

# PREVENTION STRATEGIES AND PROMOTING PSYCHOLOGICAL RESILIENCE TO BIOTERRORISM THROUGH COMMUNICATION

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## 1. Abstract

This paper examines the challenges that governments and civil society faces in preparing for bioterrorist attacks – the challenges of reporting bioterrorism in the media, the psychological responses that are likely and how to deal with them, how terrorism may disrupt the political processes and how to respond to the needs of the population for calming, and accurate information while minimizing fear states and maximizing compliance with government instructions. It examines the psychological dimensions of mass bioterrorist attacks on the civil population and government responses, working first from the normal government expectation of panic to a more modulated recognition that even when panic does occur, such as increased attachment, cohesive, and supportive societal behaviors in response to disaster situations. Likewise, this paper addresses medical, psychiatric, psychosocial, and informational needs that are likely to be encountered in the face of “invisible” threats and makes suggestions for designing risk communication strategies to address psychological contagion, acute and posttraumatic responses, and to maximize resilience in the face of the increased bioterror threats of today’s world. Today’s terrorists are skillful in their manipulation of mass media to amplify the effects of their attacks. In response, governments must be equally prepared and ready to remain calm and truthful in their communication in times of crisis, and must not compromise the core values of democracy in taking up the defense against terrorism.

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## **2. Introduction**

Of all the weapons in the terrorist arsenal those that involve weapons of mass destruction (WMD) and those that make use of biological, radiological, or chemical threats are the most terrifying of all. Instinctively all people fear poisons and a lethal, or poisoning agent that is unseen and difficult to comprehend can quickly and easily become in the public consciousness an all pervasive threat that seems impossible to protect against even if it has touched only a small portion of the population, or is only a threatened action. Bioterrorism is terrifying not only in the mind of the ordinary citizen, but perhaps even more so in the mind of the scientist, because of the threat of death or serious and perhaps deforming illness by contagion, which spreads spontaneously beyond the original attack – through vectors the terrorists themselves cannot control. In the case of bioterrorism the agent released into society is alive and often lethal – much like the terrorists themselves – and continues to carry out their death threat beyond the original strike. In this case both the media and the biological agent itself amplify the original attack multiplying its terror causing effects. Likewise the psychological contagion that often occurs with the threat of or actuality of a bioterrorist attack is of paramount importance to consider when one looks ahead to how to promote resilience to this type of terrorism. This paper addresses the need for societies to think ahead and anticipate civilian responses to bioterrorism, to design prevention strategies, and promote resilience through communication – in the media and through governmental and nongovernmental channels. In this way society can be prepared to defend against terrorism when and if it does strike.

## **3. Terrorism as a Psychological Weapon**

Terrorism is essentially a psychological weapon waged upon society by unseen and sometimes even undeclared actors who attack civilian populations using various unconventional means in order to create the most horror, fear, and panic possible. In this type of psychological warfare civilians are targeted for political purposes in order to continually create and reinforce in civilian perceptions an ongoing sense of threat and dread – that anyone and anyplace, at anytime can be a victim. By achieving this aim the terrorist can force concessions, withdrawals and win on their deadly battleground. In nearly every case the terrorists' main goal is to hit the largest possible target (symbolically or in the number of casualties) and by doing so use the media to amplify its horror driven message – make your government give in to our concessions or suffer more threats to civilian security. Terrorism is used to create states of fear, horror, and

dread not only in its immediate victims but in its wider witnessing audience.

The emerging threat of global terrorism is one that is dynamic and continually redefining itself in response to counterterrorism measures. The progress and portability of high-tech weaponry and the ability to communicate information quickly (over Internet and telephone) has advanced the ability of small groups to create virtual command centers that can operate simultaneously and cover multiple world regions, and in doing so enact events of worldwide mass terrorism. Moreover biological, chemical, and nuclear WMD – all previously weapons of states – are increasingly coming within the grasp of smaller groups of actors, and terrorists have made clear their desire to obtain and use such weapons.

#### **4. Four Tiers in the Defense Against Terrorism**

In the fight against terrorism societies must prepare themselves for all variants of terrorist attack and institute policies that prevent widespread dread and panic, and promote resilience in the larger civil society.<sup>1</sup> The defense against terrorism is in reality four-tiered. Firstly, it involves investing huge amounts of resources into hardening defenses in terms of securing buildings, airports, and civil military installations. This defense is important in securing key resources. Yet it has been called a placebo response by some because in reality, the entire nation can be a target, total defense is illusory and any death will achieve media coverage – thereby radicalizing public opinion and demonstrating the ineffectiveness of the security forces (Mackenzie, 2006). Secondly, tier of defense against terrorism includes infiltrating and destroying terrorist groups – by discovering and thwarting their plans ahead of time and raising questions about their methods and ideology within the groups (Atran, 2003; Post, 2006).

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<sup>1</sup>Civil society being broadly defined here as the formal and informal structures of society that help shape interactions amongst the population including nongovernmental organizations (NGOs), media, and those intermediary institutions (e.g., professional associations, religious groups, labor unions, citizen advocacy organizations, etc.), which build links between the population, provide information, analyses and political responses, and that give voice to various sectors of society and enrich public participation in democracies.

Of course civil society never acts in a vacuum or completely independent of government hence this paper focuses often upon how the two overlap, including through laws, policies, and instructions from one governing the other, as well as their interaction through the media, the public health service, hospitals, medical institutions, universities, think tanks, foundations, the legal system etc.

Thirdly, for winning the “war on terrorism” societies can defend against terrorism by working to understand and diminish the reasons for popular support of terrorist groups – “debranding” the ideology<sup>2</sup> and looking for and addressing the root causes. Lastly and most importantly for this paper is the need for society to anticipate the responses of its own citizenry to terror attacks of all kinds and build resilience into it so that the psychological effects of terrorism are minimized.

## 5. The New Terrorism

### 5.1. AVOWED INTEREST OF TERRORISTS IN BIOTERRORISM AND WEAPONS OF MASS DESTRUCTION

With the advent of groups like al-Qaeda and the interest in creating terror attacks involving mass casualties and the use of self martyrdom missions many in the terrorism field have begun to speak of a “new terrorism”.<sup>3</sup> Whether or not we are seeing a real break with old terrorists’ methods and goals it is certainly true that today’s terrorists function in a completely new global environment. With the erosion of strict borders between countries (particularly in the European Union) and even world regions (since the fall of the Soviet bloc), the advance and portability of high-tech weaponry including biological, chemical, and nuclear hazards, and the ease and speed of communication through the Internet and telephones for purposes of recruitment, training, and planning terror attacks – terrorists now have a global playing field in which even small groups of individuals can motivate, plan, and enact mass terrorist events. Moreover biological, chemical, and nuclear WMD – all previously weapons of states – not small groups, are increasingly coming within the grasp of smaller groups of actors, and terrorists have made clear their desire to obtain and use such weapons.

The most well-known and perhaps most feared global terrorists are al-Qaeda and its affiliates. Chillingly they have avowed their willingness to use WMD including bioterrorism (Schweitzer, 2003). In addition to the much publicized words of Osama bin Laden in which he stated it was a sin not to make use of such weapons, Shamil Basayev, leader of the Chechen terrorist groups has also avowed his willingness to attack his enemies with the same agents he believes his people have been attacked with including

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<sup>2</sup> I am indebted to Thelma Gillen of the UK MOD for this brilliant idea of attempting to “debrand” an ideology, much like one might attempt to debrand a trademark.

<sup>3</sup> Martha Crenshaw severely criticizes this conceptualization, which she credits to Simon and Benjamin.

bioterrorism.<sup>4</sup> Abu Musa'ab al Suri one of the contemporary al-Qaeda ideologues also advocated the use of WMD and criticized Osama bin Laden for not previously using them (Paz, 2005).<sup>5</sup> Likewise Aum Shinrikyo, a non-al-Qaeda linked group, that was active in Japan aimed to develop such weapons and actually shocked the world with the first mass chemical attack when they dispersed sarin gas in the Tokyo subway, injuring hundreds. Likewise two al-Qaeda affiliate groups were thwarted in their attempts to use a ricin like substance in London and Paris, and a failed biological attack was carried out in the United States when a small anti-government group attempted to contaminate a salad bar with *Salmonella*. So clearly there is an avowed willingness by today's terror groups to resort to the use of bioterrorism.

## 5.2. INITIAL ADVANCES TOWARD BIOTERRORIST ATTACKS

As far as intelligence analysts have been able to piece together when groups are searching for WMD they have thus far resorted to utilizing state sponsorship, trying to buy materials on the world black market, or resorted to illicit pilferage. When these activities have not worked, terror groups have adjusted their strategies by putting their resources into internal

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<sup>4</sup> Reuven Paz writes, "Abu Mus'ab al-Suri – a former leading trainer and scholar of al-Qaeda, published two significant documents calling for a new organization of Global Jihad: "The Islamist Global Resistance." One was a nine-page letter published in December 2004, and the other was a huge book totaling 1,600 pages about the strategy of Global Jihad... In his open letter to the State Department, Al-Suri talks at length about the importance of using WMD against the United States as the only means to fight it from a point of equality. He even criticizes Osama bin Laden for not using WMD in the September 11 attacks: "If I were consulted in the case of that operation I would advise the use of planes in flights from outside the U.S. that would carry WMD. Hitting the U.S. with WMD was and is still very complicated. Yet, it is possible after all, with Allah's help, and more important than being possible—it is vital." Al-Suri states that "the Muslim resistance elements [must] seriously consider this difficult yet vital direction."

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research and development (Hoffman, 2005). The Aum Shinrikyo group recruited and hired highly trained Russian scientists and set up a highly specialized laboratory. Likewise, information discovered in Afghanistan makes clear that al-Qaeda was engaged in a serious effort to develop a usable chemical and biological weapons capability. Seized materials include films of tests carried out by al-Qaeda operatives showing that the group achieved their goals enough to having reached the stage of limited testing of agents on live subjects. In the United Kingdom and France terrorists groups have utilized crude recipes for biological agents such as ricin (Hoffman, 2005; Schweitzer, 2003). In the thwarted UK case the group planned to smear small amounts of ricin on the door handles of random vehicles and thereby hoped to create mass hysteria from a few deaths rather than enact a mass killing.<sup>6</sup>

### 5.3. UNDERMINING PUBLIC CONFIDENCE AND CREATING MASS ANXIETY WITH BIOTERRORISM

Terrorists have certainly observed that it is possible to undermine public confidence and create mass anxiety responses by simple and even limited dispersal of a biological agent. The huge public reaction to the anthrax attacks in the United States (and indeed worldwide when one considers the number of US embassies that were also affected, as well as the many hoax attacks throughout Europe which were taken seriously by emergency providers) included: shutting down buildings; strangling the mail system; workers donning masks and rubber gloves while processing mail; quarantining areas, requiring employees to take precautionary strong antibiotics, public and private stock piling of medicines, and widespread anxiety about anthrax. These responses made clear that one could both undermine public confidence and create widespread mass distress with relatively few anthrax attacks (Hoffman, 2005; Speckhard, 2002a). Likewise the fact that it took 4 months and \$41.7 million to decontaminate the Hart Senate Office Building and nearly \$100 million to do the same in the Boca Raton postal facility demonstrated the high costs of responding to the dispersal of minute quantities of a biological agent. Terrorists learned from these events that rendering an important facility inoperable by virtue of biocontamination can have widespread and devastating social, psychological, and economic repercussions (Hoffman, 2005).

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<sup>6</sup> The so-called Chechen cell of North Africans in Paris were discovered preparing ricin for an attack on the Russian embassy in Paris and the London group had already prepared large quantities of ricin for an unspecified attack.

During the UK trial of the al-Qaeda affiliate leaders involved in the ricin scandal it became apparent that the terrorists were more interested in their ability to undermine public confidence and to potentially create mass hysteria with a bioterrorism attack than in actually enacting a mass killing event. Likewise the Algerian cell's interest in ricin appears to be based in their inability to achieve sufficient media impact using strictly conventional attacks (Hoffman, 2005). Terrorism relies upon making a strong media impact and bioterrorism has that potential.

#### 5.4. MASS BIOTERRORIST ATTACK MAY BE SIMPLY A MATTER OF TIME

While the war in Afghanistan made significant inroads in taking out the main al-Qaeda leadership, its ideology still flourishes and in the absence of a strong centralized leadership the movement has continued unabated. Recruitment, training and perhaps most important, a motivational ideology is daily transmitted globally via the Internet bringing on board a disparate (but unified by a common ideology) group of disenfranchised, alienated, frustrated, and even traumatized individuals living in both conflict and non-conflict zones willing to sign on to support and even enact terrorism. In terms of western security, this is particularly troublesome in Europe where radicalization among disenfranchised Muslim communities appears to be a swelling phenomenon. The unresolved conflicts and human rights violations in Chechnya, Palestine, Kashmir, and now in Afghanistan, Iraq, and Guantanamo Bay as well, all give fuel to the al-Qaeda ideology, which argues that Islam is under attack by corrupt western powers and militant jihad including attacks on civilians and self martyrdom operations is not only justified, but a duty. With the current ease of communication, lessening of technological barriers, convincing ideology, and a ready pool of recruits, it appears that the occurrence of a mass bioterrorism attack may simply be only a matter of time.

Given this state of affairs can we anticipate the responses of our citizenry to bioterrorism and if so how can government and civil society prepare and increase societal resilience to such attacks?

## 6. Unrecognized Resilience in Society

To answer this question we must acknowledge that our citizenry is far more resilient than they are often given credit for. The common view espoused by government officials and policymakers is an expectation that people will panic in the face of a mass terrorist event and that chaos will ensue. Experience with terrorism, however, does not bear that out (Wessely, 2004), although most of our research is based on conventional versus

bioterrorism. In nearly all civil disasters that have been studied by researchers, holding aside the moments of escaping an imminent danger such as a fire, earthquake, hurricane, or bomb – researchers repeatedly have found that citizenry has become quite attachment and community-oriented in times of threat. Total strangers help each other, open their homes, volunteer their resources, and risk their lives to help each other. Society actually becomes more civil during times of disaster as social cohesion increases rather than decreases under threat: in the short-term attachment behaviors generally increase, social cohesion increases, and the heroic is often called forth in ordinary people (Speckhard, 2005a). We have numerous studies that bear this out.

9/11 is a good example. After-the-event interviews of persons involved revealed that people did not take a “me first attitude”, disabled and injured persons were not run over by panicking hordes or left behind, abandoned (Furedi, 2004). On the contrary the 9/11 evacuation was self-generated, orderly, and without panic, and those who were hurt or disabled were carefully and calmly assisted and taken to emergency services (Glass and Schoch-Spana, 2002). The explosion of the Chernobyl nuclear power plant gives us another window in which to view the responses of citizenry in times of mass disaster. When the reactor was about to explode the plant operators did not abandon their posts and flee like cowards to protect themselves. Instead they heroically fought to the last moments to shut down the reactor, to contain the damage – many giving their lives to do so. The Madrid train bombings give us another example. Witnesses state that after the first explosions passengers helped one another and calmly began to exit the scene. Only when repeated blasts occurred did some begin to run. Even then, when it became clear that emergency vehicles were having a hard time getting to the platform, taxi drivers waiting for customers did not flee in fear, but volunteered themselves as makeshift ambulances and ferried wounded persons to emergency care (Speckhard, 2004b). The same happened in the Moscow subway bombings – people walked calmly for long distances in the darkness, helping the wounded to evacuate. When terrorists bombed a crowded rock concert outside of Moscow – the band agreed to bravely play on, the audience followed instructions not to stampede in fear and the wounded were carefully attended to. In the Moscow theater where 800 hostages were held by Chechen suicide terrorists the hostages also remained calm for the most part during their ordeal and helped one another (Speckhard, 2004a; Speckhard et al., 2004; Speckhard et al., 2005a, b). Even in the Beslan hostage taking crisis where hundreds of children were held hostage, water and toilet privileges were withheld, and shooting occurred in front of the hostages – there were only limited outbreaks



of hysteria. For the most part the adults present calmed the children and some extremely heroic behaviors were displayed (Speckhard, 2005c). The London public transportation bombings also met with relative calm, with Londoners quickly resuming confidence in the use of public transportation (Wessely, 2005).

Even under sustained and intense terrorist threat such as what has occurred in Israel during the second intifada (uprising) we witness that the vast majority of the population there has habituated to the threat, certainly making adjustments in daily living to avoid as much as possible their potential for being killed by terrorists – but yet carrying on with life all the same. While the psychological costs of living under a sustained and intense terror threat are still not well understood (likely causing hyperarousal states in many, bodily distress, etc.) we do also see that most of the Israeli population have on their own found ways to be resilient in the face of it. Terrorists aim at creating widespread horror, dread, and fear, and to divide society. However, it is safe to say that despite this when under threat one can see in civil society, at least in the short term that attachment behaviors generally increase, social cohesion increases, and the heroic is often called forth in ordinary people.

While this is true of terrorism that involves bombs and destruction we know less about societal responses to bioterrorism and we may find that the lessons learned from one type of terrorism may not transfer as well to another. We still have not studied well the potential effects of a mass bioterrorism event in which the dread caused by the spread of an invisible, contagious, and potentially lethal pathogen may be horrendous and in fact lead to less resilient responses. In this case the spread of horror from the terrorist attack will be amplified not only by the mass media but also by the many vectors of contagious contact all of which are difficult for ordinary individuals, much less medical professionals to understand and cope with. Likewise trying to contain a potentially lethal contagious disease, that has a presymptomatic incubating period, and that can be spread through contact with others is extremely challenging and requires societal cohesion and compliance with rapidly responding and well-informed government authorities. In this case quarantines and the means of enforcing them, panic-driven hoarding of medicines and overwhelming the medical care services with “worried well” and psychosomatic individuals are issues that we know from other disasters might well occur and, which might severely impact societal resilience. Thus we cannot say in all cases we expect society to be resilient. When it comes to poisons, invisible toxins, and fear inducing contagious illness, we have to look at other incidents to draw lessons.

## **7. Fear of the Unseen and Unknown – Poisons, Toxins, Biochemical and Radiological Agents**

When a threat is invisible and difficult to comprehend, some individuals may be expected to respond with fear, aggression, hysteria, and even psychosomatic symptoms if the fear of a potential toxic exposure becomes overwhelming. Such responses have been witnessed in many events and are well documented in the literature. After the Goiania radioactive incident (Brandao Mello et al., 1991), following Chernobyl (Bromet et al., 1998; Green et al., 1994; Havenaar et al., 2002; Speckhard, 2002b), and after the sarin attacks in the Tokyo subway, medical systems were briefly overwhelmed by thousands of individuals who feared that they had the symptoms of poisoning, many who became psychosomatically ill. The explosion of the Chernobyl nuclear power plant was perhaps the most serious “invisible” threat to date. Likewise the Bhopal and Goiania and other similar incidents give us additional information making clear that there are unique psychological and fear responses to “invisible” toxins, poisons, and contaminants, as well as the widespread dread of pervasive and random threat that accompanies conventional terrorism.

## **8. Psychosocial Contagion**

Not only is disease contagious but psychosocial phenomena can also spread as infectious through populations as biological agents, sometimes wreaking as much havoc with health as the disease agents themselves. The processes whereby emotions, attitudes, beliefs, and behavior are spread, transmitted, and even leap between populations, similar to other contagious outbreaks like measles, chicken pox, or even the common cold is referred to as psychological or psychosocial contagion. Psychosocial contagion moves from person to person, often times requiring only a single exposure.

Categories of contagion important for understanding potential societal responses to bioterrorism include emotional, behavioral and aggression contagions. Mood, fear, and anxiety states can be transmitted quickly through a population as humans tend to synchronize their facial expressions, voices, and postures with those in their immediate environment taking on fear and distress states when they witness these in those around them (Behnke et al., 1994; Hatfield et al., 1993; Hsee et al., 1992; McDougall, 1920). This is particularly true of children. This synchronization can occur in response to viewing live footage in the mass media and may be one of the modern day mechanisms for rapid transmission of emotional contagions.

Behavioral contagions can also occur. For instance individuals exposed to violations of rules often increase their likelihood to engage in a similar or

identical behaviors (i.e., speeding, delinquency, criminality, teenage smoking, youth sex, substance abuse) (Connolly, 1993; Ennett et al., 1997; Jones, 1998; Jones and Jones, 1995; Rowe et al., 1992). These two contagions – emotional and behavioral likely explain the psychology behind the hysterical buy out of duct tape in the United States when word got out that the Homeland defense report had made mention of duct tape as a useful means of protecting oneself from chemical and biological attacks. Similarly it can explain in part why many Americans were massively noncompliant and failed to heed public health officials instructions not to stockpile Cipro (flaxocin) the antibiotic used to treat anthrax, instead of following a general panic among many to buy out unnecessary antibiotics and perhaps by doing so deprive those truly in need of them. If the anthrax attacks had been widespread, this may have caused significant hardship for some.

As of this writing, we see the dread and dismay caused as Avian flu makes its way westward, with many citizens overly worried and rejecting poultry products and others noncompliant due to economic concerns of losing livelihoods, with the long-term health and economic consequences still unknown. Certainly governments must plan ahead for how they would handle issues of quarantine if it were needed and work beforehand with the public to get their participation and acceptance for plans, as well as with the media, police, military, or national guard units that would be responsible for reporting on and enforcing quarantine so that as much as possible contentious issues are dealt with and anticipated beforehand. Even rehearsing how a decontamination unit would function in a mass terror setting is important for small but crucial issues like deciding does everyone who goes through the unit have to strip naked and if so can provisions be made for segregating the sexes – a difficult issue for those for whom modesty is a key value; how do decontamination units handle the need to give up contaminated items including car keys – raising the issue of how does one get home; or how to handle the surrender of contaminated mobile phones – creating stresses and tensions for family members who can no longer check on and reassure their loved ones. Small but crucial issues like these if anticipated and thought through beforehand, with useful remedies built into the response scenarios can be arranged for the least stressful responses. New models of readiness are necessary to counter this threat especially when it pertains to biological terrorism because biological contamination raises unique and difficult issues, differing dramatically from other types of terrorism.

As psychological contagion is a very real response to the potential of toxic exposure, medical systems should prepare ahead for massive onslaughts of the “worried well”. The severe acute respiratory syndrome (SARS) virus crossing from Asia to Canada in a very short time – shutting

down an entire city; the *Cryptosporidium* epidemic of 1993 in the state of Wisconsin; and the current epidemic with avian flu makes clear that huge number of people can be affected when a bio-threat spreads quickly through a community and that these threats raise difficult psychological and medical issues (Glaser, 2004). Governments and media must work together preparing ahead of time on how to communicate calmly in such crises in a manner that will offer useful preventative measures, minimize the potential negative effects of psychosocial contagions (including citizenry becoming noncompliant and aggressive), prevent mass sociogenic illness from occurring, and prevent overwhelming of the medical systems by those whose emotional state has put them in need of medical care. In the case of bioterrorism as we shall see this is no easy task.

## 9. Mass Sociogenic Illness

In its extreme form psychosocial contagion can spawn mass hysterical contagions or mass sociogenic illness – that is, the rapid spread of illness signs and symptoms, which has no physical basis for the symptoms and no known exposure to a pathogen (Bartholomew and Wessely, 2002; Cohen et al., 1978; Kerckhoff, 1968; Marsden, 1998). Hysterical contagions involve the spread by contact, including mass media exposure, of reported symptoms and experiences usually associated with clinical hysteria (hallucinations, nausea, vomiting, fainting, etc.) in the absence of exposure to a pathogen. Such illnesses often begin with exposure of a limited group to a biological contagion or chemical toxin with the others around these persons or learning of them responding hysterically with some form of nervous excitation, including a significant loss or alteration of function, and physical symptoms with no basis in physical etiology. These types of illness often affect members of a cohesive group although they can leap across groups when common links are made in reality or imagination. Such links are often made through the mass media in which one quite limited group of individuals is actually exposed to a biological or chemical toxin and has real symptoms but other groups fear that they too have been exposed.

Study of these types of contagions has found that exposure to the verbal reporting of symptoms rather than exposure to the symptoms themselves was enough to pass it on to others (Colligan and Murphy, 1982), which makes it clear that responsible and nonhysterical news reporting is very necessary to contain such contagions. Often there is a sensitizing issue that makes populations vulnerable to psychogenic illness. In Belgium in 1999, a mass sociogenic illness occurred in response to tainted Coca Cola that gave off harmless fumes, but caused psychogenic symptoms in schoolchildren

and members of the general public. This may have occurred because the Belgian public had been sensitized by serious food scares during the previous year involving dioxin contamination in the food (Nemery et al., 2002). Research has also shown that when one group feels under attack by an enemy it is much easier for the symptoms to spread as the “victim” group finds it easy to believe that they have been poisoned by their enemies (Bartholomew and Wessely, 2002). This occurred in Palestine (Modan et al., 1983), Kosovo (Hay and Foran, 1991), and recently in Chechnya.

Recent evidence indicates people do not even have to be present at a terrorist event to experience posttraumatic symptoms (Speckhard, 2002a, b; Speckhard and Mufel, 2003). Likewise, numerous studies have shown that television coverage had a profound impact on children after the Challenger explosion (Terr et al., 1999), the first Gulf War (Cantor et al., 1993), and the Oklahoma City bombing (Pfefferbaum et al., 2000; Pfefferbaum, 2001). The impact of the 9/11 attacks was reported as far away as Italy (Apolone et al., 2002) and India (Ray and Malhi, 2005) and was acutely experienced by expatriate Americans in Belgium (Speckhard, 2002a, b; Speckhard and Mufel, 2003). In these studies, media and, particularly television exposure, was an important predictor of stress or traumatic symptoms in the face of terrorism second to geographic distance from the attacks. We must recognize that graphic images have the potential to be traumatic in themselves in terms of their potential to create a “witnessing” experience of trauma and their constant replay can also become traumatic reminders, resulting in persistent reexperiencing and hyperarousal symptoms (Hayez, 2001). Personalizing the event and reflecting on oneself as a potential victim also proved to cause stress symptoms (Dixon et al., 1993), something that can also occur via televised images.

## **10. Mass Media’s Role in Mediating Emotional and Behavioral Contagions**

Terrorists’ goals are to spread horror in behalf of their political cause and they reach their goal of maximum psychological impact through their manipulation of the mass media. The media, which is in a sense symbiotic with all the horrors of the world, generally responds within minutes of any terror attack and coverage begins immediately. In the case of a mass terror attack, the “talking heads” follow shortly thereafter. In most cases of mass terrorism it will be through these channels that the population will learn what has happened and form their attitudes about how bad it is, what the potential effects are, what they should do, and what they should fear. It is at this moment that governments can make or fail to make crucial

interventions to the resiliency of civil society – by what they communicate or fail to communicate.

Journalist Robert Frank points out that in a disaster situation people often “only recall from the peak moment, in the peak intensity, and far less attention is paid to the more accurate picture that emerges over time.” This then according to Frank, “creates a predisposition to think a certain way before the facts are fully presented and afterward then only to listen and retain those that confirm what was previously believed.” Unfortunately journalists are under pressure to get stories quickly and report the news with insufficient information. Frank goes on to state, “It is however, very, very seductive to news-workers to appear knowledgeable when you are not” (Speckhard, 2002b).

Certainly the emotional and behavioral response of citizenry to an event of bioterrorism will depend in part on how well and calmly government communicates the events to citizens and directs them in useful activities rather than leaving an information vacuum for the media experts or “talking heads” to fill with emotionally fearful information. If governments wish to avoid such consequences and compete with the unbridled freedom of mass media to form public opinions they must be prepared and have their own “sound bites” and “talking heads” prepared well ahead of a disaster, otherwise the mass media will fill the vacuum. While the practice of journalists presenting incomplete stories with only half fashioned facts is unlikely to disappear, government and the public health systems have a responsibility to prepare ahead of time and be ready to provide psychological triage – both through the media and in person for the worried well and psychosomatic individuals who will likely overwhelm the medical facilities. In the short term government and experts credibility is crucial. Once that is lost it is very difficult to calm arousal states in individuals who will not believe competing information from that they already took on board.

Terrorists thrive on creating a mental environment in which citizens live in fear and dread of the next attack. Civil society can do a lot to fight this type of psychological tactic. One of the most important ways is for those in charge of information to be well prepared and to speak in a reassuring manner about what is both known and unknown, giving essential information but not creating a sense of constant danger. This is a difficult but necessary balance to strike.

In providing psychological reassurance over the media, government needs to think ahead of time to taking advantage of the new technologies as well – particularly the Internet. In today’s world we must recognize that many people will instantly log onto the Internet in search of information and that rumors will abound. Public health officials should have already

prepared and be ready to launch (or have already launched) reliable and useful information via the Internet and through all other channels of mass media to reassure the public and instruct them for the most protective responses. Likewise government can make use of mobile phones, computers, and hand held devices that can receive transmissions with messages specifically aimed at them by virtue of where they are presently located. In the case of a contagious outbreak it is possible to transmit information regarding advisories of where not to travel and information about which hospitals and clinics in the area are free versus overwhelmed and general health care advice for that regional area (Hopmeier, 2006). In this case credibility is crucial. Government must be very careful from the beginning to not lose the trust of the public in announcing what is known and still unknown, and to address psychosomatic responses in a meaningful way that differentiates them from the actual illness in question.

While state control of media is an anathema to those who hold dear the rights of free press and freedoms of speech, the media can take actions collectively to self censor sensationalist reporting that continues to ratchet up fears. Government spokespersons can put fears in perspective reminding people not to generalize from one event to all potential possibilities. For instance, following the February 2004 Moscow subway suicide bombing that killed less than 200 persons, Moscow's Carnegie Center Dmitri Trenin stated, "Every time I go down into the underground I wonder if I will finish my journey. Now nine million people feeling they are playing Russian roulette" (Ostrovsky, 2004). While this was a statement of his feelings, it reflects the sense of psychological contagion that can occur when nine million people fear an event that affected only a very small proportion of their total. Statistically the dreaded terror event is much more unlikely to happen to them than many other ordinary horrors that they forget to fear. The same occurred with the sniper in the Washington area in the fall of 2002, with fear of a deadly but highly unlikely threat nearly paralyzing a huge metropolitan area. Terrorists win when they can create a sense of dread of a pervasive and random threat – one that can strike anyone, anywhere at anytime. Invisible threats – as involved in bioterrorism have the most likelihood of achieving this goal.

## **11. The Importance of Calm and Truthful Communication in Times of Crisis**

The Chernobyl disaster is probably the most well-known example of an abysmal failure by government to communicate and protect its citizenry and the effects of this failure are still felt today. Twenty years later the

population has still not recovered from fearing what their government failed to protect them from and many individuals disregard competing causes for illnesses such as alcoholism, pollution, stress, poor nutrition, etc., with nearly every birth defect, many serious illnesses – especially cancer, and even symptoms of minor distress in the region still suspected and blamed on Chernobyl (Speckhard, 2002b, b).

Most of the potential bioterrorist threats are clear – although the uncertainty lies as to where, when and how. Thus it is possible for government to think ahead to what the population needs to know to respond calmly and with insight. Indeed it may be wise to be already letting people know that smallpox vaccinations work even after exposure, that anthrax can be lethal upon direct exposure but is not spread infectiously. These bits of information can lay a foundation for calm responses, should the dreaded event occur, and create confidence that one could survive.

In the wake of an actual mass terror event it is wise if the government has prepared ahead of time on who will speak and given some thought, not only to the facts that must be relayed, but also to that *how* the message is relayed is often as important as the message itself. The emotional tone of the message can create fear or calm. The Israelis' success during the first Gulf War (1991) when the population was being bombarded by Scud missiles and directed to don gas masks (including putting them on small children), and retire to safe bio-sealed rooms in the event of a bioterror attack depended in large part on the preparation taken beforehand by government to disperse gas masks and to teach individuals how to take preventative measures to respond to bioterrorism. Likewise Israeli Army spokesman, Nahman Shai, whose task it was to announce to the citizenry instructions to don gas masks and go to shelters, performed this duty in such a reassuring manner that he is still remembered fondly. In providing this anxiety inducing information at the moment of imminent attack his voice remained so calm and soothing as did his demeanor that he was later nicknamed the “the valium of the nation.”

Likewise when the decision was made in Israel to inoculate first responders (i.e., medical personnel, police officers, public health teams, and army soldiers) to a potential bioterrorism attack involving smallpox the fear surrounding doing so was addressed by the general director of the ministry of health, Boaz Lev, going on television and being the first to take the inoculation – showing by example that he had faith that it was worth the risks of doing so. This is a heroic example of how to communicate calmness in a crisis situation.



Often when a disaster or terrorist event occurs all the information is not known and the greatest psychological issue is about safety and what is next. Frightened citizens want to know what to expect and they need things explained in a way they can understand. This is difficult for government officials who often do not have all the information they need to respond immediately and do not know if the threat is ongoing. In this case it is of paramount importance to tell the truth. Short-term pacifications achieved with falsehood only create mistrust and blame later. It is far wiser to state clearly what is known and to admit what is still not known, making it clear that government is working hard to get the answers and nothing will be withheld to achieve maximum protection for the citizens. When explaining the risks of toxic and radioactive exposures it is important to speak in ways that put the dangers in perspective. Far more people currently die in road accidents than in terror attacks, radiation exposure also occurs normally at the dentist, while flying, etc. People can understand and respond better when risks are explained in terms of comprehensible and clear comparisons.

## **12. Preparation and Decision Making in the Face of Bioterrorism**

Public health systems in the United States at least, have been losing funding in recent years. Without the foresight of politicians, to have made preparatory investments of resources and personnel, they may not be ready to handle a huge public health epidemic, especially one caused by bioterrorism. The equipment and training alone needed to competently handle a bioterrorism attack (in terms of rapid identification and containment) must be anticipated ahead of time and the need for a central command and control, and clear lines of communication often across many agencies must also be determined well in advance. These are lessons we have learned from other terrorist and disaster events. In the Japanese sarin attacks for instance the lack of emergency decontamination facilities and protective equipment resulted in a further secondary exposure of medical staff (135 ambulance staff and 110 staff in the main receiving hospital reported symptoms). The same occurred following Chernobyl.

In a training scenario involving multiple bombs and a potential chemical attack played out at the North Atlantic Treaty Organization (NATO) support facility in Brussels in 2005 numerous personnel who were unaware it was not a real event, were called to the scene – ambulances, bomb detonation, decontamination units, etc. who interacted with guards already present at the unit. It became clear in analyzing the exercise that the various actors could not communicate well, as the handheld radios of the

emergency workers did not coordinate with those in the NATO support facility. It was also not clear who should take charge of the multiple units who converged upon the site and when the decontamination unit did not arrive (it went to another facility by accident) the entire “rescue” was delayed by hours. Likewise the ambulatory contaminated “victims” ran to ambulances who refused to take them – because they were contaminated – and then ran through the neighborhood. Had it been a real chemical or biological attack the contaminant or pathogen would likely have been widely spread.

A similar public safety exercise known as TOPOFF 2 – for “Top Officials 2,” sponsored by the US Department of Homeland Security and State designed to test and improve US domestic response to terrorist incidents, carried out a fictional simultaneous attack against Chicago using pneumonic plague and Seattle using a radiological bomb in May 2003. Similar to the NATO support facility exercise the real first responders were not alerted ahead of time that it was a fictional attack but once on the scene worked simulated crime scenes and treated volunteers pretending to be victims. Nineteen federal agencies, as well as state and local emergency responders from Illinois and Washington, as well as from Canada and the American Red Cross were involved. The exercise provided valuable lessons, including the realization that multiple control centers, numerous liaisons, and increasing numbers of response teams only complicated the emergency effort. Likewise officials noted that it was essential to monitor and correct false media reports that might have inflamed the public to panic (Miller, 2003). Certainly we know from such exercises that resources must be devoted not only to equipment but to careful planning of how to respond well technically and media-wise to terrorist threats, especially those involving radiological, biological, and chemical terrorism.

Most worrisome in a biological attack is the ability of government officials to detect unusual activity – as in new strange symptoms – and act early enough to contain the spread of lethal contagious disease within a geographical and population area in time to prevent mass casualties. This is extremely difficult to do as lethal contagious bioterrorist attacks will follow a trajectory beginning with exposure, to incubation, to latently symptomatic individuals to those who succumb and die. In the event of a biological terrorism attack public health officials working with government will be called upon to quickly identify if they are dealing with a bacteria, virus, or toxin and to identify it as quickly as possible and mount an efficient response. Since biological infections have an incubation period an efficient response could mean cordoning off those who have been exposed and who are potentially dangerous transmitters (vectors) of the

disease. This could mean quarantining symptomless individuals in an effort to make sure that those who have been exposed and could, but are not necessarily proven to, be incubating disease do not spread it to others. It is unclear in a liberal democracy if government officials would be able to establish quarantines that keep people in, much less out, of a zone that has been identified as “exposed” to a lethal biological agent. In these cases one might envision in the United States, the National Guard or police troops called in to quarantine off a subpopulation of highly upset individuals who have families, cares, and responsibilities outside of the zone being quarantined (Pollack, 2006).

Certainly, in such a scenario, we can expect extremely strong fear and anxiety states to be transmitted quickly through the population and much rule-breaking behavior. Whether or not this would mount to the point of contagious aggression is unknown as it has never been well tested. We do know, however, that the contagion of aggressive behavior has been shown to operate in both local and dispersed collectives, particularly within transitory and unpredictable angry crowds (mobs) (Bandura, 1973; Lachman, 1996; Reicher, 1984) and we know from the recent riots in the Islamic world that such aggressive contagions can easily be mediated and whipped up by the mass media.

It is unlikely that democratic governments would ever desire or strive to shut down media reporting of a bioterrorist attack, yet we can learn from other societies that have taken this tact. After the initial stages of the Beslan hostage-taking siege, Ossetian authorities shut down broadcasts from the local television stations in an effort to defuse some of the local tension of televised broadcasting of the event. Likewise psychiatric consultants brought in to help with the siege realized that mothers sitting at home with nothing more to do than agitate and shame their husbands for not going to rescue their children caught in the school building had to be addressed. They organized meaningful tasks for the mothers and opened a briefing center where every three hours or so they gave reports to the townspeople outlining everything they knew about the siege, potential negotiations, the state of the children inside, and so on. While it is unlikely that western countries would follow suit in shutting down television broadcasting, and even in Beslan, cable networks, Internet, and radio continued to broadcast in the area, it is useful to think ahead on how to work with the media and how to give citizens useful tasks to help them be empowered to be heroic in a crisis versus feeling helpless and frustrated with a sense of powerless inactivity.

Government decisions on when and what to tell, regarding attempts to contain the threat using quarantine strategies, whether or not to take action

in a bioterrorism attack during the period of incubation when there are still no casualties, how to educate now and during the crisis, decisions about putting resources into the public health system, making sure medicines and vaccinations are available and dispersed fairly – are all public policy issues that should be ethically addressed well ahead of time. Active public participation in such plans creates a societal investment in carrying them out. If this work has not been done ahead of time it may result in less complaint, less cohesive, and less resilient responses to terrorist threats.

### **13. Psychological Triage for Acute and Posttraumatic Stress**

While civilians are more resilient that given credit for, a proportion of individuals will predictably suffer from symptoms of acute and posttraumatic stress when exposed to violence and death in a terrorist attack. While many of these responses are short-lived and resolve themselves through normal coping channels, some do not. The nature of a bioterrorism event, however, is less likely to result in acute posttraumatic stress states (unless there are massive numbers of deaths) than one might expect when the attack involves an explosion or other act of mass violence because the traumatic stressor is *information* versus a witnessed trauma. This is the difficulty inherent in dealing with “invisible” stressors, such as toxins, pathogens, and contaminants – they create fear, horror, and dread but there is often no clearly defined event to address, but instead an amorphous and undefined emotional horror.

Acute stress responses to a bioterrorism attack are much more likely to include psychosocial and behavioral contagions including hysteria, somatization, mass sociogenic illness outbreaks, and hysterical and possibly even aggressive demands for medical care, vaccines, and medicines than the acute posttraumatic responses often seen in response to an explosion or an act of violence. In all cases reassuring information and calm responses are the most helpful. There is a strong body of literature that demonstrates that intrusive psychological debriefing applied in a coercive manner in the immediate aftermath of traumas, is neither necessary or helpful, and sometimes even harmful, as most acute and posttraumatic symptoms to terror attacks decline overtime when normal coping channels are utilized (National Institute of Mental Health, 2002). However, this is not to say that the “worried well” or psychosomatic individuals who appear asking for help should not receive psychological triage.

In most cases traumatized individuals and those in high arousal states will respond well to having their posttraumatic and acute stress symptoms

normalized – learning that it is a normal reaction to a traumatic event to feel fear, to even be dissociative if the fear is overwhelming, to experience intrusive thoughts and bodily arousal afterwards, and to engage avoidance strategies to little avail. Learning that these are normal responses to trauma often helps individuals to move beyond them more easily versus get caught up in additional fears and shame over why they are not feeling or acting normal, as well as to diminish the avoidance responses that often occur in those who suffer from posttraumatic reexperiencing (Speckhard, 2002a; Speckhard et al., 2005a, b). Likewise those who have “caught” contagious psychological states and somatic symptoms are often also well served to receive medical care assuring them they are not a victim of the biological contaminate, as well as reassuring them that it is normal for some individuals to “catch” fear states and for these to evidence themselves in the body. In this way the individual is not shamed by having somatized their stress, something most individuals find distressing in itself, but also receives a logical explanation for what is happening in their body – an explanation that if judged as credible (and this is crucial) allows them to calm the bodily arousal that is supporting the negative symptoms. When a sense of humor and normality is introduced, the somatizing response often lessens.

However if the person’s real concerns are not taken seriously, and are ridiculed, he is accused of making up symptoms, ignored or told to go home as nothing is wrong, symptoms can often worsen. Fear states can increase causing further somatization, shame can lead to strong avoidance, and isolation responses or the fear can drive aggressive responses. Thus a balance must be struck between kindly understanding gentle humor to help somatizing individuals to understand how psychological contagions pass between persons, and firm reassurance that they are indeed not infected by the biocontaminate. Of course those who are most distressed and less responsive to short-term triage should be identified and put in contact with helping professionals for longer term care with particular emphasis on those who are seriously dissociative and children with strongly embedded somatic symptoms.

The best ways to ensure that acute stress responses to a mass terrorist event are minimized is to move survivors as quickly as possible to safety and reunite family members. This can be complicated in the event of a bioterror attack as it can be unclear for sometime if it is safe for persons to be reunited and it takes some time to establish when the critical period of attack (and ensuing contagion) is over. Communications in all terror attack scenarios should be calm and clear and everything supportive that can be done to lower physiological states of arousal should be done.

We know that a natural antidote to traumatic experience is attachment – the neurobiology of the latter antagonizes the former – calming and lowering hyperarousal states. Hence behaviors that are attachment oriented – calling family, seeking out contact with others, etc. should be encouraged in the aftermath of a terror event. The Internet may also prove to be a very useful tool in this regard. Following 9/11, numerous researchers made use of the Internet as a research tool and surprisingly found it also functioned as a therapeutic tool – that discussing the issues for many functioned as a social buffer.

In terms of posttraumatic sequelae to bioterrorism there are unique long-term variants that must be taken into account. Those exposed to poisons, invisible toxins, radiation, and so forth often worry less about their “traumatic” exposure, since that was often a non-event for them at the time it occurred, but only took on importance retrospectively when they learned horrifying information about their potential exposure to a deadly contaminant or toxin, which now threatens to poison their entire future. Since horrifying information is usually the central aspect of contamination stressor and there is often an absence of sensory details in the threat, the stressor may be said to be of a more cognitive, but equally horrifying form.

Indeed, victims of toxic disasters often experience horror in their imaginations of the future. For instance, the Chernobyl victim who has a high radiation exposure as a child may continually see himself in the future as a cancer victim, or the pregnant woman exposed to a toxic contaminant may continually flash forward to the birth of deformed child, fearing to continue her pregnancy but loath to abort it. As a result survivors of toxic traumas develop a unique trauma-induced time distortion that is better understood as a “flash-forward” because it is the constant intrusion and reexperience in the mind of a horrifying, inescapable, and life-threatening event that the survivor *expects to happen in the future* as a result of having been exposed to a contaminant in the past. These flash-forwards are made up of repetitive and intrusive thoughts and images (similar to flashbacks) and create acute emotional distress and bodily agitation similar to the hyperaroused state typically observed with flashbacks (Speckhard, 2002b, 2005b). This was quite common among those traumatized by Chernobyl. They did not evidence clear posttraumatic arousal states to the memories of actual exposure but instead displayed them in response to involuntary horrific thinking about the *future*, experiencing intrusive and distressing states about getting cancer, dying young, bearing deformed children, etc. (Speckhard, 2002b, 2005b).

## 14. Support for Vulnerable Populations

There are also vulnerable populations to consider in a bioterrorist attack. Pregnant women are often overlooked in such situations even though pregnancy is known to often be a time fraught with worry about the health of the future child. One researcher wrote that the highest death toll from the Chernobyl disaster was not caused by direct exposure to radiation but due to the huge increase in voluntary abortion following it, even in areas in Europe not directly exposed (Knudsen, 1991). Likewise makeshift abortions were provided for many women in the direct exposure area. The decision to abort is an extremely difficult one for many persons, particularly those with a wanted pregnancy and in instances following toxic exposure is often made in a relatively short time period with the potential for deep psychological distress afterward including impacted grief, guilt, and traumatic responses (Speckhard and Mufel, 2003; Speckhard and Rue, 1993). Given that we can anticipate many of the bioterrorist threats we may face, we should prepare ahead of time, reassuring and giving accurate information concerning the potential desire to abort what may be a perfectly healthy pregnancy, so that unnecessary abortions of wanted pregnancies do not take place.

Researchers of toxic disasters often find that mothers are often more worried about their children's symptoms than children themselves (Bromet et al., 1998). Finding a way to reach out to mothers and reassure them while giving them useful strategies for finding mastery for combating their fears, versus feeling powerless to protect their children, can also be very helpful. Likewise we must address long-term fears of mothers-to-be when contamination of any type has occurred. Girls and young women yet to bear children are often stigmatized after toxic exposures. Not only do they often fear having deformed children, even many years afterwards, but they also often become the victims of the stigmatizing fears of others, which can diminish their ability to find suitable marriage partners. Following Chernobyl, the birthrate in contaminated areas as opposed to noncontaminated areas fell dramatically from 1991 to 2001; an effect which was attributed, as most likely, due to maternal anxiety about birth defects (World Health Organization, 2005) and many young men and women who had been exposed found they were shunned as marriage partners. Worries of being exposed to a toxin, contaminant, or pathogen especially in girls and young women and in regard to childbirth nearly always is an issue that must be addressed even long after the fact of exposure.

Health-care workers are another vulnerable population. They form the front line in an often terrifying scenario caring for individuals who may contaminate them as well. They bravely risk their own health, which many

are willing and able to do by virtue of their training, but this can be especially difficult for health-care workers who are also parents, or who have elderly relatives at home, and who fear exposing their own families. Indeed when the Israelis decided to inoculate their first responders against smallpox the only fatality was a family member of a doctor who ended up infecting his immune-suppressed wife. The horror of potentially contaminating one's own children was voiced by health-care workers after the SARS outbreak, as well as by those caring for contaminated individuals directly after the Chernobyl explosion, with workers saying that was the hardest part of the ordeal for them. We must take into account these very difficult situations our health-care workers will face, and consider ahead of time emergency protocols for childcare for those who take the very front lines in a serious bioterrorism threat, so that they can devote their complete energies to medical care and worry less about spreading lethal and not well understood disease at home. We must also find ways to support and honor heroic health-care workers like those who died taking care of SARS patients, as well as those others who volunteered to help with the SARS outbreak, knowing full well that to do so might be risking their lives.

In the face of a massive bioterrorism threat we should give some thought to preparing psychological triage workers – mental health workers who have been trained ahead of time to sort through psychosomatic symptoms versus those needing immediate quarantine and treatment. Given the thousands of psychosomatic and worried individuals who have overtaken the health-care systems in other similar situations, mental health-care workers can ease the burden on health-care workers and send the worried and hysterical patients home with some calming reassurance, sorting through those who also should be referred for additional psychological assistance.

## **15. Not Losing What We Value Most**

Terrorists achieve their goals when they manage to derail political processes and move democracies to compromise their cherished values. As many terrorist attacks have been aimed at and timed with elections it is wise for governments to plan ahead how to respond when a candidate is killed, when a terror attack occurs during an election and so forth, so that the processes of democracy do not become derailed. The chaos of a bio-terror attack can easily disrupt an election if voters are afraid to congregate in public places. It is wise to have thought ahead of time what the strategy would be for delaying or recounting an election in such a scenario.

Likewise when terrorists exploit the freedoms of liberal democracies it is tempting to surrender civil liberties in order to stop them. While some liberties may have to be suspended to effectively fight terrorism, it is



important to recognize that going too far in this direction – detaining thousands of aliens following 9/11, practicing “torture lite” in detention centers, such as at Guantanamo Bay, abusing prisoners in Abu Ghraib, etc. simply discredits our integrity and plays into the terrorist promoting ideologies that support violent responses against our abuses. These things unleash the terrorists’ justifications for “defending” themselves through the use of WMD including bioterrorism. We need to always occupy the higher ground and continually remind, especially those who support the new “religiously” oriented terrorists, that Islam in particular does not condone killing by poison and that many scholars of the Koran takes a firm stance against the use of such weapons. But such statements fall on deaf ears if we ourselves are guilty of similar violations of morality and ethics.

Individuals need to feel that their world is somewhat predictable and that they have some mastery in it. Bioterrorism involves an invisible threat that can create the opposite feelings: fear, horror, and dread as the actual contaminate spreads by biological contagion, and fear states including psychosomatic responses spread via psychosocial contagion. To defend against bioterrorism government initiatives should have been well thought out ahead of time, include preparatory education and a participatory process of the citizenry, preparation of experts who will be called on to help and work ahead of time with the media who will report the crisis, coupled with leaders whose words and actions inspire the belief that government is credible, calm, and acting in the public’s behalf during a crisis. When leaders are honest, communicate calmly, and have prepared their societies ahead of time to respond well to terrorism, we can expect resilient responses. In times of threat and disaster populations often become attachment oriented and cohesive and heroic behaviors are frequently displayed.

The best defense against terrorism, however, is to address first and foremost the root causes of it and end the motivations of terrorist leaders and sympathizers to kill and destroy. Ultimately terrorism will not disappear until its root causes are addressed. Social injustices that inflame terrorist rhetoric must be addressed as we all work for peace and security in this new uncertain world. Until we achieve the ability to undermine terrorism by addressing its root causes, infiltrating terrorist groups and hardening our defenses we will have to continue to work toward strengthening civil society to be resilient to face this continuing threat. In the absence of achieving this we must prepare our societies with well thought out plans to be as resilient as possible.

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