

Use of Medical Reserve Corps Volunteers in a Hospital-based Disaster Exercise

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Abbreviations:

DOHMH: Department of Health and Mental Hygiene
FDNY: Fire Department of the City of New York
MRC: Medical Reserve Corps
NYC: New York City
POD: point of distribution

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Abstract

Introduction: The Medical Reserve Corps (MRC) is a national network of community-based volunteer groups created in 2002 by the Office of the United States Surgeon General (Rockville, Maryland USA) to augment the nation's ability to respond to medical and public health emergencies. However, there is little evidence-based literature available to guide hospitals on the optimal use of medical volunteers and hesitancy on the part of hospitals to use them.

Hypothesis/Problem: This study sought to determine how MRC volunteers can be used in hospital-based disasters through their participation in a full-scale exercise.

Methods: A full-scale exercise was designed as a "Disaster Olympics," in which the Emergency Medicine residents were divided into teams tasked with completing one of the following five challenges: victim decontamination, mass casualty/decontamination tent assembly, patient triage and registration during a disaster, point of distribution (POD) site set-up and operation, and infection control management. A surge of patients potentially exposed to avian influenza was the scenario created for the latter three challenges. Some MRC volunteers were assigned clinical roles. These roles included serving as members of the support team for victim decontamination, distributing medications at the POD, and managing infection control. Other MRC volunteers functioned as "victim evaluators," who portrayed the potential avian influenza victims while simultaneously evaluating various aspects of the disaster response. The MRC volunteers provided feedback on their experience and evaluators provided feedback on the performance of the MRC volunteers using evaluation tools.

Results: Twenty-eight (90%) MRC volunteers reported that they worked well with the residents and hospital staff, felt the exercise was useful, and were assigned clearly defined roles. However, only 21 (67%) reported that their qualifications were assessed prior to role assignment. For those MRC members who functioned as "victim evaluators," nine identified errors in aspects of the care they received and the disaster response. Of those who evaluated the MRC, nine (90%) felt that the MRC worked well with the residents and hospital staff. Ten (100%) of these evaluators recommended that MRC volunteers participate in future disaster exercises.

Conclusion: Through use of a full-scale exercise, this study was able to identify roles for MRC volunteers in a hospital-based disaster. This study also found MRC volunteers to be uniquely qualified to serve as "victim evaluators" in a hospital-based disaster exercise.

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Introduction

The Medical Reserve Corps (MRC) is a national network of community-based volunteer groups created in 2002 by the Office of the United States Surgeon General (Rockville, Maryland USA) to augment the nation's ability to respond to medical and public health emergencies. The need for a more cohesive and strategic approach to using medical volunteers in disasters became apparent after two major events: the attacks of September 11, 2001 (New York USA), where many medical volunteers were turned away due to a myriad of logistical issues; and the anthrax mailings in October 2001 (USA), where it became apparent that a significant number of health professionals would be needed to manage a mass prophylaxis effectively.¹

Throughout the nation, there are currently 993 MRC units comprised of 207,783 volunteers, 7,667 of which are part of the MRC network in New York City (NYC; New York USA). Medical Reserve Corps volunteers include a wide range of medical and public health professionals, including physicians, pharmacists, dentists, nurses, nurse practitioners, veterinarians, mental health providers, and others. The primary role of the MRC is to promote better health outcomes by developing resiliency through public health initiatives and to assist in the response to various disasters and emergencies such as medical evacuation, medical surge capacity, mass sheltering operations, screening, monitoring of patient transit between institutions, and psychological first aid.²

Despite these efforts to strengthen the nation's response to disasters through creation of the MRC, there is no consensus on how to best utilize medical volunteers in hospital-based disasters. Field training exercises have been used as a tool to help the MRC determine how its volunteers should function as members of surge capacity organizations; however, there is a lack of evidence in the literature to guide hospitals specifically on the optimal use of medical volunteers.³ In addition, the use of medical volunteers is not without risk. In a survey of national volunteer organizations that are involved actively in responding to disasters, 42% reported injuries, 32% accepted legal liability for the actions of volunteers, and 16% were sued due to incidents involving the work of volunteers.⁴

Historically, hospitals in NYC have not utilized MRC volunteers during disasters. Instead, they have relied upon their own internal staffing contingency plans or pre-established agreements with other institutions to provide the labor pool needed to manage these situations. In an attempt to elucidate the barriers preventing hospitals from using MRC volunteers during disasters, the NYC Department of Health and Mental Hygiene (DOHMH) collaborated with 33 NYC hospitals to conduct the "Medical Volunteer Project," which consisted of an electronic survey and a workgroup discussion (K. Donahue, personal communication, March 23, 2015).

The electronic survey portion of the project revealed that most health care facilities have not used medical volunteers during a disaster, and if they were to use them, it would likely be in non-acute care and non-clinical settings. The respondents were hesitant to use medical volunteers in these roles due to concerns regarding lack of hospital-specific training, inability to verify their competence and credentials, liability for actions performed by volunteers, and lack of established roles for medical volunteers in disasters. During the workgroup discussion portion of the project, the hospitals voiced concerns similar to those outlined in the surveys. Some institutions expressed interest in having local MRC volunteers participate in their annual emergency preparedness training exercises in an effort to become more familiar with the MRC and their skill sets (K. Donahue, personal communication, March 23, 2015).

This study sought to determine how MRC volunteers can be used in hospital-based disasters through their participation in a full-scale exercise involving two tertiary care medical centers in Brooklyn, New York (USA).

Methods

For this study, the full-scale exercise was designed in the form of a "Disaster Olympics." The goal of this exercise was to further Emergency Medicine resident education and hospital preparedness. This full-scale exercise required participation and coordination of

NYC DOHMH, NYC MRC, Fire Department of the City of New York (FDNY), and numerous departments from both hospitals. This study was deemed exempt by the State University of New York's (SUNY; Brooklyn, New York USA) Institutional Review Board (IRB# 501662-1).

The "Disaster Olympics" design involved dividing the Emergency Medicine residents into six teams that were given two hours to complete a challenge pertaining to one of the following five hospital disaster protocols: victim decontamination, mass casualty/decontamination tent assembly, patient triage and registration during a disaster, point of distribution (POD) site set-up and operation, and infection control management. Each team had distinct tasks to complete. After the challenges were completed, each team was given 30 minutes to prepare a 10-minute presentation and one-page matrix containing key learning points from their station that would be presented at the closing assembly.

The victim decontamination challenge station involved a team of emergency department residents receiving just-in-time training on donning and doffing equipment essential to the decontamination process. The residents then were tasked with serving as the decontamination team in a simulated victim decontamination with MRC volunteers functioning as members of the suit support team, which assisted the suit operators during the pre-doffing and post-doffing processes.

An avian influenza outbreak was simulated as the basis for the triage/registration, infection control, and POD challenges. The residents assigned to the triage/registration station were responsible for assigning an appropriate disposition to patients who presented with symptoms of avian influenza and coordinating with the admitting department in order to register these patients. The MRC volunteers were divided into two groups with different tasks for this portion of the exercise. One group was given the role of "victim evaluators," who portrayed potential avian influenza victims while simultaneously evaluating various aspects of the disaster response. The other group of MRC volunteers assisted the residents with infection control and distribution of antimicrobials for patients who met the criteria to receive prophylaxis for avian influenza exposure.

The mass casualty/decontamination tent assembly challenge involved assigning a resident team to each of the two institutions on campus. The residents received just-in-time training on tent assembly from each institution's facilities department. The two teams then engaged in a competition to determine which group could assemble their tent the fastest.

Evaluators were utilized at each challenge station to assess resident and institutional performance separately using evaluation tools. These evaluators were individuals with a background in emergency preparedness who represented various disciplines, such as physicians, FDNY, and NYC DOHMH. A separate panel of judges evaluated each Emergency Medicine resident team's presentation during the closing assembly, which was held after all of the challenge stations were completed. First, second, and third place winners were determined from each team's total evaluation score, which took into account their performance at the assigned challenge station and the quality of their assembly presentation.

The challenge station evaluators were given an additional evaluation tool to provide feedback on the performance of the MRC (Table 1). The MRC volunteers were given the opportunity to provide feedback on their experience using a separate evaluation tool (Table 2). All evaluation tools were created by the organizers of the "Disaster Olympics."

Evaluation Questions	Answer "Yes"	Answer "No"
Did the MRC participate at your Disaster Olympics challenge station?		
If the MRC did participate at your challenge station, did they function as a "victim" or a "team member?"	Victim: _____ Team Member: _____	
Did the resident team evaluate the qualifications/credentials of the MRC volunteers to determine the best way in which they could be used?		
Were the MRC volunteers used to their fullest capacity based upon their qualifications/credentials?		
Did the MRC volunteers work well with the residents and/or hospital staff?		
Would you recommend using MRC volunteers in future disaster drills?		

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Table 1. MRC Performance Evaluation Tool
Abbreviation: MRC, Medical Reserve Corps.

Post-exercise Evaluation Questions	Answer "Yes"	Answer "No"
1. Was the exercise well organized?		
2. Was this exercise useful to you as a MRC member?		
3. Will you use/apply the experience you gained in this exercise in a real disaster?		
4. Did you clearly understand your role in this exercise?		
5. Were the residents/hospital staff polite to you?		
6. If you were a "team member," were your skills utilized appropriately (ie, did they take your training level into account when assigning your role)?		
7. If you were a "victim," were there errors in the registration of your patient information?		
If yes to above, please specify the error(s);		

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Table 2. Exercise Evaluation Tool Used by MRC
Abbreviation: MRC, Medical Reserve Corps.

Results

There were 31 (58%) MRC volunteers who participated in the "Disaster Olympics" out of the 53 who registered in advance. Twenty-eight (90%) MRC volunteers reported that they worked well with the residents and hospital staff. Similarly, 28 (90%) MRC volunteers believed the exercise was useful to them because they gained experience they could foresee using in a real disaster. However, only 14 (45%) of the MRC volunteers perceived the exercise as well-organized. Although 28 (90%) participants reported that the resident teams assigned them clearly defined roles at their challenge stations, only 21 (68%) reported that the team assessed their qualifications and credentials prior to assigning them these roles. For those MRC members who functioned as "victim evaluators" in the avian influenza scenario, nine reported errors in aspects of the care they received and the disaster response. The identified deficiencies included inadequate provisions for children who were separated from their parents, lack of access to interpreters for non-English speaking victims, and failure to assess drug allergies before prescribing of antimicrobials to patients.

There were a total of 12 challenge station evaluators and four challenge station controllers who completed the MRC evaluation

tool, and of these, 10 (62%) reported that the MRC participated in their portion of the "Disaster Olympics." Of these evaluators and controllers who had MRC volunteers assigned to their challenge stations, six (60%) reported that MRC volunteers took on the role of "victims," while four (40%) had MRC volunteers participate as "team members." Three (75%) of the four evaluators who had MRC volunteers function as "team members" reported that the resident team did not verify the qualifications and credentials of the volunteers prior to role assignment. Nine (90%) evaluators stated that the MRC volunteers worked well with the residents and hospital staff. Ten (100%) of the evaluators and controllers who had MRC volunteers assigned to their exercise station recommend their participation in future disaster exercises.

Discussion

Based upon a review of the literature, this is the first attempt at conducting a study to determine the optimal use of MRC volunteers in hospital-based disasters through their participation in a full-scale exercise.

The institutions had an opportunity to gain familiarity with the MRC and some of the assets they bring to bear in a disaster by

inviting them to participate in this exercise as team members involved in direct patient care. They participated in victim decontamination as members of the suit support team, medication distribution at the POD, and managing infection control for the avian influenza scenario. Based upon the data obtained from the evaluation tools, the MRC were well qualified to fill these roles. These findings provide hospitals with some evidenced-based guidance on ways to utilize MRC volunteers in actual disasters. However, if hospitals are going to rely upon MRC volunteers in disasters, both real and simulated, it will be incumbent upon the MRC organization to provide the amount of volunteers they committed to sending originally. It should be noted that this observation may be an artificiality of the exercise as historically, the MRC in NYC have dispatched the promised number of volunteers for real world emergencies (B. Duggan, personal communication, March 18, 2015). It will also be important for the hospitals to utilize the mechanisms in place to verify the qualifications of MRC volunteers prior to assigning them tasks during a disaster, which did not take place during this exercise.

This study created a novel use for MRC volunteers in a hospital-based disaster exercise as “victim evaluators” for various portions of the exercise. Typically, lay people are used as victims for disaster exercises. Filling these roles using extramural medical volunteers with a background in emergency preparedness yielded informed and objective feedback on the performance of the practitioners, effectiveness of the hospital’s emergency operations plan, and the “Disaster Olympics” design. The major opportunities for improvement identified by the MRC were errors that took place at the patient registration and POD challenge stations. It should be noted that these errors were not identified by the challenge station evaluators as the scope of their evaluations was different. Because of the expertise of MRC volunteers, significant issues were discovered that may not have been noticed otherwise.

The results of this study should encourage hospitals in the United States to use disaster exercises as a vehicle for establishing a relationship with the MRC. Such efforts may serve as a mechanism for obtaining invaluable expert feedback as institutions seek to improve their emergency preparedness operations. As these collaborations under simulated conditions occur with a greater frequency, the reservations to using medical volunteers hopefully will dissipate such that hospitals will become more comfortable using MRC medical volunteers during actual disasters.

Limitations

There were some limitations to the study. Firstly, the “Disaster Olympics” design did not test the process of obtaining emergency privileges for MRC volunteers. This process would likely have required a significant amount of time and prevented the MRC volunteers from participating in this exercise given its inherent time constraints. A limitation to the use of MRC volunteers as “victim evaluators” was the failure to provide a mechanism that allowed them to state specific ways in which both the exercise design and the hospital’s response to the disaster scenarios could be improved. Future studies potentially could examine other roles MRC volunteers can take on in a hospital-based disaster as this study did not examine the full scope of the MRC’s capabilities.

Conclusion

This study utilized a hospital-based, full-scale exercise to demonstrate that hospitals can use MRC volunteers effectively as members of a victim decontamination team, an infection control team, and a POD team. Additionally, this study created a novel use for MRC volunteers in a hospital-based disaster exercise as “victim evaluators.”

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