance costs, and increased responsiveness to a catastrophic or other significant disaster are the immediate benefits of this project. The long-term return of this operational concept has the potential to save countless lives.

## About the Authors

University of Maryland Baltimore, The Graduate School; University of Maryland Global Campus, The Business School (Dr Donahue); Harvard School of Public Health; Harvard Humanitarian Initiative (Dr Burke); Uniformed Services University of the Health Sciences, Chair, Board of Regents (Dr Blanck).

Correspondence and reprint requests to Donald Donahue, 18823 New Hampshire Avenue, Ashton, MD 20861 (e-mail: [donald.donahuejr@verizon.net](mailto:donald.donahuejr@verizon.net)).

## REFERENCES

1. Operational Requirements Document. Action Memo: Office of the Assistant Secretary of Defense, Subject: Joint Interagency Civil Support Training Center, March 9, 2004
2. Testimony: "Chemical and Biological Defense: Emphasis Remains Insufficient to Resolve Continuing Problems" (GAO/T-NSIAD-96-123), March 12, 1996.
3. Testimony: "Chemical and Biological Defense: Emphasis Remains Insufficient to Resolve Continuing Problems" (GAO/T-NSIAD-96-154), May 1, 1996.
4. Report: "Chemical and Biological Defense – DoD Need to Clarify Expectations for Medical Readiness" (GAO 02-38), October 2001.
5. FY00 Medical NBC Defense Readiness Conference and FY01 Medical NBC Defense Readiness Conference – Joint Professional Medical NBC Training, April 30-May 4, 2001.
6. DoD Directive 1322.18, "Military Training", January 9, 1987.
7. DoD Directive 1215.6, "Uniform Reserve, Training and Retirement Category," March 14, 1997.
8. DoD Instruction 1322.24, "Medical Readiness Training," July 12, 2002.

9. Draft Department of Defense Instruction, Number XXXX.XX, Subject: Chemical, Biological, Radiological, Nuclear, and (High Yield) Explosives (CBRNE) Training for Military Medical Personnel.
10. DoD. Chemical and Biological Defense Program – Annual Report to Congress. <https://archive.defense.gov/pubs/chembio02012000.pdf> (2000).
11. The United States Army Reserve and Homeland Security Operations, October 15, 2004, [https://www.powershow.com/view1/88f71-ZDc1Z/31-Dec-14\\_1\\_powerpoint\\_ppt\\_presentation?varnishcache=1](https://www.powershow.com/view1/88f71-ZDc1Z/31-Dec-14_1_powerpoint_ppt_presentation?varnishcache=1).
12. Donahue DA, Godwin EA, Cunnion SO. Medical response capabilities to a catastrophic disaster: “house” or house of cards? *J Homel Secur Emerg Manag.* 2012;9(2). doi: [10.1515/1547-7355.2029](https://doi.org/10.1515/1547-7355.2029)
13. McCann DG. National Disaster Medical System: NDMS—Do Not Go Gentle into That Good Night. The National Emergency Management Summit; Agenda Day One, Monday February 4, 2008. <http://www.emergencymanagementsummit.com/past2008/agenda/day1.html>.
14. Burkle FM Jr, Dallas CE. Developing a nuclear global health workforce amid the increasing threat of a nuclear crisis” *disaster medicine and public health preparedness.* 2016;10(1):129-144. doi: [10.1017/dmp.2015.125](https://doi.org/10.1017/dmp.2015.125)
15. World Health Organization. *The World health Report 2007—a safer future: global public health security in the 21st century.* Geneva: World Health Organization. 2007
16. “You can’t get there from here... Shortfalls in post-disaster patient evacuation planning.” *Nationwide Response Issues After an Improvised Nuclear Device Attack: Medical and Public Health Considerations for Neighboring Jurisdictions Workshop*, January 24, 2013, the IOM Forum on Medical and Public Health Preparedness for Catastrophic Events, Washington, DC: Institute of Medicine and National Association of County and City Health Officials
17. “EMP and the Resilient Hospital,” Panel presentation: “Resilient Hospitals in Large Scale Disasters (The role of alternative technologies and sustainability in electric power grid mitigation,” National InfraGard EMP Special Interest Group: Planning Resilience for High Impact Threats to Critical Infrastructure in 2015, Washington, DC, December 5, 2014
18. Franco C, Toner E, Waldhorn R, et al. The National Disaster Medical System: past, present, and suggestions for the future. *Biosecur Bioterror.* 2007;5(4):319-325.
19. Bipartisan Commission on Biodefense. <http://www.biodefensestudy.org/>
20. Winters A. *One Year Later: Two Hospitals on Road to Recovery.* Joplin Globe Video. 2011. <https://www.youtube.com/watch?v=Ikx3pNLQ9e0>.
21. Robles F, Fink S. Amid Puerto Rico Disaster, Hospital Ship Admitted Just 6 Patients a Day. *New York Times.* 2017, December 6. <https://www.nytimes.com/2017/12/06/us/puerto-rico-hurricane-maria-hospital-ship.html>.
22. Burkle FM Jr. Challenges of global public health emergencies: development of a health-crisis management framework. *Tohoku J Exp Med.* 2019; 249:33-41.