The Social and Psychological Effects of Bioterrorism

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Abstract: In the absence of substantial empirical data on bioterrorism, two competing discourses have emerged about the potential strategies to address psychological distress. One discourse stresses the innately terrifying qualities of biological agents and argues that the government and public health communities should do more to prepare and protect the public from psychological trauma. A second discourse identifies government and defense/security community as partly responsible for constructing a sense of danger and fear among the general population. This article summarizes these competing schools and recommends emergency preparedness and risk communication strategies that draw on both.

Keywords: bioterrorism, psychological effects of terrorism, risk communication, Cross-cultural communication

Introduction

Although historians have identified the use of biological agents as weapons throughout human history, the concept of biological terrorism did not emerge until the mid-1990s, when the United States’ military began to contemplate how ‘rogue state’ and non-state actors might make use of such weapons. The belief that Iraq might deploy biochemical agents in the 1991 Gulf War, coupled with Japanese cult Aum Shinrikyo’s lethal chemical gas attack in a Tokyo subway in 1995 seemed to be persuasive evidence of a new threat. Contemplating the future, military theorists concluded that, “nuclear, biological, and chemical (NBC) armaments now form a new ‘trinity’ of weapons of mass destruction that threaten to make twenty-first century warfare potentially more costly than anything seen before.” At the same time, the intelligence community envisioned future scenarios in which “the dramatic increase in drug-resistant microbes, combined with the lag in development of new antibiotics, the rise of megacities with severe health care deficiencies, environmental degradation, and the growing ease and frequency of cross-border movements of people and produce” made the possibility of bioterrorism both greater and more dangerous.1

The al-Qaida attacks on September 11, 2001 pitched terrorism to the forefront of American concerns, coloring the response to the anthrax-laced letters that led to five fatalities a month later. Both the government and the media contributed to the convergence of the two events in the popular imagination. Bioterrorism joined global terrorism as an urgent interest in the security community. A few months later, in his 2003 State of the Union address, President Bush proposed Project BioShield, which would provide at least $6 billion dollars to developing countermeasures.

The September 11 attacks made the psychological and social consequences of terrorism newly visible to the United States policy community. The attacks produced a widespread sense of trauma and vulnerability, not only among New Yorkers and those with a personal connection to the victims, but also among those who experienced the attacks through the media [1]. The anthrax attacks appeared to affect an even wider swath of the globe; fear of suspected attacks and outbreaks of mass sociogenic illness occurred on several continents. The severe acute respiratory syndrome (SARS) epidemic that began in 2002 produced evidence of powerful collective emotional responses, including mass flight and rioting in China [2].

The U.S. government’s dedication of unprecedented resources to biodefense, in the context of a more broadly defined concern with terrorism and emergency preparedness, have encouraged the growth of academic literature on psychological effects. Most recently compiled studies on the topic take for granted that there is a moderate to severe risk of an attack and that psychological and social effects stem primarily from the inherently traumatizing nature of bioterrorism. However, a number of analyses question these assumptions to examine how national security, public health and media establishments can help to create a sense of psychological vulnerability in the general public. These analyses highlight how authorities may contribute to creating precisely the sense of fear that they hope to prevent or address. Both viewpoints offer valuable starting points for planning strategies to address the potential psychological and social effects of bioterrorism.

1. Assessments of Psychological Threat in Contemporary Literature

In the absence of substantial empirical evidence, providing definitive statements about the psychosocial effects of bioterrorism has proven to be a challenging task. The paucity of evidence has led researchers to cast a wide net in search of events to compare to a projected bioterrorism attack, including chemical attacks; state uses of biological and chemical agents as weapons; conventional terrorist attacks; nuclear accidents; industrial accidents; and outbreaks of infectious diseases. Although it would seem foolhardy to discount the general lessons to be gained about emergency preparedness and disaster relief, it is not clear that these distinct forms of disaster produce the same psychological effects.

Bioterrorism is often described as having a singular ability to inspire powerful psychological responses. Many researchers attribute the terrorizing capacity to the qualities of biological agents themselves. They are “invisible, odorless, imperceptible
to humans, and their effects are delayed and often protracted....” and might produce “both gnawing doubt over whether one has been exposed and a sense of powerlessness against an unseen hazard.” Moreover, “uncertainty about exposure to a biological agent whether one was directly exposed is likely to increase fear and anxiety among the general public.” The specter of a lethal, invisible alien (pathogen) capable of violating our individual and community boundaries appears to raise a constellation of archetypal human fears that transcend particular cultures. Virtually nothing is known about how these specific qualities might promote specific psychological responses, nor how these responses might differ among various populations with distinct values and histories.

Emotional responses to bioterrorism are frequently considered to be comparable to the responses to a natural outbreak of disease, although there is no consensus. There is research to support the premise that malicious events are more frightening than naturally occurring ones [3], as well as research concluding that ambiguity about the source of disease amplifies fear.

Despite the imprecision of much of the current research, it has had the beneficial effect of broadening the discussion of bioterrorism’s psychosocial effects and creating a basis for planning risk communication, mental health responses, and community awareness. Indeed, individual and collective psychological responses to bioterrorism are increasingly perceived to be so acute that they constitute a distinct risk category, and some researchers, moreover, believe that the psychological dimensions of a bioterrorism should receive greater focus. [4-5]

1.1. Specific Psychological and Social Effects

1.1.1. Individual Responses from Generalized Distress to Post-traumatic Stress Disorder

While there is ample evidence that the perception of a bioterrorism risk causes anxiety and distress, there is limited evidence about how exposed individuals would respond to an attack. The authors of a 2004 compendium of research on the emotional and behavioral impact of bioterrorism found no relevant studies on exposed individuals in actual events, and only a few related to other relevant populations [3].

The evidence collected following the Tokyo sarin gas attacks suggests that psychological trauma would be a substantial consequence of an attack. In that attack, three Tokyo subway lines were simultaneously permeated by the lethal gas, which had been placed on trains in liquid form in disguised packaging such as drink bottles. Gas was released when the packages leaked. Morning rush hour travelers felt the effects of the attacks immediately, and stumbled and collapsed as they exited the trains.

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St. Luke’s International Hospital received 641 victims on the day of the attack. Of those, 111 victims were considered to have injuries serious enough to justify admission (106 were classified as having moderate injuries; 5 were severe).6

According to one account, 33.3% (37) were characterized on admission as suffering agitation [6]. Other psychological symptoms reported by patients in the moderately injured group following their release included “anxiety, fear, nightmares, insomnia, and irritability; of these, five had nightmares and insomnia so severe that they required visits to psychiatrists” [7]. Answers provided by 475 victims a month after the attack indicated the prolonged nature of psychological distress (the 475 respondents represent 77.9% of 610 who were given a questionnaire). Nearly 60% continued to experience psychological distress in some form. The greatest number reported a fear of the subway (52 / 32%) and sleep disturbance (37/ 29%). Other reported symptoms included insomnia, flashbacks, depression, irritation and nightmares that included the presence of monsters, or large rocks dropping on victims. These symptoms and others indicative of PTSD persisted in some patients for six months or longer, and required psychiatric treatment [7].

The imperceptible nature of biological agents and delayed onset of symptoms of exposure may themselves cause anxiety. This can make it difficult for people in an affected area to differentiate between anxiety about exposure and exposure. These ‘worried well’ – as they are often termed – may be viewed as panicking unnecessarily. However, they may not know whether they have suffered exposure. Moreover, they may be suffering physical symptoms [3].

Authorities should consider the possibility that large numbers of those in the vicinity of a potential attack will seek treatment, and that many will suffer symptoms of psychological distress. Over 5,000 people presented for medical treatment following the Tokyo subway attack. Of the thousands of people who sought medical treatment following Iraqi Scud missile attacks on Israel during the 1991 Gulf War, nearly all of them suffered from psychological effects. Forty-three percent of the 773 people hospitalized over the four-week period of the attacks were admitted for psychological stress [8]. People may also respond to hoax attacks with heightened anxiety [9, 14].

Alexander and Klein (2003) compiled a sketch of other potential individual responses to an attack, culled from literature on natural and intentionally provoked events. These included emotional responses such as:

- Emotional numbness
- Horror and disgust at unfamiliar forms of injury
- Anger at authorities for failing to protect them
- Paranoia and xenophobia;
- Loss of trust and increased feelings of vulnerability
- Hopelessness and helplessness
- Survivor guilt [10].

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6 Ohbu et al characterized moderately injured victims if they were immobile or had difficulty breathing were vomiting, had severe headaches; severe or critical injury was indicated by patients in cardiac or respiratory arrest. A third classification of mildly injured victims included those who suffering from eye problems, rhinorrhea (runny noses) and mild headaches.
Long-term anxiety may also result from a bioterrorist attack. Post-traumatic stress disorder (PTSD) is an anxiety disorder triggered by a traumatizing event such as a natural disaster, military combat or exposure to terrorism or other mass violence. PTSD symptoms are distinguished from nonclinical anxiety by their intensity and duration of over a month. In some cases, PTSD lasts for years following a traumatic event [11]. While there is substantial agreement that the psychological effects of bioterrorism could last for years beyond the event, based on the evidence of depression, increased alcohol and tobacco use and PTSD supplied by Oklahoma City survivors and New York City residents following September 11 [10, 15]. There is little understanding of who may be at risk for long-term or especially severe responses to bioterrorism [12-13]; in the cited cases of conventional terrorism, most people recover from anxiety and other symptoms fairly quickly, within a month. Similarly, there is little understanding of which forms of intervention may prove most effective. Delhanty suggests that since most victims of terrorism appear to recover rapidly, that close monitoring for several weeks following an event may be preferable to immediate intervention [12].

1.2. Collective Responses: Mass Anxiety and Mass Sociogenic Illness

The assumption that suspected or actual bioterrorism will provoke collective anxiety is nearly ubiquitous in both specialized and popular treatments of bioterrorism. The proposed consequences of such anxiety could include mass panic, mass sociogenic illness and widespread behaviors that put pressure on emergency medical systems, public transit or food and clean water supplies. Recent disasters appear to bear out the assumption that collective, ‘contagious’ behavioral responses will ensue following an attack. Experts disagree, however, about the meaning and significance of some of these behaviors and about the use of interpreting all behaviors as panicked or irrational. Some make the case that the expectation of panic in the face of disaster is not justified, considering the lack of panic in a wide range of events including gas attacks on various cities during World War II, the sarin gas attacks in 1995, the 1995 Oklahoma City bombing, and the September 11, 2001 attack, among others [8].

The actions of thousands of Beijing residents fearing exposure to SARS in April 2003 were widely perceived and communicated as reflecting panic. The New York Times reported that residents “raced” to local shops for food, and that thousands of people “crowded railway stations and rushed onto buses … ignoring official appeals” [14]. In fact, the decision to flee in the face of consistently untrustworthy information from the government [15] can be interpreted as intuitively reasonable. Glass and Schoch-Spana make the case that when 40% of the population surrounding Three Mile Island evacuated themselves following the 1979 nuclear accident, they were making “a reasonable decision to remove themselves from a situation of unknown and potentially significant risk” (reference) in the absence of good information [16]. The difference between the two events is the SARS virus contagious effects. Clearly, it is crucial that people be made aware of the distinct characteristics of biological agents so that they can make appropriate decisions about how to respond.

Mass sociogenic illness (also called psychogenic illness) is the “rapid spread of illness signs and systems affecting members of a cohesive groups … whereby physical complaints that are exhibited unconsciously have no corresponding organic aetiology” [17]. Symptoms characteristically include shortness of breath, hyperventilation,
headaches, nausea and other signs of stress [8, 10, 18]. Multiple cases appeared in 2001 following the September 11 attack and the anthrax-laced letter mailings, some with large numbers of victims. Over a thousand Manila schoolchildren with flu-like symptoms were brought in for medical attention in October in 2001, following the rapid spread of a rumor by text message [18]. Distinguishing mass sociological illness from exposure to biological or chemical agents is particularly challenging because the symptoms of fear and anxiety, such as shortness of breath, are similar to the symptoms of exposure [17].

2. Assessments of the Construction of Threat and Fear in Bioterrorism Literature

Much but not all of the academic literature on bioterrorism presumes that society’s fear of bioterrorism is the natural outcome of the inherently terrifying nature of biological agents and the uncertain threat of an attack. Some analyses suggest the existence of what may be termed a ‘bioterrorism discourse,’ in which the sum of the actions, rhetoric, resources and research dedicated to bioterrorism mobilize pre-existing fears. In this view, society’s fear of terrorism is not natural, but politically and socially constructed.\(^7\)

When the ‘natural’ qualities of bioterrorism fears are dismantled, it becomes clearer that public fears can be “produced and deployed” by the actions, symbolic gestures and statements of public officials, the media and others.\(^8\) A number of authors point to the use of hazardous materials suits as a symbolic gesture that communicates grave threat. In their examination of psychological impact on thirteen people exposed to suspected anthrax, Mason and Lyons (2003) found that 45% reported a clinically relevant level of anxiety a week after the event. This was a substantially higher percentage than among an unexposed control group, despite the fact that the exposed were informed that the substance was inert within 24 hours of their exposure.\(^9\) The authors conjectured that the response to the incident, which included “removal of the packages by fire service personnel wearing full protective suits and complete chemical decontamination of exposed persons,” might have played a part in creating powerful anxiety [9].

These and other symbolic gestures that encourage elevated fear may have unintended health consequences. A study of 2,700 Americans’ health levels since before 2001 revealed that after the attacks, and for several years afterwards, those who

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\(^7\) The idea of a ‘bioterrorism discourse’ owes much to Joseba Zulaika and William A. Douglass, who coined the concept of a “terrorism discourse” in Terror and Taboo: The Follies, Fables and Faces of Terrorism (New York: Routledge, 1996). Without disputing the existence of political violence, they argued that the category “terrorism” is a way of representing and narrating political violence to serve particular political interests, less than it is a direct reflection of a pre-existent phenomenon. For analyses along these lines about bioterrorism, see Making Threats: Biofears and Environmental Anxieties, Eds. Betsy Hartman, et al., Rowman & Littlefield (2005) and Melinda Cooper, “Pre-empting Emergence: The Biological Turn in the War on Terror,” Theory, Culture and Society 23:4 (2006) 113-134.

\(^8\) Betsy Hartmann, Introduction, Making Threats, 3.

\(^9\) These conclusions were made on the basis of administering a questionnaire linked to symptoms on the Hospital Anxiety and Depression (HAD) Scale. Control data was borrowed from another study of the same population in the same time frame.
feared terrorism the most had a three to five times greater likelihood of being diagnosed with cardiovascular risk. Researchers speculated that constantly elevating terrorist threat alert levels contributed to sustained fear [19].

Symbolic and other direct communication about terrorism is only one of the ways bioterrorism discourse mobilizes fear. Each society’s approach to bioterrorism engages much broader cultural narratives about security and threat, and political as well as mental health. Durodié argues that mainstream bioterrorism discourse exaggerates the true vulnerability of developed Western countries. This is achieved partly by ignoring factors that mitigate the threat, such as the fact that biological agents are not easy to develop and deploy, that they have rarely been used, that there is little evidence as to the psychological effects of an attack and that developed countries’ resources for dealing with bioterrorism may deter an attack.

In addition, Durodié contends that Americans’ magnified feeling of susceptibility to attack both predates September 11 and is “culturally determining, giving shape to and driving much of the bioterrorism agenda. (265). The sources of such feelings are various and range from fears related to social change, globalization and ‘American standing’ in the world to the growing role of a therapeutic sensibility that encourages a focus on human vulnerability [20].

These conclusions point in two directions. For the United States and societies with some similar characteristics, they indicate that greater public clarity about the source of fear and a sense of vulnerability can actually serve to inoculate against some harmful effects of fearing and undergoing a terrorist attack. For other societies, similar analyses of their own cultural contours are indicated, as are the limits of drawing wholesale on research conclusions about the consequences of terrorism that draw solely on the American experience.

3. Strategies for Planning for the Psychological and Social Effects of Bioterrorism

The following planning considerations, culled from the extant literature on bioterrorism and its effects, are divided into four areas: framing, communication, practitioner best practices and community participation. Good communication is the key recommendation in each area. Decision makers and practitioners will be well served by continuing to seek an understanding of the symbolic aspects of bioterrorism—how bioterrorism harnesses social fears, and how an attack might unleash novel ones. Authorities should also recognize that actions as well as words help shape perceptions of an attack, before, during and afterwards.

3.1. Framing strategies

In the social sciences, a frame refers to the conceptual structure from within which people interpret an event. How people respond to a biological attack is likely to reflect preconceived frames of reference. High-level decision makers and communications strategists can benefit from an understanding of how bioterrorism aligns with and intersects dominant social and political narratives.

Framing considerations for the policy community include
• Raise awareness among authorities of current frames that dominate interpretations of bioterrorism. These include: national security, medical, globalization, and social issues. There may be others, and each will have distinct national and cultural contours in different communities. Understand these, more broadly, within the dominant national or cultural historical narratives
• Recognize that the entire range of actions taken in regard to bioterrorism contribute to its social framing. These include legislation, resource allocation, public statements, and emergency preparedness plans.
• Create emergency preparedness and disaster plans that reflect and reinforce intended frameworks
• Remain prepared to modify framing and communication strategies as knowledge and circumstances evolve

3.2. Communication strategies

Framing sets the stage for how people interpret bioterrorism and how they will interpret government and other authorities communications while preparing for or responding to an attack, and it is the first element shaping communication between authorities and the public about bioterrorism.

There are also specific communication tactics that can be taken before and during an event to encourage constructive responses within a victimized community and beyond it. They may be more likely to panic or feel helpless if they do not understand it or feel they have no control over their own safety. If, however, they view bioterrorism as one among other known biological risks, they are more likely to take constructive steps as possible. In their recommendations, Ackerman and Moran point out that “worst case scenarios and highly dramatic – but relatively improbable – potential bio-attack outcomes” dominate the public imagination, and that “extreme portrayals” may compound the psychosocial effect of an attack. They recommend placing the event in the context of similar risks [5].

Above all, it is critical that authorities recognize the importance of communicating early, honestly and consistently with the public to maintain trust, reduce the invidious role of conspiracy theories or rumor, establish order and ensure that victims’ and others’ needs are met. As the chief investigator of the 1994 plague outbreak in Surat, India observed in the aftermath, “Chaos reigned supreme, rumor was the ruler. Lack of accurate information was the bane of the whole thing …. Transparency, be transparent and provide the information. Come out and do not hide …. This should be the public posture all the time.”[10]

• Recognize the critical nature of communication between authorities, between authorities and the general public and between different communities in the public at large

• Prepare a communications and media strategy in advance, recognizing that it may need communication
• Be prepared to provide accurate and trustworthy information. Correct mistakes early.
• Recognize the regional or global potential of an attack, and prepare for communication for different audiences (Ackerman and Moran)
• Incorporate technological assistance into a communications plan. Biosurveillance technologies that help identify the cause of an attack can serve as the prelude for communication (Beaton, et al)
• Communication should continue after an attack. Stein et al note that even several months following the anthrax letters, many Americans were unclear about whether it was contagious.

3.3. Practitioner responses

In the United States, the need for greater mental health preparedness is a recent phenomenon, and there is little consensus as to the specific responses that are appropriate to identify and alleviate psychological distress. Practitioners agree that a visibly sound reaction to the event in the medical community is a crucial step and that more research and involvement by the mental health community will

• Recognize that psychological distress and its physical symptoms are meaningful and legitimate responses to an attack and that they are deserving of the authorities’ attention. Label the system in a way that respects everyone rather than dismissing the concerns of those suffering from anxiety. Hall (2005; see footnote 1) notes that “worried well” is a dismissive term and that other terms may be more appropriate.
• Engage the mental health community into the emergency planning process, as well as others who may participate in psychological interventions, such as community religious leaders, family heads and others
• Create opportunities to attend to the psychological needs of communities that may have special vulnerabilities, including rescue workers and medical personnel providing care, children and those with pre-existing psychiatric conditions
• Hall recommends creating a clinical registry to keep track of those concerned about potential exposure, and observes that it will serve as both psychological and public health needs [2]

3.4. Engage the Community

Most bioterrorism scenarios predict negative social responses. Glass and Schoch-Spana (2002) argue that historically, adaptability and cooperation are the norm [16].
As a result of negative expectations, the public is rarely perceived as a participant in responding to emergencies. They have proposed broad guidelines to ensure that the public is made a partner in bioterrorism planning. Their recommendations include:

- Recognize that panic is unusual and can be prevented.
- Recruit the public as a partner in emergency preparedness. The public – through civic and other groups – can be entrusted to disseminate information, monitor for disease outbreak and distribute medicine.
- “Think beyond the hospital for mass-casualty care.” Hospitals will not be able to absorb mass numbers of exposed or infected victims. Community members can help to identify, assist and care for victims in homes and other locations.

3.5. Regional and Cross-Cultural Considerations

Analyses of the effects of bioterrorism and, more broadly, terrorism in general, tend to speak in universal generalities. American, Japanese, Chinese, British, Israeli and other experiences are examined for their instructive use across cultures and nations. At a fundamental level, this appears to be appropriate. Narratives about the victims of political violence and natural disaster reveal basic human needs such as fear, anxiety, trauma, concern for family and community, the desire for safety and trustworthy communication. Risk-perception research over the last generation reveals that “humans appear to fear similar things, for similar reasons” that include our awareness of a risk, the uncertainty of an event’s occurrence and whether it is catastrophic [21].

Behind these generalities, however, lie specific cultural and political factors that shape expectations and responses to disaster. Israelis’ intense psychological responses to the 1991 Scud missile attacks, such that several people suffocated in gas masks when there was no chemical gas attack, were shaped by expectations unlikely to be replicated elsewhere. They included the expectation that Saddam Hussein wished to tow Israel into combat and a cultural predisposition to fear chemical gas in particular, based on the Jewish experience in the Holocaust [8]. The substantial record of Americans’ distress and sense of vulnerability following the 2001 attacks relates to the specific political and cultural belief that the United States was impossible to harm, preceding the attacks. It is unclear that collective trauma would take the same shape elsewhere. In both of these instances, government authorities and the public shared expectations with their citizens, which suggests that authorities should be especially conscious of the political and cultural assumptions underwriting their emergency preparedness and risk communications planning.

- Recognize that political, historical and cultural factors shape expectations and approaches to disaster and violence.
- When consulting extant research on psychological and social effects of bioterrorism, be aware of cultural assumptions in the research. Where was the research performed, which populations does it concern, what expectations shaped responses to attacks or disasater?
- Examine conventional modes of communication while creating risk communication plans. Considerations include: determining the modes and sources of communication that people tend to trust; levels of existing trust in...
government communication; how community networks function; the existing role of rumor and conspiracy theory in society

- Take into consideration specific community formations when creating emergency preparedness plans. Recommendations in American research that civic groups, religious organizations or other local groups be involved in preparing and responding to an attack may be modified in other settings as appropriate. In some areas, families or other kin structures, informal networks, unions or other professional organizations may serve as responders and conduits for trustworthy communication.
- Coordinate across regions and countries for potential cross-border events or outbreaks.

References


