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Volunteer-Operated Field Medical Tents During Civilian Protests in Beirut, Lebanon: Challenges and Lessons

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ABSTRACT

In October 2019, the worsening political, economic, and perceived corruption in Lebanon led to civil unrest. In anticipation of injuries, a group of healthcare professionals and social activists summoned paramedics, nurses, and physicians through social media, to provide medical assistance in the protest area. These volunteers established a physician-led advanced first-aid tent, whose aim was to reduce the patient load on Emergency Departments in local hospitals. We present the experience of volunteers, lessons learned, and challenges faced during the establishment of the physician-led first aid tent. In this manuscript, we discuss the following aspects of our efforts that can serve as relevant lessons we learned about medical volunteerism: spontaneity in volunteerism, operations, location and storage, supplies, roaming team, coordination with emergency services, safety, documentation, communication, special situations, and transition from acute to primary care.

Keywords: civil unrest, emergency medicine, emergency medical services, injury, riot, volunteer

INTRODUCTION

In October 2019, the worsening political, economic, and perceived corruption in Lebanon led to civil unrest. Protests spread to all major cities, and tents were set up by social and political activists at the major protest areas between the Beirut Central District (BCD) at Martyr Square and Riad El Solh Street (Figure 1).

As the protests gained momentum, internal security forces and counter-protesters responded with violence to suppress the protests. In anticipation of injuries, a group of health care professionals and social activists summoned paramedics, nurses, and physicians through social media (Figure 2), to provide medical assistance in the protest area. These volunteers established a physician-led advanced first-aid tent, whose aim was to reduce the patient

load on Emergency Departments in local hospitals.

SPONTANEITY IN MEDICAL VOLUNTEERISM

In emergency situations, organized volunteers are medical providers who are trained for this purpose, and who operate under organizations.¹ Alternatively, spontaneous volunteers (SVs) are not affiliated with organizations¹⁻³ and respond to sudden needs in a crisis context in an unplanned, spontaneous, and ad hoc manner.⁴ Another term used to describe this is “convergent volunteerism” (CV), defined as the unexpected or uninvited arrival of personnel who engage in freelancing.⁵ SVs do not undergo prior training for emergency situations⁶, which results in several challenges^{7,8}, including communication, task prioritization, personal physical risks equipment cost, and risk to reputation. The spontaneous volunteers who deployed to the protest areas faced these challenges and operated under their own responsibility without any proper attention to personal health or liability insurance coverage.

The SVs originated from different backgrounds and cities. A WhatsApp group was created for operational purposes. The group expanded to

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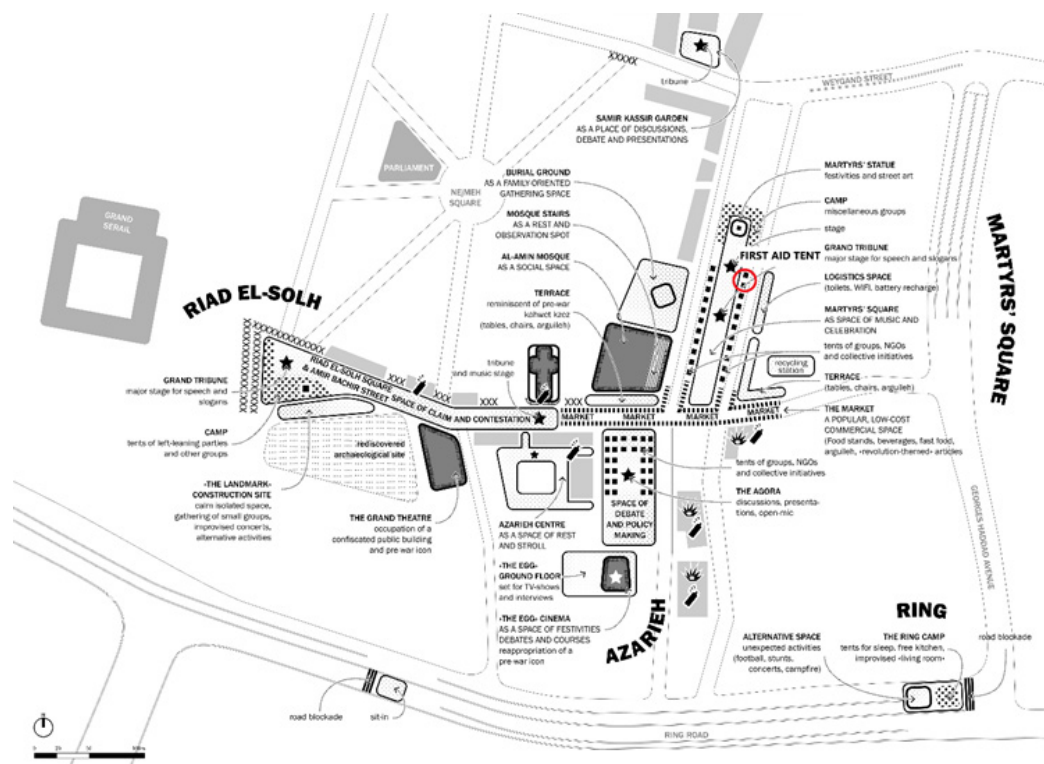


Figure 1 Field and area map. (Courtesy of Antoine Attalah)

200 people, out of which only ten were actively volunteering. Discussions were unorganized and side conversations were distracting. More importantly, SVs could not inspect or verify the credibility, motivation, or competence of each volunteer. In fact, SVs realized that a group member was incompetent to provide care after several incidents that demonstrated clinical mismanagement. Similarly, one volunteer turned out to be affiliated politically and was gathering personal information about the tent members. Indeed, there is evidence that SVs can become a liability when they hinder logistics, cross roles, compromise safety and control, and do not follow proper incident command structure or medical oversight.⁹ These two members were excluded from the team. Conversely, physicians and nurses in the team who were already familiar with one another, having worked together in local hospitals or by acquaintance, established trust early amongst each other which in turn helped foster the development of teamwork dynamics at large.

Lesson learned: We later created a smaller WhatsApp group, comprising the active SVs only, whose credibility and competence became acknowledged within a month's period. Members'

roles were assigned according to their training background and years of experience. The medical doctor (MD) on shift was the final decision-maker. Improved coordination with Emergency Medical Services (EMS) (elaborated in section 6) also contributed to establishing a quasi-system within which we all operated, hence reducing unwanted disruptive behaviors by SVs.

OPERATIONS

The density of protesters on the ground, as well as the number of volunteers available, were the determining factors for the opening and closing of the tent. This allowed us to preserve our human and logistical resources. The minimum number of available volunteers to set up the tent was three people, with on-call back up. Team members onsite included nurses, paramedics, and when deemed safe, a senior medical student. A physician was always present to ensure safe and proper patient care is provided (Figure 3).

The physician was also in charge of supervising medication dispensing and assessing the need to transport a patient to a hospital (Table 1).

Since SVs had full-time jobs, ensuring sufficient



Figure 2 First aid tent with some of the volunteers.

staffing proved challenging and hindered the ability to provide the service on several occasions despite the need created by a flare-up in the protests.

Lesson learned: To work around this shortcoming, the SVs established a roaming on-call team for urgent and emergent situations. This is further described in a subsequent section of this paper.

LOCATION AND STORAGE

Establishing a presence and adding signage were initial and fundamental objectives to make it easier for protesters to locate where to carry injuries

or whom to call for help. Simple reflective vests helped identify the team members by protesters, security personnel and other team members. Our tent location was shared on social media, so people became familiar with it.

Storage of the medical equipment and supplies at night, when the streets were deserted, was a significant undertaking. As the tent was operated by volunteers who were unable to guard the location around the clock, the equipment and supplies were not properly secured. Therefore, team members stored the supplies in their own vehicles. This



Figure 3 Physician-led first aid within the tent

limited the potential for expansion according to the storage capacity. It also forced team members to be unwaveringly available for setting up and closing the tent.

Lesson learned: To manage the storage issue, the team divided some of the equipment among the active volunteers and locked the examination table in place with a lock and chain. Hence, the team members were able to open the tent in case of emergency. The rest of the equipment, particularly

Table 1 Medications and equipment available in the first aid tent

Airway and Breathing

O₂ and nebulizers: ipratropium bromide, salbutamol

Face masks

Oral and nasal airways

Bag-valve mask

Miscellaneous

Automatic external defibrillator

Medical examination table

Duct tape

Rope

Tarp and plastic sheeting

Locks and chains

Plastic chairs and tables

Shelving

Plastic storage bins

Signage

Rechargeable lamps

Cleaning supplies

Patient assessment tools

Personal protective equipment

Stethoscope

Sphygmomanometer

Oximeter

Glucometer

Trauma supplies

Assortment of gauze and bandages

Hemostatic and trauma dressings

Arm slings and ace wraps

Tourniquets

Medical tape

Medications (oral and intramuscular)

Paracetamol

Diphenhydramine

Metoclopramide

Scopolamine

Epinephrine

Dexamethasone

Diazepam

Medications (topical)

Alcohol and Betadine

Fucidic acid

Non-steroidal anti-inflammatory drugs gel

the heavy supplies, was stocked in the Al Amine Mosque in BCD (map) to mitigate any risk of them being lost or stolen.

SUPPLIES

As word of the first aid tent spread, the SVs received unsolicited donations, including medical supplies and medications, from private individuals as well as from NGOs and medical institutions. This created issues with “drug dumping”^{10,11}, as the team received irrelevant or inappropriate donations (e.g. food supplements and expired medications). These were either rechanneled or discarded, as deemed appropriate.

Within the first ten days, operational costs such as those needed for medical supplies, signage, lights, and protective gear, began to mount and the need for more sophisticated medical equipment became evident.

Lesson learned: A significant number of the medical supplies, including an automatic external defibrillator (AED), oxygen tanks, nebulizer machines, trauma supplies, and a simple examination table were donated by NGOs, a university hospital in Beirut, and a private medical center in Damour. To better manage drug donations, the SVs devised an inventory of the essential items that were frequently used up to manage the target patient population. This allowed them to anticipate what supplies they needed^{12,13} and relay them to the donors. This also served to ensure transparency in the operations with these donors.^{14,15}

ROAMING & ON-CALL TEAM

Early on, the SVs realized the benefit of having a roaming team whose mission was to engage in areas at the margins of hot zones that are generally difficult to reach by EMS, as they were instructed to stay near their vehicles. A hot zone is defined as an actively unstable and potentially violent zone given observed protest actions, whereas a cold zone is a safe area. A warm zone is relatively safe for emergency responders with vigilant observation.^{16,17} The team would linger near areas of expected violence and respond accordingly when injuries occurred, sometimes even extracting injured people from within the hot zones. The roaming team was activated in situations where there was

excessive crowding during protests, when riot police interdiction was expected, or when agitators (individuals who incite the crowd by engaging in unlawful disruptive conduct) incited riots with throwing of rocks and Molotov cocktails. In essence, the roaming team acted as the medical arm of a mobile field force (MFF), which is advocated as a special response team for civil disturbance.¹⁷

Social media served as a dynamic source of acutely emerging information of the situation on the ground for the SVs. Indeed, social media allows shareholders to gauge public reaction to a disaster. It also has possible roles in crisis management.¹⁸ In particular, Twitter has been used during disasters as a decentralized communication channel to share critical information and provide first-person accounts of what is happening on the ground.¹⁹ Nonetheless, the open nature of social media makes these platforms ideal to spread misinformation during disasters. Miyabe et al. (2014) explained that disasters catalyze the spread of rumors on social media compared to normal situations.²⁰ The SVs remained vigilant while routinely scanning social media to assess the situation around the protests.

Table 2 Roaming team supplies

Personal protective equipment: Gloves, eye protection, respirator, helmet, body protection Flashlight, head lamp Trauma shears Stethoscope, sphygmomanometer, oximeter, glucometer Assortment of gauze and bandages Hemostatic and trauma dressings, tourniquets, medical tape Malleable aluminum splints Triple antibiotic ointment Oropharyngeal airways, cervical collar Paracetamol Non-steroidal anti-inflammatory drugs gel Sterile saline, water Waste disposal bag Duct tape
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Lesson learned: Deploying the roaming team necessitated a rigorous stepwise assessment of the situation on the ground. Social media outlets including WhatsApp groups were constantly

monitored for reports of skirmishes that could escalate into violent activity. If vetting the source of these reports was not possible, or when similar ambiguous reports flowed from various sources, the SVs would send a small contingent of the roaming team to examine the situation firsthand. Some of the roaming team volunteers had motorcycles or scooters, allowing them easier and more timely access to a site of possible violence. Hence, they could quickly reconnoiter the area in question and prompt the team to intervene as needed.

An important challenge for the roaming team was balancing the amount of supplies to carry with the need to maintain the agility needed for rapid response and exfiltration as the situation demanded. A sample list of supplies carried by the roaming teams can be seen in Table 2. In case a patient needed to be transferred to the tent or to a hospital for further management, SVs would coordinate with EMS team for transport.

Lesson learned: SVs debated whether to include suture kits or staplers to manage deep wounds. However, given the need for a sterile environment and subsequent follow up, the team decided against it.

PATIENT PROFILE OF INJURIES AND MEDICAL CONDITIONS

Due to the volatility of working and security conditions and to the inherent non-compliance of volunteers with requests for documentation of all injuries, we were only able to collect limited data of trauma/injury patients treated within a 10-day timeframe from November 3 to November 13, 2019.

Table 3 Traumatic injuries received during protests

Chief Complaint	Number
Extremity injury	112
Extremity burn	16
Facial injury	15
Wound/Trauma (unknown)	5
Burn (unknown)	3
Acid exposure	1
Total	152

Protest-related traumatic injuries

Table 3 presents all traumatic injuries during the 10-day period; clashes between police, protesters, and those opposing the protests resulted in violence over the months as political instability deepened. Blunt injuries from clubs and stones were commonplace. Penetrating injuries from rubber bullets, birdshot and other sharp objects were also seen. There was 1 fatality during the months of the protests when a police officer seemingly became disoriented in a building under construction and fell down in an unsecured elevator shaft. Extremity injuries constituted the majority of cases that were seen and treated, followed by head injuries. Injuries ranged from bruises, scrapes and lacerations, to burns from smoke and tear gas grenades, to fractured bones and joint dislocations, to penetrating trauma from rubber bullets and birdshot.

Non-traumatic illnesses treated at the medical tent during the protests

Table 4 Non-trauma patients cared for at the tent

Chief Complaint	Number
Headache	57
BP check	24
Abdominal pain	14
Dizziness	13
Panic attack	11
Chest pain	6
Rash	6
Pilonidal cyst	4
Shortness of breath	4
Back pain	4
Animal bite	4
Cough	3
Presyncope	3
Syncope	2
Fever	2
Decreased level of consciousness	2
Vaginal pain	1
Aphthous ulcer	1
Developmental Delay	1
Scabies	1
Intoxication	1
Total	164

SVs at the first aid tent also treated several non-trauma related illnesses, conditions, and chief complaints. Table 4 clearly demonstrates many patients found it opportune to seek free medical evaluation, guidance, and care at the medical tent. However, a number of these non-traumatic conditions could be possibly attributed to the stressful and crowded conditions prevailing in the protest zones. These potentially include syncope, presyncope, dizziness, chest pain, panic attacks, and shortness of breath.

We note that even during this documented period (10-day), 37 cases were recorded as unknown without further details available.

COORDINATION WITH EMS

EMS in Lebanon is underdeveloped and almost exclusively volunteer-based.²¹ The best-trained responders have Basic Life Support (BLS)-level training.²² Many are trained in only basic first aid, and therefore opt to “scoop and run” on all patients including minor trauma and medical cases. This deficiency is the result of the lack of EMS curriculum and scope of practice for prehospital providers, and the absence of a governmental regulatory or legislative authority responsible for the EMS system.²² The limitation in capabilities and capacity in EMS training naturally prompts responders to transport all patients to Emergency Departments (EDs) for better assessment. During riots, the lack of effective communication between EMS personnel and ED staff puts EDs at risk of being overwhelmed by the large number of patients, the majority of whom have minor complaints that are manageable in the field.²² Indeed, treating simple cases in the field was key to decongesting local EDs. Therefore, the role of the first aid tent was to provide physician-led prehospital emergency medical care and intercept patients whose care can be provided on the field as a mean to reduce the patient load to local EDs.

Coordination with the EMS teams had a bumpy start due to overlap in roles and goals. The coordination and pooling of resources was also inadequate. This ultimately led to duplication of efforts and inefficiency in patient management. Not surprisingly, the literature describes SVs as often perceived as an inconvenience, inadvertently

creating problems with protocol adherence, crowd control, security, safety, patient tracking and liability, and accountability.²³

Lesson learned: Once the initial discord with EMS was resolved, SVs began structured coordination with its prehospital providers. The first aid tent would provide advanced triage and assessment of patients with physician oversight, allowing the option to treat patients with minor complaints in the field. Communication with EMS was either by cellphone to teams in the field or via direct radio communication if EMS personnel were already at the tent. If an EMS team needed medical consultation on a case, they could bring the patient to the tent. Alternatively, the physicians from the first aid tent would assist directly in the ambulance. This allowed for advanced assessment of patients who presented to ambulances with complaints. In the event a patient required transport to an ED, physicians from the team would manage the hand-over to the selected ED to facilitate the process and ultimately ensure a smoother transition of care.

Table 5 Patient referrals from the first aid tent

Referral	Number
Referred to the Emergency Department	23
Refused	6
Referred to Psychological first aid tent	2
Total	31

With time the dynamics between the first aid

tent and EMS teams improved, which laid the groundwork for more efficient patient handover and transport.

This experience is in line with the concept of “mutual aid”²⁴ where individual volunteers who freelance at the scene of a mass casualty incident (MCI) end up converging with EMS for efficient coordination of human resources, role assignment and operations, donations, and exchange of critical information. The team succeeded in significantly reducing the number of potential patients presenting to the ED. Over the course of one week when data was collected, out of 353 documented patients examined, only 31 (less than 10%) were found to need transfer to the ED (Table 5).

Similar findings were reported in the literature²⁵, where on-site physicians were found to reduce ambulance transfers to local hospitals by up to 89%, thus relieving the burden of an event on local EMS services and hospitals.

SAFETY

Prehospital providers are traditionally trained to establish scene safety as a priority before engaging with patients. This proved problematic in the volatile and unpredictable environment during protests.²⁶ Roaming teams were instructed to stand off to the periphery in the warm or cold zone and wait for injuries to be brought to them, or approach once the area has regained calm. What appeared to



Figure 4 Before adequate donations and Pre-COVID19: limited funds meant limited protective gear. An emergency physician pictured here wearing a ski-helmet



Figure 5 Each volunteer of the roaming team was equipped with a respirator, eye protection and a helmet.

be standard practice was stymied by two realities. First, SVs found it difficult to witness a person being injured nearby and not intervene while waiting for the area to regain calm. Second, the roaming teams would occasionally find themselves caught in no-man’s land between the protesters, the agitators and riot police. A “safe area” could suddenly and unexpectedly become a hot zone as the lines shifted abruptly. First aid providers were inevitably injured from being directly targeted by agitators or getting “caught in the crossfire”. The affected members were either attacked directly, hit by “less-lethal” munitions including rubber bullets and tear gas or struck by thrown rocks and other projectiles.

Lesson learned: Roaming SV team members were provided with extra protective equipment, including helmets, body protection and respirators, using personal funds and donations (Figures 4,5).

DOCUMENTATION

As the number of protestors and injuries grew, the surge capacity of the tent was rapidly reached. Providers inevitably prioritized delivering medical care and neglected documentation. In fact, some evidence in the literature points towards the nature of working in sudden onset disaster environments, necessitating some deviation from usual practice, and adopting a more basic triage-oriented response.²⁷ Volunteer physicians also report that they do not have time, nor do they perceive documentation as a priority in these circumstances.²⁸

Challenge faced: Data collection with pen and paper was not suitable due to the chaotic, high-turnover conditions that caused loss or destruction

of the paper records. Some volunteers also had poor English-writing skills, which prevented standardization of the documentation language to English. These challenges mirrored what previous literature has shown.²⁹ Originally, a non-governmental organization (NGO) provided data collectors for a few days. Afterwards, the team figured out a system that enabled them to collect data, using a simple method of a separate WhatsApp group for documentation by the treating medical provider. Hereafter, the collected data was organized and added into a Microsoft Excel spreadsheet. Documented information included the date and time of the encounter, the patient’s sex and estimated age, chief complaint, and management (Tables 3, 4 and 6). Unfortunately, data collection was sporadic and incomplete. The most consistent period of data collection occurred during 10 days in November and is thus presented as an example of the patients seen.

As seen in other mass casualty incidents^{30,31}, SVs of the first aid tent would often prioritize patient care over documentation.

Lesson learned: The importance of medical documentation must not be downplayed, both for patient outcomes and for litigation considerations. The SV teams could have been more prudent and searched the literature for simplified medical records tailored to MCIs, such as the pilot disaster medical record.³²

Table 6 Patient gender and age distribution from November 3, 2019 to November 12, 2019

	Age	Number of Patients
	Less than 10	20
	10 to 19	41
	20 to 30	130
	30 to 40	53
	40 to 50	42
	50 to 60	45
	More than 60	20
	Undocumented	2
Gender	Male	251
	Female	92
	Undocumented	10
Total		353

Future efforts should be geared towards inciting

national bodies such as the Lebanese Ministry of Public Health to mandate disaster-specific documentation records as well as providing training to EMS providers on how and why to use them.

10. COMMUNICATION

Effective communication is one of the fundamentals of mass casualty response. It is well known that breakdowns in communication hinder the ability to respond effectively to disasters.³³ WhatsApp was the SVs' primary medium for communication, relying on the individual provider's mobile phone-based 3G network.

During days when the protests were more crowded, the network coverage would sometimes become unreliable, thus compromising communication between SVs. Moreover, when SVs were heavily engaged tending to the injured, they could not always keep their phones on hand.

Lesson learned: For close coordination purposes, the roaming team formed a closed WhatsApp group, where discussions were restricted to the availability of SVs in times of need, and constant communication with the SVs on the ground, including real time updates on security and safety issues as they emerged. WhatsApp has historically been shown to be efficient to relay information within hospitals. In fact, it was added to the formal communication protocol for the Emergency Preparedness Plan of a University Hospital in Beirut³³. Additionally, it was essential that the roaming team closely coordinates with the military and security forces, to facilitate unrestricted movement and to locate the injured including members of the military and police themselves. Two-way radios were useful as a last resort when network coverage failed. Finally, a communication plan was established where SVs roaming on the ground were expected to conduct interval check-ins, reporting on the situation, and their safety status.

SPECIAL CONSIDERATIONS

Scabies Infection

Many protesters chose to "occupy" the downtown Beirut area and set up tents for long-term stays. Unfortunately, the protester tents were often shared, crowded and unhygienic. Not surprisingly,

a few cases of scabies were encountered, which raised concern for a potential outbreak among the individuals sleeping in these tents. It is documented that overcrowded living conditions, poor hygienic conditions and shared bedding increase the risk of scabies.³⁴ An infectious disease specialist visited these tents and examined the mattresses. They were damp and had no exposure to the sun. Lindane and Ivermectin were secured to treat patients, and instructions were given to protesters on how to prevent infection.

The issue of prescribing medications to patients sparked a lively debate amongst the physician volunteers who had no means to adequately document these prescriptions, obtain diagnostic tests, or arrange for follow-up visits. Ultimately, the consensus was to restrict dispensing acute medications to severe cases that had a high index of clinical suspicion, such that the benefits of the intervention outweighed the potential risks.

TRANSITION TO PRIMARY CARE

As the protests occurred over several months, they became less high-spirited and smaller in size. Donations decreased in number. Triage, first aid and emergency care gave way to primary care as the patient demographic shifted away from acute trauma to homeless and uninsured people seeking easily accessible care. The SVs did multiple dressing changes for an adult male who had a surgical excision of a pilonidal cyst. Blood pressure and blood sugar checks became frequent requests. Despite the expansion and reinforcement of a country-wide network of subsidized primary health care services³⁵ to balance out the predominance of privatization and decentralization of the healthcare sector^{36,37}, these milestones did not translate into a better access of poor Lebanese to supported primary health care facilities.³⁷ The first aid tent therefore served as a convenient alternative to people on the ground to access free medical services and medications.

CONCLUSION

Setting up physician-led field medical operations in a protest area can potentially decrease the surge of patients with minor injuries presenting to local EDs, especially in countries such as Lebanon with

limited EMS coverage and capabilities, and where the instability of the socio-politico-economic conditions are fertile grounds for the emergence of civil unrest. Anticipating the presence of SVs and prospectively organizing their involvement in close coordination with EMS is key in assigning them predefined effective roles that do not hinder the EMS operations nor expose them to unnecessary risks. Finally, WhatsApp and social media can be an effective means of rapidly organizing and engaging with SVs within the context of disaster management. Vigilance, however, must be exercised when using them as disaster situations catalyze the spread of misinformation.

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