

The background of the cover is an abstract, textured composition. The top half features a mix of red and blue brushstrokes, with the red being more prominent. The bottom half is dominated by a vibrant red color, overlaid with faint, intricate patterns that resemble a network or a map. The overall effect is one of depth and complexity, reflecting the book's focus on mental health interventions.

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Terrorism and Disaster

Individual and Community Mental Health Interventions

CAMBRIDGE

Part I

Introduction

Trauma, terrorism, and disaster

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For us, this was something that did not compute. We could not keep up fast enough with the implications of what was going on. We could not accept it. We could not believe it . . . That it could be damaged I could accept, but when I learned that the Towers had collapsed, I was just speechless. I could not believe it. I could not comprehend it because these are massive structures, and it was unbelievable to think that something like that could happen. You could not even begin to think about the human toll at first, inasmuch as you were trying to respond to the situation itself, which was so shocking . . . It turned out that there was no need because there were no survivors of the magnitude we anticipated. That was both surprising and horrifying as we began to understand why.

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A traumatic event is defined by its capacity to evoke terror, fear, helplessness, or horror in the face of a threat to life or serious injury (American Psychiatric Association, 1994). A wide host of traumatic events can stun, terrify, and disrupt communities. Communities exposed to disasters experience multiple traumatic events including threat to life, loss of property, exposure to death, and often economic devastation. Disasters by definition overwhelm institutions, health care, and social resources and require from months to years for both individuals and communities to recover. Natural disasters can strike without much notice, as can human-made traumas such as transportation disasters, factory explosions, and school shootings which have become a seemingly common part of modern-day life.

Individual traumatic events such as motor vehicle accidents, sudden unexpected death of a close friend or relative, or witnessing violence and physical assault, put a huge demand on individuals and families but usually have little consequence for the larger community. In many Western cultures (but not all cultures), such individual traumas are seen as accidents that do not disrupt cultural assumptions

about social values or destroy access to social processes. Surveys in the general population estimate that approximately 69 percent of the US population are exposed to disasters or individual traumatic events over their lifetime (Norris, 1992). Of those exposed, 15 to 24 percent develop posttraumatic stress disorder (PTSD) (Breslau *et al.*, 1991; Kessler *et al.*, 1995).

Large-scale terrorist attacks are a particular type of disaster. They are human-caused, intentional interpersonal violence. Terrorists have used bombings, contamination, and weapons of mass destruction including chemical agents. The sarin nerve gas release in Tokyo and the anthrax attacks in the United States demonstrate the particular ability of chemical and biological weapons to create fear and social disruption. In addition to injuries and killing victims, the anthrax attack also forced the desertion of commercial and public buildings, disrupted the distribution of mail, occasioned social conflict, and evoked considerable fear and concern despite the fact that these attacks produced fewer casualties than car accidents and probably no greater economic loss. Terrorist events such as the Tokyo subway sarin gas attack in 1995, the bomb that exploded on a busy shopping street in Omagh, Northern Ireland, the World Trade Center attack on September 11, the 1998 embassy bombing in Nairobi, Kenya, and the 1995 Oklahoma City bombing, vividly demonstrate the strong psychological and social responses engendered by terrorism (North *et al.*, 1999; Pfefferbaum, 1999; Murakami, 2000; Tucker *et al.*, 2000; Schuster *et al.*, 2001; Galea *et al.*, 2002; Koplewicz *et al.*, 2002; Luce *et al.*, 2002; North *et al.*, 2002) and their impact on our beliefs and values (Jernigan *et al.*, 2001; *Morbidity and Mortality Weekly Report*, 2001).

Whether the perpetrators of terrorist acts represent powerful nations attempting to exert social control or small revolutionary religious or political groups attempting to impose their will upon their opponents, the purpose of most terrorists is to change the behavior of others by frightening or terrifying them and to kill those 'who do not believe' (Benedek *et al.*, 2002). Terrorism destroys the sense of safety and creates terror in individuals, communities, and nations. How the psychological response to a terrorist attack is managed may be the defining factor in the ability of a community to recover (Holloway *et al.*, 1997).

The deliberate infliction of pain and suffering as occurs in a terrorist attack is a particularly potent psychological stressor. In a nationally representative survey in the United States conducted the week after the September 11 terrorist attack, 44 percent of the adults reported one or more substantial symptoms of stress, and 90 percent reported at least low levels of stress symptoms (Schuster *et al.*, 2001). In the area most directly affected by the September 11 attack, 17.3 percent of the population were estimated to have PTSD or depression 1–2 months after the attack (Galea *et al.*, 2002). In a national study 1–2 months after September 11, rates of probable PTSD were 11.2 percent in New York City, 2.7 percent in Washington DC,

3.6 percent in other metropolitan areas, and 4.0 percent in the rest of the United States (Schlenger *et al.*, 2002). Approximately 35 percent of those directly exposed to the Oklahoma City terrorist bombing developed PTSD by 6 months (North *et al.*, 1999). An ongoing threat of terrorist attacks affects both the severity and duration of posttraumatic stress responses (Shalev, 2000).

Preventive medicine, a familiar organizing structure for conceptualizing infectious outbreaks, can also organize our understanding and interventions for behavioral and psychological responses to disasters (Ursano *et al.*, 1995b; Pfefferbaum and Pfefferbaum, 1998). In this model one identifies the pathogen, its source, and those exposed. For the psychiatric consequences of disasters the stressful psychological, physiological, and social events of the disaster are the pathogens. Terrorist attacks differ from disasters in the prominence of terror as the agent of disease and disruption.

Primary (preevent), secondary (event), and tertiary (postevent) interventions can decrease the risk of maladaptive behaviors, distress, mental disorder and disrupted functioning (Sorenson, 2002). Importantly, preevent interventions to decrease exposure to the traumatic event (e.g., practice drills) or its severity (e.g., seat belts) are an important and often overlooked component of mental health disaster planning (Aguirre *et al.*, 1998; Ursano, 2002). Identifying the groups of people that are most highly exposed to these stressors is the critical second step in determining the community consequences of a disaster or terrorist attack.

Characteristics and dimensions of traumatic events, disasters, and terrorism

Traumatic events can be first characterized by who is exposed, individuals or communities/populations (e.g., rape versus tornado). Individually experienced traumatic events can be further classified as intentional (e.g., assault) or unintentional, i.e., 'accidental' such as motor vehicle accidents. Similarly, community/population based traumatic events (i.e., disasters) are broadly categorized as human-made (e.g., terrorism, war, industrial accidents) or natural (e.g., earthquakes, floods, hurricanes) (Fig. 1.1). Often human-made disasters have been shown to be more disturbing and disruptive than natural disasters (for review see Norris, 2002). However, this distinction is increasingly difficult to make. The etiology and consequences of natural disasters often are affected by human beings. For example, the damage and loss of life caused by an earthquake can be magnified by poor construction practices and high-density occupancy. Similarly, humans may cause or contribute to natural disasters through poor land-management practices that increase the probability of floods. Interpersonal violence between individuals (assault) or groups (war, terrorism) is perhaps the most disturbing traumatic experience. Disasters, as well as individual traumatic events, are also characterized by their severity as well

Table 1.1 Dimensions of traumatic events

Threat to life
Exposure to the grotesque (dead)
Physical harm or injury
Loss of significant others
Loss of property
Information stress

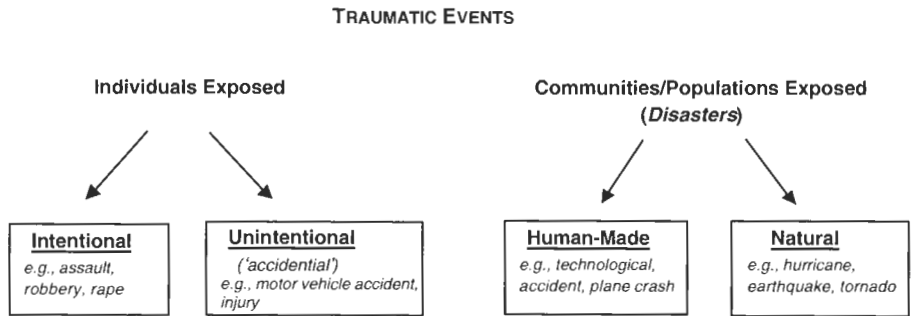


Figure 1.1 Characteristics of traumatic events.

as the nature of the stressful dimensions of the particular disaster (Green, 1990) such as: threat to life, exposure to the grotesque, physical harm or injury, loss of significant others, loss of property, or information stress (Table 1.1).

A major component of all traumatic events is disruption of the experience of safety. Some dimensions of traumatic events are more likely to engender psychiatric morbidity. High perceived threat, low controllability, lack of predictability, and high loss and injury are associated with the highest risk of psychiatric morbidity (American Psychiatric Association, 1994; Epstein *et al.*, 1997; Boudreaux *et al.*, 1998; North *et al.*, 1999; Schuster *et al.*, 2001; Zatzick *et al.*, 2001). For example, exposure to the dead and mutilated increases the risk of adverse psychiatric events (Ursano and McCarroll, 1990; Ursano *et al.*, 1995a; McCarroll *et al.*, 1996). Some groups such as first responders (firefighters, police, and Emergency Medical Technicians), hospital workers, and mortuary volunteers are routinely exposed to the dead and injured and therefore are nearly always at increased risk for a psychiatric illness and morbidity.

Increasingly, traumatic bereavement is recognized as posing special challenges to survivors (Raphael, 1977; Fullerton *et al.*, 1999; Prigerson *et al.*, 1999; Shear *et al.*, 2001). Interventions for bereavement are different than those for exposure to life threat both for adults and children (Pynoos *et al.*, 1987; Pynoos and Nader, 1993).

Table 1.2 Similarities and differences in terrorism, natural disaster, and technological disaster

Dimension	Terrorism ^a	Natural disaster ^b	Technological disaster ^c
Altered sense of safety	+++	+++	+++
Intentional	+++		
Unpredictable	+++	++	+++
Localized geographically		+++	++
Local fear	++	+++	+++
National fear	+++		
National bereavement	+++	+	+
Consequences spread over time	+++	++	++
Loss of confidence in institutions	+++	+	+++
Community disruption	+++	+++	+++
Target basic societal infrastructure	+++		
Overwhelm health care systems	+	+++	++
Hoaxes/copycats	+++		

^aTerrorism, e.g., bombings, hostage-taking.

^bNatural disaster, e.g., hurricanes, tornadoes, earthquakes.

^cTechnological disasters, e.g., nuclear leaks, toxic spills.

In children traumatic play, a phenomenon similar to intrusive symptoms in adults, is both a sign of distress and an effort at mastery (Terr, 1981). While the death of loved ones is always painful, an unexpected and violent death can be more difficult. Even when not directly witnessing the death, family members may develop intrusive images based on information gleaned from authorities or the media.

Witnessing or learning of violence to a loved one increases vulnerability to psychiatric distress as well as does knowledge that one has been exposed to toxins (e.g., chemicals or radiation) (Baum *et al.*, 1983; Weisaeth, 1994). In this case, information itself is the primary stressor. Often times toxic exposures have the added stress of being clouded in uncertainty as to whether or not exposure has taken place and what the long-term health consequences may be. Living with the uncertainty can be exceedingly stressful. Typically uncertainty accompanies bioterrorism and is the focus of much concern in the medical community preparing for responses to terrorist attacks using biological, chemical, or nuclear agents (Holloway *et al.*, 1997; DiGiovanni, 1999; Benedek *et al.*, 2002).

Terrorism often can be distinguished from other natural and human-made disasters by the characteristic extensive fear, loss of confidence in institutions, unpredictability and pervasive experience of loss of safety (Table 1.2). In a longitudinal national study of reactions to September 11, 64.6 percent of people outside of New York City reported fears of future terrorism at 2 months and 37.5 percent at 6 months

(Silver *et al.*, 2002). In addition, 59.5 percent reported fear of harm to family at 2 months and 40.6 percent at 6 months. Terrorism is one of the most powerful and pervasive generators of psychiatric illness, distress, and disrupted community and social functioning (Holloway *et al.*, 1997; North *et al.*, 1999).

Health consequences of terrorism and disaster

The psychosocial, cognitive, and biologic effects of traumatic events are complex and interrelated (McEwan, 2001; Ursano, 2002; Yehuda, 2002). The behavioral and psychological responses seen in disasters are not random and frequently have a predictable structure and time course. For most individuals posttraumatic psychiatric symptoms are transitory. These early symptoms usually respond to education, obtaining enough rest, and maintaining biological rhythms (e.g., sleep at the same time, eat at the same time). Media exposure can be both reassuring and threatening. Limiting such exposure can minimize the disturbing effects especially in children (Pfefferbaum *et al.*, 2001). Educating spouses and significant others of those distressed can assist in treatment as well as in identifying the worsening or persistence of symptoms. At times, traumatic events and disasters also have beneficial effects serving as organizing events and providing a sense of purpose as well as an opportunity for positive growth experiences (Ursano, 1987; Foa *et al.*, 2000).

For some, however, the effects of disaster linger long after its occurrence, rekindled by new experiences that remind the person of the past traumatic event. PTSD is not uncommon following many traumatic events from terrorism to motor vehicle accidents to industrial explosions. In its acute form PTSD may be more like the common cold, experienced at some time in one's life by nearly all. If it persists, it can be debilitating and require psychotherapeutic and pharmacological intervention.

PTSD is not, however, the only trauma-related disorder, nor perhaps the most common (Fullerton and Ursano, 1997; North *et al.*, 1999; Norris, in press) (Table 1.3). People exposed to terrorism and disaster are at increased risk for depression, generalized anxiety disorder, panic disorder, and increased substance use (Breslau *et al.*, 1991; Kessler *et al.*, 1995; North *et al.*, 1999, 2002; Vlahov *et al.*, 2002). Forty-five percent of survivors of the Oklahoma City bombing had a post-disaster psychiatric disorder. Of these 34.3 percent had PTSD and 22.5 percent had major depression (North *et al.*, 1999). Nearly 40 percent of those with PTSD or depression had no previous history of psychiatric illness (North *et al.*, 1999). After a disaster or terrorist event the contribution of the psychological factors to medical illness can also be pervasive – from heart disease (Leor *et al.*, 1996) to diabetes (Jacobson, 1996). Importantly, injured survivors often have psychological factors affecting their physical condition (Shore *et al.*, 1989; Kulka *et al.*, 1990; Smith *et al.*, 1990; North *et al.*, 1999; Zatzick, 2001).

Table 1.3 Health outcomes*Psychiatric diagnoses*

Posttraumatic stress disorder

Acute stress disorder

Major depression

Substance-use disorders

Generalized anxiety disorder

Adjustment disorder

Organic mental disorders secondary to head injury, toxic exposure, illness, and dehydration

Psychological factors affecting physical disease (in the injured)

Psychological/behavioral responses

Grief reactions and other normal responses to an abnormal event

Family conflict

Acute stress disorder (ASD) was introduced into the diagnostic nomenclature in *DSM-IV* (American Psychiatric Association, 1994). ASD is a constellation of symptoms very similar to PTSD but persists for a minimum of 2 days and a maximum of 4 weeks and occurs within 4 weeks of the trauma. The only difference in symptom requirements between the two diagnoses is that dissociative symptoms must be present in order to diagnose ASD. The dissociative symptoms can occur during the traumatic event itself or after it. A common early response to traumatic exposure appears to be a disturbance in our sense of time, our internal time clock, resulting in time distortion – time feeling speeded up or slowed down (Ursano and Fullerton, 2000). Along with other dissociative symptoms this time distortion indicates an over four times greater risk for chronic PTSD and may also be an accompaniment of depressive symptoms.

Traumatic bereavement (Prigerson *et al.*, 1999), unexplained somatic symptoms (Ford, 1997; McCarroll *et al.*, 2002), depression (Kessler *et al.*, 1999), sleep disturbance, increased alcohol, caffeine, and cigarette use (Shalev *et al.*, 1990), as well as family conflict and family violence are not uncommon following traumatic events. Anger, disbelief, sadness, anxiety, fear, and irritability are expected responses. In each, the role of exposure to the traumatic event may be easily overlooked by a primary-care physician. Anxiety and family conflict can accompany the fear and distress of new terrorist alerts, toxic contamination, and the economic impact of lost jobs and companies closed or moving. Medical evaluation which includes inquiring about family conflict can provide reassurance as well as begin a discussion for referral, and be a primary preventive intervention for children whose first experience of a disaster or terrorist attack is mediated through their parents.

Community effects of terrorism and disaster

While there are many definitions of terrorism and disaster, a common feature is that the event overwhelms local resources and threatens the function and safety of the community. With the advent of instantaneous communication and media coverage, word of terrorism or disaster is disseminated quickly, often in real time witnessed around the globe. The disaster community is soon flooded with outsiders: people offering assistance, curiosity-seekers, and the media. This sudden influx of strangers affects the community in many ways. The presence of large numbers of media representatives can be experienced as intrusive and insensitive. Hotel rooms have no vacancies, restaurants are crowded with unfamiliar faces, and the normal routine of the community is altered. At a time when, traditionally, communities turn inward to grieve and assist affected families, the normal social supports are strained and disrupted by outsiders.

Inevitably, after any major trauma, there are rumors circulated within the community about the circumstances leading up to the traumatic event and the government response. Sometimes there is a heightened state of fear. For example, a study of a school shooting in Illinois noted that a high level of anxiety continued for a week after the event, even after it was known that the perpetrator had committed suicide (Schwarz and Kowalski, 1991).

Outpourings of sympathy for the injured, dead, and their friends and families are common and expected. Impromptu memorials of flowers, photographs, and memorabilia are frequently erected. Churches, synagogues, temples, and mosques play an important role in assisting communities' search for meaning from such tragedy and in assisting in the grief process.

Over time, anger often emerges in the community. Typically, there is a focus on accountability, a search for someone who was responsible for a lack of preparation or inadequate response. Mayors, police and fire chiefs, and other community leaders are often targets of these strong feelings. Scapegoating can be an especially destructive process when leveled at those who already hold themselves responsible, even if, in reality, there was nothing they could have done to prevent adverse outcomes. In addition, nations and communities experience ongoing hypervigilance and a sense of lost safety while trying to establish a new normal in their lives.

There are many milestones of a disaster which both affect the community and may offer opportunities for recovery. There are the normal rituals associated with burying the dead. Later, energy is poured into creating appropriate memorials. Memorialization carries the potential to cause harm as well as to do good. There can be heated disagreement about what the monument should look like and where it should be placed. Special thought must be given to the placement of memorials. If the monument is situated too prominently so that community members cannot

Table 1.4 High-risk groups

Directly exposed to life threat
Injured
First responders
Bereaved
Single parents
Children
Elderly
Women
Individuals with:
prior PTSD
prior exposure to trauma
prior or current psychiatric or medical illness
lack of supportive relationships

avoid encountering it, the memorial may heighten intrusive recollections and interfere with the resolution of grief reactions. Anniversaries of the disaster (one week, one month, one year) often stimulate renewed grief.

High-risk groups

Posttraumatic stress is most often seen in those directly exposed to the threat to life and the horror of a traumatic event. The greater the 'dose' of traumatic stressors, the more likely a group is to develop high rates of psychiatric morbidity. Importantly, as noted earlier, psychiatric illness can develop even in those with no previous psychiatric history (North *et al.*, 1999). Therefore those needing treatment will not all have the usually expected accompanying risk factors and coping strategies of other mental health populations. While each disaster has its unique aspects, certain groups are routinely exposed to the dead and injured and, therefore, are at risk for psychiatric sequelae (Table 1.4). Adults, children, and the elderly in particular who were in physical danger and who directly witnessed the events are at risk. Traumatically bereaved parents of adult children are a group often forgotten as community programs and neighbors remember the spouse or partner and children of the deceased.

Those at greatest risk include the primary victims, those who have significant attachments with the primary victims, first responders, and support providers (Wright and Bartone, 1994). Those who were psychologically vulnerable before the terrorist attacks may also be buffeted by the fears and realities of job losses, untenably longer commutes, or eroded interpersonal and community support systems overtaxed now by increased demands.

Similarly, police, paramedics, and other first responders who assist the injured and evacuate them to medical care, and hospital personnel who care for the injured are all groups that need opportunities to process what happened, education on normal responses, and information on when to seek further help. Those who are charged with cleaning up the site of the tragedy are also vulnerable to persistent symptoms. Overidentification with the victims (e.g., 'It could have been me') and their pain and grief can perpetuate the fear response (Ursano *et al.*, 1999). This normally health and growth promoting mechanism of identification with victims and heroes can turn against us in this setting like an autoimmune disorder. Inevitably, each disaster situation will also contain individuals who are 'silent' victims and often overlooked. By paying close attention to the patterns and types of exposure, these individuals can be identified and be given proper care.

Risk communication

Multiple studies confirm that we assess risk and threat based on our feelings of control and our level of knowledge and familiarity with an event (for example, see MacGregor and Fleming, 1996). Therefore peanut butter is not recognized sufficiently as a risk to health and air travel is seen as overly risky (Slovic, 1987). Widespread fear, uncertainty, and stigmatization are common following terrorism and disasters. These fears require education about the actual risk and instruction in how to decrease risk whether the risk is falling buildings in an earthquake or infection from a biological weapon. Instruction in active coping techniques can increase feelings of control and efficacy. In particular, fears of biological contagion or other contaminants can decrease community cohesion and turn neighbor against neighbor as one tries to feel safe by identifying those who are exposed or ill as 'not me'.

The fear of exposure to toxic agents, including biological, chemical, and radiologic agents, can lead hundreds or even thousands to seek care, overwhelming our hospitals and health care system. Belief that one has been exposed to chemical and biological weapons leads individuals to seek health care and change life patterns regardless of actual exposure. After the Aum Shinrikyo attack in Tokyo in which 11 victims died, over 5000 people sought care for presumed exposure (Okumura *et al.*, 1998). In Israel, after a SCUD missile attack during the Gulf War, fear of chemical weapons exposure was the reason for nearly 700 of 1000 war-related emergency room visits (Karsenty *et al.*, 1991; Bleich *et al.*, 1992). The resources demanded by such events are large and made larger by the uncertainties associated with the event. Triage of anxious and distressed individuals is critical to being able to provide appropriate care to those who are physically injured.

Clear, accurate, and consistent information exchange is needed between health care professionals, government and local leaders, and the general public in times

of a disaster. For medical and public health care professionals, explaining and describing risk is probably the most challenging situation for communicating with nonscientists. Difficulty translating scientific information, conflicting risks and messages, and disagreement on the extent of the risk and how to assess it presents key challenges. Physicians have the ear of their community in their medical office, at community functions and schools, and through the media and therefore, are an important natural network for educating about risk and prevention.

Medical and behavioral health personnel provide important expertise in development of public information plans. Information from official and unofficial sources before, during, and after a disaster will shape expectations, behaviors and emotional responses (Holloway *et al.*, 1997). The delivery of consistent, updated information across multiple channels by way of widely recognized and trusted sources diminishes the extent to which misinformation can shape public attribution (Peters *et al.*, 1997). It is critical that the information provided be truthful even if it is bad news. Trusted media representatives may fulfill a vital function by delivering simple, salient, and repeated messages regarding matters of concern to the public. These messages could educate the public concerning the nature of the threat and how to act to avoid harm and get help.

Intervention

The normal process of recovery involves talking with others about the event, learning coping strategies, and seeking help (Table 1.5). A number of treatment approaches for PTSD have been proposed to be helpful, including: psychodynamic therapy, group therapy, psychological debriefing, cognitive-behavioral therapy, pharmacotherapy, psychosocial rehabilitation, and marital and family therapy (for reviews, see Foa *et al.*, 2000; Yehuda, 2002). Early psychiatric interventions to disaster are directed to minimizing exposure to traumatic stressors and educating about normal responses to trauma and disasters. Consultations to other health care professionals who will see individuals seeking medical care for injuries and to community leaders who need assistance in identifying at risk groups and understanding the phases of recovery are also important early on. More traditional health care services such as advising people on when to seek professional treatment; assisting in the resolution of acute symptomatology occurring in the days and weeks after the initial exposure; identifying those who are at higher risk for the development of psychiatric disorders; and engaging them in treatment and support are important to the health of the community.

Early symptoms usually respond to a number of approaches, such as helping patients and their families identify the cause of the stress and limiting further exposure (e.g., by avoiding excessive news coverage of the traumatic event) and advising

Table 1.5 Early intervention with trauma survivors

-
1. *Basic needs*
 - Safety/security/survival
 - Food and shelter
 - Orientation
 - Communication with family, friends, and community
 - Assessment of the environment for ongoing threat/toxin
 2. *Psychological first aid*
 - Protect survivors from further harm
 - Reduce physiological arousal
 - Mobilize support for those who are most distressed
 - Keep families together and facilitate reunion with loved ones
 - Provide information, foster communication and education
 - Use effective risk-communication techniques
 3. *Needs assessment*
 - Assess current status, how well needs addressed, recovery environment, what additional interventions needed for:
 - group
 - population
 - individual
 4. *Monitoring the rescue and recovery environment*
 - Observe and listen to those most affected
 - Monitor the environment for toxins and stressors
 - Monitor past and ongoing threats
 - Monitor services that are being provided
 - Monitor media coverage and rumors
 5. *Outreach and information dissemination*
 - ‘Therapy by walking around’
 - Using established community structures
 - Flyers
 - Websites
 - Media interviews, releases, and programs
 6. *Technical assistance, consultation, and training*
 - Consultation to emergency hospital personnel
 - Establish outreach programs to provide community support and social intervention programs to decrease chronicity
 - Educate medical personnel and community groups (media, schools, PTAs, hospitals, corporations) on normal responses to trauma and loss
 - Educate of medical personnel on likely presentations of psychiatric disorders to primary care physicians: somatization, grief reactions, depression, substance abuse, family violence, spouse and child abuse

Table 1.5 (cont.)

Consultation, education, and training to other groups (e.g., clergy, teachers/schools, parenting groups, employment groups) and responders
Leaders
7. <i>Fostering resilience/recovery</i>
Social interactions
Coping skills training
Risk-assessment skills training
Education about stress response, traumatic reminders, coping, normal vs. abnormal functioning, risk factors, services
Group and family interventions
Fostering natural social support
Looking after the bereaved
Repair organizational fabric
8. <i>Triage</i>
Clinical assessment
Referral when indicated
Identify the vulnerable, high-risk individuals and groups
Emergency hospitalization
9. <i>Treatment</i>
Reduce or ameliorate symptoms or improve functioning via:
individual, family, and group psychotherapy
pharmacotherapy
spiritual support
short-term or long-term hospitalization

Adapted from Ursano *et al.* (1995b); National Institute of Mental Health (2002).

patients to get enough rest and maintain their biologic rhythms (e.g., by going to sleep at the same time each night and by eating at the same times each day). Key components of early intervention can be provided by mental health professionals and by other health care providers (National Institute of Mental Health, 2002). Early interventions include meeting basic needs (safety, food, and protection from the elements), psychological first aid, assessing needs, monitoring the rescue and recovery environment, outreach and information dissemination, technical assistance, consultation and training, fostering resilience/recovery; triage, and treatment (Table 1.5).

It is important to remember that one of the goals of psychiatric care is to facilitate the treatment of the injured by removing individuals who do not require emergency medical care from the patient flow. Designation of a location near the hospital but

separate from the chaos is important for initial treatment and triage. Hospitals or other institutions serving as entry points for care can serve as locations where persons with psychological symptoms can receive respite (Benedek *et al.*, 2002).

Educating patients and their families can also help them to identify worsening or persistent symptoms. Anxiety and family conflict can be triggered by the fear of new threats or by the economic impact of the loss of a job after a traumatic event.

Interpersonal withdrawal and social isolation are particularly difficult symptoms and often bode a complex trauma response. Social withdrawal tends to limit the normal recovery mechanisms, e.g., the 'natural debriefing process' (Ursano *et al.*, 2000), talking with others, active coping, and help-seeking. Depression may be a primary contribution to withdrawal and requires evaluation and treatment.

Increased somatic symptoms have been frequently reported after disasters, particularly toxic exposures (Engel and Katon, 1999) and exposure to the dead (McCarroll *et al.*, 2002) and can be an expression of anxiety or depression. In these individuals, conservative medical management with education and reassurance are the core of medical treatment. Discussion of specific worries and fears can decrease symptoms, initiate the normal metabolism and digestion of stress symptoms, and identify any need for further specific treatment.

Although group debriefing techniques and critical incident debriefings have often been used in the aftermath of natural disasters, school shootings, and terrorist events, there is no convincing evidence that such debriefings reduce the development of psychiatric illness or prevent the development of PTSD. Nonetheless open discussions among survivors of traumatic events and among disaster workers may foster better understanding of the traumatic experience and group cohesion. This may decrease individual isolation and stigma, and facilitate identification of individuals who may require further mental health attention (Raphael, 2000). Debriefing may have its beneficial effect by encouraging talking and limiting the disability and impairment associated with withdrawal and stigma. Debriefing of homogeneous groups and being careful to not mix people with widely differing exposures (which can increase traumatic exposure for some in the group) are helpful strategies.

Evidence from clinical trials suggests that cognitive-behavioral therapy facilitates recovery from PTSD following trauma. Cognitive-behavioral therapy involves education about the nature and universality of symptoms, examination of the precipitants of symptoms (particularly cognitive distortions), and development of reframing and interpretive techniques to minimize further symptoms. Clinical trials for the treatment of depression, anxiety, and PTSD suggest that even brief therapeutic interventions of this nature may reduce immediate symptoms and diminish the development of long-term morbidity (Bryant *et al.*, 1998; Foa *et al.*, 2000).

Table 1.6 Resources for terrorism and disaster intervention

American Psychiatric Association: <http://www.psych.org>

American Psychological Association: <http://www.apa.org>

Red Cross: <http://www.redcross.org>

Uniformed Services University of the Health Sciences (USUHS), Center for the Study of Traumatic Stress, Department of Psychiatry: <http://www.usuhs.mil/psy/disasterresources.html>
(or go to USUHS home page: <http://www.usuhs.mil> and click on 'Disaster Care Resources')

Substance Abuse and Mental Health Services Administration (SAMHSA):

<http://www.samhsa.gov>

Pharmacotherapy with selective serotonin reuptake inhibitor (SSRI) agents has been shown effective with PTSD (Foa *et al.*, 2000). Limited use of sleep stabilizing medications as well as antianxiety agents can also relieve symptoms and more rapidly return those distressed to baseline functioning.

Given that medical resources may be quickly overwhelmed in the aftermath of a traumatic event, nonphysicians trained in the delivery of various early interventions (e.g., social workers, psychiatric nurses, and specifically trained others such as Red Cross volunteers) can more effectively achieve delivery of care. In establishing priorities, delay in instituting mental health diagnosis and treatment may increase long-term morbidity. Employee assistance programs are an important resource when specific businesses or buildings, as can occur in a terrorist event, have been affected.

Conclusion

The chaos that occurs when lives are thrown into the turmoil of terrorism and disaster has a structure that is increasingly becoming evident through research, clinical work, and community concern. Further understanding of the consequences of terrorism and disaster will aid leaders and health care providers in planning for such events (see Table 1.6 for additional Internet resources). The chapters that follow highlight national and international responses to terrorism and disaster. They discuss and suggest interventions for leaders, health care providers, researchers, individuals, and communities. The development of community disaster plans, medical intervention and prevention plans to address the responses to traumatic events, and the training of leaders in the stresses of traumatic events can greatly help individuals and their communities. Education about the nature of terrorism and disaster is needed to increase the knowledge base for intervention and the resources for furthering our understanding. Consultation and mutually helpful relationships among clinicians, researchers, and community leaders are essential to these efforts.

REFERENCES

- Aguirre, B. E., Wenger, D. and Vigo, G. (1998). A test of the emergent norm theory of collective behavior. *Sociological Forum*, **13**, 301–320.
- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders*, 4th edn. Washington, DC: American Psychiatric Press.
- Baum, A., Gatchel, R. J. and Schaeffer, M. A. (1983). Emotional, behavioral, and physiological effects of chronic stress at Three Mile Island. *Journal of Consulting and Clinical Psychology*, **51**, 565–572.
- Benedek, D. M., Holloway, H. C. and Becker, S. M. (2002). Emergency mental health management in bioterrorism events. *Emergency Medicine Clinics of North America*, **20**, 393–407.
- Bleich, A., Dycian, A., Koslowsky, M., Solomon, Z. and Wiener, M. (1992). Psychiatric implications of missile attacks on a civilian population. Israel: Lessons from the Persian Gulf War. *Journal of the American Medical Association*, **268**, 613–615.
- Boudreaux, E., Kilpatrick, D. G., Resnick, H. S., Best, C. L. and Saunders, B. E. (1998). Criminal victimization, posttraumatic stress disorder, and comorbid psychopathology among a community sample of women. *Journal of Traumatic Stress*, **11**, 665–678.
- Breslau, N., Davis, G. C., Andreski, P. and Peterson, E. L. (1991). Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry*, **48**, 216–222.
- Bryant, R. A., Harvey, A. G., Dang, S. T., Sackville, T. and Basten, C. (1998). Treatment of acute stress disorder: A comparison of cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology*, **66**, 862–866.
- DiGiovanni, J. (1999). Domestic terrorism with chemical or biological agents: Psychiatric aspects. *American Journal of Psychiatry*, **156**, 1500–1505.
- Engel, C. C. and Katon, W. J. (1999). Population and need-based prevention of unexplained symptoms in the community. In *Institute of Medicine, Strategies to Protect the Health of Deployed US Forces: Medical Surveillance, Record Keeping, and Risk Reduction*, eds. L. M. Joellenbeck, P. K. Russell and S. B. Guze, pp. 173–212. Washington, DC: National Academy Press.
- Epstein, J. N., Saunders, B. E. and Kilpatrick, D. G. (1997). Predicting PTSD in women with a history of childhood rape. *Journal of Traumatic Stress*, **10**, 573–588.
- Foa, E. B., Keane, T. M. and Friedman, M. J. (eds.) (2000). *Effective Treatments for PTSD*. New York: Guilford Press.
- Ford, C. V. (1997). Somatic symptoms, somatization, and traumatic stress: An overview. *Nordic Journal of Psychiatry*, **51**, 5–13.
- Fullerton, C. S., Ursano, R. J., Kao, T. C. and Bharitya, V. R. (1999). Disaster-related bereavement: Acute symptoms and subsequent depression. *Aviation, Space, and Environmental Medicine*, **70**, 902–909.
- Fullerton, C. S. and Ursano, R. J. (eds) (1997). *Posttraumatic Stress Disorder: Acute and Long-Term Responses to Trauma and Disaster*. Washington, DC: American Psychiatric Press.
- Galea, S., Ahern, J., Resnick, H., *et al.* (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. *New England Journal of Medicine*, **346**, 982–987.

- Green, B. L. (1990). Defining trauma: Terminology and generic dimensions. *Journal of Applied Social Psychology*, **20**, 1632–1642.
- Holloway, H. C., Norwood, A. E., Fullerton, C. S., Engel, C. C. and Ursano, R. J. (1997). The threat of biological weapons: Prophylaxis and mitigation of psychological and social consequences. *Journal of the American Medical Association*, **278**, 425–427.
- Jacobson, A. M. (1996). The psychological care of patients with insulin-dependent diabetes mellitus. *New England Journal of Medicine*, **334**, 1249–1253.
- Jernigan, J. A., Stephens, D. S., Ashford, D. A., *et al.* (2001). Bioterrorism-related inhalational anthrax: The first 10 cases reported in the United States. *Emergency Infectious Disease*, **7**, 933–946.
- Karsenty, E., Shemer, J., Alshech, I., *et al.* (1991). Medical aspects of the Iraqi missile attacks on Israel. *Israel Journal of Medical Science*, **27**, 603–607.
- Kessler, R. C., Barber, C., Birnbaum, H. G., *et al.* (1999). Depression in the work place: Effects of short-term disability. *Health Affairs*, **18**, 163–171.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M. and Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*, **52**, 1048–1060.
- Koplewicz, H. S., Vogel, J. M., Solanto, M. V., *et al.* (2002). Child and parent response to the 1993 World Trade Center bombing. *Journal of Traumatic Stress*, **15**, 77–85.
- Kulka, R. A., Schlenger, W. E., Fairbank, J. A., *et al.* (1990). *Trauma and the Vietnam War Generation: Report of Findings from the National Vietnam Veterans Readjustment Study*. New York: Brunner/Mazel.
- Leor, J., Poole, W. K. and Kloner, R. A. (1996). Sudden cardiac death triggered by an earthquake. *New England Journal of Medicine*, **334**, 413–419.
- Luce, A., Firth-Cozens, J., Midgley, S. and Burges, C. (2002). After the Omagh bomb: Posttraumatic stress disorder in health service staff. *Journal of Traumatic Stress*, **15**, 27–30.
- MacGregor, D. G. and Fleming, R. (1996). Risk perception and symptom reporting. *Risk Analysis*, **16**, 773–783.
- McCarroll, J. E., Fullerton, C. S., Ursano, R. J. and Hermesen, J. M. (1996). Posttraumatic stress symptoms following forensic dental identification: Mt. Carmel, Waco, Texas. *American Journal of Psychiatry*, **153**, 778–782.
- McCarroll, J. E., Ursano, R. J., Fullerton, C. S., Liu, X. and Lundy, A. (2002). Somatic symptoms in Gulf War mortuary workers. *Psychosomatic Medicine*, **64**, 29–33.
- McEwan, B. S. (2001). From molecules to mind: Stress individual differences and the social environment. *Annals of the New York Academy of Science*, **935**, 42–49.
- Morbidity and Mortality Weekly Report* (2001). Update: Investigation of bioterrorism-related anthrax, Connecticut. *Morbidity and Mortality Weekly Report*, **50**, 1077–1079.
- Murakami, H. (2000). *Underground: The Tokyo Gas Attack and the Japanese Psyche*. New York: Random House.
- National Institute of Mental Health (2002). *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention For Victims / Survivors of Mass Violence: A Workshop to Reach Consensus on Best Practices*, NIH Publication No. 02–5138. Washington, DC: US Government Printing Office.

- Norris, F. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology*, **60**, 409–418.
- Norris, F. H. (in press). 50 000 disaster victims speak: An empirical review of the empirical literature, 1981–2001. *Psychiatry*.
- North, C. S., Nixon, S. J., Shariat, S., *et al.* (1999). Psychiatric disorders among survivors of the Oklahoma City bombing. *Journal of the American Medical Association*, **282**, 755–762.
- North, C. S., Tivis, L., McMillen, J. C., *et al.* (2002). Psychiatric disorders in rescue workers after the Oklahoma City bombing. *American Journal of Psychiatry*, **159**, 857–859.
- Okumura, T., Suzuki, K., Fukuda, A., *et al.* (1998). The Tokyo Subway sarin attack: Disaster management. 2: Hospital response. *Academy of Emergency Medicine*, **5**, 618–624.
- Peters, R. G., Covello, V. T. and McCallum, D. B. (1997). The determinants of trust and credibility in environmental risk communication: An empirical study. *Risk Analysis*, **17**, 43–54.
- Pfefferbaum, B. (1999). Posttraumatic stress responses in bereaved children after the Oklahoma City bombing. *Journal of the American Academy of Child and Adolescent Psychiatry*, **38**, 1372–1379.
- Pfefferbaum, B. and Pfefferbaum, R. L. (1998). Contagion in stress: An infectious disease model for posttraumatic stress in children. *Child and Adolescent Psychiatric Clinics of North America*, **7**, 183–194.
- Pfefferbaum, B., Nixon, S. J., Tivis, R. D., *et al.* (2001). Television exposure in children after a terrorist incident. *Psychiatry*, **64**, 202–211.
- Prigerson, H. G., Shear, M. K., Jacobs, S. C., *et al.* (1999). Consensus criteria for traumatic grief: A preliminary empirical test. *British Journal of Psychiatry*, **174**, 67–73.
- Pynoos, R., Frederick, C., Nader, K., *et al.* (1987). Life threat and posttraumatic stress in school-age children. *Archives of General Psychiatry*, **44**, 1057–1063.
- Pynoos, R. S. and Nader, K. (1993). Issues in the treatment of posttraumatic stress in children and adolescents. In *International Handbook of Traumatic Stress Syndromes*, eds. J. P. Wilson and B. Raphael, pp. 535–549. New York: Plenum Press.
- Raphael, B. (1977). Preventive intervention with the recently bereaved. *Archives of General Psychiatry*, **34**, 1450–1454.
- Raphael, B. (2000). Conclusion: Debriefing – science, belief and wisdom. In *Psychological Debriefing: Theory, Practice and Evidence*, eds. B. Raphael and J. P. Wilson, pp. 351–359. New York: Cambridge University Press.
- Schlenger, W. E., Caddell, J. M., Ebert, L., *et al.* (2002). Psychological reactions to terrorist attacks. Findings from the national study of Americans' reactions to September 11. *Journal of the American Medical Association*, **288**, 581–588.
- Schuster, M. A., Stein, B. D., Jaycox, L. H., *et al.* (2001). A national survey of stress reactions after the September 11, 2001, terrorist attack. *New England Journal of Medicine*, **345**, 1507–1512.
- Schwarz, E. D. and Kowalski, J. M. (1991). Malignant memories: PTSD in children and adults after a school shooting. *Journal of the American Academy of Child and Adolescent Psychiatry*, **30**, 936–944.
- Shalev, A. Y. (2000). Measuring outcome in posttraumatic stress disorder. *Journal of Clinical Psychiatry*, **61** (Suppl. 5), 33–39.

- Shalev, A. Y., Bleich, A. and Ursano, R. J. (1990). Posttraumatic stress disorder: Somatic comorbidity and effort tolerance. *Psychosomatics*, **31**, 197–203.
- Shear, M. K., Frank, E., Foa, E., *et al.* (2001). Traumatic grief treatment: A pilot study. *American Journal of Psychiatry*, **158**, 1506–1508.
- Shore, J. H., Vollmer, W. M. and Tatum, E. L. (1989). Community patterns of posttraumatic stress disorders. *Journal of Nervous and Mental Disease*, **177**, 681–685.
- Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M. and Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *Journal of the American Medical Association*, **288**, 1235–1244.
- Slovic, P. (1987). Perception of risk. *Science*, **236**, 280–285.
- Smith, E. M., North, C. S., McCool, R. E. and Shea J. M. (1990). Acute postdisaster psychiatric disorders: Identification of persons at risk. *American Journal of Psychiatry*, **147**, 202–206.
- Sorenson, S. B. (2002). Preventing traumatic stress: Public health approaches. *Journal of Traumatic Stress*, **15**, 3–7.
- Terr, L. C. (1981). 'Forbidden games': Post-traumatic child's play. *Journal of the American Academy of Child Psychiatry*, **20**, 741–760.
- Tucker, P., Pfefferbaum, B., Nixon, S. J. and Dickson, W. (2000). Predictors of post-traumatic stress symptoms in Oklahoma City: Exposure, social support, peri-traumatic responses. *Journal of Behavioral Health Services and Research*, **27**, 406–416.
- Ursano, R. J. (1987). Posttraumatic stress disorder: the stressor criterion. *Journal of Nervous and Mental Disease*, **175**, 273–275.
- (2002). Post-traumatic stress disorder. *New England Journal of Medicine*, **34**, 130–131.
- Ursano, R. J. and Fullerton, C. S. (2000). Posttraumatic stress disorder: Cerebellar regulation of psychological, interpersonal and biological responses to trauma? *Psychiatry*, **62**, 325–328.
- Ursano, R. J., Fullerton, C. S., Kao, T. C. and Bhartiya, V. R. (1995a). Longitudinal assessment of posttraumatic stress disorder and depression after exposure to traumatic death. *Journal of Nervous and Mental Disease*, **183**, 36–42.
- Ursano, R. J., Fullerton, C. S. and Norwood, A. E. (1995b). Psychiatric dimensions of disaster: Patient care, community consultation, and preventive medicine. *Harvard Review of Psychiatry*, **3**, 196–209.
- Ursano, R. J., Fullerton, C. S., Vance, K. and Kao, T. C. (1999). Posttraumatic stress disorder and identification in disaster workers. *American Journal of Psychiatry*, **156**, 353–359.
- Ursano, R. J., Fullerton, C. S., Vance, K. and Wang, L. (2000). Debriefing: Does natural debriefing tell us a story? In *Psychological Debriefing: Theory, Practice and Evidence*, eds. B. Raphael and J. P. Wilson, pp. 32–42. New York: Cambridge University Press.
- Ursano, R. J. and McCarroll, J. E. (1990). The nature of a traumatic stressor: Handling dead bodies. *Journal of Nervous and Mental Disease*, **178**, 396–398.
- Vlahov, D., Galea, S., Resnick, H., *et al.* (2002). Increased use of cigarettes, alcohol, and marijuana among Manhattan, New York, residents after the September 11 terrorist attacks. *American Journal of Epidemiology*, **155**, 988–996.
- Weisaeth, L. (1994). Psychological and psychiatric aspects of technological disasters. In *Individual and Community Responses to Trauma: The Structure of Human Chaos*, eds. R. J. Ursano, B. G. McCaughey and C. S. Fullerton, pp. 72–102. Cambridge: Cambridge University Press.

- Wright, K. M. and Bartone, P. T. (1994). Community responses to disaster: The Gander plane crash. In *Individual and Community Responses to Trauma and Disaster: The Structure of Human Chaos*, eds. R. J. Ursano, B. G. McCaughey and C. S. Fullerton, pp. 267–284. Cambridge: Cambridge University Press.
- Yehuda, R. (2002). Post-traumatic stress disorder. *New England Journal of Medicine*, **34**, 108–114.
- Zatzick, D. F., Kang, S. M., Hinton, L., *et al.* (2001). Posttraumatic concerns: A patient-centered approach to outcome assessment after traumatic physical injury. *Medical Care*, **39**, 327–339.