

# Fostering Federal and Local Disaster Preparedness Partnerships

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**C**ommunity-Based Disaster Preparedness (CBDP) is receiving new attention from key policy makers as a way to prepare for large scale disasters. Studies show that CBDP is effective but should increase focus on mitigation and planning to adequately prepare communities. We sought to demonstrate the use of federal volunteers during CBDP mitigation and planning, contrasted with their more traditional response and recovery roles, to help prepare an urban community for a disaster. Here, we describe the experience of 6 AmeriCorps volunteers deployed over a six-week period in 2011 to assist with regional CBDP and pre-deployment disaster training of health care personnel.

## Background

Disasters, although rare events, have the potential to devastate entire communities. The 2011 Japanese tsunami and the subsequent radiologic emergency in Northern Japan resulted in over 10,000 deaths. In the aftermath of the earthquake, thousands of patients – both sick patients and the worried well – quickly depleted local health care resources creating unexpected chaos and negatively impacting patient care.

Well-designed all-hazards emergency preparedness programs can preserve and protect lives, property, businesses, and social services are necessary for sustaining community functions during a disaster. Community-based training programs became an important part of the US Homeland Security dialogue after the terrorist bombings in New

York on September 11th, 2001. In early studies, researchers reported, for example, that disaster planning supported by community input yielded in higher compliance with life-saving measures including decontamination and evacuation operations.<sup>1,2</sup> State and local programs were subsequently developed to train volunteers in assisting government disaster workers for events such as mass prophylaxis and vaccinations.<sup>3</sup>

In the era of declining budgets for emergency preparedness, effective coordination between volunteer organizations, government departments and non-governmental organizations (NGOs) has received new attention and has been highlighted as a key feature of National Incident Management System (NIMS) and the National Response Framework (NRF).<sup>4</sup> After Hurricane Katrina, calls for “community centric” disaster planning escalated in response to the limited, delayed, and inadequate federal response to the flooding across the Gulf Coast. Community advocates have since joined forces with emergency preparedness experts to support newly developed community-centric disaster plans.<sup>5</sup> Some have even encouraged the development of disaster preparedness “cells” in the community consisting of pre-trained volunteers who would activate only when called upon to serve community needs.<sup>6</sup>

The concept of community disaster preparedness, or Community-Based Disaster Preparedness (CBDP), is defined as “an approach that involves

direct participation of the people most likely to be exposed to the hazards, in planning, decision making, and operational activities at all levels of disaster management responsibility.”<sup>7</sup> The NIMS and the NRP list four major stages of emergency preparedness: mitigation, planning, response, and recovery. CBDP encompasses all four stages of emergency preparedness and “emphasizes community self-reliance, raising awareness of vulnerability, and local capacity building.”<sup>8</sup> The concept of community resiliency stresses “bottom up” approaches to emergency preparedness that empower local residents to coordinate with public and private sector entities while providing disaster assistance. Utilization of volunteers is a crucial part of CBDP as it requires community members to directly involve in preparedness efforts.

While the role of volunteers in CBDP has been highlighted in the post 9-11 era, these efforts are largely dedicated to response and recovery and less on mitigation and planning.<sup>9,10</sup> In our review of the published literature on CBDP and related topics we found a variety of studies describing the use of volunteers deployed during (i.e., response stage) and after (i.e., recovery stage) a disaster.<sup>11-13</sup> Other studies, such as those describing the disasters in Japan, the Tsunami of 2004, and earthquakes in Iran and Pakistan, have demonstrated that CBDP programs may be lacking in mitigation and planning components and have failed to adequately prepare communities for large scale disasters.<sup>14-17</sup>

**Figure 1. AmeriCorps volunteers serve as patient actors and clinical disaster training facilitators inside university's simulation center.**



This project describes the unique utilization of federal volunteers deployed to assist CBDP mitigation and planning activities associated with preparing community health care workers and facilities. The volunteers' experience, goals, mission, and accomplishments are documented as a potential model to enhance CBDP activities in other communities around the nation. Our goal was to showcase how volunteers can be utilized during CBDP mitigation and planning, in contrast to their more traditional response and recovery roles, to help prepare for a disaster.

### Methods

#### *Center for Health Training and Emergency Response (CHPTER)*

The coastal region of South Carolina is particularly at risk for both natural and man-made disasters based on large commercial seaports and other zones vulnerable to flooding and hurricanes, airports, tourist attractions, military bases and the Middleton Place Summerville Seismic Zone (MPSSZ), the eastern US's most active seismic zone. Unfortunately, patient care providers in our region are poorly prepared to handle a disaster. Recently, the American College of Emergency Physicians' (ACEP) Report Card ranked South Carolina 34th out of 50 states in Disaster Preparedness, partly due to few

health care professionals (37%) who report any emergency preparedness training (EPT). Our state's overall grade for Disaster Preparedness was "C."<sup>18</sup>

In 2009, a community-wide advisory committee of emergency preparedness stakeholders, including regional hospitals, NGO's, public health officials, EMS and law enforcement agencies met to establish the Center for Health Professional Training and Emergency Response (CHPTER). An early goal of CHPTER was to leverage existing community resources and expertise to help close the EPT training gap and to enhance regional health security and surge capability by giving disaster care providers hands-on lessons that will protect and save patient lives (See Figure 1. [www.musc.edu/chpter](http://www.musc.edu/chpter)).

A curriculum task force of the CHPTER Advisory Committee consisting of health professional and emergency preparedness experts met to develop an EPT training course for patient care providers. The task force established a goal of creating a one-day, "all-hazards" EPT curriculum based on established competency objectives and domains from a previously validated EPT course given to 4th-year university medical students.<sup>19,20</sup> The task force hypothesized that the newly proposed EPT course would improve health professional

trainee knowledge, skills, and comfort level necessary to save lives during a disaster.

Utilizing lesson learned from 'Disaster 101' and prior EPT in our region, the expert panel decided: (1) the course should be no longer than 1 day to ensure increased attendance from busy trainees and other health professionals, (2) the curriculum should be directed toward the general medical trainee, defined broadly as any patient care provider during a disaster (3) the curriculum should be interactive and case-based so trainees could recognize the relevance of disaster medicine clinical skills to their patient care setting; (4) high fidelity simulation and multi-patient encounters should be used to create 'real' clinical disasters; and (5) research metrics should be developed to measure trainee skill acquisition and performance to save lives during a disaster. The task force hypothesized that the newly proposed EPT course would improve patient care provider knowledge, skills and comfort level necessary to save lives during a disaster.

#### *Trident Voluntary Organizations Active in Disaster and the Trident United Way*

To enhance community involvement in the development and dissemination of EPT in our region, CHPTER sought the assistance of task force member, the Trident Voluntary Organizations Active in Disaster (Trident VOAD). Trident VOAD is the local chapter of the state's VOAD, which in turn participates in National VOAD (NVOAD). NVOAD, founded in 1970, is a leader for volunteer and community engagement in all phases of emergency preparedness. National VOAD is the primary point of contact for voluntary organization in the National Response Coordination Center (NRCC) at FEMA headquarters) and is a signatory to the NRP.<sup>21</sup>

Initially, Trident VOAD leveraged its network of disaster providers covering three local counties in our region by seeking the help of the Trident United Way (TUW). In its capacity as community convener, TUW has proven an effective CBDP provider in our region—for

example, in housing families relocated to our area after hurricane Katrina, as well as meeting the unmet needs of citizens after the Haiti earthquake.<sup>22,23</sup> TUW help gather additional organizations through the VOAD framework to coordinate, collaborate and communicate the CDBP work effort for this project.

**Volunteer Recruitment and Logistics**

Recognizing the need for ‘boots on the ground’ resources to develop and disseminate EPT, Trident VOAD sought the assistance of the AmeriCorps program. AmeriCorps, first launched in 1993 by the National and Community Service Trust Act, is a network of national service programs that deploy volunteers to help meet the nation’s critical needs in education, public safety, health and the environment. Since its inception, more than 250,000 volunteers have served in some capacity as an AmeriCorps member.

Trident VOAD applied for assistance from the National Civilian Community Core (NCCC) program, a division of AmeriCorps. NCCC AmeriCorps is a full-time, team-based residential program for men and women 18–24 years-of-age who serve in local communities. Projects generally last a maximum of eight weeks and focus on disaster preparation, response and recovery; environmental stewardship; energy conservation; infrastructure improvement, and urban and rural development (See Table 1). NCCC provides members with funding for room and board, health insurance, a living allowance, uniforms, leadership training, CPR and First Aid, valuable work experience and an education award of \$5,350 that can be used to pay college tuition or student loans. About one-third of NCCC members are college graduates, one-third are part way through college and one-third are high school graduates. An application is required to become a NCCC member, and acceptance is very competitive.

Hosting agencies who receive volunteers are limited to non-profits (secular and faith based), local municipalities, state and federal governments, national or

**Table 1 Community-based disaster preparedness (CDBP) activities of AmeriCorps volunteers**

AmeriCorps NCCC can help any non-profit, local, state and federal government agencies prepare for disasters by:

- Surveying and mapping community resources and populations
- Compiling or distributing disaster-preparedness information
- Assessing organizational preparedness
- Making presentations to schools, neighborhood associations, churches, etc
- Developing new brochures, fliers, etc.
- Conducting outreach and training for community disaster volunteers.
- Installing hurricane shutters, wheelchair ramps and other building modifications
- Building/renovating spaces for use as shelters, operation centers, etc.
- Coordinating/participating in disaster drills
- Just about anything else for which you can train and support the team (about 10 people each) during the project.

state parks, Indian tribes and schools. Hosting agencies must provide the NCCC volunteers with housing, training and supervision, as well as opportunities to get involved and learn about the community in which they are working. In October of 2010, TUW/Trident VOAD sent a 2-page concept form to NCCC followed by a 25-page application that covered all aspects of the schedule, training, housing and work plan. TUW/Trident VOAD acquired housing through the generous donation of a local Hampton Inn and Suites. The application was accepted in December of 2010, and the team was dispatched to our city in February of 2011 for their 6-week project. Before the team arrival, TUW/Trident VOAD received a pamphlet highlighting the demographics, interests, and abilities of the team members.

Running concurrent with the application and recruitment of volunteers were multiple planning operations. CHAPTER task force members worked to brief and receive input from regional hospital and emergency preparedness leaders about the EPT training needs. Dozens of meetings were required with

university officials, including those from the Office of the President, the Board of Trustees, the Office of the Dean, Medical University Hospital Disaster Preparedness Committee, Public Relations and Public Safety. Working with the College of Medicine, CHAPTER recruited medical students to complete the first demonstration of the EPT curriculum. An additional group of Veteran’s Hospital Authority (VHA) “subject matter experts” from around the nation were recruited to demo the EPT course following the medical students. All participants signed a “Consent and Waiver” to participate in EPT. The project was approved by the University Institutional Review Board (IRB).

**Developing the Work Plan**

A work plan for the volunteers was developed by Trident VOAD prior to their arrival. The Trident VOAD project included three parts; the CHAPTER team, the Leadership Team, who was tasked with completing a Community Plan for non-profits that integrated all the roles of local non-profits into one, all-encompassing plan, and the Agency Team, who would specifically address the

**Figure 2. AmeriCorps volunteers serve as patient actors and clinical disaster training facilitators inside university's simulation center.**



needs and concerns of specific agencies in the community around the issue of disaster preparedness. Volunteers were given preference to which projects they wanted to lead or co-lead.

The plan provided that all seven AmeriCorps volunteers would contribute to CHAPTER CBDP activities, while 2 of 7 would serve full time as CHAPTER project co-leaders. The first week of the six-week deployment was reserved for training, team development and assignment of duties. Training included the role and history of government and non-profits in disaster preparedness, National Incident Management System (NIMS) on-line training, Emergency Operations Systems, local tricounty history of disasters and vulnerabilities, communication skills for field work, and the history and roles of TUW, VOAD, and CHAPTER. During week one, time was reserved for CHAPTER task force members to provide power point presentations to the volunteers regarding regional CBDP activities of the CHAPTER coalition.

For the remaining 5 weeks, CHAPTER objectives were assigned based on three focus needs. First, volunteers were asked to create a database of all potential patient care providers in the tri county area to assist CHAPTER in identifying the most effective method for EPT distribution.

Second, volunteers were asked to develop and distribute an online EPT needs assessment survey to patient care providers to help gauge current levels of disaster preparedness and potential areas for EPT improvement. Last, volunteers were needed to assist with the development and administration of a one day EPT training demonstration project in the university's high fidelity human simulation center.

### ***Database Development and Survey Distribution***

Upon arrival on February 7th, 2011, two AmeriCorps volunteers accepted co-leadership positions for the CHAPTER project and focus areas. The volunteers were stationed in the TUW office building in North Charleston. By the end of the first week (Feb 15), they had received standard volunteer disaster preparedness training from TUW and had finalized and online EPT needs assessment survey using SurveyMonkey™. The survey included several Likert-scale questions targeting patient care providers about their preparedness and EPT needs. The volunteers also developed a database of organizations to contact for help distributing the survey, and used this database as the foundation for EPT distribution.

Volunteers took the initiative to schedule meetings with regional health leaders,

including representatives of TUW, the county Emergency Operations Centers, affiliated church groups and non-profit health care facilities. They also met with administrators of a number of hospitals, health clinics, the Department of Health and Environmental Control (DHEC), the county medical society and officials from the university. To help chart their progress, and to further grow their database and survey distribution, the volunteers created a blog of their CHAPTER mitigation and planning work. By the end of their six-week deployment, the volunteers had created an extensive database of local health and industrial leaders and they had contacted almost all of them to inform them about the survey and encourage their participation.

### ***Serving as Actors in a Simulated EPT Scenario***

A year prior to the arrival of the volunteers, CHAPTER had partnered with the university's Clinical Effectiveness and Patient Safety Center to develop multi-actor EPT with simulated clinical disasters. The center boasts a \$2M, 11,000 ft<sup>2</sup> patient simulator facility, in-house training engineering staff, computer and software experts and a wide range of research tools including discrete viewing rooms, digital video and software simulation technologies.

Over a 12-month period, CHAPTER worked with center engineers to develop a series of fictional clinical disasters that combined up to six high fidelity patient simulators and up to a fifteen trained "actors" working together to simulate a clinical disaster. The CHAPTER curriculum task force decorated one of the center's large observation rooms to look like a small emergency waiting room with several chairs and two doors. One scenario involved the acute presentation of cruise line tourists complaining of cough and shortness of breath. In this scenario, both ambulatory and non-ambulatory patients were experiencing various levels of medical acuity. Working in teams of 4 to 6 trainees were asked to mitigate the complex and chaotic scene using skills they learned during didactic and small group lessons.

Not unlike the development of a short film, storyboards and a stage map were developed for the simulated exercise (Figure 2). All seven AmeriCorps volunteers agreed serve as one of the 15 actors recruited for to play specific roles in our disaster scene. To enhance reliability and validity of the expected performance objectives from trainees, volunteers received several hours of training regarding their patient roles and how to elicit certain physical complaints. Because of the chaotic nature of the simulated disaster, specific safety training for the volunteers regarding safe practices to follow during disaster training was provided. All volunteers signed a "Consent and Waiver" prior the course.

CHPTER held two simulation training sessions, February 28, 2011 and March 13th, 2011. The curriculum combined didactics, small group exercises, and a performance-based Mass Casualty Incident (MCI) training experience using state-of-the-art patient simulators and software. A total of 28 patient care providers were trained. The volunteers performed the simulated disaster approximately a dozen times to accommodate the student teams. The benefits of their participation were twofold. It gave the volunteers a better understanding of both the need for disaster training and experience in developing and participating in training exercises, and it also provided the manpower necessary for CHPTER to measure trainee performance during a 'real' clinical disaster.

### Discussion

Of the several national organizations dedicated to fostering and coordinating disaster care by volunteers, the American Red Cross is the most established and well-known. During the 1918–1919 influenza Pandemic, American Red Cross volunteers worked to coordinate recovery efforts, collect supplies, treat patients, and care for families. In a study of their roles during the pandemic it was found that, in order for the volunteers to be most effective, coordination among local, state, and volunteer forces

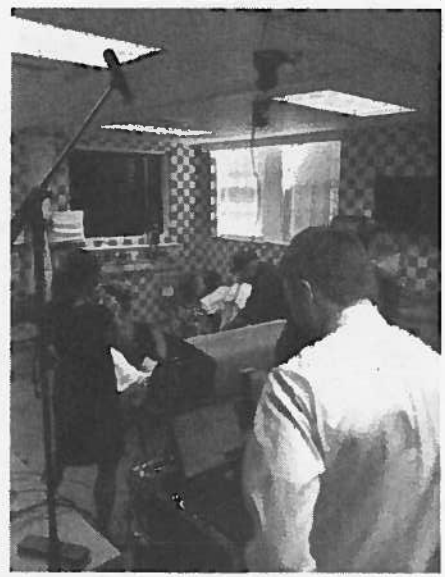
was necessary.<sup>24</sup> This is consistent with our findings that volunteers play an important role in CBDP.

Almost a century later, American Red Cross volunteers were seen again responding to recovery efforts during Hurricane Katrina. In one survey, researchers investigated the pre-deployment training and public health management skills of Katrina volunteers. While general clinical scenarios were correctly managed more than 90% of the time, the disaster management aspect, which included the screening and referral of evacuees, was deficient.<sup>25</sup> It was suggested that volunteers would benefit from pre-deployment training and other mitigation and planning activities, consistent with the Red Cross mission to "prevent, prepare" and not simply "respond" to emergencies.<sup>26</sup>

Other national volunteer organizations that foster and coordinate disaster care include the National Volunteer Organizations Active in Disaster (NVOAD), the Medical Reserve Corps (MRC) and the Emergency System for the Advance Registration of Volunteer Health Professionals (ESAR-VHP). NVOAD was founded in 1970 in response to the challenges many disaster organizations experienced following Hurricane Camille, which hit the Gulf Coast in 1969. Prior to NVOAD's founding, numerous organizations served disaster victims independently of one another. These included government, private and nonprofit entities. As a result, recovery efforts were deployed chaotically and worked in various and uncoordinated ways, resulting in the duplication of certain efforts and the simultaneous inability to accomplish other recovery goals. Today, National VOAD is the primary point of contact for voluntary organization in the National Response Coordination Center (at FEMA headquarters) and is a signatory to the National Response Plan.<sup>21</sup>

Not surprisingly, the mass influx of volunteers wanting to assist after a disaster may impede rather than foster

**Figure 3.** AmeriCorps volunteers serve as patient actors and clinical disaster training facilitators inside university's simulation center.



activities by disaster workers. These complications occurred frequently in the wake of September 11th, prompting Congress develop ESAR-VHP, a system that enables the rapid and organized deployment of health professionals following a disaster.<sup>27</sup> Another volunteer organization, The Medical Reserve Corps (MRC), is composed of approximately 6,000 healthcare personnel who are managed by the Office of the Surgeon General. The MRC has largely been utilized as a deployment asset, for example via its Rapid Deployment Force, trained specifically for mass care, point of distribution care, mass prophylaxis and pre-hospital triage.<sup>9</sup> Community Emergency Response Training (CERT) is another example of a government-supported volunteer disaster organization. CERT is a federal program with broad-based grassroots outreach. Local organizations are allowed to sponsor standardized CERT training for community members that includes finding and turning off utilities, identifying local hazardous materials, extinguish fires, the triage and support for victims and conducting search and rescue.<sup>28</sup>

**Figure 4. Volunteers interacting with emergency preparedness stakeholders at county medical society conference.**



We found several references to the Red Cross, the Emergency System for Advanced Registration of Health Professionals (ESARVHP), MRC, and CERT in the published emergency preparedness literature. A majority of the references, however, focused on the roles of these organizations in disaster response and recovery. We performed a focused literature search on PubMed for articles describing the use of volunteers in the mitigation and planning stages, using the terms “emergency planning, emergency preparedness, mitigation, community preparedness, community resilience, community based disaster planning, volunteer workers, and volunteers.” Much of the literature discussed the efforts of voluntary workers in disaster response, highlighting areas for improvement and emphasizing the importance of involving volunteers in the mitigation aspect of disaster management.<sup>29-32</sup>

A smaller sector of the literature found focuses on the actual training of voluntary workers pre-disaster. Levy et al.<sup>6</sup> describes a project at Nova Southeastern University College of Osteopathic Medicine that developed an “extensive interdisciplinary community-focused all hazards preparedness program.” The program provides simulation training experiences and utilizes students, faculty and Medical Reserve Corps members as volunteers. In Fulmer et al.,<sup>33</sup> the authors

discuss the importance of recruitment and training of volunteers in preparation for disasters. Students were surveyed and found to be willing to respond and to have applicable skills, and the authors conclude that “much is to be learned related to the deployment of volunteers during disaster.”<sup>33</sup>

We found no published articles demonstrating the use of volunteers as a model for community-based disaster preparedness mitigation and planning. The lack of published articles on this topic is unfortunate given the capabilities of volunteer organization to perform these functions and the importance of mitigation and planning to CBDP. For example, the AmeriCorps program offers one of the most widespread and heavily funded sources of full-time volunteers in the US. The volunteers represent a select group of motivated individuals and come trained, insured and ready to accomplish pre-determined goals. We believe the AmeriCorps program—and other programs like it—may be underutilized by organizations seeking to provide pre-disaster planning and mitigation in their communities.

Our engagement of Americorps in CHAPTER’s training and mitigation programs was beneficial to both the volunteers and the program. The greatest lesson gained from this experience, however, is that to fully maximize the use of federal volunteers in the mitigation stage of disaster preparation, it would be beneficial to apply this approach on a wider and more coordinated scale. For example, one of the demonstrated gaps during disaster response is the lack of communication between federal and local response. We envision a wider utilization of federal volunteers to perform disaster planning in local communities and believe this will bolster relationships between federal and local response agencies around the nation.

**Summary**

In this project, we describe the experience of utilizing six AmeriCorps volunteers deployed to an urban, coastal city over a six-week period in 2011 to assist

with a CBDP needs assessment survey and pre-deployment disaster training of health care personnel. Volunteer accomplishments included (1) a regional database of care providers to identify optimal emergency preparedness training (EPT) distribution, (2) an EPT assessment survey to gauge current care provider disaster preparedness, and (3) a high-fidelity EPT training demonstration project in the university’s human simulation center. In contrast to their more traditional roles of response and recovery, we believe that we have demonstrated a model of how volunteers can be utilized to support CBDP mitigation and planning stages of disaster. We hope the volunteers’ experiences, goals, mission and accomplishments documented here can be used as a potential model that may enhance CBDP activities around the nation.

For further information regarding the unique partnership developed between Trident VOAD and the Center for Health Professional Training and Emergency Response (CHAPTER), including a short video that details the EPT curriculum developed with the support of AmeriCorps volunteers serving as disaster victims, please visit [www.musc.edu/chapter](http://www.musc.edu/chapter).

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