Introduction

The suicide car bombing of the Baghdad headquarters of the International Committee of the Red Cross (ICRC) in October 2003 underscored the vulnerability of humanitarian and relief organizations that operate in areas of violent conflict. Since the end of the Cold War, complex humanitarian emergencies have become an increasing priority for NGOs and global health activists around the world. Over the past 10 years as the international public health community has taken a more active role in assisting post-conflict countries, re-establishing their damaged, often ill-equipped or non-existent health care infrastructure, the issues of vulnerability and the lack of security of the public health system have become hurdles and even barriers to relief efforts worldwide. A study published in 2000 by Sheik, et al in the British Journal of Medicine, listed 67% of all humanitarian-worker deaths as a result of the increase in international violence.  

As we enter the 21st century the definitions of complex humanitarian emergencies are changing and evolving to recognize the dynamic nature of global health relief efforts. We are beginning to see how natural and technological disasters as well as political struggles, and civil and military conflict are causing the disruption necessary to be considered a complex humanitarian emergency. In this age of heightened awareness about the threats of terrorism and weapons of mass destruction, the public health community needs to assess, evaluate and address the risks associated with complex emergencies (CEs) to protect the services they provide and prevent the collapse of the health care infrastructure they work so hard to achieve.

The issues of threat assessment, resource protection, physical security, protecting the public health infrastructure and liaising with the military have been raised numerous times in the litera-

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forces, this may serve as a deterrent from any looting, violence, or civil unrest that may occur when carrying out this mission. Having an armed escort may be life saving in these situations and should be viewed as a necessity rather than a luxury.

In addition to the safety and security of the food supply is the perhaps more crucial resource of water. In many field locations, the availability of potable water is limited at best. Many underdeveloped countries lack the resources to purify water. Wells may be scarce and potentially contaminated, and looting may have depleted any available bottled water. Some international humanitarian relief organizations bring bottled water or filtration systems with them on field deployments. However, in many cases local supplies are relied on and there may be only a few sources of water that are suitable as drinking reservoirs. Part of the site survey should address how water will be obtained from the region and treated if necessary, or how the water (if brought with the organization) will be stored and rationed. Each scenario requires a specific security assessment, intervention and plan of action.

In cases where water will be obtained from natural resources, sampling, filtration, and monitoring must be implemented to assure safety and public health. During the initial site survey a sample of the reservoir and the aquifer (if possible) should be obtained to assess the quality of the water, the pathogens present, any chemical contamination, and the methods to best remediate the problems. Once these factors are identified, a site remediation plan can be implemented and the water system can be filtered appropriately to protect the health of the persons utilizing the system. Daily sampling should be continued throughout the operational period to assess for the introduction of any contaminants or interruption of water quality that would require a new remediation strategy.

If the organization is bringing water to the region, the same issues of security apply as did for the food cache. In addition, many organizations bring supplies to the field which are essential for relief efforts and potentially life-saving for ill or injured patients. Field personnel should take steps to secure water, supplies, pharmaceuticals and other essential equipment in a locked and/or guarded central location when not in use, to prevent to possibility of looting, damage, or contamination.

Site Security and Infrastructure Protection

Prior to deployment to the region the organization should be taking steps to learn the operations location and the potential hazards and advantages to operation in the location of interest. Physical protection and site security are the methods and means necessary to ensure the safety and security of the staff, the facility and the patients/clients receiving care and assistance in the field milieu. Without these considerations the organization will be vulnerable to attack, theft, and personal danger if a threat should materialize.

The facility or base of operations for an international relief effort may indeed be the place with the most vulnerability. This is the location where most supplies will be stored, most personnel will be kept, and most operational tasks will be planned and carried out. In addition, some international relief organizations will have infirmaries where medical care will be provided. These facilities have special requirements for protection that begin with the initial site assessment.

The location of the facility should be planned as carefully as possible in the planning stages to address some key issues. First the facility should not be isolated. It should be near access roads that can provide a means of access by suppliers, and security forces if needed, and should also have methods of easy egress, in case an evacuation is warranted. This means having the possibility for air evacuation as well as ground and sometimes a water route as well. The location should be in proximity of the food and supply cache and the water supply as well if it is not housed within the facility.

This issue of target hardening has been one
In many instances working with law enforcement or military forces is in conflict with the mission of the NGO or humanitarian organization. Additionally, building even a professional relationship with any agency directly or indirectly involved with the conflict at hand could raise the issues of the transparency and impartiality of the relief organization. This misinterpretation may incite violence or make the group a potential target if the civilians or local inhabitants believed that the organization was affiliated with a rival faction. By performing as much of the security assessment prior to deployment as possible, and by having plans in place and the means to carry them out prior to assigning workers to the region, the transparency and impartiality of the agency can be maintained without risking the safety of the relief personnel.

There have been situations where humanitarian relief efforts have been combined with military operations in a joint venture, which has offered a great means for success. An example of the successful cooperation of military and humanitarian efforts was at the end of the Gulf War in 1991 during Operation Provide Comfort. In this campaign military units from 13 countries and humanitarian organizations from over 30 countries worked together to provide post-conflict relief to the Kurdish people. In this situation the relief workers could benefit from the increased security, language expertise, and strategic knowledge of these military units leading to an eventual drop in mortality rates and the relocation of this internally displaced population.

Resource Protection

In order for a relief organization to make any positive impact in a CE, the personnel and resources needed to assist the population must be reliable and accessible when needed. The security plan developed by humanitarian organizations must provide for the protection and maintenance of the essential resources needed to sustain their operations in the region of deployment. The security and safety of foodstuffs, potable water, and supplies must be provided for in order for the relief effort to be successful.

As seen in North Korea and Liberia the insecurity or lack of availability of food may be a cause of the conflict or a result of it. It has been reported that food insecurity during times of conflict can lead to an increase in the morbidity and mortality rates in the region. Relief organizations who intend to supply or distribute food to civilians, or even simply provide nourishment to patients in a field hospital or their own employees, need to take steps to protect this vital resource. In areas of famine, poverty, and civil disruption the food resources may be scant or nonexistent. This often leads to mass chaos, looting, violence and death when there is not enough food to go around.

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As part of the security plan, protection strategies should take various forms. Initially, the issue of food storage should be addressed. When evaluating the potential site for a field headquarters or base of regional operation, there should be a place within the structural confines of the location where the food cache can be securely stored and guarded or locked when not in use. This location needs to have the ability to maintain the temperature necessary to keep the food from spoiling. Pest control and management also needs to be addressed based on the location of the food storage facility and the indigenous insects, wildlife and other pests expected to be present in the area.

When it is appropriate to distribute food the organization should work closely with their field security personnel and the military to ensure the safety of the relief workers and the food supply as several sources in the literature have cited deficiencies in the means of food distribution as leading to an increase in mortality. By planning out the food supply and distribution route and having an armed escort to and from the location by field security personnel.
ture and by experts in the field of international disaster relief. In this article I will be examining these topics by providing an overview of some key issues in this area using examples from actual CE experiences, in an effort to illustrate how the international public health response to these incidents can be enhanced to be more protective of the population and more secure for the providers.

**ALTH RESPONSE**

**Planning and Preparation**

When NGO and humanitarian organizations prepare to provide assistance in regions that have been plagued with conflict and violence, it is important that while planning and coordinating relief efforts, these organizations address the issues of insecurity in the areas they plan to operate. By performing a threat or vulnerability assessment before deploying resources to a location, these organizations can help prevent conflict-related problems from distracting these agencies from their primary mission.

The process of a threat or vulnerability assessment should be performed by highly trained and qualified security professionals with experience working in a dynamic and often militant environment. In the past 10 years several NGOs, the UN, and the ICRC have appointed or hired security officers to attempt to handle the issues of insecurity during field operations. The UN has the most well organized security plan in place. Many of these staff members have little or no formal training in security principles or practices. The individuals who are experienced in security operations are usually not familiar with operating in the austere environment of a post-conflict region. At the very least, relief organization workers who are to be cross-trained to assist in developing security plans, site assessment or physical security should have formal training from a credible law enforcement or international organization to be best prepared to carry out these responsibilities.

The process of the security assessment should begin by gathering information or intelligence about the conflict. This may include some of the following essential information:

- Disputants and potentially hostile factions
- Inhabitants/refugees/IDPs
- Terrain and geographic layout of the site of operation
- Including needs for site protection and physical security
- Resource locations (food, water, shelter, supply routes, etc.)

Unless the organization is able to send in an advance team to gather on-site intelligence, the organization will have to rely on open-source intelligence and information obtained from other sources. This may mean security officials contacting law enforcement and/or military units who are familiar with the current conflict situation and the region of interest, or contacting local and international officials who are currently deployed in the area.
of debate in the past. A facility needs to be safe and secure for the occupants. This may mean something as simple as a staff-secure facility with nothing more than the individual workers providing safety and security, that military or security forces are providing security in the area adjacent to the facility, or having a quick response team stationed nearby to assist should conflict arise. It has been reported that by not having a full-time professional security staff in the field and by having cross-trained relief workers provide security would be "grossly inadequate in situations where there are anything more than minimal security threats."

The issue of arming staff and security personnel is often an ethical dilemma among relief organizations as it may send mixed messages to the population about the nature of transparency and impartiality of their mission. The UN's field security officers (FSOs) are largely unarmed. If an armed security force or military unit is present to assist in the relief operations and provide operational support then having armed members of the organization is probably not necessary. However, if the relief organization does not have access to immediate military support or intervention should a conflict arise, the organization should have some members of their security staff equipped with the means to defend the workers while they are evacuated or moved to a safe location. Regardless of the decision to arm security staff members, the decision should be made with the best information available in the security assessment process, and should be made and re-evaluated on a case-by-case basis.

In light of the plan to provide security of the main field facility, there are some simple common-sense steps that should always be implemented:

- Restricted (and locked) access-to-patient care locations, offices with sensitive materials, and equipment storage areas.
- A clear means to enter and exit the facility as to maintain controlled access and a predictable approach for those seeking assistance.
- This allows the facility to reserve the alternate exits for quick clandestine evacuation in emergency situations.
- Site security may also include physical deterrents as well. Fencing, barbed wire, armed uniformed guards, natural barriers or walls to control entrance or egress.

The relief infrastructure that is established and relied upon in the field often sets the pace for how the relief operation will be carried out. Power, transportation, and communication systems are often taken for granted or ill-addressed in pre-deployment planning contingencies because of the inherent unreliability and inconsistency of resources in CE. Many relief organizations do bring generators or become able to have access to electricity. However, it is essential that a strategy be formulated should infrastructure collapse occur.

As we saw in the Northeastern U.S. blackout in 2003, the nation relies heavily on power to run the technology we rely on. In the field setting everything from computer-based information systems, global positioning systems, communications equipment, medical technologies, and transportation all rely on power. Fortunately, most of these devices can be used on battery backup, and generators can provide some assistance. Generators and transportation vehicles run on fuel, and as seen [for example] in North Korean operations, the availability of fuel resources may be scarce and unpredictable. This emphasizes the need to secure the fuel reserves that are stored by the organizations to be used in relief efforts. Taking the necessary steps to plan and anticipate for these problems during the initial threat and vulnerability assessments and during site planning will allow the flow of operation to continue should a loss of infrastructure be experienced during field operations.

**Conclusion**

In any setting domestic or international, the lack of security affects the ability to ensure the maintenance of the public's health and safety. International relief workers and humanitarian organizations need to be proactive in protecting the services they provide to ensure the safety of their workers and to maintain the vital resources they provide to people who so desperately need their assistance. Over the past 10 years there have been numerous incidents illustrating how the insecurity of post-conflict countries have caused humanitarian organizations to experience their own loss and destruction. Taking action to ensure the security of their international operations by addressing the issues of threat assessment, resource protection, physical security, infrastructure protection and joint-military operations, will allow these organizations to more effectively and safely respond to complex humanitarian emergencies and make a positive impact on global public health.

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**References**