The Bio-psycho-social Consequences of Terrorism

STEVEN M. CRIMANDO, MA

LEARNING OBJECTIVES

I. To recognize the psychological effects that result from an attack of terrorism caused by a chemical, biological, radiological, or nuclear (CBRN) agent.
II. To describe different reactions experienced by individuals after disasters caused by natural forces and those caused by terrorism.
III. To understand how terrorism can have long-term effects upon individuals and communities.

The ultimate goal of terrorism is fear. Terrorists use chemical, biological, nuclear, or radiological weapons; they inflict damage that is physical and psychological. Terror is fear, and the goal of terrorism is the creation of fear so intense that it disrupts the psychological, social, and economic functioning of individuals, communities, and nations.

All disasters will result in psychiatric morbidity for a portion of the affected population. There is a substantial body of epidemiological disaster literature describing the immediate mental health effects and long-term outcomes of disasters. In a comprehensive review, Norris et al. reviewed two hundred such articles published since 1981 that address the psychosocial impact of disasters on more than sixty thousand people.[1]

The bio-psycho-social consequences of traumatic events have been studied in depth over the past four decades. This research has encompassed the trauma of child sexual abuse, combat exposure, motor vehicle accidents, and disasters that are natural, technological, or terroristic in nature. The traumatic stress responses that follow exposure to life threatening events can be conceptualized as occurring on a continuum, with the diagnosable traumatic stress conditions, such as acute stress disorder (ASD) and posttraumatic stress disorder (PTSD) representing only the extreme end of this range. Most people exposed to traumatic events experience sub-clinical levels of emotional distress, which self-resolve over time. The effect of traumatic exposure varies greatly between individuals and communities and is influenced by social context, biological and genetic factors, past traumatic experiences, and many pre-trauma and post-trauma variables. The literature suggests that terrorism is a special type of disaster known to produce substantially more psychiatric casualties than natural or technological disasters.[2]

Exposure to disasters in general, and terrorism in particular, does not necessarily result in posttraumatic stress disorder or other long-term psychological problems. On the continuum of traumatic stress response, reactions may range from mild, such as those characterized by anxiety, sleep disturbance, and temporary changes in behavior, to the diagnosable psychiatric illnesses.[3] These reactions can be separated into three categories of severity and are useful in guiding intervention strategies:

1. The majority of victims and witnesses to traumatic events experience mild distress reactions. These reactions include a range of physical, emotional, cognitive, and behavioral changes, such as fear and anxiety, insomnia, disturbance in eating,

STEVEN M. CRIMANDO, MA, is a clinician and educator specialized in disaster mental health and traumatic stress. He serves as the principle disaster mental health educator for the New Jersey Division of Mental Health Services and is the managing director of Extreme Behavioral Risk Management LLC.

DISCLOSURE: STEVEN M. CRIMANDO, MA, has no relationships to disclose.

distractibility, and increases in the use of alcohol, tobacco, and other substances. Individuals experiencing mild distress typically recover without treatment, but disaster mental health interventions may help them return more quickly to pre-trauma levels of functioning. Intervention in cases of mild distress reactions include psycho-educational opportunities and group or community support.

2. A smaller number of exposed individuals have more persistent and disruptive symptoms. This group, having a moderate traumatic stress response, reports similar experiences as those in the mild group, but with greater intensity and duration. In this group some of the hallmark diagnostic features of PTSD may be present, such as significant anxiety, emotional numbing, and experiencing the traumatic event in dreams, nightmares, and flashbacks. However, these symptoms are usually not to the degree that meet the criteria for PTSD or other diagnosable conditions. Crisis counseling and other traditional mental health interventions are indicated for those experiencing moderate traumatic stress reactions.

3. Those individuals who go on to develop serious mental illnesses, such as PTSD, depression, and other disorders, are in the smallest number. These individuals benefit from traditional mental health treatments, including psychotherapy and medications and are usually not greatly helped by frontline disaster mental health interventions.

Less is known about the psychological consequences of terrorism that involves the use of chemical, biological, radiological, or nuclear weapons. What is known is based upon industrial accidents, natural disease outbreaks, and the few terroristic uses of CBRN agents. Terrorist attacks such as the sarin gas attack on the Tokyo subway in 1995 or anthrax spores covertly distributed through the U.S. postal system in 2001, have been rare and isolated. Although there have been few terrorist acts involving CBRN agents to date, intelligence agencies in the United States and abroad continue to warn that terrorist groups repeatedly have attempted to acquire or manufacture these weapons. By all estimates there will be an overwhelming need for community outreach, education, and acute mental health care following an act of terrorism using CBRN weapons.

Compared with the weapons of conventional terrorism, such as firearms and high-yield explosives, CBRN weapons are particularly effective agents of terror. The unique terror-producing features of these agents must be understood and anticipated by clinicians and front-line responders in order to address the likely surge in health care–seeking behavior and other complex psychosocial reactions associated with CBRN terrorism. Even experienced disaster mental health responders, skilled in recognizing and addressing traumatic stress reactions, are likely to be unfamiliar with the idiosyncratic psychological response to this form of mass violence. Expert consensus suggests that the nation's mental health, public health, medical, and emergency response systems currently are not able to meet the psychological needs that result from conventional terrorism and that there is an even lesser degree of readiness to respond to the psychological consequences of unconventional terrorism.

Since the September 11, 2001, terrorist attacks, the majority of terrorism-related funding and effort has been directed toward the detection and response to the on-going threat of terrorism. This has involved the procurement of highly specialized emergency response equipment, sophisticated security devices, and focused training for first responders. In comparison, little attention or funding has been directed toward the mental health aspects of terrorism in general, and CBRN terrorism in specific. Despite the imbalance in attention and spending, an act of CBRN terrorism on U.S. soil will, largely, be a mental health disaster.

The threat of CBRN terrorism demands core competencies among all responders, including law enforcement, emergency managers, mental health and public health officials. The Institute of Medicine (IOM) of the National Academies has recommended the use of a public health strategy in coordinating these various disciplines.[5] Further discussion of the unique medical and mental health consequences of CBRN terrorism clearly point to the

need for a high degree of collaboration in addressing these complex emergencies.

Implications of Unconventional Terrorism

The effects of CBRN terrorism are derived from two sources: the action of the substance on the brain and body and the implications of the terrorist act on the human psyche. This form of mass violence is also unique in its capacity to tear at the social fabric of a community that normally would be a source of support in the wake of a disaster. CBRN terrorism could disrupt all spheres of functioning, complicating triage, intervention, and treatment in both the short and long term. Central to this complex bio-psycho-social response are the specific terror-producing aspects of CBRN agents, as well as a wide range of psychiatric symptoms caused by the affects of the substances on the central nervous system.

It is likely that first responders and emergency medical professionals will experience difficulty differentiating between physiological and behavioral changes caused by exposure to a biological or chemical agent and those changes resulting from acute anxiety. Some CBRN agents can induce significant psychiatric symptoms. Certain biological agents may cause infections or toxicity leading to bacterial meningitis or viral encephalitis, causing pronounced behavioral alterations.[4] Exposure to chemical agents, such as sarin, an organic phosphorus compound, result in disorientation, impaired concentration, and drowsiness. Glycolate anticholinergics, such as Agent 15, produce psychotic symptoms in those exposed to this incapacitating substance. Agent 15 (3-quinuclidinyl benzilate), first used as a weapon by Iraq, crosses the blood-brain barrier disrupting central nervous system functioning and causing mental status changes and delirium. Those exposed to Agent 15 can experience hallucinations, paranoia, and other extreme behavioral alterations.[5]

Unlike the weapons of conventional terrorism, CBRN attacks can be considered silent disasters. In most scenarios, there would not be an explosion or other tangible proof that an attack has occurred. A biological attack might not be recognized until several days after the initial event, when public health surveillance identifies patterns of illness or injury. Most chemical, biological, and radiological agents are colorless, odorless, and undetectable without highly specialized equipment. The fact that there is no single impact event to alert the population that a hazard exists, coupled with the invisibility of the harmful agent, has an immense effect on the public reaction to the terrorist event.

The gruesome disfigurement and deformity that may result from illnesses such as smallpox, or burns caused by chemical or radiological exposure, heighten the public's morbid fears. Descriptions of biological or chemical weapons that can kill quickly with frightening manifestations, such as suffocation or seizures, are horrifying and can contribute to panic and hysteria. Media reports and graphic photographs of the physical damage caused by CBRN weapons can further terrify an already vulnerable population.

The emotional impact of CBRN terrorism is complicated further by the delayed onset of physical illness in the case of some biological, chemical, and radiological agents. Individuals who have been exposed to such agents, or who believe they may have been exposed, may present as asymptomatic, but manifest high levels of anxiety about developing illnesses in the future caused by their toxic exposure. In the instance of radiological exposure, individuals may also harbor fears of genetic damage and birth defects in future generations. The chronic anxiety associated with not knowing and constant anticipation of potential medical problems can lead to long-term mental health consequences.

Many of the behavioral effects associated with CBRN terrorism are related to the extreme fear and uncertainty that accompany the incident. Two specific psychological reactions contribute directly to the potential for panic and hysteria, as well as a surge in health care–seeking behavior. The first is the likelihood that individuals will mistakenly attribute their normal physiological arousal result-

ing from the crisis to CBRN exposure. As the population becomes aware of an attack, individuals may report acute autonomic arousal. This is true of both exposed and unexposed individuals. It would be extremely difficult, in the first hours and days of an event, to separate these populations, and the behavioral response may complicate triage and treatment. The misattribution of normal arousal symptoms can contribute to a surge in demand for emergency health care and lead to psychological contagion in a segment of the population.

Mass sociogenic illness is also considered to be likely following a CBRN event and must be a concern for planners and frontline responders.[6] Mass sociogenic illness is a social phenomenon in which two or more people report a cluster of symptoms for which there is no identifiable medical cause. Also referred to as mass psychogenic illness and epidemic hysteria, the potential for psychological contagion is very high following acts of unconventional terrorism.

Community cohesion and social support are critical to psychological recovery following a disaster. Several unique aspects of CBRN terrorism disrupt community cohesion, especially the potential for biological dispersion, the possibility of evacuation from some geographic areas, and the quarantine of exposed people. The fear of contagion can quickly become a barrier to social support and also may force frontline health care providers to rethink the methods of delivery for both medical and mental health services.

Recommendations

Americans and their allies have been exposed to increased levels of terrorism and mass violence during the past decade. Various domestic and foreign intelligence agencies continue to warn of more terrorism to come, possibly including the use of unconventional weapons.

Efforts directed at better understanding the impact of these events and the efficacy of disaster mental health interventions, short- and long-term treatment models, and methods of fostering resilience in affected populations may yield, not only improved approaches to caring for the victims of unconventional terrorism, but may help mitigate mental health consequences and serve as a form of psychological counterterrorism. These ideas must be reflected in preparation, planning, education, training, and service provision evaluation to truly be meaningful. Absent a significant number of episodes of unconventional terrorism, the limited body of research, expert consensus and anecdotal field experience will serve to guide the process of predicting and preparing for such events.

Conclusion

Cross training and the development of meaningful partnerships must take place prior to such an event and can be useful in mitigating the fear, anxiety, and distrust likely to follow an actual incident of CBRN terrorism. Participation in bioterrorism and public health emergency drills and exercises are important for all disciplines to foster a greater degree of interoperability between public health, mental health, and emergency management agencies. Efforts are underway to recalibrate disaster mental health and public health plans to better anticipate and respond to these complex bio-psycho-social emergencies. It is hoped that the lessons learned from 9/11 and the anthrax outbreak, as well as from the climate of ambient fear that followed, will not be lost with the passage of time and that decision makers involved at all levels review and understand the unique demands created by acts of unconventional terrorism. *NJM*

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81. Attacks using a chemical, biological, radiological, or nuclear (CBRN) agent are likely to result in:
   A. Physical harm
   B. Psychological sequelae
   C. Both physical and psychological effects
   D. None of the above
82. Terrorism is a special type of disaster known to result in:
   A. Fewer psychiatric casualties than disasters caused by natural forces or technological failures
   B. More psychiatric casualties than disasters caused by natural forces or technological failures
   C. About the same number of casualties than disasters caused by natural forces or technological failures
   D. An inability to assess the relative number of casualties compared to other types of disasters
83. Traumatic stress responses following an exposure to life-threatening events can result in:
   A. Anxiety attacks
   B. Increased use of alcohol and tobacco
   C. Post traumatic stress disorder (PTSD)
   D. All of the above
84. The majority of victims and witnesses to traumatic events experience:
   A. Post traumatic stress disorder (PTSD)
   B. Serious and persistent mental illness
   C. Mild distress reactions
   D. None of the above.
85. Chemical, biological, radiological, and nuclear (CBRN) weapons are effective agents of terror because:
   A. They can harm the substance of the brain and body
   B. They can influence the human psyche
   C. They can disrupt the operations of daily living
   D. All of the above
86. The after effects of terror caused by chemical, biological, radiological, or nuclear (CBRN) weapons will demand the attention of:
   A. Mental health counselors
   B. Law enforcement officers
   C. Emergency responders
   D. All of the above

87. Depending on the agent used, it can be difficult to differentiate between physiological and behavioral changes of those exposed because:
   A. Some chemical agents can result in disorientation, impaired concentration, and drowsiness
   B. Some chemical agents can cause hallucinations, paranoia, and other extreme behavioral alterations
   C. Both of the above
   D. Neither of the above

88. After an initial attack by chemical, biological, radiological, or nuclear (CBRN) agents people can experience:
   A. Fear of future illness such as cancer
   B. Fear of genetic effects in future generations
   C. Fear of difficulties unfounded in evidence-based studies
   D. All of the above

89. The potential for mass sociogenic illness also referred to as mass psychogenic illness and epidemic hysteria following acts of terrorism is:
   A. Unlikely
   B. High
   C. Only found in school populations
   D. Only found among the population displaced from their homes

90. Community cohesion can be disrupted by:
   A. The fear of contagion after a terrorism attack caused by a biologic agent
   B. Isolation and quarantine of persons infected or exposed to a biologic agent
   C. Emergency services being incapacitated
   D. All of the above