Preparing for the Next Generation of Disasters

A Binational Perspective

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With more than 100 years of combined service to the community and extensive experience in addressing the behavioral challenges associated with disasters and terrorism, the F·E·G·S Health and Human Services System in the United States and the Community Stress Prevention Center (CSPC) in Israel are working together to anticipate future disasters and approaches to building resilient communities.

The Mashabim ("resources" in Hebrew) Center of the CSPC has focused on advancing the knowledge and application of human resiliency in disaster management at the personal, organizational, and national levels. It is home to internationally renowned specialists in the field of disaster preparation and response, providing immediate and long-term psychosocial support to the victims, survivors, and witnesses of disasters and terrorism in Israel, as well as in many other countries, for more than 30 years.

F·E·G·S provides its broad-based expertise to address post-disaster service needs locally and nationally. It is designated by the City of New York as a Tier One disaster responder, providing staff to assist onsite New York City Disaster Assistance Centers in the wake of a natural disaster, public health crisis, or an act of terrorism. In response to the Hurricane Katrina disaster, F·E·G·S provided counseling and trauma support, as well as an employment hotline for evacuees. F·E·G·S leaders, staff members, and interns have provided hands-on assistance to disaster-affected communities across the United States and around the world.

In addition, Extreme Behavioral Risk Management (XBRM), a division of F·E·G·S' AllSector Technology Group, Inc. subsidiary, is a behavioral health consulting firm specializing in disaster mental health, violence prevention, and acute stress management. XBRM's associates develop products and provide consulting and training services to the FBI, FEMA, the U.S. Public Health Service, and the United Nations, as well as many other public and private sector organizations worldwide.

F·E·G·S and CSPC have worked together for more than a decade in assisting the victims and survivors of disasters and violence. Disaster responders and expert consultants from F·E·G·S and CSPC have worked together to provide community support after the 9/11 attacks in New York, Hurricane Katrina in the U.S. Gulf region, and Sri Lanka after the tsunami.

CURRENT TRENDS

Without needing to refer to statistics, it is apparent that more frequent and powerful disasters are affecting greater numbers of people than ever before.

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In the first six months of 2010 alone, there were nine major earthquakes, including the three in China, Chile, and Haiti that together resulted in more than 250,000 deaths and millions left injured and homeless.

The number of natural disasters has quadrupled over the last two decades; from 120 each year in the early 1980s to as many as 500 today (Oxfam, 2009). This number does not include technological disasters, such as transportation or industrial accidents, or disasters of human intention, like terrorism, genocide, or military conflicts. On average, nearly 250 million people are affected by natural disasters each year (Oxfam, 2009). It is projected that by 2015, this number will rise to more than 350 million each year. This projected 54% increase in the number of people affected annually by natural disasters has the potential to overwhelm current global capacity to respond to the humanitarian challenges of disasters.

Not only are there more disasters but there are also more people than ever, and the global population is growing quickly. It is estimated that the current world population of approximately 6.8 billion will increase to more than 8 billion by 2025, and 99% of that growth is expected in developing countries that are already vulnerable to many types of disasters (IRIN, 2007). In the next 15 years, current trends suggest that more than half of the world's population will live in dense, urban environments, and a quarter will live in overcrowded, impoverished slums (IRIN, 2007). With the increasing prevalence of social media (i.e., Twitter, Facebook) and citizen journalists able to capture and broadcast images of devastation and chaos from their mobile phones, even more people will be exposed to graphic and gruesome sights and sounds from disaster sites.

Our global risk profile is rapidly changing. Clearly there will be more disasters and more people affected by them. Add to this the speed and sophistication of our technological advances, as well as the ever evolving nature of terrorism, and the new challenges in disaster management and humanitarian care become even more apparent. We are entering or are already in the early stages of a new era in disasters, presenting new challenges and requiring a fresh look at ways to mitigate their impact.

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As always, future disasters will not recognize borders or boundaries. Such events are often multiregional or multinational events. The massive storm plodding across the Atlantic basin can devastate small island nations and then move along to level large swaths of a continent in its journey. A disease outbreak can quickly circle the globe, as can a cloud of volcanic ash. As the new portrait of disaster-related risk comes into focus, a multinational approach to preparedness and response becomes increasingly urgent. Given the effects of globalization and increasingly multicultural nations, this approach becomes even more critical.

LESSONS LEARNED

In June 1980 more than 16,000 inhabitants of Kiryat Shmona were forced to stay in shelters for almost two weeks to escape Lebanon's shelling of northern Israel. One of the first lessons learned by CSPC was that decision makers, managers, and incident commanders from both the homefront and civilian managers of the town failed to "read" the developing situational map and lacked the capacity to monitor and properly analyze the public's behavior. Many decisions were based on false assumptions that the public would panic and would be unable to maintain

normal life, that looting would prevail, and that those who left the town were "deserters" rather than families who could not continue to stay underground for so long and took respite in relatives' homes away from the frontline. These leaders relied too heavily on the media as a credible source of information. This "command post blindness" is not unique to the Israeli scene or to military events and disaster situations. It has been documented in many incidents where the failure to understand and anticipate public behavior has led to flawed decisions, resulting in the loss of many lives and increased suffering.

A classic example of the misinterpretation of public behavior was the Hillsborough Football Stadium disaster in April 1989, in which 39 people were crushed to death by panicked football fans (Hodgkinson & Stuart, 1998). This tragedy was caused by the failure of police officers in the control center to recognize that too many fans were being directed into a section of the stands too small to accommodate their numbers. As the number of people in the tight space increased, the crowd reached a "flashpoint" and became an "escape mob" (Crimando, 2007). Both command and tactical officers misinterpreted the crowd's frenzied attempt to flee as that of football hooligans trying to invade the football pitch. Using dogs and aggressive police tactics to contain the mob, the situation escalated and led to unfortunate consequences.

More recently, the concluding comments of the U.S. House of Representatives' report on Hurricane Katrina, entitled *A Failure of Initiative*, noted an overdependency on the media and failure to read the disaster from a human behavior perspective:

We focused assets and resources based on situational awareness provided to us by the media…, frankly. And the media failed in their responsibility to get it right. …we sent forces and capabilities to places that didn't need to go there in numbers that were far in excess of what was required, because they kept running the same roll over and over…. and the impression to us that were watching it was that the condition did not change. But the conditions were continually changing (A Failure of Initiative, 2006).

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Yet reshowing the same camera footage was not the most damaging information that government leaders relied on during Hurricane Katrina. More alarming was their acceptance of media reports of looting, shootings, and rape as facts, as further noted in the congressional report:

As discussed in our report, widely-distributed uncorroborated rumors caused resources to be deployed, and important time and energy wasted, chasing down the imaginary. Already traumatized people in the Superdome and elsewhere, listening to their transistor radios, were further panicked.… The sensational accounts delayed rescue and evacuation efforts already hampered by poor planning and a lack of coordination among local, state, and federal agencies…. Government at all levels lost credibility due to inaccurate or unsubstantiated public statements made by officials regarding law and order. But it's clear, accurate reporting was among Katrina's many victims. If anyone rioted, it was the media. Many stories of rape, murder, and general lawlessness were at best unsubstantiated, at worst simply false (A Failure of Initiative, 2006).

One of the worst technological accidents in history—the radiation accident in Goiânia, Brazil, in September 1987—provides a useful illustration of the unusual behavioral reactions that can accompany unconventional or novel threats

and overwhelm local response capabilities. In that incident, two men scavenged a radioactive device, part of a radiation therapy machine, from an abandoned medical clinic near Goiânia, a city of 1.2 million with a metropolitan area of more than 2 million people surrounding it. They then brought the device into their homes, unaware that it contained a "hot" source of cesium-137. After they noticed a blue glowing light coming from the device they called friends and neighbors to see it and to take pieces from it to paint their skin with glowing blue powder as they did at carnival time.

Several of the people who had handled the radioactive material became ill, but were initially misdiagnosed with other conditions ranging from allergies to tropical diseases. Within two weeks, many others also became ill. As word of the radioactive contamination spread through the city, thousands swarmed hospital emergency rooms and clinics to seek radiation screening or treatment for real or imagined symptoms. To handle this surge, the government opened the Olympic soccer stadium as a screening center. As psychological terror gripped the region, nearly 112,000 people came forward to be screened.

Realistically, the number of people who should have been worried about exposure was in the dozens or perhaps hundreds, but the more than 100,000 "worried well" overwhelmed the medical services. For every 500 people screened, only one was actually contaminated, resulting in a 500:1 ratio of psychological to medical casualties. Most striking is the report that of the first 60,000 people screened, nearly 5,000 (8%) had the signs and symptoms of radiation illness although not a single one had actually been contaminated (Becker, 2001).

Research into human behavior in different event types supports the idea that people's reactions are largely influenced by the sort of disaster or emergency situation they are confronted with and that there is no "one-size-fits-all" or universal response to disasters. One fact is clear, however: in many disasters and health emergencies, including those involving chemical, biological, radiological, or nuclear materials, there is likely to be an overwhelming behavioral response that will greatly increase demands on various resources and systems. For example, research into the March 1995 sarin gas attack on the Tokyo subway system documented a 4:1 ratio between psychological casualties (i.e., acute anxiety, psychosomatic symptoms, etc.) and medical casualties, creating complex challenges for emergency managers and responders (Kawana, Ishimatsu, & Kanda, 2001) In Israel during the 2000 uprising of the Palestinians (the Second Intifada) the ratio of people reporting to hospitals after a suicide bomber attack at times approached a ratio of one fatality to 15 people suffering emotional reactions (Lahad & Ben Nesher 2008).

Planners and responders can benefit from the knowledge that in many disasters and health emergencies, an overwhelming behavioral response is likely if the threat is invisible or horrific or media describe its impact to be potentially deadly. Increased demands on various resources and systems are to be expected, and if the threat is prolonged there may be a second wave of patients seeking help in emergency rooms.

In all disasters, the need for a professional consultant on human behavior across all phases of an emergency and at all levels of crisis decision making is very evident.

THE EMERGENCY BEHAVIORAL MANAGEMENT SYSTEM

In recognition of the critical role of behavioral response in all phases of emergency management (Figure 1) and the importance of mitigating the psychosocial consequences of disasters and mass violence, we suggest that an emergency behavioral management system (EBMS), focusing on the psychosocial aspects of disasters and including defined roles for emergency behavioral officers (EBOs), be further developed and integrated into the current models of emergency management now in place.

The task of the EBMS should include (a) advising policymakers, (b) building databases, (c) developing tools and methods to analyze information in "real time," and (d) coordinating agencies and services dealing with the public during normal times so that the response during the emergency will be well organized and resources will be better used. With terrorist attacks, it must take into account additional considerations, including the public's reaction to the perpetrators (such as the wish for revenge, which is not always directed at only the perpetrators) and the altered perception of what constitutes a safe activity (such as fears of traveling on a bus and eating in a café). The EBMS should function at all levels: (a) headquarters (decision makers), (b) intervention teams, and (c) ground level (in the community). At the local level, it should adopt the concept of "helping the public to help themselves"; that is, enhancing "motivational resiliency" and the concept of "assisted coping" (i.e., doing *with* rather than doing *for* people to foster a sense of self-efficacy).

We recommend adapting the existing Israeli model and building on nascent U.S. models of integration and coordination of EBMS teams with existing welfare, health, education, community services, nongovernmental organizations (NGOs), clergy, and other cultural services, as well as public information, shelters, and mental health services. In the community response teams (CRTs) model that was developed and implemented in Israel, a small team of community leaders, activists, and professionals prepare themselves to run that community in the face of disaster. This model is applicable in small communities where the CRT coordinates help by providing training and activating volunteers (e.g., teachers, nurses, social/community workers/mental health workers, technicians, etc) so that these remote communities will maintain their routine until further help will come. We recommend that this model be adopted by small, remote communities that may be subject to disasters and where distance or scarcity of professional help necessitates a locally led response (Brender, 2001; Gilad & Cohen, 1988).

Figure 1. Phases of emergency management

Phase-Specific Integration

Disaster mental health research and observation have long suggested that for mental health interventions to be most effective they should begin early and be ongoing. Quick initiation of mental health interventions in the wake of a disaster requires that the guiding concepts and implementation mechanisms be embedded in the overall design of disaster and emergency management in any given jurisdiction. For disaster management efforts to be most effective, disaster and emergency-related policies, plans, procedures, and exercises must be based on reality; that is, on how people are most likely to behave in a crisis, not simply the planner's assumptions. Plans based on an inaccurate or incomplete understanding of human behavior in disasters can lead to critical errors in planning and response. Flawed plans can be ineffective, inappropriate, and even dangerous (Crimando & Wainschel, 2010).

Phase-Specific Applications

Mitigation

In the context of emergency management, mitigation refers to actions taken before a disaster to reduce the likelihood or severity of the incident if and when it occurs. However, the mitigation phase actually falls between the preparedness and response phases because mitigation efforts can be both proactive and reactive. In proactive applications, community leaders and planners using hazard vulnerability assessments and other similar methodologies attempt to forecast the types of disasters that may befall their jurisdictions, as well as the probability and severity of such events. The results of such assessments then inform preparedness efforts. In reactive applications, the lessons learned from recent crises are organized into corrective action plans used to identify and fill gaps that contributed to or compounded the effects of most recent disasters. Applying both approaches, proactive and reactive, is generally considered the best way to fortify mitigation efforts.

Much of the focus of mitigation is on physical concerns, such as hardening the likely targets of terrorism or reinforcing structures to withstand storms. Over the past decades there has been an increasing awareness of the importance of fortifying individuals, families, and communities to better withstand the effects of natural, technological, and human-caused disasters. This fortification is often referred to as resilience: an elastic quality of bending with and bouncing back from threatening or damaging events.

Resilience is a significant factor in coping with the psychosocial consequences of disasters and terrorism.

Resilience is a significant factor in coping with the psychosocial consequences of disasters and terrorism and plays a role in reducing mental health casualties. Adverse or ineffective behavior during and after a disaster may impede emergency response and recovery efforts and lead to more harm, both physically and psychologically.

Recently the U.S. Department of Homeland Security has developed a dedicated Human Factors-Behavioral Sciences Division within the Science and Technology Directorate. Its mission is to apply the social and behavioral sciences to improve the detection, analysis, understanding of, and response to homeland security threats and to enhance preparedness and mitigate impacts of catastrophic events by incorporating social, psychological, and economic aspects of societal resilience.

Although the focus on resilience-building is somewhat new in emergency management circles in the United States it is well established in Israel. The CSPC was a pioneer in developing an overall framework for resiliency and coping based on the integrative model of resiliency known as BASIC Ph (Lahad, 1992). This model established a paradigm for understanding how a community copes and is the basis for communicating with decision makers and the public and for using the media as a source of support (Lahad, 2005).

The community resilience center model is a recent development in crisis management, which was formulated by CSPC and adopted by the Israeli Ministry of Welfare in 2003 (Lahad & Ben Nesher, 2008). The center is intended to be a focal point for resources and coordination between government and local, regional, and national voluntary organizations; its goals are "developing and advancing community activities, improving resilience, and treating crisis situations from an interdisciplinary vantage point, that seeks to galvanize a community's potential and to encourage residents to act to change their situation, to take responsibility, to be active participants and to help themselves and others to develop coping resources under the direction and supervision of the welfare services in cooperation with other bodies" (Lahad & Ben Nesher, 2008, p. 5).

Nine community resilience centers have been operating in Israel since 2007. Each is made up of the following interdisciplinary teams: a security committee, a community development team to provide physical/psychological support, a psycho-trauma treatment team to treat special needs groups, absorption, community information and communication, an economic/social team, a fundraising team, an education team, a culture and leisure team, and a training committee. Five of these centers have already been tested in real crisis situations and were very effective in coordinating and managing the psychosocial needs of the communities through deploying trained community workers, activating hundreds of volunteers, operating the psycho-trauma center, coordinating the involvement of NGOs and other donations from the outside, operating help lines and information centers, running alternative education and schooling activities in shelters, and providing basic needs to vulnerable populations.

Preparedness Phase

In the preparedness phase it is important for planners and decision makers to collect relevant information and data regarding culture, faith, socioeconomic status, and the rituals and norms of the population in the region; available psychosocial, health, and faith-based services; community leaders; and media and other forms of communication available in the area. Mapping these services, keeping in contact with the major service providers, planning for their roles and functions, and defining the types of communication/information that will be expected of them during an emergency are the major tasks of the EBO and the EBMS. Having such information during a disaster heightens the commanders' and the command structure's overall "situational awareness."

Preparedness phase activities also include disaster exercises and drills. For drills and exercises to be most effective, behavioral responses must be anticipated and incorporated throughout to ensure that plans will hold up to the realities presented by the likely behaviors of individuals, groups, crowds, and even mobs (Crimando, 2007). Properly designed, behaviorally accurate

exercises provide an opportunity not only to practice crisis leadership, decision making, and tactical response but also to learn the nature of extreme and rare situations—such as a dirty bomb, pandemic, or civil strife—and what the options may be in dealing with the human response to such situations. Accurate behavioral assumptions are critical to response, recovery, and mitigation activities, and commanders benefit from briefings on these matters at the outset of the exercise and throughout it as the exercise scenario introduces new behavioral concerns.

Response Phase

In the response phase there are three potential points of inclusion for the EBO: serving as the liaison officer, as a member of the command staff, and as an asset to the Planning Division. In the typical incident command structure (Figure 2), the liaison officer serves as an information conduit to the incident commander, the ultimate on-the-scene decision maker. Because behavioral information is critical to the decision-making process, the EBO may be positioned to channel behavioral information. Finally, the EBO may serve as a subject matter expert to the Planning Division. In any configuration, identifying a suitable point of entry and appropriate place in the overall command structure for the EBO pre-incident will help expedite the flow of important behavioral information to those who need to know it in real time.

For example, the Rapid Assessment, Deployment and Response (RADAR) team of the New Jersey Division of Mental Health Services-Disaster and Terrorism Branch incorporates the EBO function in overall incident management and response. The RADAR team comprises several disaster mental health experts credentialed and deployed by the New Jersey State Police Regional Operations Intelligence Center (ROIC) in the immediate wake of a disaster or act of terrorism. RADAR team members serve as advisors to the on-site incident commander in determining the likely psychosocial consequences of the situation and in activating the local and state disaster mental support system as needed. The application of a rapid deployment, "tactical mental health" team ensures that decision makers are operating with accurate behavioral assumptions in planning and responding to the incident at hand. In this application, the RADAR team serves as an ad hoc asset to decision makers, but is not necessarily a formal element of the incident command structure in all emergencies or crisis events.

To date, there are hundreds of trained EBOs in Israel and in other countries serving as consultants on human behavior and community stress prevention, but at present the concept remains somewhat novel in the United States.

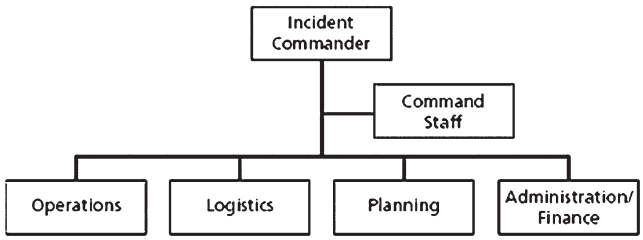

Figure 2. Incident command system structure

Recovery Phase

Recovery from a disaster or crisis typically involves a coordinated effort between the affected population, volunteers and disaster relief agencies, and government entities. A wide range of emotional and behavioral problems can inhibit recovery, and the role of the behavioral consultant, EBO, and/or disaster mental health team is to help accelerate a return to pre-incident baseline levels of functioning as quickly as possible.

The EBO is uniquely qualified to assist leaders and decision makers in developing both short- and long-term recovery strategies by educating them about the various behavioral factors that can inhibit or facilitate a successful, timely recovery. Issues such as trauma-related mental health problems, substance abuse, and relationship difficulties all may be within the scope of the EBO and can help planners gain a more accurate picture of the recovery landscape. Whereas the end of an incident or disaster is very clear to most emergency services, it is not so clear in the psychosocial realm. Taking into account the disaster's ripple effects and the meaning of the catastrophe, the EBMS can suggest a specific point when returning to routine services is declared.

The focus then should be on four areas:

1. The victims and their families
2. The rehabilitation of social and community services (including reopening of schools, community centers, etc.), mobilizing and coordinating resources from within as well as outside help, and paying attention to the family as the smallest community cell
3. Debriefing leadership and emergency service personnel and helping them reorganize for future events, in addition to evaluating the EBMS function during the incident and updating the EBMS method of operation accordingly
4. Celebrating life—encouraging leaders and community services to initiate activities that will transmit messages of resiliency, ability, and hope

CONCLUSION

The human impact of disasters is outpacing our ability to respond effectively using existing models. Recent developments in the behavioral sciences, especially in the area of disaster-related behaviors, have increased the usefulness of behavioral advisors to emergency management leaders, decision makers, and responders by helping them make more accurate assumptions about how people will respond across all four phases of the emergency management cycle. Polices, plans, and exercises that ignore behavioral response invite failure. Leaders need to be aware of likely behavioral responses.

To facilitate the development of the EBMS and integration of behavioral considerations into all levels of disaster response planning, we recommend the following:

- Initiatives to instill a public behavior approach in all models of intervention after a disaster
- Inclusion of a professional behavioral expert and/or team in the standardized framework of decision making at headquarters or command staff levels
- Strengthening reciprocal relationships and cooperation between government, social-community systems, and the defense and economic systems (i.e., public and private sectors)

- Development of a regional/district behavioral system for intervention, support, and rehabilitation that will be able to function even in the absence of or in the event of a delay in response from the local or federal government
- Establishing behaviorally aware doctrines and protocols for local and national mass media during and after a disaster
- Creation of indices according to which community and national resilience may be measured
- Development of standardized measurements for assessing the efficacy of post-disaster interventions;
- Implementation of a standard intervention kit based on an evaluation of which basic services or means are required to ensure the survival of the citizens
- Increased focus on programs to further the concept of individual capability and community resilience for the family and community

All of the above must be predicated on accurate models of disaster-related human behavior, not myths, exaggerations, or speculations on how people are most likely to behave based on the representations of the mass media or movie studios. More people being affected by more disasters means we have to get it right the first time. Misestimating the human impact and response to catastrophic events can no longer be an option.

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